CULTURAL HERITAGE IMPACT ASSESSMENT

89 Park Street North, Hamilton

Date:
October 2023

Prepared for:
HC EC 89 Park LP (Empire Communities)
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PLANNING
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Executive Summary

MHBC Planning Ltd., was retained to complete a Cultural Heritage Impact Assessment (CHIA) for the proposed redevelopment of 89 Park Street N, Hamilton. The property is inventoried on the City of Hamilton Municipal Heritage Register and contains a place of worship. The proposed redevelopment includes the removal of the church and construction of a mixed-use building. The property is also adjacent to a number of Listed and Designated properties on the Municipal Heritage Register.

The purpose of this CHIA is twofold: (1) to determine if the subject property is of cultural heritage value or interest (CHVI), and (2) to assess whether the proposed development will result in adverse impacts to heritage resources on site and adjacent.

The property retains design value as it includes a place of worship that is representative of the Classical Revival architectural style as well as the Romanesque style, and has historical value as it is associated with Pastor Peter W. Philpott and the Christian Workers Church.

The impact assessment concludes that the proposed development will result in adverse impacts to the Church due to the proposed removal of the identified heritage resource. A possible impact of land disturbance has been identified for the abutting Salvation Army property related to construction activities and the excavation for underground parking.

Alternative development options have been explored. The Church has undergone significant exterior facade alterations. According to technical studies which assessed the durability of the Church and condition of its exterior, the integrity and condition of the building has been compromised. The original brick façade has been covered in a cement-based mortar. The original heritage attributes have been covered with this cement mortar, and the underlying brick has been compromised. Due to the condition of the building and conclusions of the technical studies, retention of the building and integration with the proposed development is not a feasible option. Therefore, removal of the Church is being proposed.

Several implementation measures are recommended for the proposed development:

- Documentation of the site before demolition occurs;
- Retention and integration of some of the heritage attributes within the new development;
- A Heritage Conservation Easement to protect the retained attributes;
- Commemoration and interpretation of the property; and
- Vibration monitoring during construction to ensure there are no impacts on adjacent properties.

1.0 Introduction

1.1 Overview

MHBC Planning Limited has been retained by HC EC Park LP (Empire Communities) to undertake a CHIA for the property located at 89 Park Street N, City of Hamilton. Currently, the property contains a building known as Philpott Memorial Church. The Church has determined that the existing building, in its current state, cannot meet its congregation's needs. After completing building investigations, the Church determined that it could not update the building to meet its needs and decided to sell the property to the current owner. The Philpott Memorial Church will be relocating to a new building in the fall of 2024. The owner of the property is proposing to remove the existing building and construct a new mixed-use development.

The building was originally constructed of brick, which was later covered in a cement-based mortar. The building is recognized by the City as a heritage resource as it is listed (not designated) on the Hamilton Heritage Property Register. There are also a number of listed, inventoried and designated properties in proximity to the subject property.

During consultation with City planning staff, the City requested that retention of the building be considered as part of the redevelopment plan, and that a CHIA be completed to determine the heritage value of the property and assess impacts of the proposed development on heritage resources, on site and adjacent.

Technical studies were completed, including a brick Feasibility Study and Structural Condition Report to determine if building retention was feasible. The Brick Feasibility Study prepared by PJMC (included as Appendix A) concluded that the cement-based mortar was applied directly onto the brick. Removing the cement-based mortar would likely result in shearing the original brick. Additionally, there is evidence of cracked mortar indicating that the brick underneath has been exposed to moisture and is crumbling underneath. Ultimately, the study suggests that returning the building to its original façade is not feasible given the deterioration of the brick and the application of the mortar.

The Structural Condition Assessment prepared by Jablonksy Ast and Partners (included as Appendix B) confirmed the findings of the Feasibility Study. The results of a prism test indicate that the brick is significantly deteriorated behind the mortar. Test samples

revealed that the cement-based mortar was adhered to the brick using steel mesh and nails. Overtime, moisture has been trapped within the adhesive, causing rust to the nails and steel mesh, as well as causing damage to the brick. Structurally, the Park Street and York Boulevard elevations are in good condition, however, due to the state of the brick, significant repair is needed for the walls to support a new building. Therefore, the Assessment recommends demolition of the building.

The studies conclude that the building cannot be adequately retained considering the severe deterioration of the brick. Therefore, the owner is proposing to remove the church and proceed with the current concept plan, with retention of some features of the building and a commemoration feature. The proposal to remove the building requires delisting the property from the heritage register. The proposed delisting will facilitate the submission of future planning applications.

The purpose of this CHIA is to determine if the subject property has heritage value and assess whether the proposed redevelopment will result in adverse impacts to identified heritage resources on site and adjacent.

1.2 Subject Property

The subject property is addressed as 89 Park Street N, Hamilton. The subject property is located in the Built Boundary of the City in the downtown core, identified as a 'Downtown Urban Growth Centre' node in the Urban Hamilton Official Plan.

The development site has a total area of 4,936m^2 with approximately 44m of frontage on York Boulevard, 90m of frontage on Park Street N, and 62m of frontage on Vine Street. The property is occupied with an existing two storey civic building, known as Philpott Memorial Church.

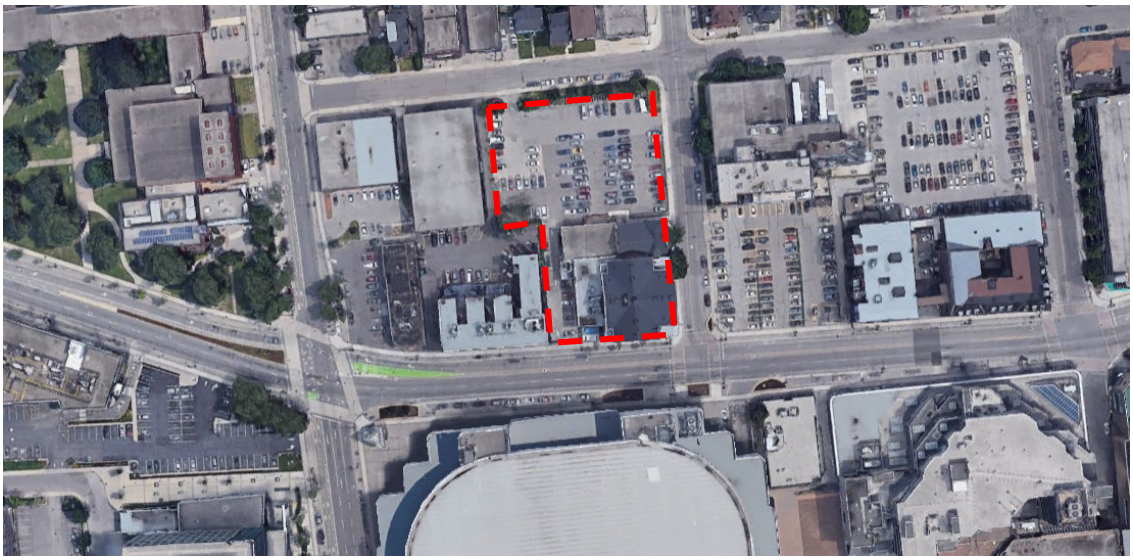


Figure 1: Subject property noted in red (Google Earth)

1.3 Surrounding Area

The subject property is within the Hamilton downtown area and is surrounded by institutional, commercial and community uses. The site is located at the intersections of Park Street and York Boulevard, and Park Street and Vine Street. The area is comprised of a mix of low, medium and high density built forms. The surrounding area is described in detail below.

NORTH: Various commercial uses within the downtown area. Beyond Cannon Street are predominantly low density residential land uses. Further along Park Street N is the West Harbour Go station.

EAST: East of the property are commercial uses along York Boulevard. This area comprises the downtown growth area.

SOUTH: FirstOntario Centre is located opposite the subject property. Past the arena are higher density built forms, including hotels, the Art Gallery of Hamilton, and office towers.

WEST: Adjacent to the property is the Salvation Army Homeless Shelter (also on the Hamilton heritage register). Further west of the property are a range of commercial, civic, and residential uses, including Hamilton Downtown Mosque, community living Hamilton, a long term care centre, and apartment buildings.

1.4 Heritage Status

Part IV, Section 27 of the *Ontario Heritage Act* requires that each municipality keep a public register of properties that are of cultural heritage value or interest. Properties on the register can be listed or designated.

The City of Hamilton is currently updating their Heritage Register. The city formerly had two inventories/registers:

1. 'Volume 1: List of Designated Properties and Heritage Conservation easements under the Ontario Heritage Act' and,
2. 'Volume 2: Inventory of Buildings of Architectural and/or Historical Interest'

The volumes have been integrated into the Heritage Property Mapping tool as the City continues to update their inventory. The heritage mapping tool now contains:

- Properties designated under Part IV of the Ontario Heritage Act
- Properties listed on the Municipal Heritage Register, and
- Properties listed on the inventory (not listed or designated)

The subject property located at 89 Park Street N is 'listed' on the Municipal Heritage Register.

