The church renovation was complete in August 2016.

Restoring an Historic Church to its Former Glory

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On the south-east corner at the intersection of Line 3 of Oro-Medonte and Old Barrie Road sits the small but significant Oro African Episcopal Methodist Church. The church, built in 1849, was a focal point of an African Canadian settlement established in part by militiamen from the War of 1812 (Canada's Historic Places, 2000).

Even though the original settlement has long since disappeared and the church is no longer active, the building remained. Despite previous attempts at restoration, the condition of the church continued to deteriorate. An awareness campaign was launched by the Township to address the deteriorated state of the church. This was the catalyst in driving community interest and Government support.

The authors, in collaboration with the building team, saw the project through the design and construction phases. The project involved raising the building to accommodate a new crawl space, log wall replacement and repair, re-cladding of the exterior wall, roofing replacement, chimney relocation, and provisions for additional structural support.

PROJECT BACKGROUND AND METHODOLOGY

The existing building had a footprint of 20 feet by 30 feet (6.1 metres by 9.1 metres) constructed of wood log wall framing, wood roof framing, and wood floor framing supported on stone foundations. The building's interior included perimeter wainscoting and chair rail with a whitewash interior finish. The church and its site experienced many changes and additions after its abandonment in the early 1900s to its recent revival.

Periodic repairs due to accidents or deterioration of the building, temporarily renewed public interest but never produced enough momentum to fund a complete restoration. It was not until 2011 that the Township again took an interest in restoring the church. In 2013, a team of heritage consultants was retained to complete a Cultural Heritage Assessment (CHA) with the intent of providing recommendations for the preservation of the building and its site.

The project was completed in collaboration with Parks Canada using the *Parks Canada Standards and Guidelines* (Parks

Canada, 2010) and the guiding principles in the *Conservation of Historic Properties* (Ontario Heritage Trust, 2012).

Following the recommendations of the CHA, it was decided to complete a restoration of the building back to its 1941 state while protecting its heritage value, which can be seen in the photo on this page. In consultation with Parks Canada, this period in history was selected because it encompassed the evolution of the building during its life as a fully functional church before its abandonment. The church was closed to the public until the restoration could be completed at a projected restoration cost of $140,000.

FOUNDATION

In October 2015, the authors were contacted to review the existing state of the church and provide design options with respect to a new foundation in keeping with the approved restoration scope. The Township wanted a new permanent foundation system for the building.

The square-notched log walls of the church were most heavily deteriorated at their base. The sill logs were mostly at grade, bearing on buried corner and mid stones, with fill stones located in between. Due to the negative slope in grade around the building and a wall system that was in direct contact with grade at its base, the sill logs were highly susceptible to exposure to the elements. This included repetitive cycles of wet / dry / wet / freeze contributing to the sill log deterioration and loss of mass over time. The sill logs needed replacement and, to mitigate future repairs, a new perimeter foundation that would raise the base of the wall from finished grade was proposed. This decision provided more options for ventilation and future heating of the new crawl space, as well as opportunities for maintaining the new floor structure. It would also allow for a sump pit connected with a perimeter weeping tile to address drainage issues. To temporarily relocate the building to accommodate the new foundation, the Township retained the services of a building raising and moving contractor.

Although the construction of the new foundation resulted in an increase to the finished interior floor elevation, elevating the church was necessary to protect the remaining original logs from decay. It was challenging to find an acceptable finished elevation that limited the amount of concrete wall exposure and preserved the integrity of the interior treatments.

BUILDING ENVELOPE AND VENTILATION

Ventilation between the new log floor framing and crawl space was an important design consideration, as this was the area of work that departed considerably from the building's original construction. During the construction of the foundation, four depressions in the foundation wall were formed around the perimeter for venting.

The exposed concrete wall was wrapped with a three-inch-thick (76-millimetre) by 12-inch-high (305-millimetre) cedar board as a cap wall. The cap was finished to replicate the exterior look of the original 12-inch-squared (305-millimetre-squared) cedar mud sill log, as can be seen in Figure 1 on the next page. This member was designed to be a "sacrificial" component expected to require occasional replacement from time to

The Oro African Episcopal Methodist Church, 1941. Photo credit: The late Mrs. Jean (née Gilchrist) Blackstock.

