CAPACITY ENGINEERING LTD.

Condition Assessment

231/233 St. Patrick St

Ottawa, Ontario

Client: City of Ottawa

Date: 22 July 2024

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Version History

19 July 2024 – '231 & 233 St-Patrick Condition Assessment - Revision 0'
22 July 2024 – '231 & 233 St-Patrick Condition Assessment - Revision 1'

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'Heritage Survey And Evaluation Form, Category Scoring - 231/233 St-Patrick St' prepared by City of Ottawa Department of Planning & Development – M. Carter – June 1992

1.0 Executive Summary

Capacity Engineering Limited (CEL) was engaged by Lesley Collins on behalf of the City of Ottawa to provide a condition assessment report for the multi-tenant heritage building located at 231/233 St-Patrick St. Note that the structure was constructed between 1872 and 1878, located within the ByWard Market Heritage Conservation District (HCD), per city of Ottawa By-Law 60-91. In carrying out this assignment, CEL attended site to conduct a primarily visual assessment of the property. In addition, CEL made use of hand tools and non-destructive testing equipment, in implementation of our Heritage Engineering field assessment methodology to further assess the state of the structure. Following our initial and detailed site visits and a review of relevant documents (see Section 4.0), it is CEL's opinion that despite the buildings Category 2 Heritage Structure status under part V of the Ontario Heritage Act (Ontario Heritage Act, RSO 1990, c O.18), the retention of the building is not feasible and warrants demolition. Section 5.0 outlines the deterioration of the property and section 6.0 discusses whether portions of the structure are salvageable.

2.0 Applicable Documentation

- ACI 201.1R-08 "Guide for Conducting a Visual Inspection of Concrete in Service"
- ASTM F2659 - Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete [ ] NDT Moisture Meter
- BRE's "Foundation Movement and Remedial Underpinning in Low Rise Buildings
- CAN/CSA A371-14 "Masonry Construction for Buildings"
- CAN·CSA-S478-95 (R2007) Guideline on Durability in Buildings
- English Heritage "Methodology and Guidance for Surveying Listed Buildings"
- National Research Council Canada CBD-230 "Applying Building Codes to Existing Buildings"
- OBC 2012 "Ontario Building Code"
- OSIM "Ontario Structure Inspection Manual"
- Parks Canada "Standards and Guidelines for the Conservation of Historic Places in Canada". February 2011
- Professional Engineers Ontario "Structural Condition Assessment of Existing Buildings and Designated Structures Guideline", November 2016
- PWGSC "Bridge Inspection Manual"
- Timber Frame Engineering Council "Guide to Structural Evaluations of Existing Timber Structures", January 2019

3.0 Limitations

Our report is limited to those issues specifically described herein. Our staff are not qualified to comment on matters other than those generally accepted to be in the purview of Civil Engineering, and where other concerns are raised, we have referred the client to a suitable consultant, contractor or other.

We cannot warrant the work of any other party, nor be held responsible for their work. Where an existing design of an element is deficient but did not show signs of distress at the time of our review, we reserve the right to consider such an element's design as sound.

We have not been engaged to complete a total review of 227-237 St. Patrick St or all the elements within. As such, hidden defects and issues without obvious visible signs or missing from the provided documentation will not have been identified or included in this report. Where further investigation is recommended, the client is strongly advised to undertake further work or investigation, and we stand by ready to assist.

This report represents the best judgment of Capacity Engineering Limited ("CEL Ottawa") given the information available at the time of writing. Any use which a third party makes of this report, or any reliance upon, decisions made in response to or in any way influenced by this report are the responsibility of such third party. Professional Engineering requires significant judgement and can only be held to be valid for a specific client, with known information, for a specific location and time frame. Any third party that uses this report without written consent of CEL waives any and all liability of CEL.

Any and all decisions made based on this report without the direct involvement of CEL Ottawa are the responsibility of the party(ies) making such decisions. Do not make any interpretation of this or any other project documentation. Note that it is the policy of CEL Ottawa not to charge for phone calls as to interpretations of any of our project documentation, including this report. Contact CEL Ottawa for further assistance.

This report is both confidential and copyrighted. Should you have received this in error, please return to Capacity Engineering Limited.

A note about language: "*Appears*" is frequently used as a reminder of the limitations of a review from only documentation and where absent, all language should be read as conditional.

