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September 10, 2018

City of Kawartha Lakes
180 Kent Street West
Lindsay, Ontario K9V 2Y6

Attention: Ms. Jenn Toste, Municipal Law Enforcement Officer

Re: **Structural Condition Review of the Existing Two Storey Building Located at 2 River Street, Coboconk, Ontario
Project No. 18214**

Dear Ms. Toste:

Barry Bryan Associates (BBA) Architects, Engineers, and Project Managers was retained by the City of Kawartha Lakes to complete a review of the structural framing for the two (2) storey unoccupied building, which is located at 2 River Street in Coboconk, Ontario.

The purpose of the review was to visually assess the condition of the structural elements where accessible within existing building. The building was not inspected for hazardous materials and access to the interior of the space was not completed due to the poor condition observed from the exterior of the building during the site tour.

We conducted a site visit of the existing building elevations on August 26, 2018. There were no drawings available of the existing building at the time of our review. Further, our report is based on visual observations made on site on the date noted. We did not undertake any destructive or intrusive testing.

BUILDING DESCRIPTION:

We understand from information provided by the City of Kawartha Lakes that the original building was used as a former school house. However, the building at the time of the visit was un-occupied and most window and door openings had been hoarded with plywood. It appeared that the local utilities had been disconnected from the building.

The existing building is a two (2) storey structure. We were unable to verify if there is a basement or partial basement at the time of the visit. The south west corner of the building consists of a single storey structure which appears to have been added after the original construction of the building. The overall building has a ground floor footprint of approximately 400 square metres. We are not aware of the dates for the original construction of the building or any renovation work.

The basic building structure appears to consist of wood sheathing placed on wood roof trusses in a hip roof orientation. The single storey portion of the building located in the south west corner consists of a mono-sloped roof structure, which appears constructed using wood framing.

The wood trusses and rafters are supported on exterior masonry brick bearing walls and likely interior load-bearing partition walls. We did not enter the building and therefore could not confirm the 2nd floor and possible ground floor construction over a potential basement area.

The perimeter load bearing brick masonry walls are supported on rough cut limestone foundation walls.

OBSERVATIONS AND STRUCTURAL CHARACTERISTICS:

The general observations for the structural components which were visually reviewed at the time of our site visit are itemized below:

Roof Structure

The hip roof consists of wood sheathing which is supported on wood trusses and/or rafters (Photos 001 and 002). We could not verify the spans of the trusses and rafters, however noted that the exterior brick masonry walls are load bearing and support the trusses.

There was evidence of severe deterioration and localized complete failures of the roof structure especially along the north and north / east end of the roof. There was approximately a 24" deep valley observed across the north roof slope. The valley appears to have been caused by the localized failure of the load bearing brick masonry wall below (Photo 003, 004). Additionally, a valley approximately 12" deep had formed along both the east and west roof slope also due to the localized failure of the roof structure above excessively deteriorated sections of brick masonry walls (Photo 005, 006). The roof deck and wood soffit and fascia boards in these areas had fully delaminated from the supporting roof structure and were open to the exterior elements (Photo 007, 008, 009).

The roof consists of asphalt shingles which in many locations had lifted or were stripped from the roof allowing moisture infiltration into the roof envelope (Photo 010, 011). There were three (3) brick masonry chimney's observed during the site visit which projected approximately 8'-0" above the roof line. We were unable to verify the framing supporting the chimneys.

The roof structure was in poor condition with localized areas of complete structural failure at the time of the site visit.

Second Floor Structure

We were unable to confirm the framing for the 2nd floor structure at the time of the visit.

Ground Floor Structure

We were unable to confirm the framing for the ground floor structure at the time of the visit.

Basement

We were unable to confirm the extents of the basement and the framing for the basement walls and/or slab structure at the time of our visit.

Exterior Bearing Walls

The exterior walls of the building were constructed with load bearing brick masonry units. The brick masonry walls are supported on the top of the exterior limestone foundation walls and extend to the underside of the wood trusses and rafters (Photo 012). There are window and door penetrations located around the perimeter of the building. The openings have been framed with arched soldier coursed headers approximately two (2) brick units deep and precast concrete sills (Photo 013, 014).

