CRITERIUM® ENGINEERS

STRUCTURAL EVALUATION

Holy Angels Church
3 Milford Street
Upton, MA

Prepared for:

Town of Upton
c/o Derek Brindisi - Town Manager
1 Main Street
Upton, MA 01568

Prepared by:

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In association with
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Hopkinton, Massachusetts

April 26, 2019

Project Number: 19-0104-MA
Date of Inspection: April 4, 2019
Engineers: H. Alan Mooney, P.E.
Nate Powelson, P.E.

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1.0 Introduction

At the request of the Economic Development Committee (the Committee) in Upton, Massachusetts we have performed a structural evaluation of the Holy Angels Church located at 3 Milford Street in Upton, MA. The report that follows, including the photos and other information in the appendices, is the result of our evaluation.

After you have had an opportunity to review this information, if you wish to discuss our observations and conclusions in more detail, we are available for a meeting.

2.0 Purpose

As we understand it, the committee is interested in obtaining a professional opinion on whether the building is structurally sound and what, if any, significant repairs or rehabilitation would be needed if it were to be actively occupied again, perhaps as a mixed-use building.

Further, if rehabilitation is feasible, the committee would also like to know the estimated cost for rehabilitation. Our ability to provide a cost estimate is limited to some assumptions we must make about reuse options as well as having only evaluated the structural condition.

Overall, our work was guided by our proposal for this project which is included in Appendix D.

3.0 Executive Summary

Overall, we consider this building to be structurally sound. We found some evidence of deterioration in parts of the framing in contact with the soil on the lower level; however, this is not significant and does not compromise the overall structural soundness at this time. Some repairs would be needed in these areas if an extensive renovation or conversion to a different use was undertaken.

The approximate live load capacity for the first floor is 65 pounds per square foot (PSF). That capacity is typical for a building of this age and construction type. However, if this building were renovated and used for assembly purposes (theater, restaurant, etc.) it is likely that the required first floor live load capacity would be 100 PSF. Therefore, some reinforcement would be needed. Also, if this type of use were anticipated, some reinforcement of the framing connections and details for the first floor would be recommended.

Of most concern in this building, although not specifically structural, is the evidence of widespread presence of asbestos containing materials. The mitigation of these materials, which includes some of the floor tiles (typically the 9” x 9” tiles) and some of the loose insulation, will be a complex and potentially expensive project. Also, considering the age of this building, it is likely that lead paint was used which also would require some mitigation depending on the anticipated use.

Finally, with regard to an overall summary, for future reuse, accessibility will be a concern. There is a ramp on the right side of the building which does provide access to the main level. However, this ramp is generally in poor condition at this time. Further, the details of this ramp

(slope, width, etc.) would need to be reviewed to be sure that it is compliant with current ADA standards. Further, there are other accessibility issues throughout this building including door widths, access to the stage, rest rooms, signage, etc. All of these would need to be addressed appropriately to secure proper permits for any planned renovation of this building.

Of immediate consideration is the safety of the ramp; use should be prohibited.

4.0 Description

This building, a former church now vacant, was reportedly built around 1800 and consists of approximately 7,600 SF of above grade space. Prior to our inspection, finishes had been removed on most of the lower level.

There are two sections: the original building and a smaller addition at the rear. The main building has wood siding and the addition has vinyl siding. The roofs on both buildings are composite shingles. There are several significant architectural features (columns, cornices, etc.) on the exterior of this building.

The primary structural system contains heavy timber elements typical for a building of this age. The newer addition is more conventional wood framing.

5.0 Methodology

The field inspection was conducted by H. Alan Mooney, P.E. (MA) and Nate Powelson, P.E. (ME). Resumes are provided in Appendix E. These two individuals spent approximately four hours at the property. At that time, all accessible parts of the building structure were examined. In addition, photos were taken (see Appendix B). Please be sure to review all of the photos since they supplement the report.

Our inspection team was assisted by Andrew Dudka, the principal of Criterium-Dudka Engineers in Hopkinton, MA.

Elevations were taken of the upper level and lower level floors. Also, a sampling of specific framing measurements were taken to provide basis for our subsequent analysis of the upper level floor capacity.

Various members of the Committee and Upton town officials were in attendance at the time of our inspection.

We also reviewed various plans made available to us, most of which relate to a proposed renovation prepared in 2015.

We also have reviewed an engineering report by Flood Consulting dated November 26, 2014. That report is included in Appendix C.

6.0 Standards and Limitations

Our inspection and report has been conducted consistent with that level of care and skill that is ordinarily exercised by members of the profession providing the same services under similar conditions at the time the services are performed.

We examined this building based on our extensive experience with other buildings of similar age and construction type. A standard of reference for new construction would not be appropriate for a building that is over 100 years old. We examined it for structural soundness and for reasonable structural integrity.

Our inspection report is limited to observations made from visual evidence. No destructive or invasive testing was performed. Our report is not to be considered a guarantee of condition and no warranty is implied.

For your reference while reading our report, the following definitions may be helpful:

Average - Component or system compares to what is typical for construction in the geographic area in which the inspection occurs. It also compares it to buildings of similar age and construction type. Since construction practices vary from region to region, average is intended to be region specific.

Excellent - Component or system is in "as new" condition, requiring no rehabilitation, and should perform as expected.

Good - Component or system is sound and performing its function, although it may show signs of normal wear and tear. Some normal maintenance work may be required.

Fair - Component or system falls into one or more of the following categories:

1. Evidence of previous repairs not in compliance with commonly accepted standards.
2. Workmanship not in compliance with commonly accepted standards.
3. Component or system is obsolete.
4. Component or system approaching end of expected performance. Repair or replacement is required to prevent further deterioration or to prolong expected life.

Poor - Component or system has either failed, or cannot be relied upon to continue performing its original function as a result of having exceeded its expected performance, excessive deferred maintenance, or state of disrepair. Present condition could contribute or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

All ratings are determined by comparison to other buildings of similar age and construction type.

We did not do a complete code evaluation of this building. This would be inappropriate for a building of this age unless proposed renovations would trigger a need for compliance with current building codes. The International Existing Building Codes (IEBC) do provide some

flexibility for reuse of existing buildings, however, there would still be some significant building code requirements if this building were to be renovated for a new use.

While some references to hazardous materials may be made, our report is not a complete investigation for toxic wastes in the building or adjacent soils, hazardous materials, or public records affecting this property. Such an investigation would be much more costly and is beyond the scope of this inspection.

Mold is a growing concern. For some individuals, the presence of mold may aggravate certain respiratory conditions, and, for still a smaller group, may actually be toxic. Organizations like the Environmental Protection Agency (EPA) and the Centers for Disease Control (CDC) have not established any levels considered to be safe or unsafe for mold. This is not for lack of trying; it is a matter of complexity. If you find mold, it often can be removed effectively using a chlorine solution (e.g. diluted Clorox) and then monitoring the area to determine if it returns. Mold is usually the result of moisture. Controlling moisture penetration will typically eliminate the opportunity for mold to survive. For more information about mold, you might want to consider visiting one or more of the following websites:

1. www.iaqa.com
2. www.epa.gov/iaw/molds/index.html
3. www.cdc.gov (search on mold)

While some references to handicap accessibility may be made, our report is not intended to be a complete investigation for conformance to the Americans with Disabilities Act (ADA) or any other state or Federal handicap accessibility standards. Such an investigation is beyond the scope of this inspection.

