Grand Isle Free Library
November 10, 2014

Trustees Present: Kate O'Neil, Carolyn McCray, Colleen Bushway, Lucy Gordon. Kathy Tulissi (Librarian)

Trustees Absent: Karen Allen.

Others Present: Denise Abbott-Douglas, Marie Toro, Adam White and Mark Cobb.

Special Meeting:

This was a Special meeting called to discuss the Structural issues and the results of the energy audit conducted in October 2014. Jim Bradley met with Mark Cobb to perform the audit. The library is in need of a lot of work. The Library will have to move out of the existing building while repairs would be done. The attic contains Vermiculite Insulation. Vermiculite is known to contained asbestos. The removal of the vermiculite would have to be done by a qualified vermiculite remediation company and disposed of properly. There wasn't any quote for this work. But Mr. Bradly noted that in the past he has seem quotes for a job of this size in the thousand to tens of thousands dollars.

Mr. Bradley's quote is attached. Some of the hi-lights are:

- Air-sealing in the attic. $1,650.00
- Eave Side Top Plates need to be spray-Foamed. $1,405.00
- Add 24" of Loose-fill cellulose insulation $2,205.00
- Attic needs venting $1,000.00
- Attic remediation $ unknown
- Basement needs to be covered with 2 ½" fire-rated rigid insulation board $2,780.00
- Repair of floor joist though out the library $ unknown

The above list does NOT include everything. Please see attached quote for entire list. Speculation is the repairs could be in the $40,000 to $50,000 range depending on the remediation.

The library discussed building at the gravel pit site. That discussion will go to the Select Board. The Select Board will add the Library as an agenda item for their next meeting.

Respectfully,

Lucy Gordon

CALEB CONTRACTING, LLC

Building Homes, Establishing Families, Fulfilling Destiny

Friday, October 24, 2014

To: Grand Isle Free Library
c/o Mr. Mark Cobb
9 Hyde Road
Grand Isle, VT 05458

From: Mr. James Bradley
Caleb Contracting, LLC
211 Cambridge Glen
Cambridge, VT 05444

RE: Energy Audit Results for 9 Hyde Road, Grand Isle, VT

Dear Mr. Cobb,

It was good to meet with you recently and to perform an energy audit for you at the library. I truly appreciate the time you have afforded me in order to compile the data regarding the recommended efficiency improvements to your library. It is understood that you are weighing your options as to how to make the most effective efficiency improvements to the structure, and I trust that the following information will assist you in navigating the process successfully. The items listed below detail the specifics of the structure:

- Weather on Day of the Energy Assessment: 55 F Sunny
- Building Age: circa 1900
- Building Type: One-story brick building with a mixture of a full-height/reduced -height basement
- Building Size: 822 ft^2
- Bedrooms Used for Sleeping: 0
- Relative Humidity: 62.8%
- Heating System: Sealed-combustion, propane-fired furnace w/small, on-demand, electric, hot water heater
- Blower Door Test: Due to the presence of vermiculite in the attic, we were unable to perform a blower door test. If the vermiculite is remediated, we will return to perform a blower door test.
- BTU's use per ft^2: 108,391 (A highly efficient house would use much less than 40,000 btu's per ft^2)

211 Cambridge Glen – Cambridge, VT 05444

Phone: 802-644-8756 Fax: 802-644-8768 Email: jimidaja@sover.net

Summary:

Though the library is overall adequately built from a structural standpoint, it is a very leaky structure, and it is using more fossil fuels to heat the library as compared to similarly-sized efficient buildings. Thus, moderate thermal improvements should be considered for implementation in order to improve the efficiency of the building, while at the same time, addressing health & safety components and maintaining the structural integrity of the library. Specifically speaking, the thermal envelope needs to be made as contiguous as is feasible by addressing various insulation deficiencies in the attic, as well as the un-insulated basement wall.