The brick masonry units consist of beige bricks which are stacked approximately three (3) wythes thick where visually accessible. The brick wall had fully failed around the north west corner of the building where the roof framing had deflected and created valleys referenced above (Photo 015, 016, 017).

There were localized pockets along the exterior wall where the entire outside wythe of brick had no mortar between the joints and the wall had locally failed or excessively deflected. The remaining bricks in these areas were loose along the exterior facade and had started falling to the ground in many locations (Photo 018, 019, 020, 021, and 022). These pockets of deteriorated brick appeared common at areas where the walls are likely subject to prolonged moisture due to adjacent valleys in the roof profiles and concentrated lateral loading from applied wind pressures on window lintels or sills.

Where the brick was in poor condition, the interior of the building was fully exposed to the exterior elements and likely accessible to local wildlife. There was an accumulation of rubble on the ground indicating that the walls are actively deteriorating (Photos 023, 024, 025).

There was excessive overgrown vegetation around the exterior of the building (Photo 026, 027).

Interior Load Bearing Walls

We were unable to confirm and review the interior load-bearing walls at time of our visit.



RECOMMENDATIONS:

We reviewed the structural components of the building for evidence of deterioration or damage to the structural framing. The structure at the time of our visit was in poor condition with evidence of advanced deterioration and localized complete failure of the structural framing.

It is our opinion that the existing structure is compromised and localized collapse of the roof and walls can be expected under an applied load due to conventional snow loading or heavy wind loads at any time. The localized failure of the roof structure and poor condition of the supporting exterior load bearing brick masonry walls is evidence that the structure is currently unstable and access inside the building must be restricted. Additionally, the perimeter security fence must remain installed to prevent pedestrian access inside the possible collapse zone extending 15'-0" from the building elevation to the building.

Immediate temporary shoring and extensive structural remedial repair work is required to restore the building superstructure to allow for the space to be safely occupied. We have provided a summary of the minimum recommended remedial work as follows:

1. Complete a temporary shoring and develop a detailed stabilization plan. This may involve further close up investigation of the failed structure from an overhead articulating lift to better understand the condition of the failed structure.
2. After temporary shoring has been installed, complete a review of the interior load-bearing elements (load-bearing walls, 2nd floor structure, ground floor, and basement).
3. Complete additional shoring as necessary to accommodate further identified areas of structure distress inside the building.
4. Repair the perimeter load bearing brick masonry walls. This work will involve extensive reconstruction of the original three (3) wythe brick masonry walls. We estimate that 30% of the existing walls will need to be reconstructed.
5. Repair the failed roof structure. This will involve locally removal of the roof deck and potential installation of new rafters or trusses. Extensive reinforcing of all existing wood framing to remain can be expected due to the amount of moisture infiltration through the roof envelope due to the current condition of the asphalt shingles.
6. Install a new roof system.
7. Replace broken windows and doors to make the structure weather tight.
8. Cut back all overgrown vegetation to allow the exterior brick masonry walls to dry out and not be under a fully shaded condition.
9. Reinstate minimal heat inside the space to prevent temperatures below freezing inside the building which will promote frost action.
10. Assess restoration of the interior finishes, which can be anticipated to be in poor condition.

The remedial stabilization work must be completed immediately to prevent the possibility of full or localized collapse of the building. Further exposure to winter weather will promote freezing of any accumulated moisture inside the building, leading to differential movement of the building structure. Due to the poor condition of the existing structure, any differential movement in combination with applied loading from snow or wind will likely cause localized or complete collapse of the building structure.

Alternatively, the building can be demolished to the foundation level and new construction from the foundation walls up can be considered for preservation of the buildings original size and community attributes.

CONCLUSION

The current structural condition of the building is structurally unstable. Pedestrian access inside the building must be immediately restricted due to the unsafe condition of the structure. A temporary shoring procedure and remedial repair work must be completed immediately to prevent the partial or full collapse of the building. Alternatively, demolition of the building can be considered.