Per PEO Guidelines (Structural Condition Assessments of Existing Buildings and Designated Structures Guideline), reports "should include" definitions of qualitative terms specific to the assessment. As such, these are our terms used in reports. Note that these are an adaptation and blending of the Ontario Structure Inspection Manual (OSIM) from the Ministry of Transportation, and the field methodology of English Heritage (UK).

3.1 Amalgamated Building & Element Condition Ratings

NB: Per PEO Guidelines, reports "should include" definitions of qualitative terms specific to the assessment. As such, these are our terms used in reports. Note that these are an adaptation and blending of the Ontario Structure Inspection Manual (OSIM) from the Ministry of Transportation, and the field methodology of English Heritage (UK).

Excellent
Like new; structurally sound; weathertight; no significant repairs needed.

Good
Structurally sound; weathertight; no significant repairs needed.

Fair
Structurally sound; in need of minor repair; showing signs of a lack of general maintenance.

Poor
Deteriorating masonry; leaking roof; defective rainwater goods, usually accompanied by rot outbreaks; general deterioration of most elements of the building fabric, including external joinery; or where there has been a fire or other disaster which has affected part of the building.

Very bad
Structural failure or clear signs of structural instability; loss of significant areas of the roof covering, leading to major deterioration of the interior; or where there has been a major fire or other disaster affecting most of the building.

Archeological
Ruins, or structure known to exist / have existed, but is not visible

4.0 Background Information Received

The following documents were provided for CEL's review:

- 'Evaluation of Existing Structures at 227/229, 231/233, 235/237 St-Patrick, Ottawa, ON.' prepared by Gadient Structural Engineering Ltd., 13 August 2021
- 'Heritage Survey And Evaluation Form - 231/233 St-Patrick St' prepared by City of Ottawa Department of Planning & Development – M.Carter – January 1990
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4.1 Gadient Engineering Report Summary

In October of 2023, Mathieu Gadient of Gadient Structural Engineering Ltd. was engaged to provide structural assessment of the condition of the structure located at 231/233 St. Patrick St.

The findings of this report are summarized below:

> *231/233 is a three-storey multi-tenant residence. The building appears to have rot in the wood framing for the exterior walls and a crack in the foundation wall. The roof rafters appear to be rotten. A portion of the second-floor overhangs beyond the main floor wall & teleposts have been added to support this overhang as it was likely sagging. There is also an elevated structure which serves as the rear exit and as a deck. It is supported by a single wood column, with an added telepost and is not to code, it should be demolished and rebuilt.*

The overall conclusion of the report was that the deck must be demolished, most (if not all) of the exterior walls will require replacement, foundation walls would require repairs and the exterior cladding would require repairs or replacement. For these reasons, Gadient concluded that the best option would be a complete demolition and rebuild.

4.2 Commentary on Gadient Report

The Gadient report appears to adhere to the standards expected of a Professional Engineer licensed and practising in Ontario, within the field of Structural Engineering. The work appears to align the requirements of applicable PEO Guidelines for safely and protection. However, it lacks an assessment of the heritage characteristics and the overall built heritage of the structure and site. As a result, the report cannot be used as a reliable basis for evaluation since it does not adequately address the structures context. In CEL's professional opinion, while the report provides a solid evaluation of the structural conditions, it cannot support a recommendation for demolition.

5.0 Observations

On the southern side (front) of the building, CEL staff noted two cladding systems: stucco for the upper half of the building and concrete faux-stone cladding for the lower half (see Photo 1). On the stucco, a large horizontal crack can be observed. The flashing for the porch roof is also not tied into the wall, which can cause water infiltration (see Photo 2). This has led to water damage which has visibly wet the faux-stone cladding and turned it just below the porch roof.

On the east wall of the building, siding and insulation were applied on top of the existing stucco which appeared to be deteriorating near the base of the wall (see Photo 4). This stucco was applied onto what appeared to be traditional wood clapboard siding. Along this wall, newer concrete that had been applied to the existing foundation wall was found to be crumbling off the wall (see Photo 5).