While we often comment on major code violations, as we mentioned, this report should not be construed as a specific code compliance investigation. Further, since this is a public, commercial building, it is subject to many local and state ordinances and codes which do change from time to time. Therefore, to avoid surprises later on that might affect your use of this building as well as your maintenance and renovation budgets, we suggest that you review this building with the local code enforcement and fire officials prior to making any final decisions about its future. Establishing a relationship with these officials and having them review your building at this stage would be appropriate.

The cost estimates we provided are presented to give you a range of magnitude understanding of the costs for the recommended repairs. While every effort has been made to be precise, the actual costs may vary from these estimates. Many different variables affect the final cost of any project. Consultation with the contractor who will actually be doing the work will give you a much more precise estimate.

7.0 Observations

7.1. Foundation

The foundation of the main building is primarily stone and brick. It reflects a high quality of workmanship as would be consistent for 19th century construction of a religious facility. We did not find any evidence of significant distress in the foundation of the main building.

The newer addition at the rear of the building has a cast in place concrete foundation. That also is in sound condition at this time. Nothing suggests that new work would be needed to the foundation other than some modest repointing of the stonework in a few areas.

Cost for general rehabilitation of the foundation would be minimal, perhaps $3,000 to $5,000. This work is not urgent.

7.2. Framing

This section will address the framing for the lower level, upper level and attic portions of this building.

The basement, otherwise referred to here as the lower level, is mostly above grade. The building was built into a slope such that the main level (the sanctuary level) is at street level at the front of the building. At the rear of the building, the lower level is at ground level.

The lower level floor is concrete. It is generally relatively level. Appendix A includes a basement plan where we have noted elevation differences throughout the lower level floor. The most significant difference is approximately 0.1 feet which is approximately one inch. This suggests that there has been minimal settlement in this foundation throughout its approximate 200 year life.

There are a few cracks in the lower level floor but none that are significant as it relates to evidence of any structural distress or settlement.

We also took elevations of the main floor. That plan with our elevations noted is included in Appendix A. We found as much as two to three inches of variation in parts of the floor. For the size of the space, this is not unusual, nor is it of concern structurally. Of course, if this building were to be renovated, it is likely that some leveling would be needed to serve the needs of some future space.

The upper level framing is visible from the lower level. Most of the interior finishes (ceiling, walls, etc.) have been removed. Generally, the main level framing is in good condition. There are a series of columns, beams and joists. The photos show the sizes measured of a sampling those members. The framing includes both saw cut and hand hewn members.

The joists are notched to rest on the beams. Many joists have been shimmed to level the floor above. Again, this is evidence of a high quality of workmanship typical for this type of building in the 19th century.

Our review of the capacity of this framing system indicates a live load capacity of approximately 65 pounds per square foot (PSF). As noted previously, this is less than would be expected for this building if it were built today and being used for assembly (church, restaurant, theater, etc.). It is also likely that a more detailed analysis of this framing would yield a somewhat higher capacity. We have used conservative allowable stresses that may not apply to lumber of this age since such lumber is generally more dense than dimension lumber available today. In any event, if a future use needed a higher capacity, given the openness of the lower level, it would be relatively straightforward to reinforce the main level to satisfy a higher load requirement.

The notched configuration of the joists as they are supported by the beams visible in the lower level is not ideal and does compromise the capacity of those joists. If this building were to be reused and if the required first floor live load capacity was 70 PSF or more, we recommend adding joist hangers to these joists so that the full bearing of the joist would be at the bottom of the joist, not at the notch.

In addition to the primary columns, there are a few steel lally columns noted in the basement. These were probably added to stiffen certain areas related to functions and/or equipment on the upper level. These did not appear to be structurally significant.

This, along with some other upgrading or refreshing of the general capacity of the main floor framing, would be a recommendation of the building at this time regardless of its future use.

The attic was accessed through a hatch from the balcony at the rear of the sanctuary. There are many pictures in Appendix B of the attic framing. It is well done, consistent with the workmanship that would be expected of a building of this type in the early19th century. It is likely that the bell tower was added somewhat after the original construction. A close examination of the various framing members reveals some members that are saw cut and others that are hewn, as is the case with some of the framing in the lower level.

As an aside, it is fascinating to think about how this building would have been built in the early 19th century. The requirement for hand labor and hand tools was enormous, to both create the framing members and to erect the structure. There are beams in the upper level floor framing that appear to be one solid piece the full width of the building.

We did not find any evidence of significant distress in the roof framing. There are many combinations of trusses, rafters and steel hangers effectively integrated to produce a roof framing system that has survived 200 years. The work is consistent with the capability of what was known as a Master Builder in the 19th century, someone who embodied the skills of what we think of today as an architect, an engineer and a builder. They were competent and capable of producing well-crafted, sound buildings, mostly relying on experience and good judgement.

The ceiling in the sanctuary has insulation installed above it. It is unclear when that ceiling was installed. It is not likely original to this building. Most likely, for this vintage, the original ceiling would have been plaster. Many plaster ceilings from 19th century churches have been removed or failed as the buildings age. I suspect the current ceiling is a later addition. The insulation above it adds some weight but not enough to be significant at this time. However, that insulation may contain some asbestos and mitigation may be required if that ceiling is to be removed and replaced as part of any renovation.

There is a rather challenging and somewhat awkward stair going up into the bell tower. If this building were to be fully rehabilitated, for safety purposes, some of the access throughout the attic and up into the bell tower should be upgraded.

For now, however, since access to the attic would be limited to those appropriately qualified, there is no need to do any repair work to the roof framing or attic access in this building.

While doing our field investigation, we also checked the plumbness of the walls at a sampling of locations, both at the lower level and the upper level (see photos). We generally found the plumbness to be within reasonable tolerances we would expect for a building of this age. They are not perfectly plumb, and in fact they may not have been perfectly plumb when this building was built. However, they are certainly within any tolerance that we would consider to be appropriate to conclude that this building is structurally sound and stable at this time.

7.3. Roof

The roof on the main building is composite shingles. They appear to be in good condition at this time, we would estimate they are not much more than 10-15 years old. Another 5-10 years is likely.

The roof on the new addition is also composite shingles and appears to be in good condition at this time and at least another 5-10 years can be expected. I suspect both roofs were reshingled at the same time.

From the attic, the roof framing and roof sheathing appear to be in good condition.

There is evidence of a few roof leaks which may be the result of ice dams and/or some flashing failure around the chimney, for example. These did not appear to be extensive, however.

The most significant area of water intrusion is around the bell tower. There are water stains on the ceiling of the balcony, most likely the result of wind-driven rain entering the bell tower. That structure is not weather tight. It would be necessary, if the building is to be renovated, to enclose that bell tower in some way to assure weather-tightness.

At this point, if the building is to remain unused for the foreseeable future, some effort to make the bell tower weather tight, at least temporarily, is recommended. Given the accessibility (height, steep roof, attic access), we suggest an allowance of $7,000 to do that, and that would only provide a temporary solution, not a permanent one.

7.4. Interior

The interior finishes are what would be expected of a building of this age and construction type, and they are generally in fair condition at this time. The lower level finishes have been removed almost entirely. The main level finishes are still in place, but would need to be renovated for any future use. As noted, as the main level finishes are removed, there appears to be loose insulation in the wall cavity which should be tested for asbestos.

Any significant renovation would require all new interior finishes. The choice of materials and quality for the interior finishes will affect the cost significantly.