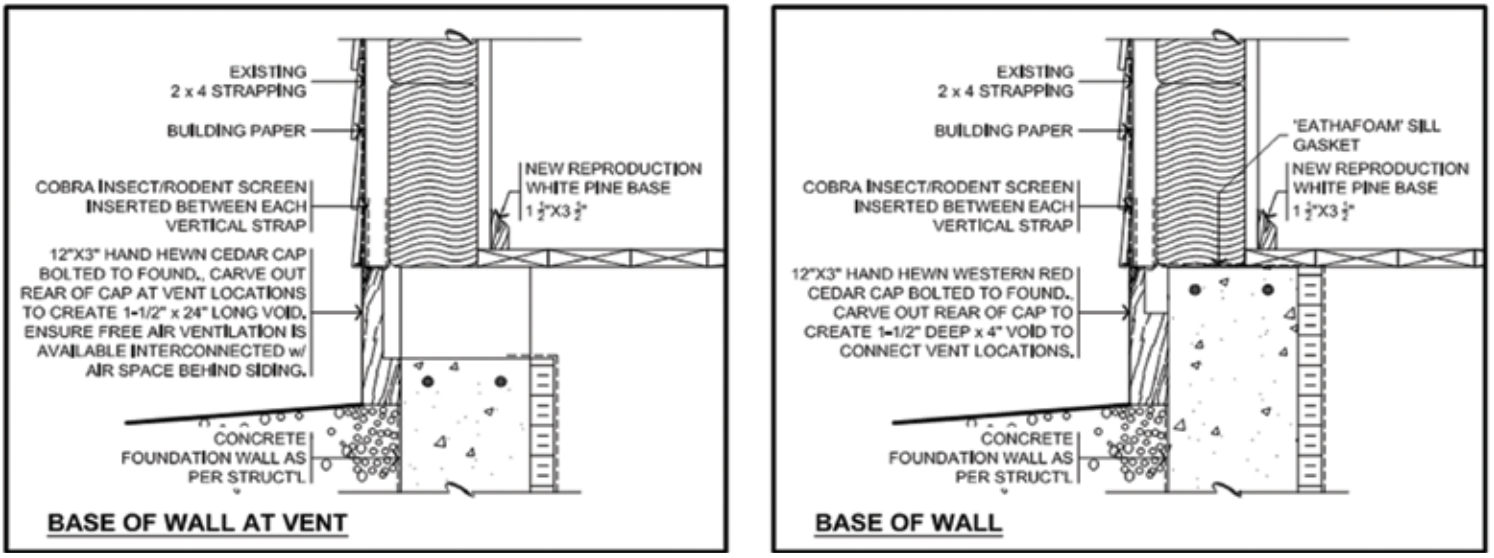

Figure 1. A "superficial" sill log.

time due to its proximity to grade. The attachment was by stainless steel anchors and lags, which could be reused in the future. At the vent locations, the foundation cap included a one-and-a-half-inch deep (38-millimetre) by 24-inch-long (610-millimetre) notch on the backside to permit air flow into and out of the crawl space. The foundation cap also included a one-and-a-half-inch deep (38-millimetre) by four-inch-wide (102-millimetre) continuous notch between foundation vent locations to provide cross-ventilation between foundation vents. The crawlspace venting is directly connected behind the foundation cap and functions through a stack effect with the full height cavity that extends to the roof soffit. This addressed the need for venting to the exterior, while keeping an appearance that blended in with the existing building and creating a start-stop point between new construction and existing heritage fabric. An extension of the crawl space ventilation was provided by the addition of two cast iron grates in opposite corners of the main floor, which

provided air flow from the crawl space to the remainder of the church.