On the northern side (rear) of the building, a second storey deck used to access the rear unit is supported by two jackposts (see Photo 3). This deck is leaning and does not appear to be stable. Inside the rear unit itself, a small bulge is present in the drywall (see Photo 21). The homeowner noted anecdotally that there had been a fire in this unit, however without any exploratory openings CEL cannot say to what extent the renovation fixed any underlying issues that resulted. The rear unit also appears to be founded upon a cracking slab that does not appear to have any frost protection.

Upon entering the main section of the building, CEL staff noticed the poor condition of the wood composing an exterior wall. Dark staining over multiple areas indicated prolonged moisture exposure over many years. The interior walls experience similar damage with dark staining present on exposed areas of lath.

At the rear of the building, a significant hole between the first floor and crawlspace was observed. (see Photo 15). The surrounding area showed signs of moisture damage, indicating ongoing issues. Inside the crawlspace, a main beam supporting this area of the building also appears to have dark staining (see Photo 10), another indicator of prolonged moisture exposure. The footing for this beam is in poor condition, with missing bricks at its base and a rock wedged between the beam and the masonry footing (see Photo 9). Additionally, bricks were missing at the corner of the foundation wall. Furthermore, the structure's foundation appeared to extend approximately 3'-0" below grade. Thus, the observed settlement and slanting of the structure may also have been caused by the soils beneath the foundation being susceptible to, and eventually affected by, freeze-thaw cycles.

On the second floor, both the floor and ceiling appeared to be slanted (see Photos 18 and 19). A previous flood in the bathroom had caused water damage to the floors, suggesting there may be more underlying damage to the buildings structure (see Photo 20).

In the attic, CEL staff observed numerous structural members with dark stains, indicative of moisture damage (see Photos 22 and 25). Sheathing has been applied on top of the

existing planks as a temporary repair (see Photo 25). The roof's rafters are also darkly stained and decayed, likely due to moisture damage, with one rafter completely broken off the roof (see Photo 24). Additionally, the top of the chimney was also wet (see photo 26), suggesting water infiltration is likely a systemic issue for the roof as a whole. Light infiltrating the attic further indicated paths for water entry. Externally, the roof appears to be slanted from west to east (see Photo 24), with localized sagging from east to west. This water infiltration had also affected the western wall, where wooden members comprising the exterior walls of both 227/229 and 231/233 St-Patrick were visibly wet with dark staining present.

5.1 Exterior Photos

In the figure above, the original structure of 231/233 St-Patrick St can be seen outlined in red above, the blue outline denotes the addition.

5.1.1 South Wall (Front)

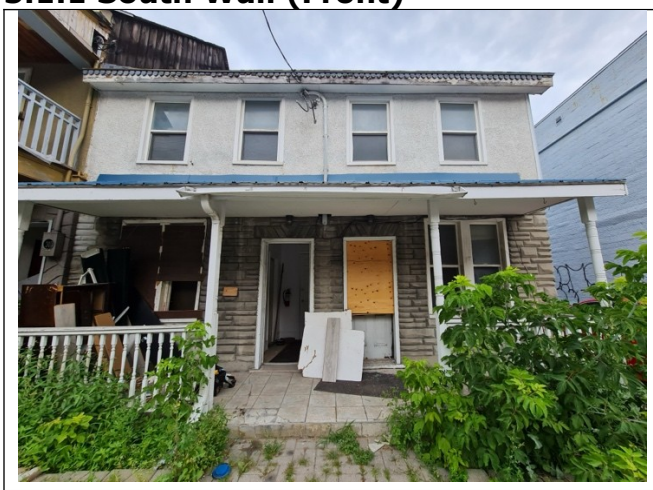	
Photo 1: Porch roof no longer appears level.	Photo 2: Flashing is not tied into stucco cladding and stucco is cracked along the interface.

5.1.2 North Wall (Rear)

	
Photo 3: Elevated rear deck is leaning and is only supported by two jackposts.	This square is intentionally left blank.

5.1.3 East Wall

Photo 4: Siding has been applied on top of existing stucco and original wood siding.

Photo 5: Exterior concrete spalling of foundation wall exposed above grade.