7.5. Exterior

The exterior of the main building is primarily wood clapboard and wood panel siding. The rear newer addition is vinyl siding. There are a few areas (see photos) where there is some rot in the wood siding and wood trim. This is not extensive but would need attention. At a minimum, if this building is to remain unoccupied for some period of time, the exterior should be thoroughly prepared and painted. Those areas where there is evidence of rot should be addressed to remove and replace the rotted wood and apply an appropriate paint or wood preservative.

All of the exterior doors are in poor condition.

Since this is a large, tall, complex building, thoroughly repainting the exterior is likely to cost $50,000 or more.

7.6. Site Drainage

There are drainage channels that run down both sides of this building (see photos). Given the steepness of the slope and the way this building is built into the slope, during a heavy rain there would be quite a lot of water that would run down the sides of this building. That has caused some erosion toward the rear of the building and does expose some of the wood framing to moisture that has caused some rot. Also, particularly along the left side (facing from the street), there is water intrusion evident in the lower level as a result of that drainage. Some of the backup of water is based on the drainage channels not being kept clear so they flood or pond during heavy rains. This should be improved as part of the stabilization project.

7.7. General

The ramp on the right and the metal stair on the left are in fair to poor condition. Many of the connections in the ramp, as well as the attachment to the building, are substandard and at risk of failure. The ramp should not be used.

While our purpose is to evaluate the structural condition of the building at this time, we consider it relevant to note two other areas that will need consideration regardless of what future plans may be undertaken for this building.

The first involves hazardous materials. There is evidence of widespread presence of asbestos-containing materials (ACM) in this building. This includes the smaller floor tiles (9" square) and some of the loose insulation. Some other materials such as wall finishes may also contain asbestos. Asbestos in building materials was quite common in the 19th century as well as the early 20th century.

A comprehensive project for mitigating ACMs in this building is likely to cost several hundred thousand dollars. A more specific estimate would require more investigation and material testing.

It is also likely that there is lead paint in this building. The extent to which that would need to be mitigated would depend on the plans for the building. Generally speaking, dealing with lead paint is guided by "lead-safe" standards rather than "lead-free" standards. Lead-safe means, among other things, an effective lead paint management program. It does not mean removing all of the lead paint. However, even an effective lead paint management program to achieve a "lead safe" condition could cost $50,000 or more for a building of this size.

Another area of concern involves accessibility. To what extent this would impact the future use of this building would depend greatly on what that future use may be. If it is to remain some type of a theater, performance, meeting or religious facility, access to the stage/platform would be needed. Also, there are stairs in the building that are too steep to meet current standards. If the exterior ramp were to be rehabilitated, that could provide adequate access to both levels, but again it depends on the future use would be as to the extent that would be necessary to satisfy Americans with Disabilities Act (ADA) standards.

In addition, accessible restrooms will be needed on both levels if public access is anticipated for both levels.

Accessibility has been a high priority for quite some time and the standards are becoming more demanding as time passes.

8.0 Recommendations

There are essentially two options for going forward with this building. One is to simply take minimal action it so it can remain unoccupied and unused for some period of time while minimizing further deterioration. We call that stabilization. The second would be renovation for some new use. We can only offer a very rough estimate for that cost since it would be totally dependent on what that new use would be.

8.1. Stabilize

To stabilize, the following items will need to be addressed and we have provided rough estimates for each.

Repaint exterior	$50,000
Weatherproof bell tower	$8,000
Rehabilitate access ramp (or close it)	$10,000
Control water intrusion at the basement	$3,000
Subtotal	$71,000
Contingency (10%)	$7,000
TOTAL	**$78,000**

We have not included the rehabilitation of the main level framing in this stabilization project since that would only be required as part of a renovation project for this building.

8.2.Renovate

To renovate, the following items will need to be addressed. Many of these estimates are very approximate since further testing and investigation is needed before more firm estimates can be developed.

All of stabilization (except bell tower)	$74,000	
Asbestos mitigation	$150,000	
Lead paint mitigation	$50,000	
Upper level framing upgrades	$8,000	
Interior finishes/simple (7,600 SF)	$220,000	*Note 1*
Subtotal	$502,000	
Contingency	$50,000	
TOTAL	**$552,000**	

Note 1 – The cost of interior finishes will vary significantly depending on the quality and type of materials and fixtures chosen.

Since our work was structural, we have not addressed anything with regard to electrical, lighting, plumbing, HVAC, fire sprinklers, alarm systems, etc. All of those would need to be considered.

A very rough estimate for a major renovation of this building including all systems would be $1,500,000. And, again, that is very dependent on the quality of finishes and materials chosen.

9.0 Conclusion

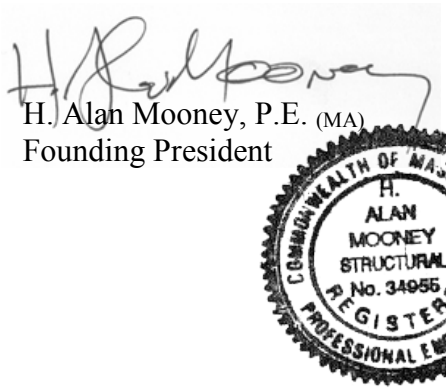
We consider this building to be structurally sound at this time. If nothing were done to it, it is likely that it would continue to be structurally sound for many years.

However, to minimize ongoing deterioration, a modest stabilization project as outlined here is recommended. Also, for public safety and to minimize liability, access to the ramp should be prohibited.

After that is complete, further work will be dependent on the planned use. Again, it is important to remember that any renovations of this building will require mitigation of the hazardous materials, at least the asbestos-containing material, and attention to accessibility.

As you have any additional questions, please feel free to call. Thank you for the opportunity to work with you by evaluating this interesting and historically significant building.

Respectfully submitted,



H. Alan Mooney, P.E. (MA)
Founding President

APPENDIX A

FLOOR ELEVATION PLANS

REMOVE EXISTING DOORS AND WINDOWS AS REQUIRED FOR NEW CONSTRUCTION

REMOVE EXISTING WALLS AS REQUIRED FOR NEW CONSTRUCTION

REMOVE EXISTING CONCRETE FLOOR AS REQUIRED FOR NEW CONSTRUCTION.

REMOVE EXISTING DRIVEWAY AS REQUIRED FOR NEW ENTRANCE TO BASEMENT TO SLOPE AWAY FROM EXISTING BASEMENT FLOOR.

