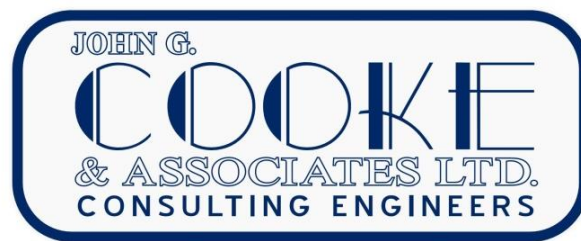


Building Condition Report

**231 Cobourg Street
Ottawa, ON**

March 2018

Prepared By:



JCAL 18096

EXECUTIVE SUMMARY

John G. Cooke & Associates Ltd (JCAL) was retained by the Planning, Infrastructure and Economic Development Department of the City of Ottawa to review Consultant reports relating to 231 Cobourg Street, to complete a visual survey of the building, and provide an opinion on the state of the building's structure.

The building resides within the Wilbrod/Laurier Heritage Conservation District. It has stood vacant for four years and unheated through at least two winters. The structure consists of poured concrete foundations, composite masonry exterior walls, concrete masonry below grade interior walls with wood posts and beams, wood framed above grade interior walls, and wood framed floors and roof.

The building has some major defects related to active settlement which are demonstrated by the following:

- Cracking of the concrete foundation wall as visible in the basement;
- Severe cracking of the slab on grade, with dramatic sloping;
- Cracking of the loadbearing and non-loadbearing concrete masonry in the basement;
- Cracking of the exterior brick masonry walls;
- Cracking of previous repairs to the exterior brick masonry walls;
- Cracking of the interior walls finishes throughout the first and second floors;
- Unevenness of the floor framing, with dramatic sloping down to the exterior walls.

JCAL has concluded that the observed, and previously reported, settlement issues and the damage it has caused to the building structure is significant. While structurally feasible, the cost to undertake work to stabilize the building is similarly significant. The Heritage Value of asset must be weighed with the costs of rehabilitation and this is well discussed in the Cultural Heritage Impact Statement. Based on this and the significant effort to undertake stabilization, we support recommendations for demolition.

1. INTRODUCTION

At the request of the Planning, Infrastructure and Economic Development Department of the City of Ottawa (The City), John G. Cooke & Associates Ltd (JCAL) was contracted to assess the condition of the vacant property at 231 Cobourg Street. Originally a residential building, the building was most recently home to the Uganda High Commission since 1993, though the occupants reportedly vacated ca. 2013.

2. TERMS OF REFERENCE

JCAL's terms of reference for the project are:

- Visit the site to inspect foundation walls, masonry, and visible/accessible structural components to assess their respective condition.
- Review previous reports and assessments and the Cultural Heritage Impact Statement prepared by other consultants and provided by The City.
- Prepare and submit a report detailing the building's current condition. Including:
 - comment on previous documents;
 - comment on practicality of foundation remediation;
 - comment on structural impact of environmental damage;
 - opinion of previous rehabilitation cost estimates;
 - opinion of whether the building should be demolished.

3. METHODOLOGY

The property at 231 Cobourg Street was visually inspected by John Barton, C.E.T. and Chris Vopni, P.Eng. of JCAL on February 26, 2018. Roger Charbonneau represented the owner and was present to allow JCAL access to the building.

The building's exterior walls were reviewed, deterioration was noted, and photographs were taken. The interior faces of the foundation walls were also inspected with defects noted. Visual inspection of the interiors of the ground floor and upper floor was also carried out.

4. DESCRIPTION

The building at 231 Cobourg is a two-storey, masonry and wood framed structure on concrete foundations. The building resides within the Wilbrod/Laurier Heritage Conservation District and is reported to have been constructed between 1935 and 1947.

The property has been vacant for over 4 years, and it was reported that the water was shut off approximately 2 years ago due to a burst pipe. The heating in the building was provided by hot water radiators which became inactive as a result of the water shut-off.

The building exterior is clad with a clay brick veneer and with an assumed cinder block backup. The foundation wall is concrete from the footings to grade and was poured with wood plank formwork, common from this era of construction.