During the energy assessment, numerous air-bypasses at the walls and ceilings were observed that provide a clearer picture as to where targeted improvements should be made. This includes air leakage through the exterior wall outlets, the perimeter band joists in the basement, the groove of the sliding door in the library's main floor, and the top plates of the framing. Based upon previous experience with other buildings of this vintage and type, it is certainly possible to make substantial efficiency improvements within the structure that will not only provide an immediate comfort and financial benefit, but also, the long-term outlook would offer a positive return on the investment in efficiency improvements when the available incentives offered by Efficiency Vermont are included. If improvements are not made, the building would continue to leak expensively- conditioned indoor air that makes only your fuel providers and their kids' college funds happy.

One major consideration is that the attic was insulated with vermiculite. This insulation material came from a mine where the vermiculite was mixed with asbestos. Remediation of this vermiculite would be required before any air-sealing or further insulation work could be done in the attic. The remediation would need to be done by a certified asbestos remediation company and unfortunately, the cost can be quite significant. Due to the presence of vermiculite, we are precluded, (by law), from doing work on or in the attic. This being said, there are more than enough opportunities in the rest of the building which will increase the durability and comfort of the building while simultaneously decreasing energy costs.

Please follow this link to the list of licensed asbestos remediation contractors if you are so inclined:

http://healthvermont.gov/enviro/asbestos/documents/asbestos_consult_contractor_list.pdf

My recommendations are as follows:

1. Attic Measures:

- The attic flat above the library has 4" of vermiculite which is covered with an additional 10" of fiberglass insulation above it.

  Vermiculite insulation is known to have contained asbestos. Due to BPI Certification requirements, we are not allowed to disturb this potentially dangerous material. In addition, due to the presence of vermiculite, we were unable to perform a blower door

test because the attic was not properly ventilated to the soffits, and any pressurization of the building could force attic air back down into the main space of the library, thus causing possible asbestos contamination. We recommend that you contact a number of vermiculite remediation companies in order to get quotes on what it would cost to remediate the vermiculite. In the past, we have seen quotes for jobs of this size in the thousands to tens of thousands of dollars.

During remediation, the fiberglass insulation should be disposed of.

- Once the vermiculite has been removed, we recommend that you consider the following measures:
  - Air-sealing should be accomplished in the attic flat, which includes the addressing of as many attic penetrations across the ceiling planes as possible in order to prevent warm and moist air from entering the spaces. This also includes the correcting of air bypasses and electrical and plumbing penetrations.
    - $1,650.00
  - After the attic air-sealing measures have been accomplished, it would be advisable that 24" of loose-fill cellulose insulation would be added in order to increase the effective R-Value of the attic areas to an R-89.
    - $2,205.00
  - Due to the low-slung roof, the eave side top plates need to be spray-foamed in order to attain the minimum R-49 that is required by code. The spray-foam extends for approximately 12" into the attic from the eaves, thus providing adequate air-sealing of the top plates and insulation.
    - $1,405.00
- The attic is presently not vented. We recommend adding vents to the attic. During our visit you discussed the addition of some vents to the roof. Soffit vents could be added, but would be difficult due to the type of soffit the building has. Since the building has historic value, the placement of small dog-house dormers (specifically built to house the attic vent) would need to be placed on the roof in such a way that it is not visible from the street side.
    - $1,000.00
- The attic hatch should be properly insulated to an R-89, and also properly weather–stripped as is required by code. An insulation dam should be installed at the attic hatch in order to ensure that cellulose insulation does not fall on your head when you open the hatch.
    - $420.00

2. Main Living Spaces – Den, 1st & 2nd Floors:

- The electrical outlets and light switches at the exterior walls were quite leaky, and therefore, they would need to be properly air-sealed.
    - $205.00

- The window trim was well sealed with caulk (except at the top). We would recommend air-sealing the top of the window and the door trim in order to minimize air leakage.
    - $415.00

- The exterior door was found to be leaking air. To remedy this, we recommend reworking and weather-stripping the door in order to ensure air tightness.
    - $105.00

3. Basement:

- The perimeter joist bays in the basement were un-insulated and had blocks of wood in them. Due to the fact that the outside of the perimeter joist bays are covered with cement, we are reticent to use spray-foam to air seal this juncture. The interior floor joist on the eave end probably has an air space between it and the exterior cement parging. Any attempt to air-seal this could cause wood rot in this joist, or it could trap moisture into the gap between the wood and the exterior cement. We therefore, recommend leaving the perimeter as is.

