McKAY LOG HOUSE
PHYSICAL CONDITION ASSESSMENT

Besser Museum for Northeast Michigan
Alpena, Michigan

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21 May 2020

INTRODUCTION

This report is a physical condition assessment of the historic John McKay Log House located at the Besser Museum of Northeast Michigan, in Alpena, Michigan. The McKay Log House was constructed c. 1898 by John Peter McKay (1847 - 1935) in Wilson Township, Alpena County. McKay was born near Sarnia, Ontario, Canada, and moved as a young man to homestead a large tract of land in the area. He married Emily Ann Lester, and they raised four children in the log house. McKay prospered in business and established himself as a lumberman and owner of timber lands along the Thunder Bay River.

The McKay Log House was donated to the Besser Museum by one of the McKay children, and moved in 1971 from its original location 20 miles to Alpena, as the first historic building in the collection on the grounds of the Museum.

DESCRIPTION

The story and a half, gable roofed log house is about 23 by 18 feet in size. It is constructed of 10 - 12 inch diameter round logs, joined at the corners with half-lap corner notching. The long walls are 12 logs high, and support (six) 6 inch round log joists constituting the second floor framing, and (five) sets of 5 inch round log roof rafters comprising the roof framing. These rafters are set on a low knee wall about 32 inches above the floor. A steep stair in the right front corner provides access to the second floor. This area is divided into three “rooms” by vertical board partial partitions, reflecting two sleeping areas at the far end and one at the top of the stair. A brick chimney set on a bracketed support is located at approximately the center of the house. This chimney extends up through the second floor and determines the location of the room dividers. When moved to the Besser Museum the house was set on a concrete slab foundation.

BUILDING SYSTEMS ASSESSMENT

The house was inspected in a comprehensive but general way, noting the physical condition of the various systems which comprise the building construction. A brief description of each, followed by a brief assessment of each, is as follows:

Foundation

Description: The house sits on a concrete slab foundation, constructed in 1971. Details of its construction are not known. Also not known is whether or not the slab provides intermediate support of the floor framing.

Assessment: Although not fully exposed around the entire perimeter, no cracks were noted in the concrete slab.

Floor Framing

Description: First floor framing spans from front to back, but is inaccessible without removing floor boards, and this was not done at the inspection. However, some floor joist ends can be seen at a few points along the front and rear walls.

Second floor framing is exposed on the interior, and consists of six log joists, 5-1/2” to 6” in diameter, also spanning front to back, bearing on wall logs.

Assessment: Some visible first floor joist ends are deteriorated with wood bearing on the slab being rotted. At the right back corner the bottom sill log is completely rotted and the wall settled, so the floor joists there must be also. But the full extent of this deterioration is difficult to determine as there is no crawl space under the house.

The second floor joists appear in good condition, but the exact condition of the joists’ end bearing in the log walls is only partially visible, and thus their structural capacity unknown.

Roof Framing

Description: The roof framing consists of five sets of log rafters, about 5” in diameter, bearing on the front and rear walls, about 32” above the floor, resulting in a low knee wall along the front and rear of the second floor.

Roof sheathing is wide sawn boards spanning end to end across the rafters.

Assessment: The roof rafters and the roof sheathing appear in good condition. Although the roof ridge is deflected on either side of the chimney this is not an alarming as such deflection is typical over time in framing constructed before building codes.

Log Walls

Description: The exterior walls are constructed of 10 - 12 inch diameter round logs, joined at the corners with half-lap corner notching. The longer front and rear walls are 12 logs high. A few logs on the rear wall retain some original bark, and appear to be red pine.

The daubing between the logs is cement mortar; most of it, and likely the oldest, looks like lime mortar. It is unknown whether new daubing was installed in 1971 when the house was moved, but various newer repair patches can be seen, comprised of cement mortar of a different color.

Assessment: Considering the wall logs are over 120 years old, are quite exposed to the weather due to their convex shape, and are of a red pine species, many still seem in good structural condition. Most are split and checked, allowing moisture to penetrate, but being a loosely constructed rudimentary structure, good air movement around and through the walls likely provides good drying of wet wood, preventing a continuously moist condition. At least two logs on each of the front, rear, and right end walls, plus the bottom two tiers of logs around the whole perimeter of the house are in quite bad condition. Several logs, including at the level of second floor joist bearing, have shifted outward probably due to failure of pin or nail connections at the corners. This has weakened joist bearing, and is of concern.