The floor structure is wood joists spanning east-west and bearing at the exterior wall masonry and at interior wood stud walls located near midspan. It was reported in previous studies that the joists are dimensional sawn 2"x10" spaced at ±14" c/c and could only be confirmed in one location where a ceiling had previously collapsed. The stud walls could not be validated as the finishes are still in place.

5. AVAILABLE INFORMATION

JCAL used the following documents provided by The City:

- Geotechnical Assessment prepared by Paterson Group Inc., dated February 15, 2013;
- Building Condition Assessment prepared by Paterson Group Inc., dated March 11, 2013;
- Geotechnical Investigation Report prepared by AATech Scientific Inc., dated January 17, 2017;
- Structural Assessment on the Chancery prepared by Stephenson Engineering Limited, dated January 24, 2017;
- Proposed Redevelopment prepared by Ten 2 Four Architecture Inc., dated April 19, 2017;
- Cultural Heritage Impact Statement prepared by Robertson Martin Architects, dated November 22, 2017;
- Report to Built Heritage Subcommittee and Planning Committee dated January 29, 2018;
- Built Heritage Subcommittee Disposition 27, dated February 8, 2018.

6. EXISTING CONDITIONS

The classifications used were as follows:

Good: Is defined as: the component is mainly intact and is at minor risk of damage or deterioration due to normal service conditions (environment, loading) in the short term (1 to 5 years).

Fair: Is defined as: the component is compromised and is at considerable risk of damage or deterioration due to normal service conditions (environment, loading) in the short term (1 to 5 years).

Poor: Is defined as: the component is lost or is at considerable risk of loss due to normal service conditions (environment, loading) in the short term (1 to 5 years).

6.1 Foundation

The foundation wall consists mostly of formed concrete on concrete footings. The footings are described, following test pits completed in 2013, to be in the order of 12" thick and project about 7" from the foundation wall. The top of footing was found to be just below the basement slab on grade. The concrete walls are approximately 5' high and terminate under windows at grade. The north elevation once featured two garage doors at the foundation level which have been filled in at an unknown time. It should be noted that the elevation of the footings and subsequent ground cover does not meet the recommended frost-protection level for unheated spaces as outlined in previous Geotechnical Reports. Due to the need address the soil issues, detailed below and in past reports, the condition of the foundation wall, although cracked in many locations, is inconsequential as it will be significantly affected by the subsurface work.

At the northwest corner, the concrete foundation wall has been replaced with concrete masonry units (CMU). During conversations on site, it was reported that this work was done in an underpinning type manner ca. 2003-2005, exact dates are unknown. The condition of the CMU is fair, though it should be noted that the interface between the CMU and concrete foundations show signs of settlement with separation noted at the interface.

While the foundation elements themselves appear in fair condition, it is important to note that the subsurface condition is very poor. As has been reported in each of the provided reports and witnessed during our visit, settlement of the building at the perimeter has been an ongoing issue for many years and potentially decades. It appears that the concrete foundation walls are generally settling intact, based on the small number of large cracks noted. At the interior of the basement, cinder block walls (loadbearing and otherwise) are severely cracked in several locations. The cracking is evident in the mortar joints and through several units. Many cracks have previously been filled in what appears to have been multiple campaigns. Further settlement can be observed as all the previously repaired cracks have again opened.

The Geotechnical Report prepared by AAtech estimates the bearing capacity of the soil at ULS 115kPa and SLS 75kPa. Considering an estimated weight of the exterior wall along with the floor and roof framing and composition, the load approaches this estimated bearing capacity.

As reported in all previous reports and validated on site, the slab on grade also shows signs of the settlement issues with significantly large fractures noted along most of the perimeter of the building. The cracking is a further indication of soil settlement

The summary presented in the Geotechnical Report prepared by Paterson Group suggests settlement as a result of dewatering of the soil. This was attributed to past droughts and large diameter trees along the foundation walls. There are many indications on site that support this theory as cracking of the slab on grade is primarily at the east wall, towards the north where a series of large trees exist. Settlement at the northeast corner was also significant and although there currently is no tree it was reported that a large tree was removed in the order of 10 years ago from this location.