-0.09 -0.08 -0.05 -0.08 -0.04 -0.03

-0.09 -0.09 -0.07 -0.04 -0.04 -0.03

-0.08 -0.10 -0.08 -0.03 -0.05 -0.04

-0.13 -0.11 -0.08 -0.04 -0.06 -0.04

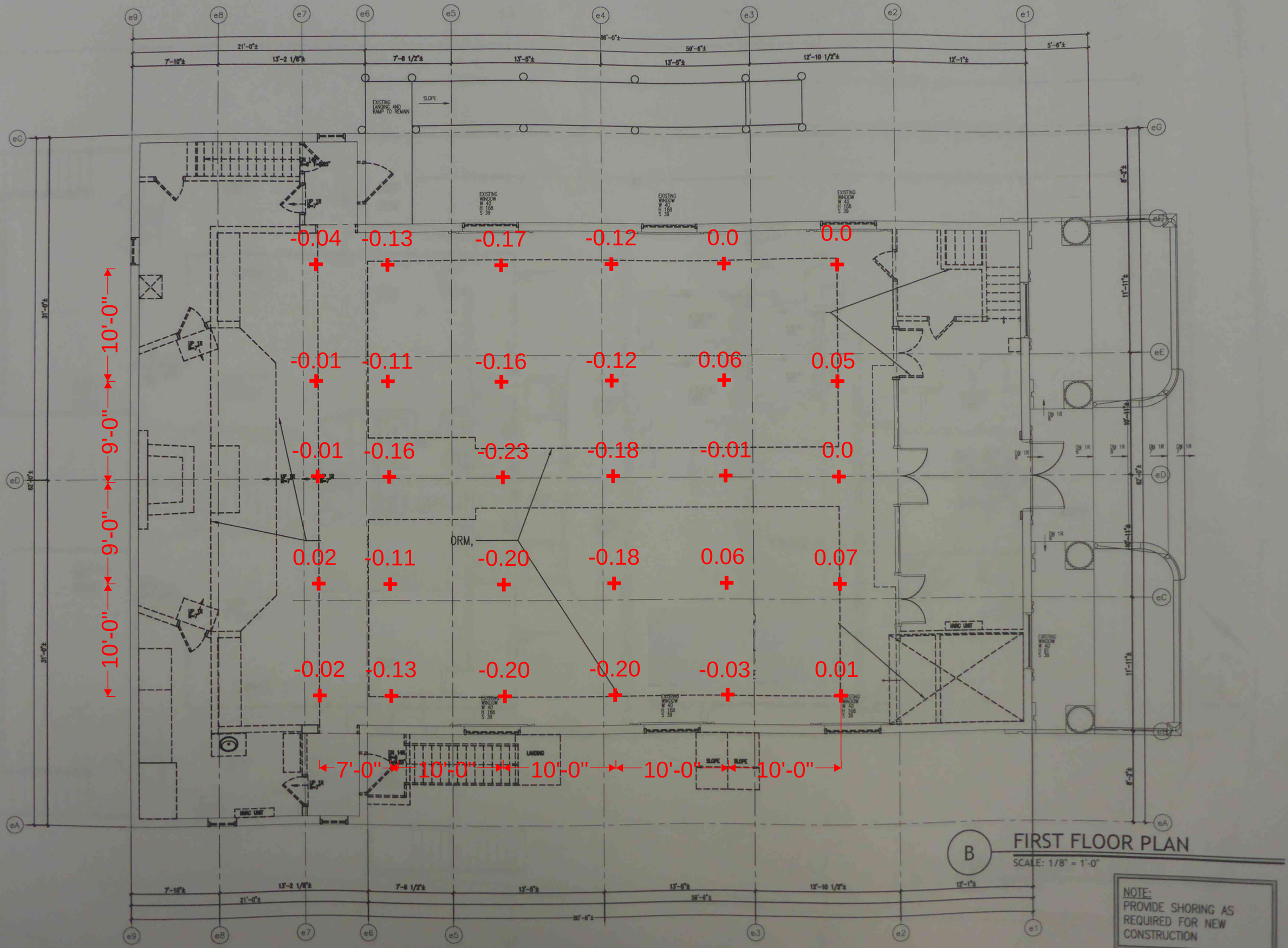
-0.12 -0.06 -0.08 -0.06 0.0

FOR

A BASEMENT PLAN

SCALE: 1/8" = 1'-0"

NOTE:
PROVIDE SHORING AS REQUIRED FOR NEW CONSTRUCTION



B FIRST FLOOR PLAN

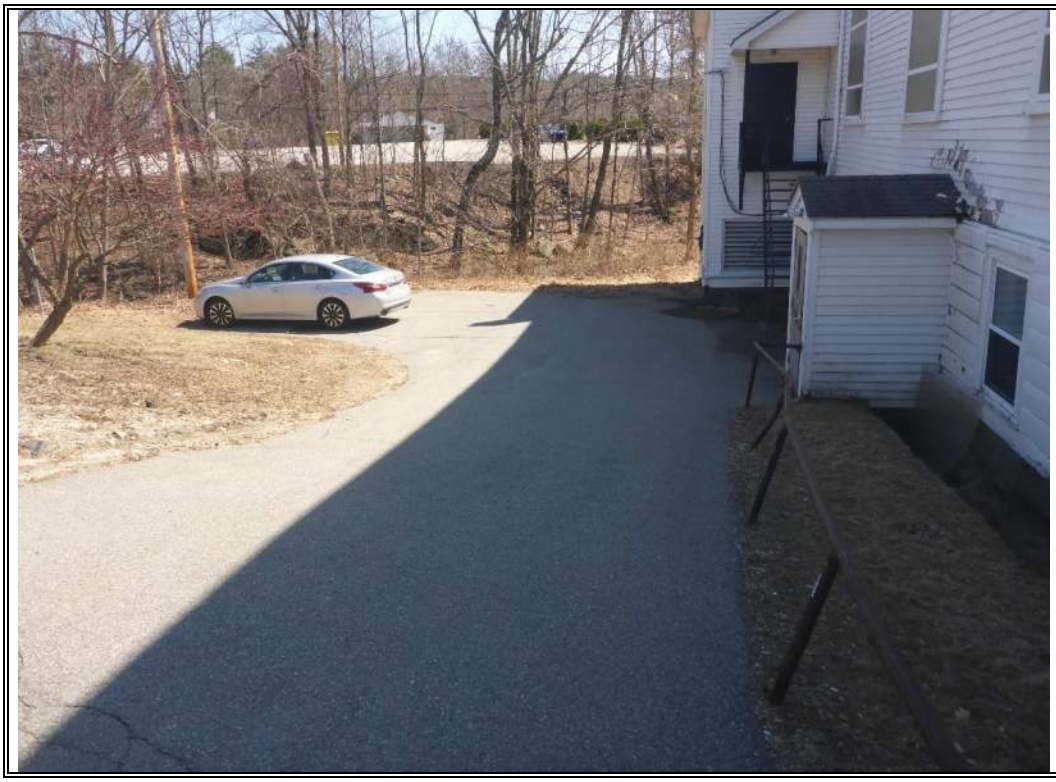
SCALE: 1/8" = 1'-0"

NOTE:
PROVIDE SHORING AS REQUIRED FOR NEW CONSTRUCTION

APPENDIX B

PHOTOS

Location:	**Photo Taken by:**	**Date:**
Holy Angels Church Upton, MA	H. Alan Mooney, P.E. Nate Powelson, P.E.	April 3, 2019



Description:

Exterior/general

Photo Number

1

Description:

Exterior/general

Photo Number

2

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/general

Photo Number
3

Description:

Exterior/general

Photo Number
4

Location:	Photo Taken by:	Date:
Holy Angels Church Upton, MA	H. Alan Mooney, P.E. Nate Powelson, P.E.	April 3, 2019

Description:

Exterior/general

Also showing access ramp

Photo Number

5

Description:

Exterior/general

Also showing access ramp

Photo Number

6

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/general

Rear of building, also showing some old mechanical equipment

Photo Number
7

Description:

Exterior/general

Including paved ramp to limited parking

Photo Number
8

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/general

Showing side entrances, steel stair and limited parking

Photo Number
9

Description:

Exterior/general

Photo Number
10

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Upper level – general view

Photo Number
11

Description:

Upper level balcony showing water intrusion from bell tower above

Photo Number
12

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Upper level

Photo Number
13

Description:

Upper level, looking toward balcony, showing water intrusion from bell tower above

Photo Number
14

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Upper level – open wall, loose insulation, possible ACM

Photo Number
15

Description:

Upper level – open wall, loose insulation, possible ACM, plaster and lath wall finish

Photo Number
16

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Upper level – open wall, loose insulation, possible ACM, wainscoting

Photo Number
17

Description:

Upper level – open wall, loose insulation, possible ACM, wainscoting

Photo Number
18

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Upper level – floor tile, likely ACM tile layer below the visible layer

Photo Number
19

Description:

Upper level – floor tile, likely ACM tile layer below the visible layer

Photo Number
20

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Upper level - balcony

Photo Number
21

Description:

Upper level – fluorescent lights recessed in trusses

Photo Number
22

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Lower level

Photo Number
23

Description:

Lower level – open wall

Photo Number
24

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Lower level – general view of framing system

Photo Number
25

Description:

Lower level – general view of framing system

Photo Number
26

Location:
Holy Angels Church
Upton, MA

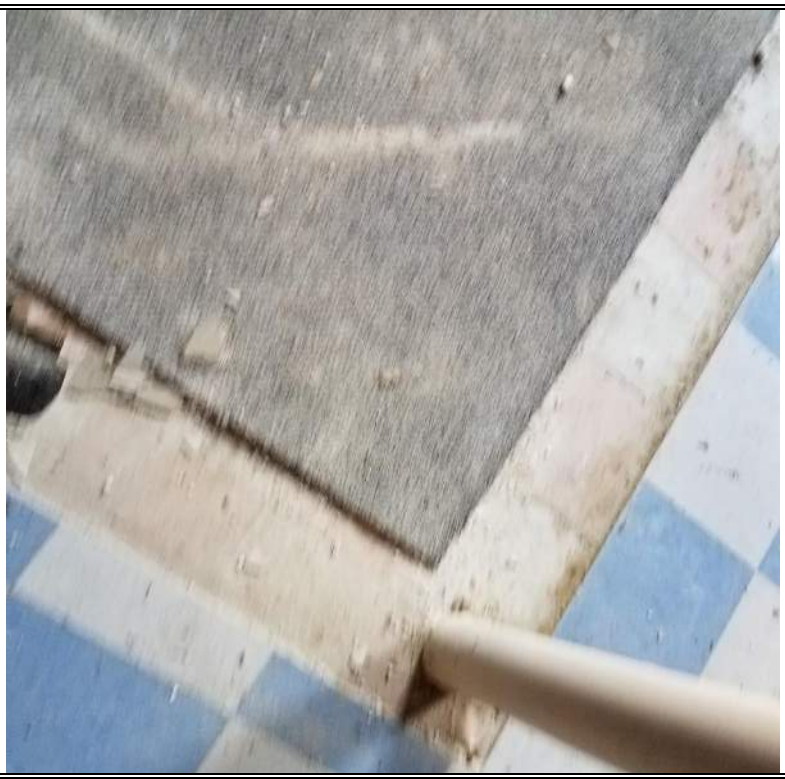
Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Lower level – showing portion of foundation wall

Photo Number
27



Description:

Lower level – floor tile, possible ACM

Photo Number
28

Location:
Holy Angels Church
Upton, MA

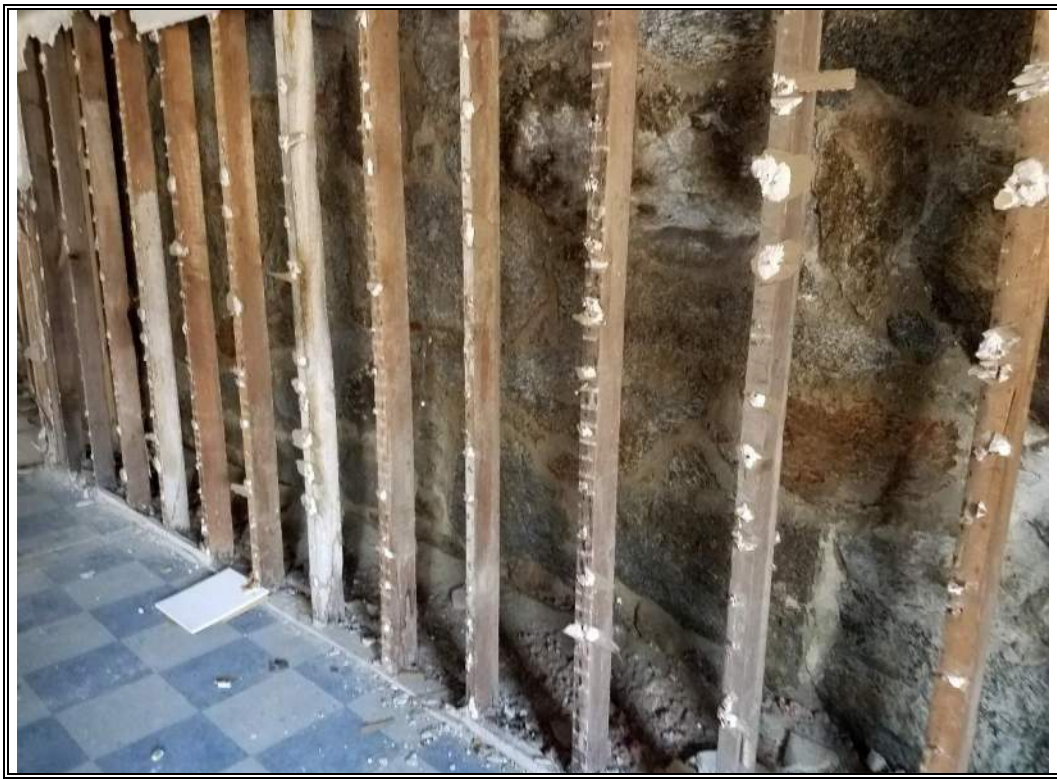
Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Lower level – some rot where wood is in contact with ground

Photo Number
29



Description:

Lower level – front, stone foundation wall

Photo Number
30

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Lower level

Photo Number
31

Description:

Lower level – framing close to ground

Photo Number
32

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Framing details – showing a sampling of dimensions

Photo Number
33

Description:

Framing details - showing a sampling of dimensions

Photo Number
34

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Framing details - showing a sampling of dimensions

Photo Number
35

Description:

Framing details - showing a sampling of dimensions

Photo Number
36

Location:	Photo Taken by:	Date:
Holy Angels Church Upton, MA	H. Alan Mooney, P.E. Nate Powelson, P.E.	April 3, 2019

Description:

Framing details - showing a sampling of dimensions

Photo Number

37

Description:

Framing details - showing a sampling of dimensions

Photo Number

38

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Framing details - showing a sampling of dimensions

Photo Number
39

Description:

Framing details - showing a sampling of dimensions

Photo Number
40

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Framing details - showing a sampling of dimensions

Photo Number
41

Description:

Framing details - showing a sampling of dimensions

Photo Number
42

Location:	Photo Taken by:	Date:
Holy Angels Church Upton, MA	H. Alan Mooney, P.E. Nate Powelson, P.E.	April 3, 2019

Description:

Framing details – notched joists at beams (see report)

Photo Number

43

Description:

Attic/roof – typical framing

Photo Number

44

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Attic/roof – typical framing

Photo Number
45

Description:

Attic/roof – typical framing

Photo Number
46

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Attic/roof – typical framing