The condition of the mortar daubing varies a lot around the house. In many joints the mortar is solid and tightly bonded to the logs, but in others it is loose, and in many places has fallen out.

Shingle Siding

Description: The two gable ends are covered with sawn wood shingle siding.

Assessment: The shingle siding is in good condition.

Roofing

Description: Existing roofing is sawn wood shingles, with a continuous board cap. This would have been typical of historic construction when the house was originally built. The present roof shingles are said to have been installed in 1992.

Assessment: Despite their age, the wood shingles are in fair condition, likely due to good ventilation. The roof appears intact and solid, but with some shingles splitting and curling.

Chimney

Description: At the center of the house is a small, square red brick chimney, supported on a bracketed shelf set about 5 feet above the floor. Presently, a large cook stove is vented into the chimney flue, which extends up through the second floor, and out through the roof at the center of the roof ridge. Inside, like the rest of the interior, the chimney is painted white. Outside it is unpainted red brick, with no cap.

Assessment: The brick masonry is in good condition. The chimney top was not inspected from the roof, but it appears sound. The absence of a cap may lead to more frequent repair.

Entry Stoop

Description: An approximately 5 feet square wood platform provides a step up from the ground at the front entry door.

Assessment: The wood planking is in good condition, although the log joists sitting on grade are deteriorating.

Doors and Windows

Description: The house has two doors, directly across from each other in the centers of the long front and rear walls. The front door is board and batten, and fabricated of just three wide boards. The rear door is of five-panel style, common in the cabin's period of construction. The two front windows are wood double-hung type, with four over four lites, single-glazed. The smaller windows on the sides, and the gable ends above, are single sashes with four lites.

Assessment: The front door is in good condition, while the rear one is in fair condition. The windows also are in generally good condition, but some putty glazing is loosening and falling out. Some window sills are rotting in places. The windows appear unpainted.

Interior Surfaces

Description: The main floor is wood of uniform width running perpendicular to the floor joists. It appears too new to be original, possibly being installed when the house was moved. The upper floor is very similar but appears older, and may be original.

Interior wall logs, floor joists, roof rafters, and floor and roof sheathing are all painted with whitewash, a primitive painted coating, easily prepared historically.

Assessment: The main floor is in good condition; the second floor is quite uneven, as the floor joists have deflected and twisted over the years.

By its nature, whitewash builds up in thickness and then loosens and spalls off, so whitewashed surfaces need regular reapplication.

Plumbing, Heating, and Electrical

Description: No plumbing or electrical systems are present; and the heating, if employed, would be the big cast iron cook stove near the chimney.

TREATMENT APPROACH

Being that later additions to the McKay House were removed when it was relocated to the Besser Museum, the house's period of significance is being interpreted in its earliest days (before any addition was added). As such, all restoration work should reflect what would have been appropriate to that period (c.1898), as best as can be determined.

All treatment of the house should follow the Secretary of the Interior's Standards for the Treatment of Historic Properties, the federal standards developed for that government's restoration and rehabilitation of its historic properties, and which are widely used by state historic preservation offices and historic district commissions.

CONCLUSIONS & RECOMMENDATIONS

The McKay House is generally in good to fair physical condition; the following are specific conclusion topics with associated recommendations.

Wall Logs - It is now apparent that deterioration of the log wall structure is a growing issue that must be addressed. Many of the wall logs are at the end of their useful lives. But to minimize a wholesale replacement of the entire cabin, an effort should be made to retain as many existing historic logs as possible, and selectively replace only the most badly deteriorated ones.

These should include the four sill logs and probably the next course all the way around the house, and at least two others on each of the south (front), east, and north faces. Displaced logs at the level of second floor joist bearing should also be repaired or replaced. Likely some others will be found to be too extensively deteriorated to retain. Given the nature of log construction, often the surface of the timber seems solid, but rot has progressed in the center of the log, where it is harder to detect. So attempting to selectively replace just some logs will likely open a "can of worms", so to speak, and require replacement of others.