JCAL agrees with past reports suggesting severe settlement issues at the foundation level.

6.2 Exterior Masonry Walls

Based on past experience and assumption from limited accessibility, we suggest that the exterior wall is a composite system comprising of an inner concrete (cinder) block wythe and outer clay brick wythe. At the basement, cinder block was observed above the concrete foundation level with brick infill around the joists bearing points on the exterior walls. This brick infill was again observed where part of a ceiling has previously collapsed on the ground floor. Typically in construction of this type, header bricks, approximately every 7 courses, would tie to the backup between two courses of cinder block. The header bricks are visible from the exterior, though their connection to the backup cinder block could not be confirmed. Our experience with construction of this type finds that often the brick headers are fractured. Fracturing is a result of the different expansion and contraction rates of brick and the block back-up. The differential movement of the two materials places stress on the brick and often will result in fracturing and disconnection of the veneer from the backup wall. We did not observe any

out of plane separation suggesting this has occurred, but it should be considered as a possibility.

The brick masonry is generally in fair condition although localized areas were noted to be in poor condition. Significant cracking of both the mortar joints and brick units are apparent in several locations throughout the exterior elevation, especially at the north and south end of the east and west walls. There is evidence of several repair campaigns where mortar was replaced at cracked joints and in all instances the repairs have cracked again, indicating continued settlement

6.3 Wood Framing

The floor and roof structure spans in the east-west direction and is supported on the exterior walls and with beams and posts in the basement and loadbearing stud walls at the upper floors. The wood framing appears to be generally in good condition where it was exposed and observed. The second floor and roof framing were mostly concealed by ceiling finishes. Although the wood appears in good condition, the settlement of the perimeter exterior walls has resulted in significant sloping towards the exterior. This assessment was noted in each of the past reports and was confirmed in our visit. The sloping and the unevenness of the floor is very apparent underfoot while walking. At a few locations, non-loadbearing partition walls have created high points in the floor due to the lack of deflection separation between the floor and wall. Although not common for the time, it is now customary to provide separation at the top of a non-loadbearing walls to allow for the deflection of the floor above.

The condition of the concealed framing cannot be validated, but consideration should be given to the potential issues caused by environmental damage. Past plumbing leaks within the building and the water infiltration through the masonry has created favourable conditions for mold growth throughout. The presence of mold was confirmed visually during our review throughout the entirety of the building. Whether the mold or presence of water has affected the structural framing was not confirmed but should be considered.

7. RECOMMENDATIONS

7.1 Foundation

Allowing future re-use of the building involves major work at and below the foundation level. The majority of the work will be to stabilize the building foundation. It's our opinion that piling is the most effective way of achieving this based on information provided in the two geotechnical reports. From a structural perspective, the piling would involve a sequence of installing new piles to a suitable depth and redistributing the structural load to the piles. Installation of the piles and redistributing of load will require temporary support of the walls so that the foundation walls can be replaced. Based on experience with concrete walls of this era, it is unlikely that the existing walls will be sufficient to accommodate redistribution of loads and likewise it would be very invasive and inefficient to reinforce them. Temporary support of the above grade portion of the building will prove very complicated, and inherently costly, due to the tight confines of the site. There is very little room to temporarily distributed the loads during the below grade work.

7.2 Exterior Masonry Walls

To facilitate the work at the foundation level, we recommend localized repair of damaged and deteriorated masonry to stabilize the exterior walls. Replacing bricks has the benefit of providing access to the core of the wall to assess the interface between the brick and the backup masonry. Temporary support of the building will result in redistribution of forces and stresses in the wall, to accommodate this it is imperative the connection between the brick and the backup be confirmed prior to any temporary support or lifting and leveling of the building. There should be sufficient allowance carried to address any disconnection of the veneer from the backup.