Overview of Heritage Listing		
Address & Photograph	Date	Heritage Register Description
89 Park Street N 	c.1906	Philpott Memorial Church Address: 84 York Blvd Date added: September 2014

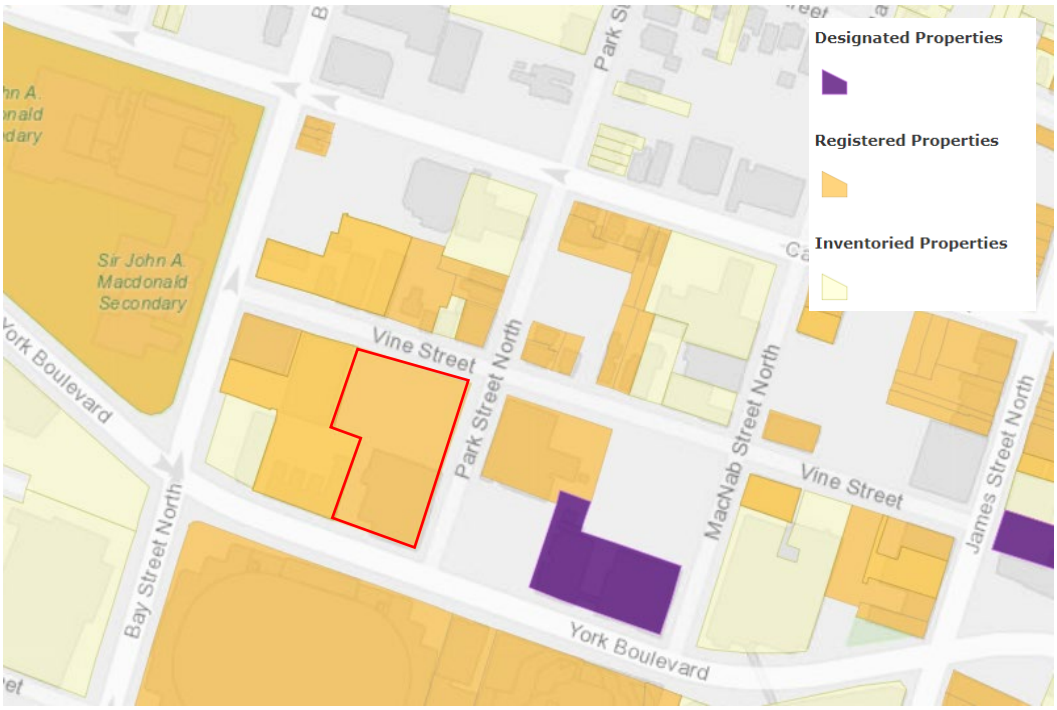


Figure 2: Excerpt of the Hamilton interactive heritage mapping tool. Subject property noted in red (City of Hamilton, 2022)

The subject property is also included in the City's Places of Worship Inventory and is located within the Central Historical Neighbourhood. Note that the Places of Worship Inventory and the Central Historical Neighbourhood are Municipal tools used to identify heritage resources and are separate from the Municipal Heritage Register. The listed property is not identified as being part of a cultural heritage landscape and is not located in a Heritage Conservation District designated under Part V of the *OHA*.

1.4.1 *Adjacent Heritage Properties*

The property is surrounded by other inventoried, listed and designated properties. The Hamilton Cultural Heritage Impact Assessment Guidelines identify that redevelopment may create disturbances to lands adjacent. Therefore, adjacent heritage properties are to be included in the impact assessment to determine whether the redevelopment will impact adjacent cultural heritage attributes. Adjacent is defined by the province as properties which are contiguous to or located across the street from the subject property.

There are 14 adjacent properties identified on the City's heritage mapping tool. These properties have been assessed for adverse impacts resulting from the proposed redevelopment. These properties are identified in the following table.

	Property	Status	Inventory Photograph
1.	94 Park Street Salvation Army Hamilton Booth Centre 1950	Listed Property	
2.	103 Vine Street Former Hamilton Dairy Stables 1915	Listed Property	
3.	100 Vine Street 1900	Listed Property	
4.	98 Vine Street Hamilton Dairy Company Building 1912	Listed Property	
5.	94 Vine Street 1948	Listed Property	

6.	82 Vine Street 1876	Listed Property	
7.	86 Vine Street 1876	Listed Property	
8.	78 Vine Street 1919	Listed Property	
9.	94 Park Street N 1903	Listed Property	
10.	62 Vine Street 1899	Listed Property	

11.	80 Park Street N G.S. Dunn & Co. 1899	Listed Property	
12.	56 York Blvd Coppley/Commercial Block 1856	Designated	
13.	101 York Blvd First Ontario Centre 1985	Listed Property	
14.	55 York Blvd Hamilton Central Public Library 1980	Listed Property	

2.0 Policy Context

2.1 The Planning Act and PPS 2020

The *Planning Act* is provincial legislation that guides land use planning in Ontario. It makes a number of provisions respecting cultural heritage. In Section 2, The Act outlines 18 spheres of provincial interest that must be considered by appropriate authorities in the planning process. One of the intentions of the *Planning* Act is to "encourage the co-operation and co-ordination among the various interests". Regarding cultural heritage, Subsection 2(d) of the Act provides that:

"The Minister, the council of a municipality, a local board, a planning board and the Municipal Board, in carrying out their responsibilities under this Act, shall have regard to, among other matters, matters of provincial interest such as, …"

> (d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest;

The *Planning Act* therefore provides for the overall broad consideration of cultural heritage resources through the land use planning process.

The *Provincial Policy Statement* (PPS) was issued under Section 3 of the *Planning Act* and came into effect May 1, 2020. The PPS is "intended to be read in its entirety and the relevant policy areas are to be applied in each situation". When addressing cultural heritage planning, the PPS provides for the following:

> *2.6.1 Significant built heritage resources and significant cultural heritage landscapes shall be conserved.*
>
> *2.6.3 Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved.*
>
> *2.6.5 Planning authorities shall engage with Indigenous communities and consider their interests when identifying, protecting and managing cultural heritage and archaeological resources.*

The following definitions are provided in Section 6.0 of the PPS and outline key terms that are valuable in the overall evaluation of cultural heritage resources:

> *Significant: In regard to cultural heritage and archaeology, resources that have been determined to have cultural heritage value or interest. Processes and criteria*

for determining cultural heritage value or interest are established by the Province under the Ontario Heritage Act.

Heritage attributes: means the principal features or elements that contribute to a protected heritage property's cultural heritage value or interest, and may include the 45 | Provincial Policy Statement, 2020 property's built, constructed, or manufactured elements, as well as natural landforms, vegetation, water features, and its visual setting (e.g. significant views or vistas to or from a protected heritage property).

Built Heritage Resource: means a building, structure, monument, installation or any manufactured or constructed part or remnant that contributes to a property's cultural heritage value or interest as identified by a community, including an Indigenous community. Built heritage resources that are located on a property that may be designated under Parts IV or V of the Ontario Heritage Act, or that may be included on local, provincial, federal and/or international registers.

Protected Heritage Property: means a property designated under Parts IV, V or VI of the Ontario Heritage Act; a property subject to a heritage conservation easement under Parts II or IV of the Ontario Heritage Act; a property identified by the Province and prescribed public bodies as provincial heritage property under the Standards and Guidelines for Conservation of Provincial Heritage Properties; a property protected under federal legislation, and UNESCO World Heritage Sites.

2.2 Ontario Heritage Act

The Ontario Heritage Act, R.S.O, 1990, c.0.18 remains the guiding legislation for the conservation of significant cultural heritage resources in Ontario. The cultural heritage evaluation contained in section 5.0 of this report has been guided by the criteria provided with Regulation 9/06 of the Ontario Heritage Act that outlines the mechanism for determining cultural heritage value or interest.

2.3 Urban Hamilton Official Plan

The subject property is located in the 'Downtown Urban Growth Centre Node' in Schedule E and designated as 'Downtown Mixed-Use Area' in the, Schedule E-1 in the City of Hamilton Urban Official Plan, Volume 1.

The City of Hamilton Urban Official Plan, Volume 1 contains policies regarding the conservation of cultural heritage resources. These policies are provided in Chapter B – Communities, section 3.4.

Section 3.4.1 sets out the policy goals for heritage resources, applicable policies include:

3.4.1.3 Ensure that new development, site alterations, building alterations and additions are contextually appropriate and maintain the integrity of all on-site or adjacent cultural heritage resources

3.4.1.4 Encourage the rehabilitation, renovation, and restoration of built heritage resources to maintain their active use

General Cultural Heritage Policies are set out in section 3.4.2 and include:

a) Protect and conserve the tangible cultural heritage resources of the City, including archaeological resources, built heritage resources, and cultural heritage landscapes for present and future generations

b) Identify cultural heritage resources through a continuing process of inventory, survey, and evaluation, as a basis for the wise management of these resources.

i) Use all relevant provincial legislation, particularly the provisions of the Ontario Heritage Act, the Planning Act, R.S.O., 1990 c. P.13, the Environmental Assessment Act, the Municipal Act, the Niagara Escarpment Planning and Development Act, the Cemeteries Act, the Greenbelt Act, the Places to Grow Act, and all related plans and strategies in order to appropriately manage, conserve and protect Hamilton's cultural heritage resources.