Photo Number
47

Description:

Attic/roof – typical framing

Photo Number
48

Location:	Photo Taken by:	Date:
Holy Angels Church Upton, MA	H. Alan Mooney, P.E. Nate Powelson, P.E.	April 3, 2019

Description:

Attic/roof – apparent insulation depth

Photo Number

49

Description:

Attic/roof – apparent insulation depth

Photo Number

50

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Attic/roof - bell tower framing

Photo Number
51

Description:

Attic/roof - bell tower framing

Photo Number
52

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Attic/roof – typical framing

Photo Number
53

Description:

Attic/roof – typical framing, some water stains, likely predates current roof shingles

Photo Number
54

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Attic/roof –
typical framing

Photo Number
55

Description:

Attic/roof
Bell tower
framing

Photo Number
56

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Attic/roof – typical framing

Photo Number
57

Description:

Attic/roof – typical framing, also showing access walkway

Photo Number
58

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Attic/roof – typical framing

Photo Number
59

Description:

Attic/roof – showing insulation above ceiling

Photo Number
60

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Attic/roof – showing insulation above ceiling

Photo Number
61

Description:

Attic/roof – showing details of a 19th century craftsman

Photo Number
62

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
63

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
64

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
65

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
66

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
67

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
68

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
69

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
70

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
71

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
72

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
73

Description:

Plumbness sampling – well within reasonable tolerances

Photo Number
74

Location:
Holy Angels Church
Upton, MA

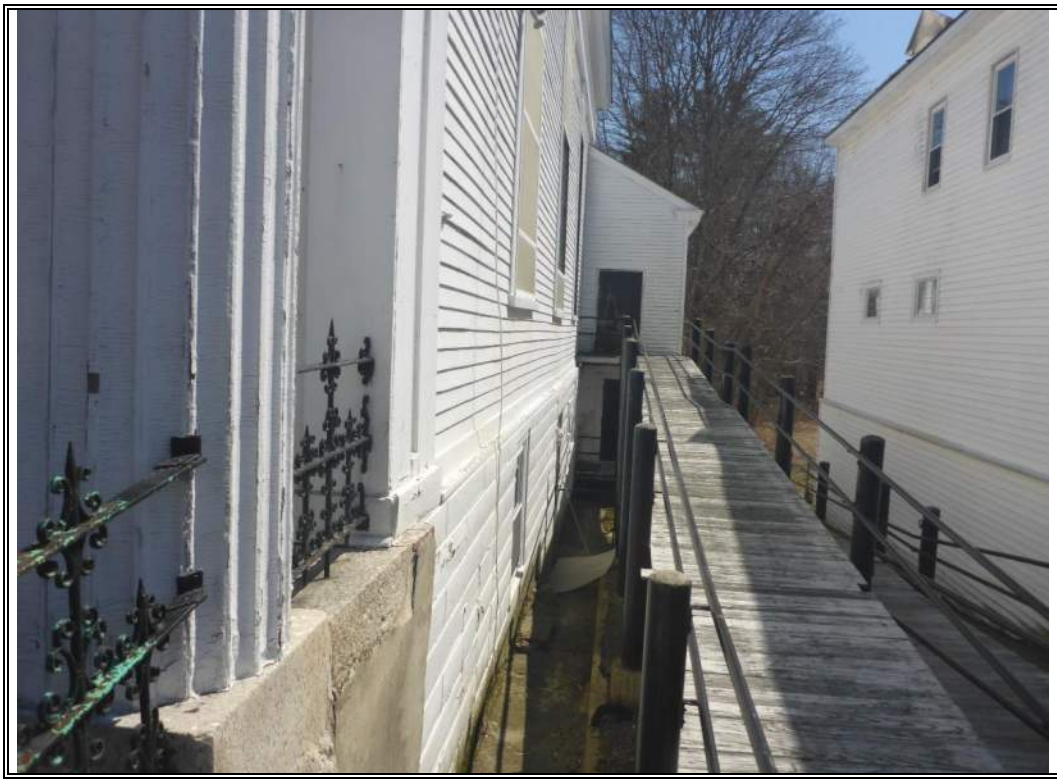
Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Deck/ramp – railings and structural integrity seriously deficient, unsafe for use.

Photo Number
75



Description:

Deck/ramp – railings and structural integrity seriously deficient, unsafe for use.

Photo Number
76

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Deck/ramp – railings and structural integrity seriously deficient, unsafe for use.

Photo Number
77

Description:

Deck/ramp – railings and structural integrity seriously deficient, unsafe for use.

Photo Number
78

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Deck/ramp – post off center

Photo Number
79

Description:

Deck/ramp – joist hangers improperly connected with sheetrock screws

Photo Number
80

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Deck/ramp – joist hangers improperly connected with sheetrock screws

Photo Number
81

Description:

Deck/ramp – not adequately connected to posts

Photo Number
82

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Left side stair, corroded at base

Photo Number
83

Description:

Left side stair

Photo Number
84

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Left side stair, corroded at base

Photo Number
85

Description:

Exterior/details – paint needed

Photo Number
86

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/details – ponding and marginal drainage

Photo Number
87

Description:

Exterior/details – blocked drainage channels

Photo Number
88

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/details – left side drainage channel

Photo Number
89

Description:

Exterior/details – rot in trim

Photo Number
90

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/details – railing at front, needs paint and some repair

Photo Number
91

Description:

Exterior/details – railing at front, needs paint and some repair

Photo Number
92

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/details – some movement at front steps

Photo Number
93

Description:

Exterior/details – some movement at front steps, most likely soil settlement

Photo Number
94

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/details – architectural details need paint and thorough preparation

Photo Number
95

Description:

Exterior/details – keep channel clear, paint wood surfaces

Photo Number
96

Location:	Photo Taken by:	Date:
Holy Angels Church Upton, MA	H. Alan Mooney, P.E. Nate Powelson, P.E.	April 3, 2019

Description:

Exterior/details – tripping hazard

Photo Number
97

Description:

Exterior/details – siding and trim needs paint. Also note poor railing connection

Photo Number
98

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/details – tripping hazard

Photo Number
99

Description:

Exterior/details

Photo Number
100

Location:	Photo Taken by:	Date:
Holy Angels Church Upton, MA	H. Alan Mooney, P.E. Nate Powelson, P.E.	April 3, 2019

Description:

Exterior/details – foundation crack, not structurally significant

Photo Number

101

Description:

Exterior/details

Photo Number

102

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/details – showing vinyl siding and concrete foundation of newer addition

Photo Number
103

Description:

Exterior/details – showing drainage channel

Photo Number
104

Location:
Holy Angels Church
Upton, MA

Photo Taken by:
H. Alan Mooney, P.E.
Nate Powelson, P.E.

Date:
April 3, 2019

Description:

Exterior/details – showing drainage channel and some rot due to wood exposed to water

Photo Number
105

Description:

Exterior/details – showing drainage channel and some rot due to wood exposed to water

Photo Number
106

APPENDIX C

FLOOD REPORT

FLOOD CONSULTING
Structural Engineering

Revised November 26, 2014

Mr. James Maloney
10 North Main Street
Upton, MA 01568

Re: **Holy Angels Catholic Church**
Structural Review
3 Milford Street
Upton, MA
FC Project No. 1494

Dear James:

Per your request, I visited the site of the above-referenced project in order to perform a structural review of the existing building. The structure was built in 1900 with a 4,000 square foot footprint. The structure consists of single floor level with a partial upper floor mezzanine and a full basement. The building is wood-framed with a heavy timber roof truss system bearing on perimeter columns down to the basement level. The first floor level appears to be wood framed with steel pipe column supports within the basement area. The structure is founded on a solid granite wall system.