The building structure in its current state has evidence of localized structural failures and partial or full collapse can be expected with applied loading if temporary shoring and remedial restoration is not completed immediately. The security fence around the building must remain in place to restrict pedestrian access onto the site without authorized personnel.



Our review was limited to what was visible from the exterior of the building since access was not permitted due to the unstable condition of the structure.

We trust the above information meets your requirements. Should you require any further information, please do not hesitate to contact our office.

Respectfully submitted,

Barry Bryan Associates
Architects, Engineers, Project Managers

Doug McLaughlin, P. Eng.

David Bovill, P.E., P. Eng

DM/nb

Enclosure: Photos 001 - 027

Draft

Structural Condition Review of the Existing Two Storey Building Located at 2 River Street, Coboconk, Ontario
Project No. 18214
Report Photos

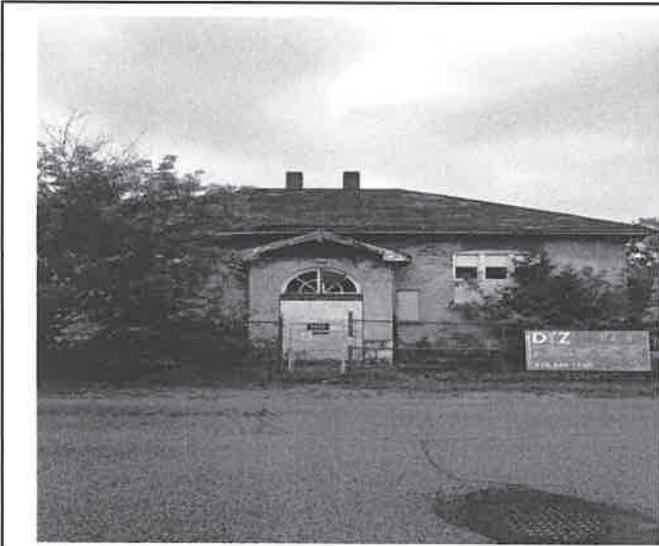


Photo 001



Photo 002



Photo 003



Photo 004



Structural Condition Review of the Existing Two Storey Building Located at 2 River Street, Coboconk, Ontario
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Photo 005



Photo 006



Photo 007

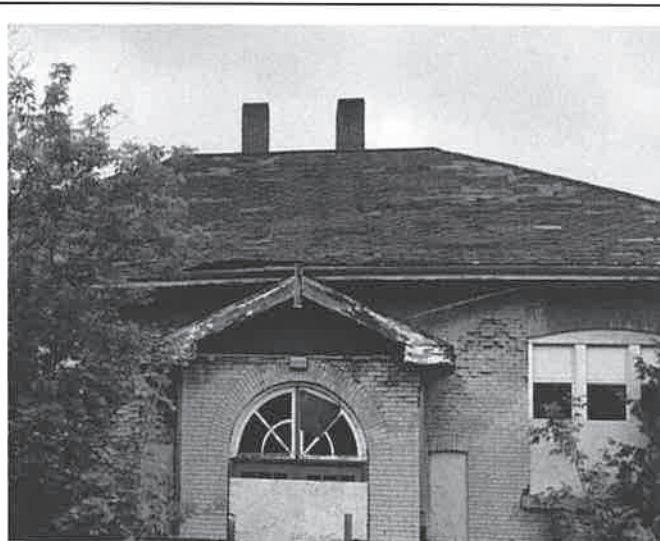


Photo 008

Structural Condition Review of the Existing Two Storey Building Located at 2 River Street, Coboconk, Ontario
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Photo 009



Photo 010



Photo 011



Photo 012

Structural Condition Review of the Existing Two Storey Building Located at 2 River Street, Cobocok, Ontario
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Photo 013