Cultural Heritage Evaluation Criteria are set out in section 3.4.2.9. The city will use and require the following criteria to assess and identify cultural heritage resources:

a) Prehistoric and historical associations with a theme of human history that is representative of cultural processes in the settlement, development, and use of land in the City

b) prehistoric and historical associations with the life or activities of a person, group, institution, or organization that has made a significant contribution to the City;

c) architectural, engineering, landscape design, physical, craft, or artistic value;

d) scenic amenity with associated views and vistas that provide a recognizable sense of position or place;

e) contextual value in defining the historical, visual, scenic, physical, and functional character of an area; and,

f) landmark value

Any property that meets one or more of the criteria will be considered a heritage resource.

2.4 Downtown Hamilton Secondary Plan

The Urban Hamilton Official Plan Volume 2 contains the Secondary Plans for the City. The subject property is located in the Downtown Hamilton Secondary Plan and is identified as 'Downtown Mixed-Use' on Map B.6 1-1, designated as 'High-rise 2' on Map B.6 1-2, and identified as 'Registered Non-designated' on the Cultural Heritage Resource map.

One of the objectives for the Downtown Hamilton area is to respect design and heritage, including the conservation and re-use of buildings that serve as catalysts for other investments. The Downtown Hamilton Secondary Plan policies call for a greater emphasis on urban design and heritage conservation as key elements of the downtown Hamilton revitalization.

Cultural Heritage Resource Policies are provided in Chapter B – Hamilton Secondary Plan Section 6.1.11. The same General Cultural Heritage Policies from the Official Plan Volume 1 apply.

2.5 Terms of Reference

This report is guided by the City of Hamilton's Cultural Heritage Impact Assessment Guidelines and includes the following required sections:

- Overview of Report
- Historical Research
- Heritage Evaluation
- Statement of Significance
- Overview of proposed development
- Impact Assessment
- Alternatives and Mitigation Measures
- Conservation Strategy
- Works Cited

The cultural heritage evaluation of 89 Park Street N will be based on the *Ontario Heritage Act* Regulation 9/06, which provides the criteria to be used when evaluating heritage properties in Ontario. The evaluation of the subject property will also be guided by the Urban Official Plan Volume 1, Cultural Heritage Evaluation Criteria provided in section 3.4.2.9.

3.0 Historical Background

3.1 Pre Contact

The Pre-Contact settlement of the province can be divided into 4 main time periods including Paleolithic, Archaic, Woodland, and Historic. According to Section 1.3.1 of the Draft City of Hamilton Archaeology Management Plan (2016), the first Paleo-Indians residing in the vicinity of Hamilton were found between 13,000 and 9,000 years ago. The Paleo period was characterized by a hunter-gatherer society following big game. Archaic Peoples could be found approximately 3,000 to 9,000 years before present (Hamilton AMP, 2016). Their cultures were primarily based by stone, bone, shell, and copper tools. By the Woodland period (3,000 to 400 B.P.), pottery, horticulture and more sedentary lifestyles (such as villages) were common (Hamilton AMP, 2016).

The Historic Euro-Canadian period did not begin until the late 1700s. As noted in the 'Acknowledgements' Section of this report, the City of Hamilton includes the recognized territories of the following Indigenous groups (Hamilton AMP, 2016):

- Mississaugas;
- Huron-Wendat; and
- Iroquois Confederacy.

The area along the northern shorelines of Lake Ontario had little European settlement until after the American Revolution. The Royal Proclamation in 1763 set out that the Crown was the only entity that could purchase Indigenous Lands. Once the Crown and Indigenous Peoples negotiated land surrenders, the Crown would then redistribute the lands.

3.2 City of Hamilton

After the American Revolution United Empire Loyalists began migrating north to Ontario (Fisher Archaeological Consulting). The Loyalists, in search of lands to settle, started to displace many of the Indigenous Peoples who lived along the shorelines of Lake Ontario. In 1784 and 1792 Treaty 3 (Between the Lakes Purchase) was signed between the Mississaugas and the British Government. Treaty 3 included all of what is now the City of Hamilton

Robert Land was the first Euro-Canadian settler of Barton Township and what was to become the City of Hamilton in 1778 (University of Toronto Press, 1987). Barton Township was acquired by the British from the Mississaugas in 1784. The first survey was conducted in 1791, by Augustus Jones, deputy provincial land surveyor (University of Toronto Press, 1987). The survey was located at the head of Lake Ontario, extending north to King Street. At the time, the area was inhabited by approximately 31 families (University of Toronto Press, 1987).

James Durand laid out the first town-site between King and Main streets in the early 19th century (University of Toronto Press, 1987). In 1817 a court house was built (University of Toronto Press, 1987), which contributed to Hamilton's early growth. Hamilton was the district for judicial processes, responsible for local administration such as finances, road building, operation of jails, ferries among other items (University of Toronto Press, 1987). In 1827 construction began on a new court building. In the same year, construction of the channel through Burlington Bay to Dundas began, making Hamilton a port (University of Toronto Press, 1987).

The canal allowed for the direct access to Lake Ontario as well to other Towns and Cities, which facilitated trade. The accessibility of the port became a dominant factor in development of the City. The construction of the canal was completed in 1834, at which point Hamilton began to establish itself as an industrial town (University of Toronto Press, 1987).

The land was surveyed again in 1846 by D.B. Papineau, Commissioner of Crown Lands (University of Toronto Press, 1987). By 1846, Barton Township was bounded by Burlington Bay to the north, Saltfleet Township to the east, and Ancaster to the west. The Township was primarily settled by retired soldiers and United Empire Loyalists (Lister, 1913). The Township did not provide for good agricultural land, but profited from its proximity to Burlington Bay (Lister, 1913). The Township was surveyed into lots and concessions and Hamilton was incorporated as a City in 1846 with a population of 6,832 (Lister, 1913).

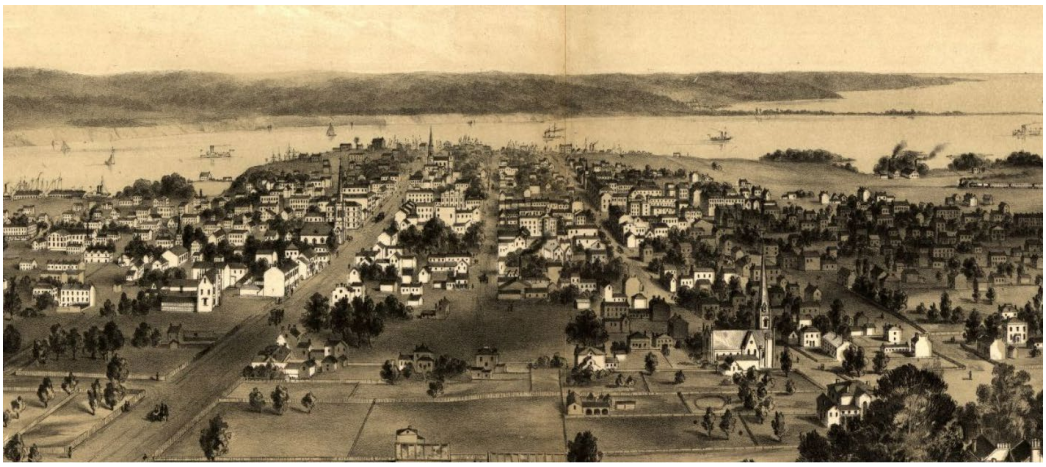


Figure 3: Illustration of Barton Township c. 1859 (Hamilton, C.W, 1859)

The industrialization of the Burlington Bay port soon extended to improvements in land transport. York Street was the main thoroughfare, and improvements to York as well as the construction and extension of other existing thoroughfares was completed. By the late 1850s the Great Western Railway was established, with a route through Hamilton. By 1891, Hamilton had a population of 50,000 establishing itself as a regional urban centre, being the fourth largest city in Canada. The built up area of Hamilton was largely bounded by Dundurn Street, Sherman Avenue and the Chedoke Ravine, as seen in the 1893 birds eye view (figure 4).