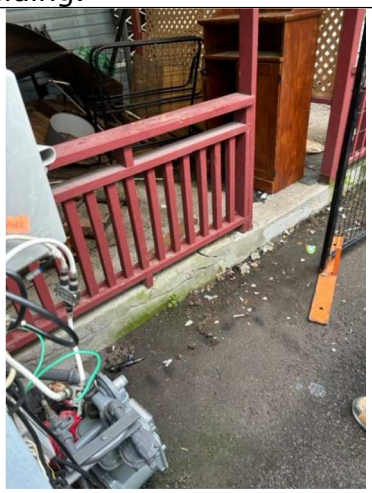

Photo 6: Cracking of the rear porch slab.

Photo 7: 231/233 St. Patrick St roof condition.

5.2 Interior Photos

5.2.1 Crawlspace

Photo 8: Water staining on joists and wet foundation wall.

Photo 9: Deterioration of masonry pier.

Photo 10: Decay on underside of main spine beam.

Photo 11: Opening at the corner of the foundation wall.

5.2.2 Main Floor

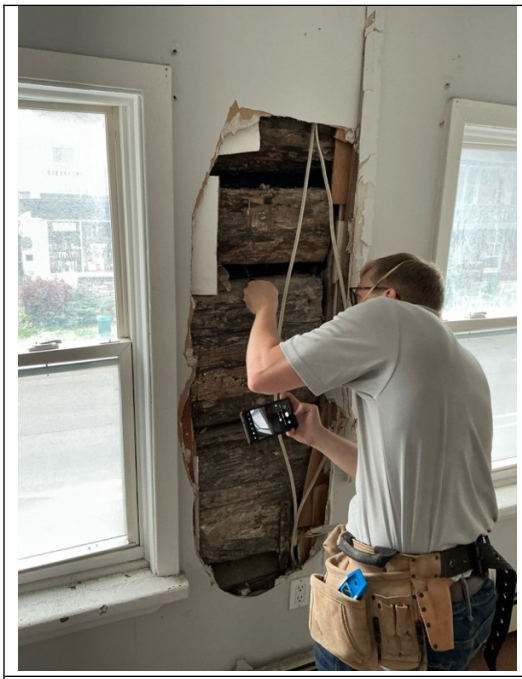

Photo 12: Rot in exterior South wall on second storey.

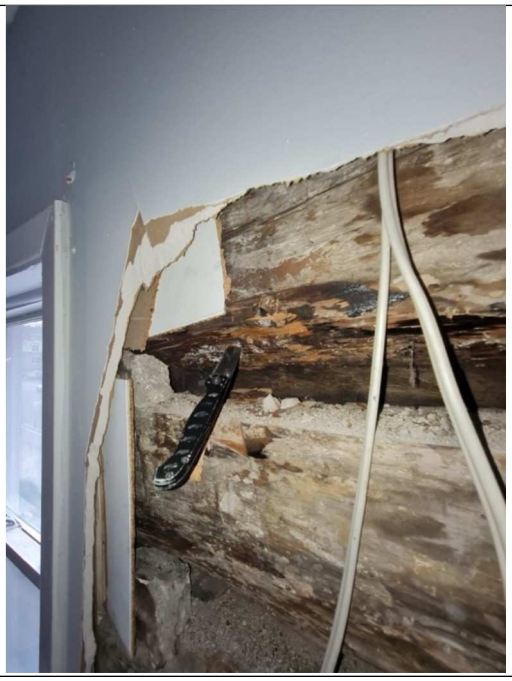

Photo 13: Field knife probe easily entered deep into exterior wall elements.

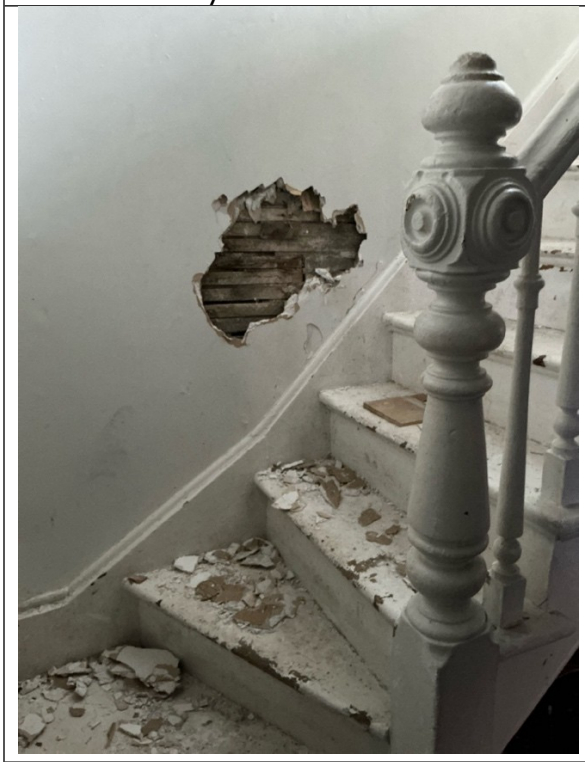

Photo 14: Exposed Lath showing signs of moisture damage.