Two additions were added to the southeast end of the building, appear to be wood-framed and are supported on concrete foundation walls. These additions were added to provide additional egress from the building. The north addition provides a stair access to the lower grade level on the north side of the building while the south addition provides a ramp from the main level to the street.

It is my understanding that modifications will be made to the structure for the conversion to a multi-family dwelling. The basement will be used for car parking with overhead door access provided through the existing exterior basement wall. The existing loft area will be expanded and a new stair will be added to the loft level. These modifications are feasible with the existing structural conditions. The structure can be reinforced and/or modified to accommodate these renovations.

Based on my visual observation, the existing structure appears to be in good condition with no visual signs of distress and conforms to the provisions of the Massachusetts State Building Code. Please note that no structural testing was performed to make this determination.

If you have any questions regarding this matter, please feel free to contact me at (978) 562-6499.

Very truly yours,

Stacy R. Flood, P.E.
Principal

56 Laurel Drive • Hudson, MA 01749 • TEL: (978) 562-6499 • FAX: (978) 562-6246

APPENDIX D

OUR PROPOSAL

CRITERIUM® DUDKA ENGINEERS

AJD Engineering Ventures, LLC
Independently Owned and Operated
34 Hayden Rowe Street, Suite #166
Hopkinton, MA 01748
(844)885-0153 Toll-Free
(508)589-8020 Office

December 17, 2018

Economic Development Committee – Upton, MA
c/o Bill McCormick
McCormick Properties
112 Main Street, P.O. Box 1004
Upton, MA 01568
508-320-3500
billmcproperty@gmail.com

RE: Structural Inspection – Holy Angels Church, Upton

Dear Mr. McCormick,

Thank you for giving us the opportunity to be of service to the Economic Development Committee in Upton, MA. This is to confirm the scope of engineering services that are to be provided by our office for your project.

As we understand it, your project involves a structural evaluation of the Holy Angels Church located at 3 Milford Street, Upton, MA. This building, a former church now vacant, was built in 1800 and consists of approximately 7,600 sq.ft of above grade space. The committee is interested in obtaining a professional opinion on whether the building is structurally sound and what, if any, significant repairs or rehabilitation would be needed if it were to be actively occupied again, perhaps as a mixed-use building. Further, if rehabilitation is feasible, the committee would also like to know the estimated cost for rehabilitation.

As part of preparing this proposal we have reviewed the engineering report by Flood Consulting dated November 26, 2014. Also, we understand that drawings are available which we will want to review as part of our evaluation of this building.

Our Evaluation

Upon the EDC's authorization, our engineers will conduct a site inspection of the above referenced property. Our site inspection will include all significant structural areas. We will identify any current deficiencies that pose a threat to life and safety, as well as those items that will require repair, rehabilitation or replacement. Included in our non-invasive investigation and report will be:

A. Foundation –

To be inspected: All accessible/visible portions of the foundation (i.e. slab, floor, walls) will be examined for evidence of distress and deterioration (e.g. cracks, movement, bowing, attachment).

To be reported: The significance of any distress or deterioration. Where appropriate, suggested approaches to repair including an estimated range of costs for the repairs will be provided.

B. Basement/crawl space

To be inspected: Surface drainage conditions around the building, evidence of water entry and/or accumulation in the crawl space/basement, excessive moisture, and the presence and condition of water control systems equipment.

To be reported: Description of water related conditions, adequacy of water control systems; limitations of inspection; potential risks of water entry; approximate scope of repairs recommended, approximate cost of repairs.

C. Framing

To be inspected: Investigate all accessible/visible portions of the building (e.g. floor, ceiling, roof framing); identify wood deterioration, insect activity and/or rot and other related deterioration; visually evaluate adequacy of framing other structural components.

To be reported: Evidence of structural deficiencies, approximate scope of structural repairs required, approximate cost of structural repairs required.

D. Roof

To be inspected: Roof surfacing, layers, flashing, sheathing (Fire Resistant Plywood), gutters for condition, type, current performance and evidence of leakage.

To be reported: Conditions requiring attention; and approximate cost to repair/replace

E. Interior/Exterior

To be inspected: Examine interior and exterior of building for evidence of distress, deterioration and weather tightness (siding and windows) that might indicate conditions affecting the overall structural integrity and stability of the building. Of particular importance for a building like this is the condition of the plaster wall and ceiling finishes.

To be reported: Evidence of distressed or deteriorated conditions and significance of same, as well as suggested approaches to the repair including an estimated range of costs for the repairs will be provided.

F. General

Other items related specifically to the structure will be examined and evaluated. These may include decks, porches and other attached structures. In addition, as engineers, we have an ethical obligation to report any significant safety hazards noted during an inspection.

Also, we will offer some limited observations regarding hazardous materials such as lead or asbestos. These materials would be common to a building of this age.

Limitations

An engineering inspection should not be construed to be any of the following:

1. A complete code compliance inspection.

   Such an inspection is a practical impossibility for any existing construction, since it is dependent on many things that cannot be seen, and on the status of codes that were applicable at the time the building was built.

2. This evaluation would not include a determination of possible uses for this building as it relates to local zoning ordinances and/or municipal regulations.

3. An inspection for hazardous materials.

   Except in the case of obvious visual evidence of hazardous materials, an engineering inspection is not a comprehensive evaluation for hazardous materials.

4. An inspection of heating, cooling, plumbing and electrical systems.

5. A detailed fire safety inspection.

   Except in the case of obvious visual evidence of violations of fire safety standards, an engineering inspection is not a comprehensive evaluation for fire safety.

6. Repair designs.

   Repairs or rehabilitation concepts will be suggested. However, the actual design of the repair nor any design drawings are included in the scope of the engineering evaluation but may be provided by Criterium Engineers for an additional fee.

Our Project Team

Our project team will consist of the following:

Project Lead - H. Alan Mooney, P.E., RS, President of Criterium Engineers. Alan is a civil and structural engineer with over 40 years of experience in engineering-related services. His experience includes complex multi-million-dollar engineering and construction projects, forensic engineering, numerous building envelope quality assurance and commissioning projects, expert witness testimony, and thousands of residential and commercial building inspections. He is a licensed Professional Engineer (P.E.) in Maine, Massachusetts and several other states. We have attached Alan's resume for your interest. Alan has had experience with several other similar buildings in New England.

Senior Engineer - J.T. Gaucher, P.E. J.T. is a civil engineer with over 30 years' experience in engineering related services in site development, construction management, building maintenance, contract administration, plumbing/mechanical maintenance, and a wide range of capital improvement plans, needs assessments and building renovations. J.T.'s resume is attached.

Field Engineer - Alex Dolphin, P.E. has 10 years' experience in civil engineering having worked in dredging, wastewater treatment, construction, and nuclear power. Most recently Alex supervised the construction of improvements and upgrades to the Upper Blackstone Wastewater Treatment facility. Prior to that project Alex was a construction manager in Oakland, CA working for an architectural and engineering services company. Alex received his Bachelor of Science in Civil Engineering from the University of Rhode Island. Alex's resume is attached.