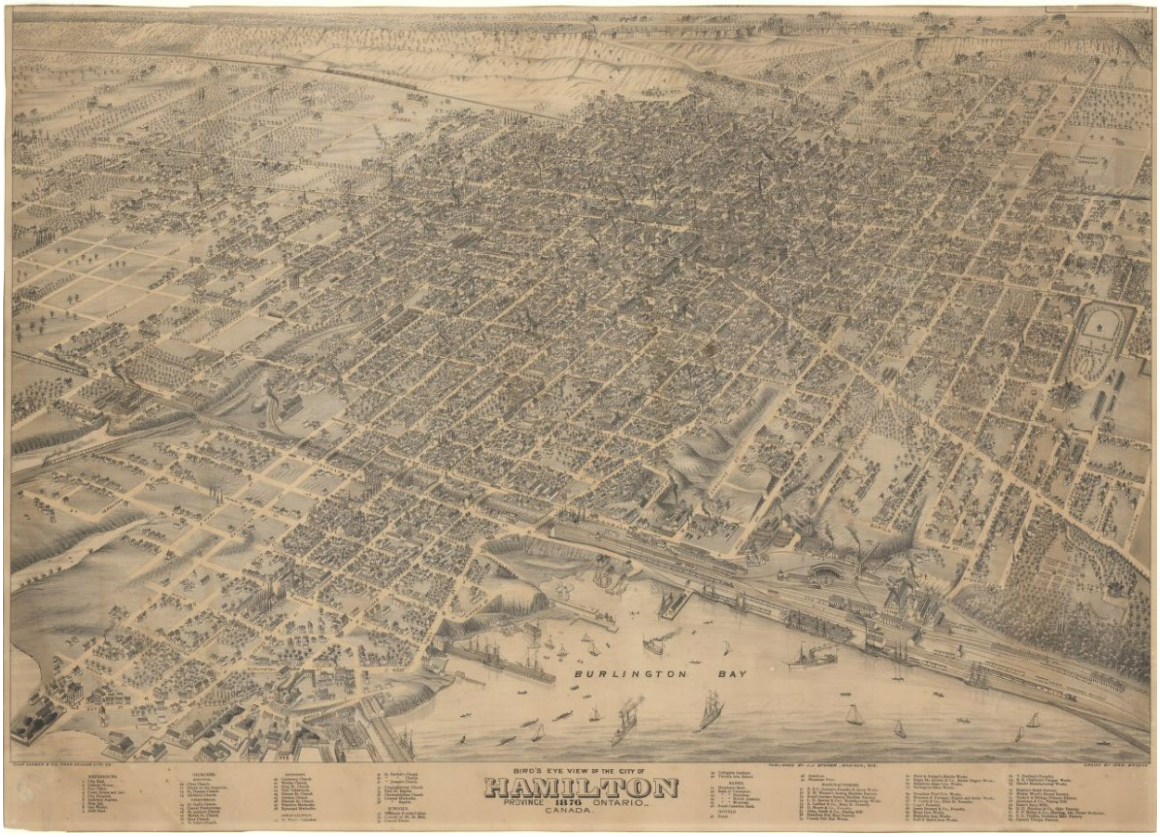


Figure 4: Bird's Eye View of the City of Hamilton c.1893 (Courtesy of McMaster University)

The City layout of the downtown core has remained largely the same, within the area of James Street and York Street. By the early 20th century, Hamilton had established itself as a manufacturing hub with a strong metals industry. By 1939, the population was 155,000 and had grown to 174,000 in 1945 (Canadian War Museum). This growth is partially attributed to the number of workers who migrated to Hamilton to work in the steel factories, producing material for the war, including artillery shells, parts for tanks and military vehicles (Canadian War Museum). The Hamilton steel industry contributed enormously to the Canadian armed forces during the Second World War. Due to the high level of production, there were a number of job opportunities for those unable to fight in the war. This attracted a number of new working class residents.

The character of downtown Hamilton has largely remained an area of civic, commercial and business interaction ancillary to the industry located on Burlington Bay. In the more recent past, the downtown has suffered from a lack of growth, with many buildings and sites laying vacant. There is at present an effort to revitalize the once thriving area, with emphasis on bringing higher density housing and infill of vacant areas of downtown.

3.3 89 Park Street N

The subject property located at 89 Park Street N is more commonly known as Philpott Memorial Church. The first transaction recorded for the property occurred in February 1835, whereby David Kirkendall sold to Joseph Kirkendall. The property experienced a number of transactions up until April 1901 when Charlotte Henderson sold the property to the Trustees of the Christian Workers Church in the City of Hamilton.

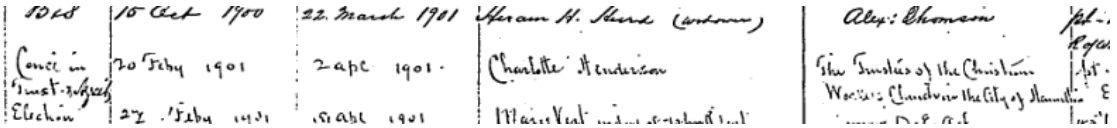


Figure 5: Excerpt from the historical abstract of Plan 39 Block 13 (retrieved from OnLand, 2022)

The Christian Workers Church was founded in 1892 by Peter W. Philpott, who would eventually become the pastor of what is now known as Philpott Memorial Church for 26 years. Peter Philpott was born in 1865 in St. Thomas Ontario, and later lived in Dresden Ontario. In his younger adult years, Philpott worked for the Salvation Army, moving through the ranks and eventually becoming the first Canadian to rank as brigadier (Draper, 2003).

Figure 6: Revereand P.W. Philpott (retrieved from Moody Church, 2022)

The Salvation Army was founded in 1865 in London by William Booth and wife Catherine as a Christian church (Gariepy, 2009). The Salvation Army was born from Booth's public campaigns on London streets, based on the notion of taking religion to the people (Gariepy, 2009). His mission was based on evangelism and social action, stating "the object and work of this mission is to seek the conversion of the neglected crowds of people who are living without god…" (Gariepy, 2009). The Salvation Army is based on a

quasi-military structure, originally employing uniforms, military etiquette and terminology. Congregations were known as 'corps', members of the church were 'soldiers', and leaders were 'sergeants' (Gariepy, 2009). The Salvation Army came to Canada in 1882, and in 1884 Peter Philpott became involved in the movement, contributing greatly to its growth in Southern Ontario. However, by 1892 Philpott grew tired and dissatisfied with the poor spiritual quality and general inequality within the Salvation Army.

Philpott believed in the commitment to bring the gospel to all classes, regardless of privilege or class hierarchy, a value he thought the Salvation Army had lost (Draper, 2003). Philpott left the Salvation Army and began his own congregation, at first located in Toronto (Draper, 2003). Rumors of this new Gospel spread, and other soldiers and sergeants began leaving the Salvation Army to join him. By 1894 the Christian Workers Congregation had formed in London, Hamilton, Kingston, Oshawa and Port Hope, as well as four other churches in Toronto, comprised entirely of former Salvation Army workers and patrons (Draper, 2003). In 1896, Philpott received two invitations to serve as pastor from Tillsonburg Baptist Church and the Christian Workers Chapel in Hamilton. In his diary entry, Philpott wrote: "I wrote Hamilton today and accepted their invitation feeling sure I had taken the unselfish path, for there is nothing very inviting about Hamilton" (Draper, 2003).

The first year of Philpott's Christian Workers Church took place in the St. James Hotel (Draper, 2003). The mission quickly outgrew the space and moved to the McNab Street Baptist Church, and moved again to the Star Theatre on Merrick Street (now York Blvd) (Draper, 2003). In 1901, the congregation purchased the subject property at Park Street and Merrick Street for $2,500 (Draper, 2003). The new chapel was built and for five years services were held out of the new building. In 1906, a $30,000 addition was constructed adjacent to the chapel, designed by Hamilton architect Charles Mills. The church was renamed the Gospel Tabernacle, with the auditorium able to host up to 1,200 people. Philpott remained at Gospel Tabernacle until 1922, when he moved to Chicago. The Christian Workers Church became recognized as a denomination as the Associated Gospel Churches of Canada. The Church at 89 Park Street North was renamed Philpott Memorial Church in 1957 after Philpott's death.

Figure 7 Image of the original 1901 Philpott Memorial Church c.1904 (Philpott Memorial Church 100th Anniversary publication, 1982)

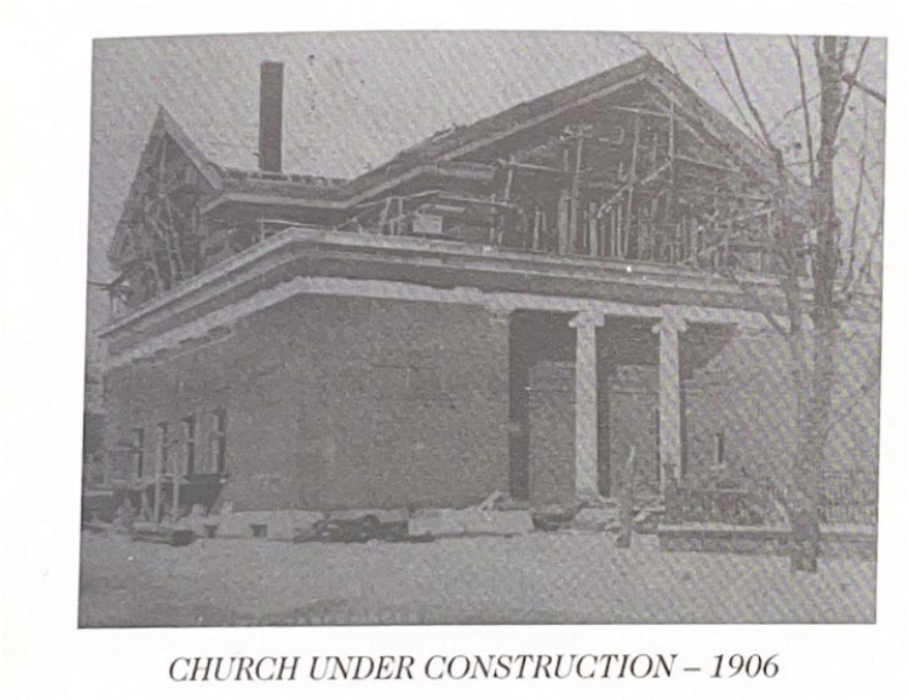


Figure 8: Addition to Philpott Memorial Church under construction c. 1906 ((Philpott Memorial Church 100th Anniversary publication, 1982)

Figure 9: Philpott Tabernacle in 1907 after construction. Original chapel is located to the right, noted by arrow (retrieved from Hamilton Archives, 2022)

Figure 10: Philpott Christian Tabernacle in 1921. (Retrieved from Hamilton Archives, 2022).