As such, a case could be made for replacing the whole exterior, as the logs definitely are very weathered. But if the whole exterior were to be rebuilt, the county building department would get involved and all the second floor joists and roof rafters would be determined to be code deficient (because they are, according to current code-required structural standards), and these also might be required to be replaced. So in the end the whole building would end up being new - a reconstruction of the historic McKay House. The logs themselves are the historic material which gives historicity to the cabin, and portray the antiquity of the place, and much would be lost if the entire house were reconstructed with new logs. While it would be new and last for another 100 plus years, the authenticity of the original artifact would be lost.

If a missing or demolished historic building is reconstructed, one expects it to be a recreation of an original - a careful replication of what once was, but lacking the historicity of the original. Stewardship of a historic building requires attention to preserving the truly historic building fabric that characterizes it, and as such, the Museum should try to selectively replace bad logs.

Once the scope of the log work is known, the scope of daubing replacement will be known. All may be required to be removed and replaced. Of course to be most authentic, mortar daubing should be used, but newer more high-performance acrylic daubing materials are now available, due to the popularity of log homes today. They provide better bonding to the logs, and the elasticity to flex with weather-related movement of the wood. These should be investigated and considered for use on the McKay House, if the appearance can duplicate the look of mortar daubing.

Floor Framing - Although not very visible, due to the deteriorated wood that can be seen, it must be assumed some first floor framing has rotted. Floor boards along the front and rear walls should be carefully removed to allow better inspection of floor joists, in order to include necessary replacement along with wall log replacement.

Roofing - Minor repairs of the roof shingles to address any badly broken, curled or missing individual shingles should be done. Also check the flashing around the chimney. The roof should not need to be replaced for some time.

Windows - Deteriorated window sills should be repaired or replaced, and deteriorated glazing putty should be replaced. Because glazing putty needs to be painted to perform best, the windows should be painted. Although they do not appear to be painted now, in at least one historic photograph the windows were painted. Some close examination of window sashes should be done to determine the color. Possibly a conservation laboratory should examine a sash to try to find evidence of the paint color.

Chimney - The brickwork at the top of the chimney is not protected from the weather - water sits on the horizontal top course of brick, is absorbed, freezes, and spalls the brick and mortar. A cap should be installed to minimize moisture penetration from the top. Since historically the chimney may never have had a cap, the recommended treatment is to fabricate one from metal, shaped as a very shallow pyramid with a minimal downturned edge. This should be fastened to a pressure-treated wood sleeve built to fit down inside the flue.

Accessibility - Presently it appears the McKay House is not accessible to handicapped visitors unable to negotiate steps. The next time the entry porch is replaced it should include a sloped access, probably extending from the left side. Since the vertical height is small it could be accomplished as an “approach”, not a “ramp”, which would avoid the requirement for a hand railing. A sloped access would allow more people to view the interior of the main floor.

Second floor framing is under-structured by today’s standards, and the exact condition of the joists’ end bearing in the log walls is unknown. As such, the current protocol to allow no visitors on the second floor is a wise precaution which should be maintained. One visitor at a time could be allowed up the stair to view the sleeping arrangements, but preventing access by means of a restraint at the top of the stair.

COST ESTIMATE

The following cost estimates are preliminary lump sum figures, based on a somewhat unknown scope of work. While not based on a detailed scope of work and contractor pricing, it should help assist with project financial planning and prioritization. For budgeting purposes plan to use a contingency with these numbers.

Wall Log and Floor Joist Replacement & Repair	$ 35,000.
Roofing	500.
Windows	3,000.
Chimney	500.
Accessibility	2,500.
Subtotal	$ 41,500.
Contingency (20%)	8,300.
Estimated Total Project Cost	$ 49,800.

SUMMARY

In summary, the historic buildings in the Besser Museum's outdoor collection have been preserved and interpreted for their local significance as historic artifacts for almost 50 years. Other than the McKay House, which is now being addressed, their physical conditions look good, evidencing the Museum's commitment to maintaining these facilities for the knowledge and enjoyment of the northeast Michigan community.