Photo 15: Hole in floor down to crawlspace. Rot is present.

5.2.3 Second Floor

Photo 16: Slanted Ceiling.

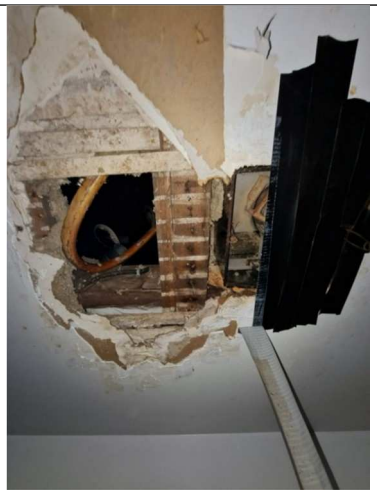

Photo 17: Hole in ceiling. Showing signs of water damage.

Photo 18: Slanted Floor.

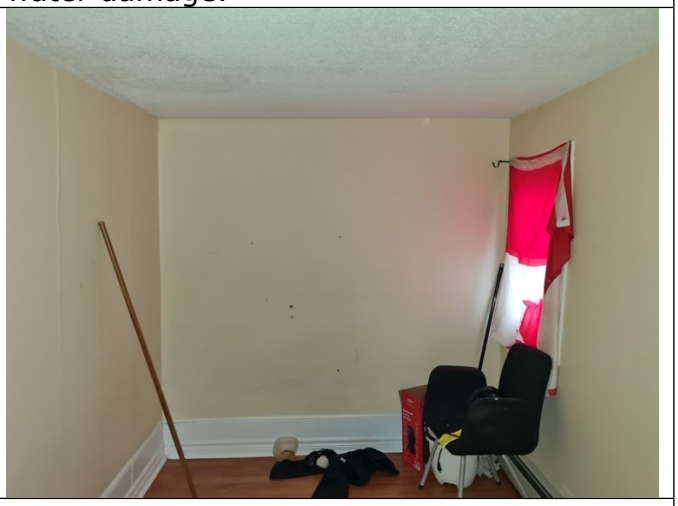

Photo 19: Slanted floor and Ceiling.

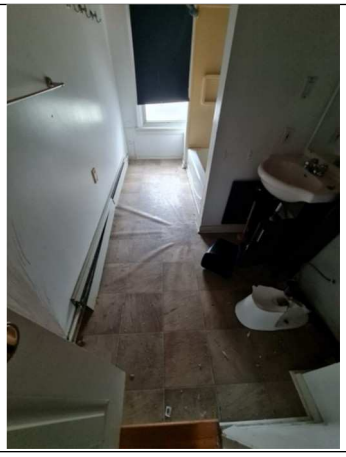

Photo 20: Flood caused water damage to floors, likely underlying damage.

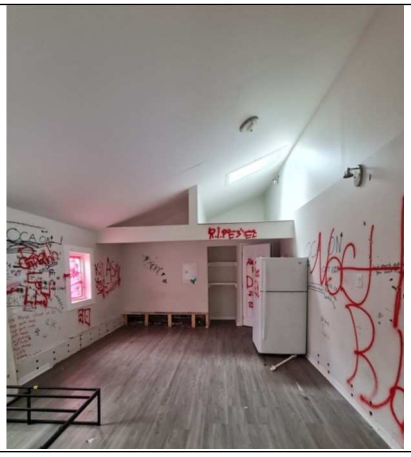

Photo 21:Small bulge in drywall.

5.3 Roof Photos

Photo 22: Roof structural elements showing signs of decay and moisture. Daylight observed from inside the attic.

Photo 23: The roof line has a general West-East slope with localized sagging in certain areas.