Figure 11: 1911 Fire Insurance Plan of Hamilton, subject property noted in red (retrieved from McMaster University, 2022)

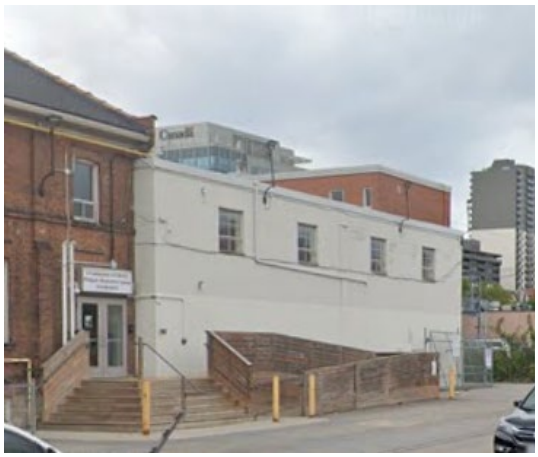
4.0 Description of Subject Property

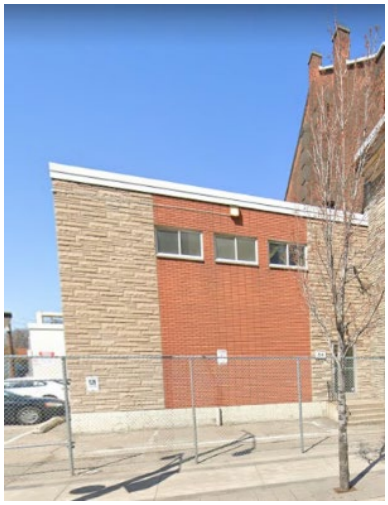
The property located at 89 Park Street N is occupied with a two-storey building known as Philpott Memorial Church. The building was constructed in phases and consists of components, described in this report as A, B, C and D. Note that parts C and D are of the same addition.

Figure 12: Overview of building components/morphology (Google Earth)

The first component of the building identified as 'A' was constructed in 1901 and served as the original chapel for the Christian Workers Church. Shortly after in 1906, a larger building was constructed adjacent to the small chapel, identified as 'B'. In 1969 new wings were added, identified as components 'C' and 'D'.

Component A was originally constructed of brick in the Romanesque architectural style. Component B was also constructed of brick, representative of the Classical Revival style. The later addition noted as 'C' was constructed of cement block, and addition 'D' was constructed of brick. Components C and D are not representative of any particular style. In 1952 the church was vandalized and underwent an exterior re-model resulting in both components A and B being re-clad with a cement-based mortar (Hamilton Archives).

Component	Exterior	Date Constructed
A		1901
B		1906
C		1969

D		1969

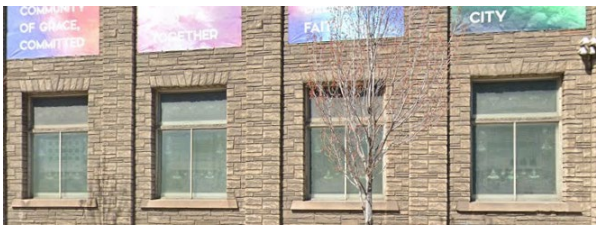
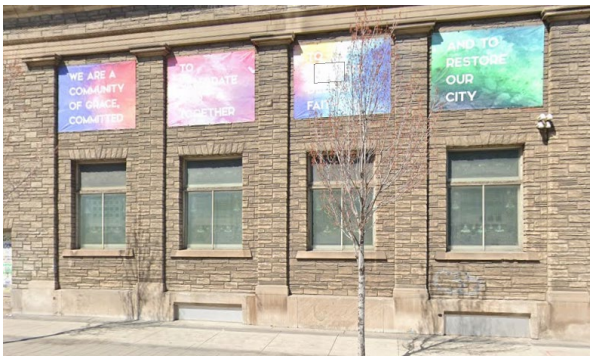
The church has experienced several alterations, both to the exterior and interior. The building has retained some of its original features, identified below.

Component 'A'	
Round Arched entrance with Voussoirs	

Keystone	
Block/band Sills	
Dentils	
Frontispiece with turrets and parapet roofline	

Lunette window	
Decorative Banding	
Original window openings with wood sills, lintels and hood molds	
Pilaster	

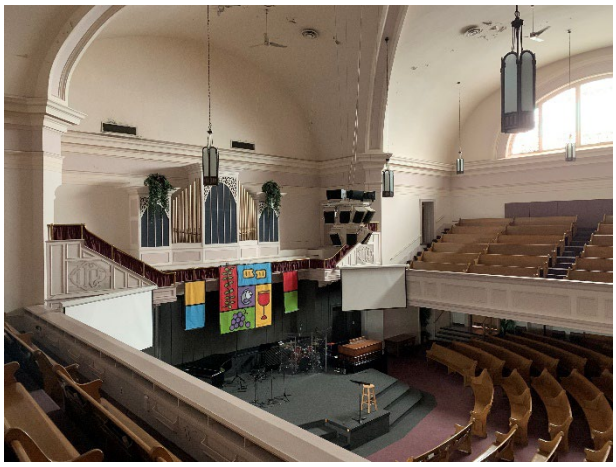
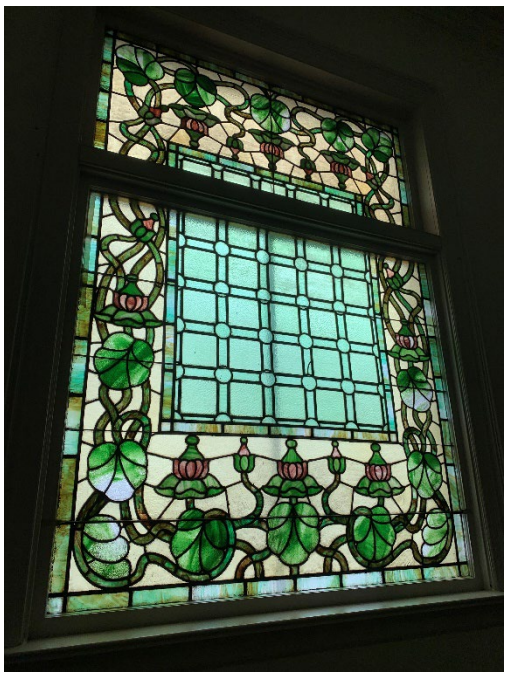
Component 'B'	
Ionic columns and Portico	
Three double doors with transoms, voussoirs and keystones	
Front and side gables with lunette stained glass windows and cornice returns	

Stained glass windows	
Pilaster	
Cut-outs	
Decorative banding	

The interior of the church has also been altered, however, the domed chapel within component 'B' remains largely unchanged. The following provides an overview of the interior chapel.

The form of religious buildings varies, but most share a common characteristic of providing space for worshippers, as well as an area for religious rituals. The Philpott Memorial Church was designed with a dome elevation and is based on the traditional

Christian Church layout. The following are interior components of the chapel. The chapel is generally modest in its design, with minimal to no decorative features.

Nave, Choir, and mass	
Stained glass	 

Wainscoting	
Groin Vault	

The interior of the original portion of the building (component A) was altered, likely at the time of the 1969 additions. It is not indicative of its original construction or form.

5.0 Evaluation of Heritage Value

The following section of this report will provide an analysis of the cultural heritage value of the subject property as per *Ontario Regulation 9/06*, which is the legislated criteria for determining cultural heritage value or interest. This criterion is related to design/physical, historical/associative and historical values as follows:

1. *Is a rare, unique, representative or early example of a style, type, expression, material or construction method,*
2. *Displays a high degree of craftsmanship or artistic merit, or*
3. *Demonstrates a high degree of technical or scientific achievement.*
4. *Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community,*
5. *Yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or*
6. *Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.*
7. *Is important in defining, maintaining or supporting the character of an area,*
8. *Is physically, functionally, visually or historically linked to its surroundings, or*
9. *Is a landmark.*

5.1 O.Reg 9/60 Evaluation

Ontario Regulation 9/06	*Dwelling*
1. *Rare, unique, representative or early example of a style, type, expression, material or construction method*	Yes.
2. *Displays high degree of craftsmanship or artistic merit*	No.
3. *Demonstrates high degree of technical or scientific achievement*	No.
4. *Direct associations with a theme, event, belief, person, activity, organization, institution that is significant*	Yes.
5. *Yields, or has potential to yield information that contributes to an understanding of a community or culture*	No.
6. *Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to the community.*	Yes.
7. *Important in defining, maintaining or supporting the character of an area*	No.
8. *Physically, functionally, visually, or historically linked to its surroundings*	No.
9. *Is a landmark*	No.

Criterion 1

Rare, unique, representative or early example of a style, type, expression, material or construction method

The church consists of various components, identified as components A, B C, and D. Components A and B have physical/design value. Component A was the original Christian Workers Church, constructed in 1901 and is representative of the Romanesque architectural style. Component B is an enlargement to the Christian Workers Church, which took place in 1906. Component B was built in the Classical Revival architectural style. Both buildings are representative examples of their particular architectural style.

Components C and D are contemporary additions which are not representative of a particular style and do not retain physical value.