Project Coordinator – Andrew Dudka,, President of Criterium Dudka Engineers. Andrew Dudka is a mechanical engineer/MBA and accomplished global executive successful at building corporate value for both public and private $20 million to $300+ million dollar OEM's. An entrepreneur, Andrew has been involved in planning and building several multi-use manufacturing facilities in the UK and USA.

The client would provide access to and make provisions for Criterium Dudka Engineers to enter the premises at all times during the inspection period. If needed, client would designate a person or persons to act as the project representative with respect to the work to be performed.

Our lump sum fee for the evaluation is: **$6,740.00**

This assumes no significant change in the scope of work you have requested of us. If additional work is requested, we will revise this fee accordingly.

In order to proceed with this project we require a retainer of $2,500.00. The balance will be billed at the completion of our work.

Our Standard Terms and Conditions, which are incorporated by reference into this confirmation letter, are enclosed.

In the event that you stop this project for any reason, you will only be responsible for the time and expenses we have accumulated up to the date when we receive your written notice to stop the project.

Schedule

We anticipate being able to begin the project with-in two weeks of receiving the retainer and signed agreement. We expect to be able to deliver the final report 3 - 4 weeks later. Our fee includes one review of the report with the Committee. If further reviews/meetings are required an additional fee will be estimated.

In Summary

We believe we are well qualified for this project. Our experience evaluating existing buildings is unmatched in New England. Our most experienced engineers will be assigned to this project. We are confident you will be satisfied with our work.

If you would like references for other similar work we have done, please let me know.

Sincerely,

Andrew Dudka
President
Criterium Dudka Engineers

Attachments: Client Authorization
Standard Terms and Conditions
Resume's

APPENDIX E

RESUMES

BUILDING INSPECTION ENGINEERS
PROUDLY SERVING NORTH AMERICA SINCE 1957

H. Alan Mooney, P.E.

Founding President

Alan Mooney is a civil and structural engineer with over 40 years of experience in engineering-related services. Since 1988 he has been President and principal owner of Criterium Engineers, a national consulting engineering firm with more than 40 offices throughout North America.

His experience includes:

- complex multi-million-dollar engineering and construction projects
- forensic engineering
- numerous building envelope quality assurance and commissioning projects
- thousands of residential and commercial building inspections

He continues to serve as an advisor/consultant for inspections, structural evaluations, investigative engineering, site planning and structural design for the Criterium Engineers staff.

As a structural engineer, he has designed a variety of structures in wood, concrete and steel. These structures include bridges, multi-story buildings, parking garages and marine facilities.

And further, Mr. Mooney has also established an impressive track record as a noted seminar leader and author, both locally and nationally, on construction-related issues, construction quality, hazardous materials and building inspection procedures and standards.

EDUCATION AND PROFESSIONAL AFFILIATION

Rutgers University, New Brunswick, NJ – 1969
Bachelors of Science, Civil Engineering

Licensed Professional Engineer in ME, NH, VT, MA, CT, NY, NC, NJ, AZ, NV, FL
Board Certified Building Inspection Engineer
Licensed Reserve Study Specialist in NV
NFPA (National Fire Protection Agency)
NSPE (National Society of Professional Engineers)
NABIE (National Academy of Building Inspection Engineers) – Founding President, 1989 - 1993
CAI (Community Associations Institute) – Member of President's Club
ASCE (American Society of Civil Engineers)

WHY I DO WHAT I DO

"Building technology is always changing; keeping up is an exciting challenge. Diagnosing problems means using good judgment and capitalizing on years of experience. It's even more challenging and exciting because every client's needs are different. What we do represents the essence of being a professional engineer."

WHY CRITERIUM ENGINEERS

"I founded Criterium Engineers to allow other engineers to discover their full potential as professionals."

PROJECT HIGHLIGHTS

- **San Diego Airport –** envelope commissioning
- **Phoenix Sky Harbor Airport –** envelope quality assurance
- **IKEA** – facilities review of all locations in the U.S.
- **Cincinnati, Ohio** – failure investigation of one-year-old, 60,000 sf roof
- **Silo Point, Baltimore, Maryland** – provided transition study and follow-up consulting for a unique, high-end condominium complex involving the conversion of an abandoned grain handling complex.
- **Sun City Anthem, Las Vegas, Nevada** – provided comprehensive reserve fund study for a large (10,000 residents), high end home owner association in Las Vegas.
- **Wimar-Tahoe** – provided expert testimony for building performance in a $100 million dispute involving a Lake Tahoe casino complex.
- **415 Congress Street** – provided expert testimony for a dispute regarding façade restoration and repair work on a large, 100-year old building listed on the National Register of Historic Places
- **American Residential Properties** – provided property evaluation reports for a national client purchasing thousands of homes as rental properties across the country

EXPERIENCE HIGHLIGHTS

- 25 years' experience as a construction quality consultant including collaboration with several major builders to develop effective quality assurance programs.
- 30 years' experience as a construction expert in construction disputes, including serving as an expert witness on numerous occasions.
- Has performed **more than 15,000 building inspections** personally.
- Criterium Engineers now performs **over 15,000 building inspections annually** to standards Mr. Mooney developed and refines on an ongoing basis.
- Author of the National Association of Home Builders (NAHB) **Quality Construction for the Master Builder**
- 25 years' experience as a **seminar leader**; presented seminars to builders, appraisers, real estate agents in more than 30 states
- Founding president of the National Academy of Building Inspection Engineers **(NABIE)**, 1989-1993.
- Co-author of the **NABIE Standards of Practice for Home Inspections**

hamooney@criterium-engineers.com – (207) 828-1969
5 Depot Street, Suite 23, Freeport, ME 04032

BUILDING INSPECTION ENGINEERS
PROUDLY SERVING NORTH AMERICA SINCE 1957

Nate Powelson, P.E.

Project Engineer

Nate Powelson is a Civil Structural engineer from New Hampshire with over 7 years of experience in engineering-related services.

Nate Powelson has investigated concrete, steel, and wood structures. His practice areas include Failure Investigation, Bridge Engineering, Repair and Rehabilitation Design, and Structural Analysis and Evaluation.

Nate has a strong background in structural engineering and building envelope design, which he has acquired while pursuing a Master Degree in Civil Engineering with a concentration on Structural Engineering. Prior to joining Criterium Engineers, he worked for Wiss, Janney, Elstner Associates in Honolulu, HI and for McFarland-Johnson, Inc. in Concord, NH where he was responsible for structural design and plan preparation for new construction as well as investigating and rehabilitating existing structures.

EDUCATION AND PROFESSIONAL AFFILIATION

Clarkson University, Potsdam, New York – 2007
- Bachelor of Science Civil Engineering
- Minor in Structural and Construction Engineering

University of Hawai'i at Manoa, Honolulu, Hawaii – 2010
- Masters of Science Civil Engineering, concentration in Structural Engineering

Licensed Professional Engineer
- State of Maine, No. 14230

Structural Engineers Association of Maine, Member

WHY I DO WHAT I DO

"I have always been a problem solver and am fascinated by the conditions of existing structures and the different construction methodologies that have been used over the years. It is a fun, challenging, and ever changing field of which I enjoy immensely."

WHY CRITERIUM ENGINEERS

"Criterium provides a variety of services which results in my work load being very diverse. This diversity keeps projects from becoming monotonous and ensures that I am continually learning and developing my professional skills"

NPowelson@criterium-engineers.com – 207-828-1969
5 Depot Street, Suite 23, Freeport, ME 04032