7.3 Wood Framing

The scope of repair for the floor structure will be related mostly to releveling. The inconsistency and the amplitude of the floor movement is significant enough that lifting is not a recommended approach. A complex series of shimming and levelling compounds for a new subfloor would be the most effective method of floor levelling. The added weight associated to the new materials will require the assessment of the floor structure to determine its ability to take on new load. An allowance is recommended to allow for floor reinforcing.

Although no environmental assessments or designated substance reports were provided, there is a very high probability that significant abatement will be required to address mold and other designated substances found in the building. It is our recommendation that all plaster and rock-lathe wall and ceiling finishes be removed to assess the concealed structure and an allowance for localized reinforcing and replacement of structural elements be carried. Removing the finishes will reduce the overall weight of the building, slightly simplifying the temporary support requirements of the foundation work.

8. ESTIMATE

We have reviewed the Budgetary Cost Estimates indicated in the report provided by Stephenson Engineering (SE) and offer the following commentary relating to the structural aspects of the work

8.1 Below Grade Work

Previously estimated at \$325,000. For the purpose of this discussion the costs labelled 'Foundation Restoration', 'Structural Renovations', and 'Concrete/Masonry Repairs Basement' have been combined.

We have assumed that the above listed categories included all geotechnical work to remediate soil, provide a new foundation system, provide new foundation walls, and all associated temporary support of the exterior walls during this operation. Based on the complications related to temporary support requirements and limited site access, we feel that the estimate of \$325,000 could be too low by a factor of 1.5 to 2.

8.2 Exterior Masonry Repairs

Previously estimated at \$50,000. Based on the content of the SE report, we suspect that the exterior structural system was misunderstood as a load-bearing wood stud. Based on our limited review of exposed condition, we suspect a composite masonry system forms the exterior wall structure. As such, we feel that the estimated cost related to masonry

will be significantly greater than what was presented. Once all finishes are removed from the interior side of the exterior walls, the conditions of the inner wythe of masonry will likely require significant intervention which was not accounted for in the previous estimate.

8.3 New Flooring

Previously estimated at \$100,000. We have assumed that this item will included all floor leveling and related localized reinforcing. Based on our review on site, we feel the estimated cost to be reasonable.

9. DISCLAIMER AND LIMITATIONS

This report is based on and limited to verbal information supplied to John G. Cooke & Associates Ltd. by the representatives of the City of Ottawa Planning and Development Department and by observations made during walk-through inspections of 231 Cobourg Street, Ottawa. Only those items that are capable of being observed and are reasonably obvious to John G. Cooke & Associates Ltd. or have been otherwise identified by other parties and detailed during this investigation can be reported.

The work reflects the Consultants' best judgement in light of the information reviewed by them at the time of preparation. There is no warranty expressed or implied by John G. Cooke & Associates Ltd. that this investigation will uncover all potential deficiencies and risks of liabilities associated with the subject property. John G. Cooke & Associates Ltd. believes, however, that the level of detail carried out in this investigation is appropriate to meet the objectives as outlined in the Terms of Reference. We cannot guarantee the completeness or accuracy of information supplied by any third party.

John G. Cooke & Associates Ltd. is not investigating or providing advice about pollutants, contaminants or hazardous materials.

Budget comments provided are based on a probable current dollar value for similar work completed under our review in the past number of years, and are provided for approximate budget purposes only. Accurate figures can only be obtained by establishing a scope of work and receiving quotes from suitable contractors.

This report has been produced for the sole use of City of Ottawa Planning and Development department and cannot be reproduced or otherwise used by any third party unless approval is obtained from John G. Cooke & Associates Ltd. No portion of this report may be used as a separate entity; it is written to be read in its entirety.

We trust that this report covers the scope of work as outlined in our Terms of Reference. Should there be any questions regarding this report, or if we can be of any further assistance to you, please contact us.

Please contact the undersigned if there are any questions. I remain,

Yours truly,

JOHN G. COOKE & ASSOCIATES LTD.



Chris Vopni, P.Eng.

A handwritten signature in blue ink, appearing to read "John Barton".

John Barton, C.E.T.