The building is not rare or unique as there are other buildings with similar styles in the City. Neither component is considered early as they were both constructed in the 20th century.

Criterion 2

Displays high degree of craftsmanship or artistic merit

A property satisfies this criterion if it demonstrates craftsmanship or artistic merit in a greater than normal quality or at an intensity above industry standard (MTCS Heritage Identification and Evaluation process, 2014). When considering the degree of craftsmanship or artistic merit, the building should be considered in its entirety, rather than by single components.

Neither the 1901, 1906, or contemporary portions of the building demonstrate a high degree of craftsmanship or artistic merit above that which could be expected for a building of this type. While part B (1906 addition) contains a distinct feature consisting of two columns, these columns alone do not demonstrate a quality or intensity above industry standard. There are other examples of buildings with columns found within the City that are of a grander achievement (such Hamilton CN Railway Station, Dundurn Castle, Landed Banking and Loan Company Building, First Pilgrim United Church) and that, in combination with the remainder of the buildings, achieve a high degree of artistic merit and design.

Criterion 3

Demonstrates high degree of technical or scientific achievement

The building does not demonstrate a high degree of technical or scientific achievement. The building was constructed for its use as a place of worship and was not built or used in a capacity beyond that which it was intended for. The building is simple in its form and function.

Criterion 4

Direct associations with a theme, event, belief, person, activity, organization, institution that is significant

The church is associated with Pastor Peter W. Philpott and the Christian Workers' Church. Pastor Philpott is the founder of the Christian Workers Church, a religious movement/denomination that began with the purpose of dissociating Canadian working class from pressures of class hierarchy and economic advancement, and which welcomed worship for all. Philpott believed that other mainstream Christian denominations and movements were unwelcoming to the working class. The Christian Workers Church was Philpott's movement to support working class values.

Peter Philpott was a significant member of the community who not only founded the Christian Workers Church but served on City Council. Philpott, through his ministry, supported the working-class community and provided an identity to working class Christians.

The Christian Workers Church was founded in 1892 by Peter Philpott. Philpott began serving as the pastor for the Christian Workers Church of Hamilton in 1896, running his ministry out of the church at 89 Park Street N from 1901 until 1922. The congregation and denomination continued after Philpott left, changing its name to the Associated Gospel Churches of Canada. The Church at 89 Park Street North remains named after Philpott and continues to have a presence in Hamilton. It is also associated with other missions including the West Hamilton Mission, Winona Gospel Church, New Testament Church, Lake Gospel Church, Freeman Mission, as well as affiliations with missionaries in Paraguay, India and Africa.

Criterion 5

The property has historical value or associative value because it yields or has potential to yield, information that contributes to an understanding of a community or culture

The property does not have the potential to yield information that contributes to the understanding of a community. The Church has been significantly altered. This includes interior alterations to the 1901 portion as well as to the exterior façade of the building. Any information that the property yields has likely already been realized through the congregation and denominations ongoing function.

Criterion 6

The property has historical value or associative value because it demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community

The building is associated with Hamilton architect Charles Mills. The 1906 addition was designed by Mills, who was born and worked in Hamilton. Mills designed several prominent buildings in Hamilton contributing to the commercial, civic and residential character of Hamilton. Significant buildings include the Landed Banking and Loan Building, the British Bank of North America building, and the Church of the Ascension Sunday School.

Criterion 7

The property has contextual value because it is important in defining, maintaining, or supporting the character of an area

The property does not have contextual value. The Church does not support, maintain or define the character of the area. The surrounding area has, and continues, to evolve to include a range of land uses (commercial, institutional and residential) at varying scales, densities and styles. While the property at one point was contextually related to its surroundings, the neighbourhood continues to change. Current efforts are being made to revitalize the immediate area, as seen through the development of First Ontario Centre (and efforts to re-build it), the Hamilton Farmers Market, surrounding

commercial and retail uses, as well as lower density residential uses to the south. The evolving context of this area results in a lack of contextual value for the property.

Criterion 8

The property has contextual value because it is physically, functionally, visually, or historically linked to its surroundings

The property does not have a significant relationship to its surroundings. While at one point it may have been associated with the surrounding area, this has not been maintained given the evolving context of the community.

Criterion 9

The property is a landmark

The Church may have been considered a landmark when it was first constructed since it was a relatively large building for the area. However, this landmark status has been lost as other more prominent buildings have been introduced to the immediate area. Today it is not considered to be a landmark given the change to the area with much larger and more recognizable buildings such as First Ontario Centre, Hamilton Public Library and Farmers Market.

5.2 Statement of Significance

The property located at 89 Park Street North is of cultural heritage value or interest as it includes a representative example of a Romanesque and Classical Revival church, constructed in 1901 and 1906. The church is associated with Peter W Philpott and the Christian Workers Church, as well as prominent architect Charles Mills.

The property contains Philpott Memorial Church a two and a half storey brick building. The original portion of the church was built in 1901 in the Romanesque architectural style. An addition was constructed at the corner of what is now Park Street North and York Boulevard in 1906 to enlarge the Church, which was constructed in the Classical Revival architectural style. The building was constructed for the Christian Workers Church, a denomination that was started by pastor Peter W Philpott in 1892. The church exterior was altered in the 1950's when the brick was covered in a cement based-mortar.

Philpott was originally with the Salvation Army, and left to start his own congregation, believing that gospel should be accessed by all members of society, regardless of social or economic status. The original Christian Workers Church was started in Toronto and news of this new mission spread. Philpott joined the Hamilton congregation in 1896. In 1901, Philpott and his congregation purchased 89 Park Street North and built a small chapel. Five years later, the congregation outgrew the chapel and hired Hamilton architect Charles Mills to design an addition. Included in the addition was a new auditorium that could host up to 1,200 members. The Christian Workers Church gained

international traction and Philpott left the Hamilton congregation in 1922 to lead the Chicago mission. The Christian Workers Church became recognized as a formal congregation and has been renamed to the Associated Gospel Churches of Canada. The Church at 89 Park Street North was renamed Philpott Memorial Church in 1957 after Philpott's death.

The 1906 addition was built in the Classical Revival architectural style, designed by Hamilton architect Charles Mills. Mills was born in Hamilton and later opened an architecture office in Hamilton. He is known for designing prominent Hamilton buildings, including the Landed Banking and Loan Building (1907) and the Bank of Hamilton building – since demolished (1905). The Bank of Hamilton building was so successful that he was commissioned to design ten more of their buildings across Canada.

The property does contain heritage attributes, which are limited to the 1901 and 1906 exterior features.

Component A – 1901 Romanesque (original church)

- Original form, massing
- East hipped roofline and west gabled roofline with parapet
- Round arched entrance with voussoirs and keystone
- Block Sills
- Dentils along roofline
- Frontispiece with turrets and lunette window
- Decorative brick banding along north facade
- segmentally-arched window openings with brick voussoir along north facade
- Brick pilasters along north facade

Component B – 1907 Classical Revival (church addition)

- Original form and massing
- Pair of ionic columns and portico entrance along east facade
- Three double doors with transoms, voussoirs and keystones along east facade
- Cross-gabled roofline with returns and ellipse windows on the south, east and north gables
- Brick parapet on the west facade
- Four stained glass windows with transoms on south facade
- Pilasters along south facade
- Cut-outs
- Decorative banding

6.0 Proposed Development

6.1 Proposed Development

The existing building on site is currently home to the Philpott Memorial Church. The Church identified several physical deficiencies with the building that required significant repairs. They decided that relocating to a new building would be more economical and would better suit the long-term needs of the congregation. The Church decided to sell the property to the current owner and will be relocating to a new space in the fall of 2024.

The current proposal is not part of any formal planning application and is still subject to change. After considering various design alternatives, the current proposal includes the removal of the existing building and development of two 30-storey multiple residential towers with ground floor retail. The retail component will be oriented to the Park Street and York Boulevard intersection. One tower will be located at the York Boulevard and Park Street intersection, and a second tower will be oriented at the Park Street and Vine Street intersection. Along the Vine Street frontage there will be seven 2-storey townhouses located at the ground level.

Interior to the development is proposed to be vehicular movement, with the entry/exit accessed from Vine Street. A total of 747 residential units are proposed, with 467 parking spaces accommodated in four levels of underground parking. Public-private patio areas will be provided along the York Boulevard and Park Street frontages in front of the commercial units. Landscape elements will be installed and planted along each frontage.

As part of the preliminary development plan, the owners are proposing the retention of some of the heritage attributes of the building and a commemorative feature to highlight the history of the property and Philpott Memorial Church. Retained features are proposed to be integrated into the development. A preliminary concept of the retained materials has been prepared, refer to figure 13.

Figure 13: Preliminary interior rendering including some heritage attributes (Figur3, 2023)

Preliminary concepts for retention and re-use of some heritage attributes have been prepared by the owners. The concepts include:

- Integration of the columns and stained-glass windows into the lobby of the development (off of Park Street) as an entryway feature;
- Design of the lobby to reflect and draw on the nave of the current Church with groin vaulted ceilings;
- Large ground floor windows so that the retained features and their integration are visible from the outside; and
- A commemorative component consisting of a plaque or display to be included in the redevelopment.

Final details of the retention plan and commemoration component will be determined during the later design stages of the project and through completion of recommended Documentation, Salvage and Commemoration Plans.