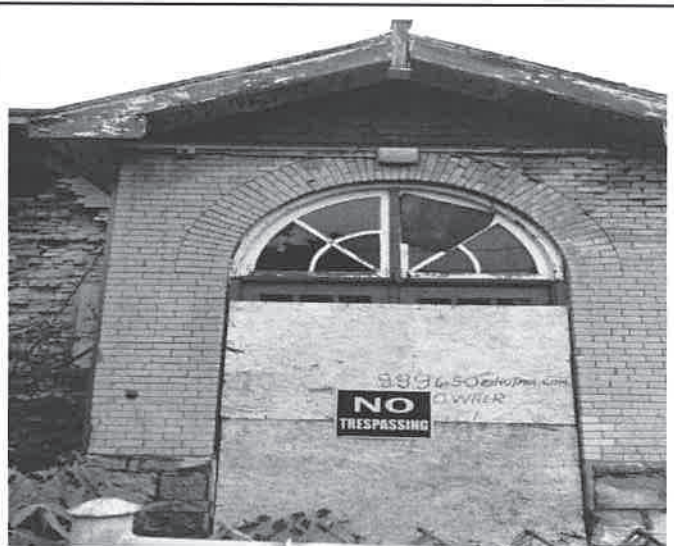


Photo 014



Photo 015



Photo 016

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Photo 017



Photo 018



Photo 019



Photo 020

Structural Condition Review of the Existing Two Storey Building Located at 2 River Street, Coboconk, Ontario
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Photo 021



Photo 022



Photo 023



Photo 024



Photo 025

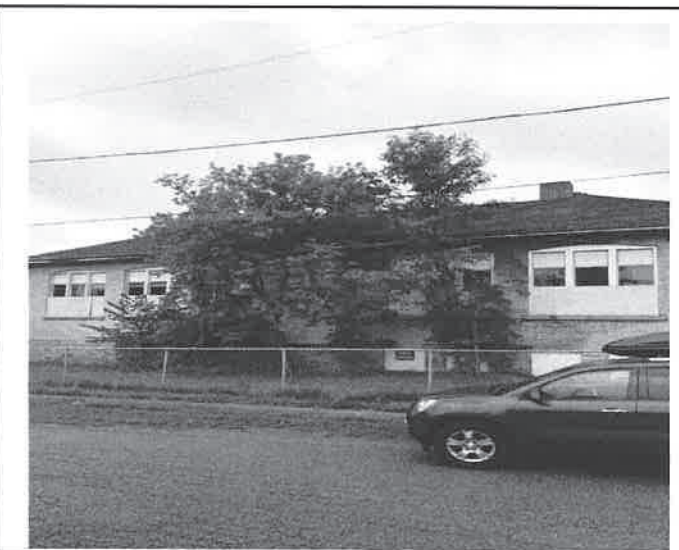


Photo 026

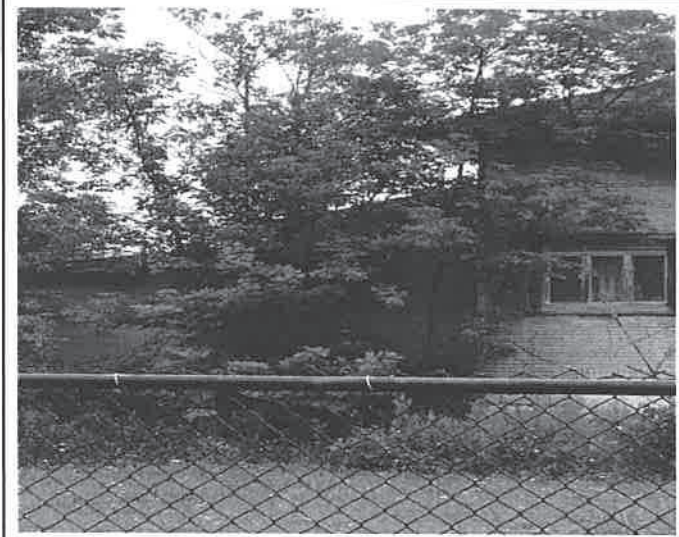


Photo 027