Photo 24: Rafter-tie is disconnected from rafter. End where previously connected has dark staining.

Photo 25: Staining of roof rafters and plank decking. Contemporary roof sheathing has been installed on top.

	
Photo 26: Chimney, with upper portion showing decay and moisture damage.	This box intentionally left blank.

6.0 Recommendations & Conclusions

Built from 1872 to 1878, this structure has been a duplex since the time of original construction and is known to have operated as a boarding house. The Heritage Survey carried out in 1990 provides a matching score (History 73, Architecture 63, Environment 84) to the adjacent property at 227 / 229 St. Patrick Street. As a result, the buildings share their overall score of 74.35 / 100. The basic form of the structure is intact, however there have been changes to the materials and detailing.

In our review of a property, we apply a systematic approach to the evaluation of the structural and building envelope elements, with each analysed in accordance with an approach adapted from English Heritage applying the Parks Canada "Standards and Guidelines for the Conservation of Historic Places in Canada", with the structural condition terminology as outlined by PEO. Thus in consideration of Heritage Value, Merit, and Context we score a property in accordance with the Standards and Guidelines, and where we look to the strength, stability, and durability of the structure, we score to PEO standards for field evaluation.

In our opinion, the overall condition of the structure located at 231/233 St-Patrick St is poor. The large horizontal crack in the South Wall stucco and water damage sustained by the faux-stone concrete likely indicate that the front façade cannot be salvaged. On the East wall, the stucco below the siding appeared to be in fair condition during our assessment, however no invasive measures were taken to confirm this conclusion. If any moisture were to infiltrate this wall, it would be trapped in, resulting in water damage. Based on the condition of the attic and other exterior walls observed, we can conclude that
the damage is likely systemic, meaning the East wall will also be unsalvageable. The west wall was observed from 231/233 to be in poor condition with severe moisture damage and rot, likely due to water infiltration from the attic. Similarly, the attic was in poor condition, with damage to numerous structural members and prolonged water infiltration which had affected many other elements of the home.

Although not all interior walls were examined, those that had been looked at were in poor condition, with rot severe enough to easily stick a field knife into them. Furthermore, the state of the foundation is poor, bricks are missing and the concrete appears to be decaying. Furthermore, the crawlspace is very wet and the foundation lacks frost protection due to its shallow depth. This is likely the cause for the buildings slanted nature. The frost affected soils must be remediated and the foundation must be removed. Similarly, the concrete slab at the rear of the home is cracked and does not appear to have any frost
protection. The rear portions of the home including the second-storey unit appear to bear
on this slab, making them susceptible to frost-heave. Therefore, both the slab and the portion of the house above it must be removed. Additionally, the elevated deck used to access the rear unit is not stable, with jackposts at midspan used as the only method of support and must be demolished.

The ground floor framing is in poor condition, with many members in a state of decay with water damage present. We believe the ground floor framing will require a complete replacement. The second-floor framing was not visible to CEL however, based on the slanted nature of both the floors and ceiling of the second floor and the decay of the walls, it's highly likely that if the joists were to be exposed, it would reveal more signs of moisture damage. As the building appears to be of plank-on-edge construction, which is an uncommon form of construction from the late 1800's time frame, we believe much of the uniqueness and value of the building is attributed to this uncommon construction style. During the course of our work in Ottawa, we have run into a number of buildings which are constructed of plank-on-edge framing, which have been generally in significantly better condition. Examples include 50 MacDonald Street, Ottawa, ON K2P 1H4 and 306 Britannia Road, Ottawa, ON K2B 5X4.

The building requires immediate intervention to prevent further deterioration and loss. The current extent of rot may, if further exploration reveals a more limited total infection, be treatable. The structure does not currently appear to be at risk of collapse and may be a candidate for rehabilitation if plans and detailed execution of extensive interventions are made without delay. Unfortunately, the past changes to the structure make restoration likely impossible, and the current condition precludes preservation. It is our recommendation that, owing to the changes to the fabric and materials of the structure, and given that the deterioration is extensive, as well as the difficulty in preserving the structure with adjacent demolition works to take place, demolition be approved.

Drafted by: R. Charron & R. Paxton, B.Eng., EIT

Reviewed and Approved for Release by: M. Quinn, P.Eng.

Note:

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Appendix A:

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