Like traditional heritage log structures, the church was constructed as a breathing building (English Heritage, 2012). The existing church had performed well as a breathing building for over 150 years with minimal decay to the exterior logs, a result of its existing rainscreen cladding system. The exterior log walls were previously clad with overlapping horizontal clapboard siding supported by rough sawn vertical strapping. Where driving rain was able to penetrate the siding, it would then stop at the face of the log walls. The air space would have permitted the moisture to be removed via natural venting and water to exit at the base of the cavity. This existing cladding system did, however, cause damage to the building's wood sills. Based on the age and state of the exterior logs, the building likely experienced extended periods of relative humidity and temperature equilibrium, preventing decay. To mitigate risk in altering the dynamics of the existing building envelope, careful consideration was given in the choice of material selection for re-cladding.

The re-shingling of the roof was completed first in conjunction with the re-chinking of the log wall framing. Approximately 15 per cent of the existing roof sheathing was replaced due to damage or deterioration. The roof sheathing was finished with building paper (15# black felt paper), and re-sawn hand split western cedar shakes 24-inch (610-millimetre) by random in size. A double layer ridge cap incorporating natural ventilation was installed, adding an extended shake drip edge profile to the roof eave.

In addition to approximately 200 linear feet of exterior log repair and / or replacement, the existing chinking and daubing was replaced for the exterior log work. The new chinking was reused off the site from original material, including the reuse of existing chinking packing. Where required, cedar wedges and strips were also included. The new daubing was reinforced with concealed hot-dipped, zinc-coated nails, partially inserted in the upper side of the log (see photo on the next page). While the original daubing formula contained clay additive, it was decided in conjunction with representatives of Parks Canada to remove this as it would weaken the mix and the longevity of the installation.

Where it was in good condition, existing rough sawn vertical strapping was left in place around the building's perimeter. Visible, modern nails were removed from the existing strapping and cut nails were left in place. Building paper (15# black felt paper) was applied to the exterior of the building on the vertical strapping to extend over the cedar cap and under the siding, so that moisture wicking is controlled. New seven-inch (178-millimetre) horizontal clapboard siding lapped one-inch (25-millimetre) board to board was installed as the finished cladding. The clapboard siding profile, thickness and lap was installed to match the existing clapboard that remained on the gable ends of the roof. Building paper was selected to act as a weather resistive barrier (WRB) at the exterior of the wall due to its ability to dry inward to the ventilated air space or outward in case of wetting. Compared to most modern housewrap, building paper will absorb and store water until drying conditions improve. Adding the breathable building paper would allow

Chinking installation in 2016.

the building to breath as it did before. The walls are deliberately not air tight, keeping with the original functionality of the church. The building's ability to breath has been its key to longevity. The use of building paper was also chosen due to its methods of installation being easily reversible if future remedial work was necessary. A WRB was not part of the original construction but was included to prevent future deterioration related to moisture of the original heritage fabric located behind (see the photo on page 38).

The building had four 12 over 12 sash windows—two symmetrically installed on both the east and west sides. New window sashes were constructed with old glass, and wood muntin bars/ frames with profiles that reproduced that of the 1840s construction. New period windows were not painted but were treated with a linseed oil preservative prior to installation. Jambs were wrapped in building paper and lapped to the exterior, while taking precaution not to disturb the existing material that was able to remain. A new set of plank doors were built of similar materials as the windows and shutters, using construction methods similar to the original. Though not characteristic of the original construction, a drip cap and sill extensions were incorporated above and below the window and door openings, with a scored reveal on the underside to direct water away from the cladding. This was deemed necessary to further preserve the building.

New cladding installation in 2016.

FINAL THOUGHTS

The restoration of heritage structures is often scrutinized by the public. The building's small footprint and project location made it easily visible during construction. Passers-by would routinely drive past the site and stop, point, stare, and ask questions of the contractors or consultants at the site. Public feedback was carefully considered when preparing the design methodology. Proposed restoration solutions had to address the reason for the deterioration.

Attention to detail to facilitate ventilation of the building's exterior, in conjunction with accommodating the new crawl space and maintaining the church's heritage value, was crucial. The result (see photo on page 33) is reminiscent of the building's state in 1941. ■

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