The site plan and renderings are included as Appendix C.

6.2 Feasibility Assessment Report: Potential Exterior Plaster Removal

A Feasibility Study was completed by PJ Materials Consultants Ltd (included as Appendix A) to assess the feasibility of removing the cement mortar and exposing and retaining the original brick façade. A summary of the main conclusions is as follow:

- It is not clear why the cement based mortar was applied, but it is likely because the original bricks were relative low quality and by the 1950s had started to degrade;
- The strength of the cement based mortar is greater that the strength of the skin of the underlying brick; therefore, removing this cement-based mortar is likely to result in shearing or spalling of the underlying brick.
- The cement-based mortar is cracking, indicating that the brick underneath has been exposed to moisture and is crumbling underneath.
- The author concludes that removal of the mortar is not possible without damage to the underlying brick and that the extent of the damage would be considerable and extensive.

6.3 Condition Assessment of Existing Structure

A Structural Condition Assessment was completed by Jablonsky, Ast and Partners (included as Appendix B). The purpose of the Assessment was to document the structural condition of the building and to give an opinion on the suitability of using the existing facades as permanent, non-load bearing façade in a potential future development.

Invasive tests were carried out on small sample areas on both the Park Street and York Boulevard facades. The test samples revealed that the cement-based mortar was adhered to the brick using steel mesh and nails. Overtime, moisture has been trapped within the adhesive, causing rust to the nails and steel mesh, as well as causing damage to the brick.

The reports conclusions can be summarized as:

- While the facades are in a reasonable structural condition, they are unable to perform the function of a durable building envelope unless there is significant repair of the exterior layer of bricks;
- There are not enough suitable bricks on other facades to use to repair the Park Street or York Boulevard facades;
- Attempt to retain and cover over the deteriorated brick will result in trapping of moisture and further degradation of the brick;
- Repairing or replacing the bricks using bricks from the interior of the building is not recommended as they are of a lesser quality compared to the exterior brick.

7.0 Impact Analysis

7.1 Assessment Criteria

The impacts of a proposed development or change to a cultural heritage resource may be direct or indirect. They may occur over a short term or long-term duration, and may occur during a pre-construction phase, construction phase or post-construction phase. Impacts to a cultural heritage resource may also be site specific or widespread, and may have low, moderate or high levels of physical impact.

The Ontario Heritage Toolkit Infosheet #5 outlines criteria for assessing impacts on heritage attributes. This criteria considers the following:

- Destruction or alteration: of any, or part of any *significant heritage attributes* or features that is not sympathetic, or is incompatible, with the historic fabric and appearance;
- Shadows: created that alter the appearance of a *heritage attribute* or change the viability of a natural feature or plantings, such as a garden;
- Isolation: of a *heritage attribute* from its surrounding environment, context or a significant relationship;
- Direct or Indirect Obstruction: of significant views or vistas within, from, or of built and natural features;
- A change in land use: such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces;
- Land disturbances: such as a change in grade that alters soils, and drainage patterns that adversely affect a cultural heritage resource.

This report utilizes guides published by the *International Council on Monuments and Site (ICOMOS)*, Council of UNESCO, from the World Heritage Convention of January of 2011. The grading of impact is based on "Guide to Assessing Magnitude of Impact" as a framework for this report. The level of impact is classified as one of the following:

- Potential/negligeable: slight changes to historic building elements or setting that hardly affect it.
- None: no change
- Minor: change to key historic elements such that the asset is slightly different
- Moderate: Change to many key historic building elements, such that the resource is significantly modified.

- Major: Change to key historic building elements that contribute to the cultural heritage value or interest (CHVI) such that the resource is totally altered. Comprehensive changes to the setting.

7.2 Impact Assessment: 89 Park Street N

The heritage evaluation contained in section 6.0 of this report concludes that the subject property is of cultural heritage value. The heritage value is vested in the 1901 and 1906 components of the building as it is representative of the Classical Revival and Romanesque styles, as well as associated with Peter Philpott and the Christian Workers Church. The proposal to demolish the church build a new high-density mixed-use development will result in adverse impacts as it will remove the heritage resource. The assessment chart provides an overview of the assessment criteria.

Criteria	Impact	Analysis
Destruction / alteration of heritage attributes	Major	The proposal includes the removal of the building and its heritage attributes. While heritage attributes have been identified, the integrity of the attributes has been reduced by the application of the cement based mortar and the deterioration of the original brick construction.
Shadows	None	This is not applicable as the building will be removed.
Isolation	None	This is not applicable as the building will be removed.
Direct or Indirect Obstruction of Views	None	This is not applicable as the building will be removed.
A Change in Land Use	None	The institutional use of the property does not have a relationship to the surrounding area. The surrounding area is evolving to accommodate a variety of use, densities, and styles. Developing the lands with mixed-use residential and commercial will not result in a change in land use which impacts the property or its heritage value.
Land Disturbance	None	This is not applicable as the building will be removed.

As identified in sections 6.2 and 6.3, additional technical reports have been prepared to assess the durability and stability of the building. These reports have concluded that the building's condition has been compromised as a result of the cement-based mortar that was applied to the brick in the mid 20th century. The brick on all facades is indicative of deterioration. The brick is not expected to last and restoring the brick is not a feasible or recommended option by the specialists.

While the property has design value and heritage attributes, many of these attributes are either in poor condition, or suffer a loss of both integrity and condition as a result of the alterations. The long-term conservation of the building is not feasible given the level of deterioration. The property has also been identified as having historical value. The historical value is not manifested in a physical manner and does not inform the physical attributes of the building. The historical value could be preserved through alternative development options, assessed in section 8.0.

7.3 Heritage Impact Assessment: Adjacent Listed Properties

The adjacent properties have been assessed for impacts and a detailed assessment for each property is provided in Appendix E. In summary, the proposed development will not result in significant adverse impacts to adjacent properties. Destruction or alteration of heritage attributes on adjacent properties will not occur and the development of the subject property will not result in isolation of any of the adjacent properties from their context. Similarly, the proposed development will not result in obstruction of significant views since views of all of the adjacent properties from the public right of way will remain in all cases. A shadow study has been completed and while the proposed development will result in some shadowing on some of the adjacent properties, the shadows will not result in significant impacts to heritage attributes. There is the potential for the impact of land disturbances resulting from excavation and construction activities. As such, a vibration monitoring plan should be completed to monitor and ensure that vibrations from construction activities are not impacting the nearby heritage resources or their attributes. Detailed commentary is provided in Appendix E.

8.0 Alternative Development Options and Mitigation Measures

8.1 Alternative Development Options

8.1.1 *Do-nothing*

The do nothing alternative would result in no redevelopment of the site and leave the building in its current condition. As identified in the technical reports, the facades of the building are in poor condition. Leaving the property as is would lead to continued deterioration of the facades. As noted in the Condition Report, it is unknown how long the mortar will remain attached to the brick, which has been identified as a concern of public safety. This option is feasible, however, will result in the worsening condition of the building and will continue to be a safety concern. This is not a preferred option and is not recommended.

8.1.2 *Adaptive Re-use and Integration*

This option would result in the rehabilitation of the building and incorporation of all or part of the building into the development. This option would result in the restoration, and ongoing maintenance over the long-term, which complies with the conservation goals for heritage properties. This option was originally considered in earlier concepts by the proponent.

However, as described in section 6.0, the technical studies have concluded that retention and repair of all or parts of the building is not feasible. Therefore, while this option would result in retention of some or all of the heritage attributes of the site, it is not a feasible option.

8.1.3 *Re-locate Building*

This option involves moving the building to a new suitable location within Hamilton and would result in the long-term conservation and restoration of the building. This option is only suitable when there is an appropriate location available to receive the building. There are no known receiving sites that are suitable for the building. The technical

reports discussed in section 6.0 did not specifically determine whether the building is capable of being moved. However, even if moving was determined to be an appropriate option, there would be necessary repair or replacement of the facades, which remains not feasible. Therefore, this option is not recommended.

8.1.4 *Demolition (proposed development)*

The demolition option would result in the removal of the building and the development concept proceeding as proposed. This option would result in impacts to heritage resources which does not align with the long-term conservation goals for heritage properties. The salvage and reuse of certain heritage attributes such as the columns and stained glass is included in the proposed development concept and assists in commemorating and conserving associative value of the property.