- Additionally, since the R-value of 8" of concrete is only an R-1, (or simply, a single pane of glass,) the exposed concrete walls should not remain void of insulation, and they should be considered a prime location for insulation. We would recommend installing 2-1/2" of Thermax© fire-rated rigid board insulation to the wall surfaces with a rated R-value of R-15.8. The insulation board would be mechanically fastened to the concrete walls using HILTI's Insulation Mandrel, part # 00332108. This measure would also help decrease the humidity levels in the basement by keeping the wall temperature at a more constant and warm level.
    - $2,780.00

- The basement window was blocked off and used for access for the sealed combustion pipes for the furnace. We recommend improved air sealing at this closed off window.
    - $95.00

- The sections of the floor of the basement (which have dirt floors) have had a moisture barrier installed in the past. Inspection of this barrier showed that it was installed in the proper manner and is functioning well.

4. Heating Systems:

- It is recommended that pipe insulation be installed over the first 9' of the hot water pipe and the first 3' of the cold water pipe that leads from the domestic water heater.

- The sealed-combustion, propane-fired furnace was operating at a 91.2% efficiency level, which is good for a unit of this type and age.

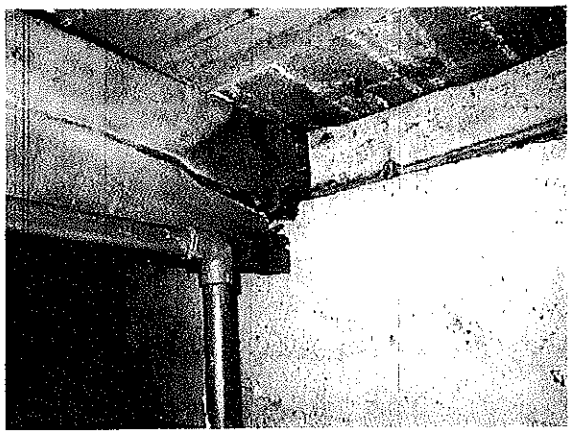
- A trained heating system professional should be contacted for a scheduled cleaning and tuning at least on a yearly interval for oil or wood-fired appliances, and on an every-other-yearly basis for gas-fired appliances.

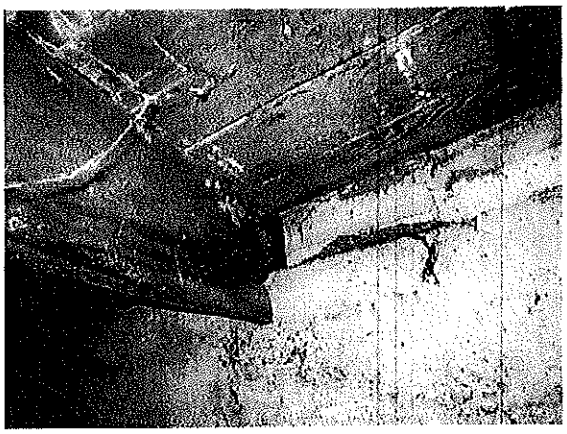
5. Health and Safety:

- Once the efficiency upgrades have been implemented, it is recommended that a test be performed for Radon Gas in order to rule out any possible safety concerns.

- As mentioned elsewhere in this report, the attic has vermiculite in it. It is highly recommended that you have this remediated. If you would like, we can put you in touch with companies that do this work for you in order to request estimates from them.

- The floor joists are rough cut 2x10's which have had the ends cut back to 4" with a 2" lip. This 2" lip is hanging off of the perimeter ledge of the basement wall. On the back right side of the library, these beams have begun to crack, due to the poor construction and the weight of the books above. These beams should be shored up as soon as possible. Although the beams in the back right of the library are already compromised, the same construction was used on the back left of the library. We suggest that during the work on the failed portion of the floor joists that you also shore the back left floor joist as well, since it is only a question of time before these fail.





Should you have any questions with the provided information, I ask that you contact me so that we may discuss them. Additionally, a final "test-out" evaluation will be performed by us in order to verify the results of the employed upgrades.

Thank you for your time.

Sincerely,

Jim Bradley
Owner
Caleb Contracting LLC
calebcontracting@myfairpoint.net
802-644-8756