8.2 Mitigation Measures

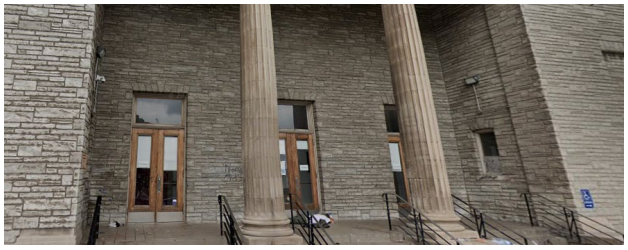
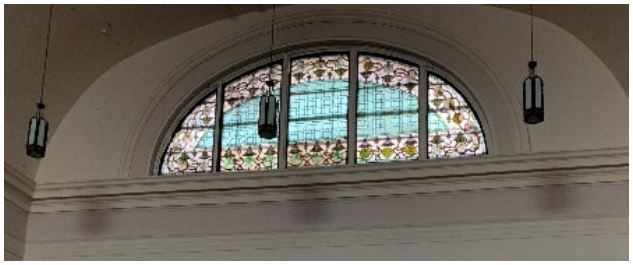
Section 6.0 of this report identified that the proposed development would have an adverse impact on heritage resources due to the removal of the Philpot Memorial Church. While no significant adverse impacts are expected to occur to adjacent heritage resources there is potential for the abutting Salvation Army property to be impacted from vibrations during construction and excavation of underground parking. As a result, the following measures are recommended:

1. The completion of a Documentation Report including measured drawings and elevations to fully document the Philpot Memorial Church before demolition occurs, to be completed by a heritage professional;
2. Completion of a Salvage Plan to identify salvageable components of the building and how they will be incorporated and used in the redevelopment, to be completed by a heritage professional. Further detail is provided in section 9.0;
3. Completion of a Commemoration and Interpretation Plan to detail the proposed form of commemoration. The intent of the commemoration is to acknowledge and honor the history of the property in the form of a material marker. Commemoration often consists of an interpretive panel, plaque or monument and can take various forms of design. Further detail is provided in section 9.0;
4. A vibration monitoring plan be completed by a certified engineer to ensure that vibration arising from excavation and construction do not impact surrounding heritage properties.

9.0 Salvage and Commemoration

9.1 Salvage

Not all identified heritage attributes are salvageable given the application of the cement based mortar. Many of the heritage attributes are located on the facades where the cement-based mortar has been applied and it has been concluded by technical experts that the underlying brick is compromised. The retention of these heritage attributes is therefore not possible given the inability of removing the cement based mortar without damaging the brick. Notwithstanding, there are some heritage attributes that remain in good condition and are recommended to be retained:

All ionic columns along the Park Street North façade	
All wood double doors within the portico along the Park Street North façade	
All stained-glass windows including those along the ground floor of the York Boulevard elevation and the ellipse windows within the roof gables	

Date stone on the Park Street North façade of the 1906 portion of the building	
Lunette window within the frontispiece gable along the Park Street North façade	

Where possible, it is also encouraged that reasonable efforts be made to salvage other elements of the building rather than disposing of them in a land fill. These elements may be retained by the owner as part of the commemoration or could be made available to other parties who specialize in historic restoration or otherwise could benefit from use of salvaged items. Such elements include brick that remains in good condition and interior hardware (such as door handles, light fixtures, pews etc).

9.2 Commemoration and Interpretation

Commemoration of the Church is recommended to be included in the proposed redevelopment. The purpose of the commemoration is to acknowledge the history of the property and the contribution that Peter Philpott and his Christian Workers Church had on the community. Commemoration can take many forms, such as an interpretive plaque or a display containing collections and archival information.

The preliminary commemoration plan includes a display that is to include a text overview of the property history with historic photographs/plans and potential building materials that could be salvaged, such as the original brick used to construct the Church and the date of construction block. In addition to a commemorative feature, reasonable efforts will be made to retain key heritage attributes of the building that will be

integrated into the new development. An example of this retention and integration is illustrated in section 6.1, figure 13. The retained features of the building can be protected through a heritage conservation easement between the property owner and the City which would establish conditions for maintaining and preserving the heritage attributes.

10.0 Conclusion

The purpose of this CHIA is to evaluate the property at 89 Park Street N and determine if the property retains cultural heritage value, and assess the potential impacts that may result from the proposed development. The CHIA has concluded that the property has heritage value since it includes a church that is representative of the Classic Revival architectural style and Romanesque style. The church also has historical value as it is associated with Pastor Peter W. Philpott and the Christian Workers' Church.

The impact assessment concludes that the proposed development will result in adverse impacts due to the proposed removal of the building. There is also the potential for land disturbances to impact the abutting heritage property due to construction and excavation activities.

Alternative development options have been explored, but due to the condition of the building and based on the findings of the structural and materials assessments that have been completed, relocation of the building is not feasible; leaving the building as is would lead to long-term deterioration and is not feasible; and retention of the building and integration with the proposed development is not a feasible option. Therefore, the proposed development includes removal of the Church and salvaging of building materials as well as a commemorative component to be integrated into the new development.

Several implementation measures are recommended for the proposed development including:

- Documentation of the site before demolition occurs;
- Retention of some heritage attributes and integration within new development;
- A Heritage Conservation Easement to conserve retained heritage attributes;
- Commemoration and interpretation of the property within new development; and
- Vibration monitoring during construction to ensure there are no impacts on adjacent properties.

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Appendix A – PJMC Feasibility Study

PJ MATERIALS CONSULTANTS Limited

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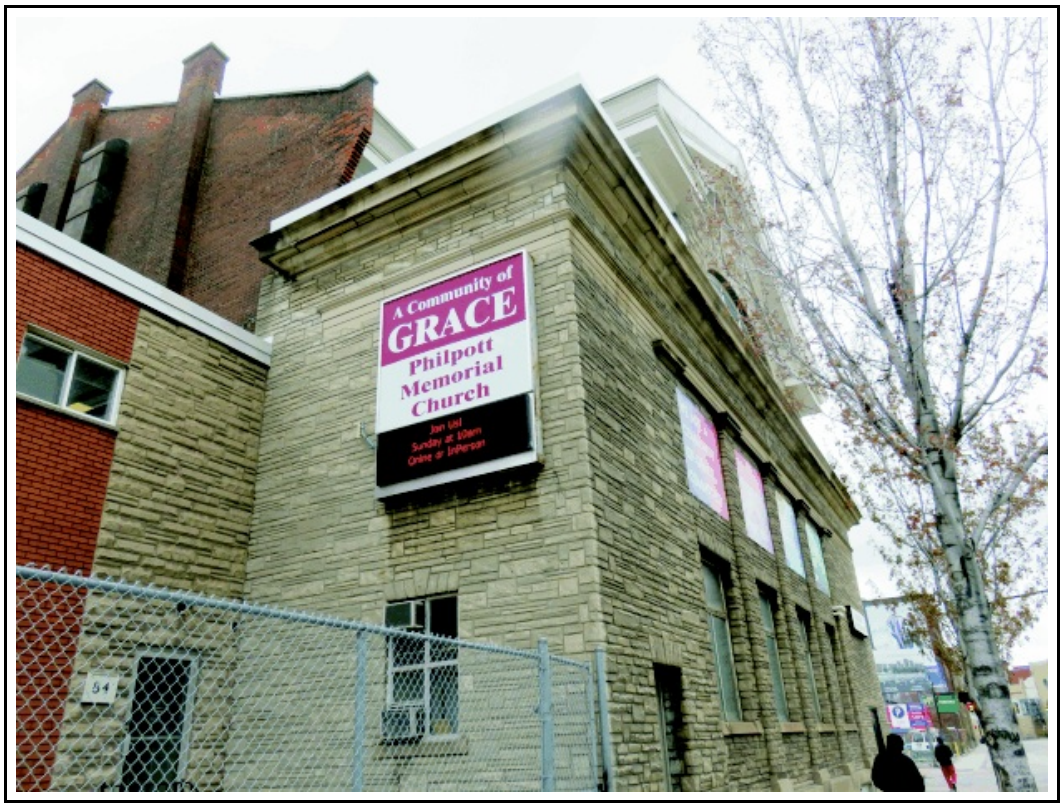
FEASIBILITY ASSESSMENT REPORT

Potential Exterior Plaster Removal
Philpott Memorial Church, Hamilton, Ontario



Prepared for:
Armstrong Planning | Project Management

Project Ref: C202313
May 2023

FEASIBILITY ASSESSMENT REPORT

CONTENTS

Electronic Distribution
(For distribution as required)
Scott Borden; Armstrong Planning | Project Management

PJ Materials Consultants Ltd **May 2023**
Potential Exterior Plaster Removal
Philpott Memorial Church, Hamilton, Ontario

FEASIBILITY ASSESSMENT REPORT

1.0 INTRODUCTION

1.1 This report has been prepared to confirm the author's opinion regarding the effects that should be anticipated in the event that a cement-based mortar is removed from brick masonry at the referenced project. An on-site visual assessment of the exterior elevations of the church was carried out by the author on Monday 1st May 2023 in the presence of Scott Borden, Armstrong Planning | Project Management.

1.1 This report is based on the following Terms of Reference.

2.0 TERMS OF REFERENCE

2.1 Visit the referenced project and review the condition of the exterior masonry, with particular reference to the integrity of the post-construction applied cement-based mortar.

2.2 Prepare and submit a "short-form" report which provides an opinion regarding the feasibility of removing the mortar to restore the underlying brick masonry to a former appearance and condition.

3.0 BACKGROUND

3.1 It is understood that the church building was constructed circa 1906, but the cement-based mortar was not applied to the brickwork until the 1950s.

3.2 It is understood that the feasibility of removing the plaster and restoring the underlying brickwork to a former appearance and condition is under evaluation.

4.0 OBSERVATIONS, DISCUSSION & OPINIONS

4.1 It was observed that the cement-based mortar had been plastered/parged over the brickwork to simulate rock-faced ashlar modular-coursed stone masonry. (Photograph 1) Although it varied, from a review of the termination joint with the side elevation brickwork, the mortar appeared to have been applied at a nominal minimum one-inch thickness within the simulated mortar joints. (Inset image)

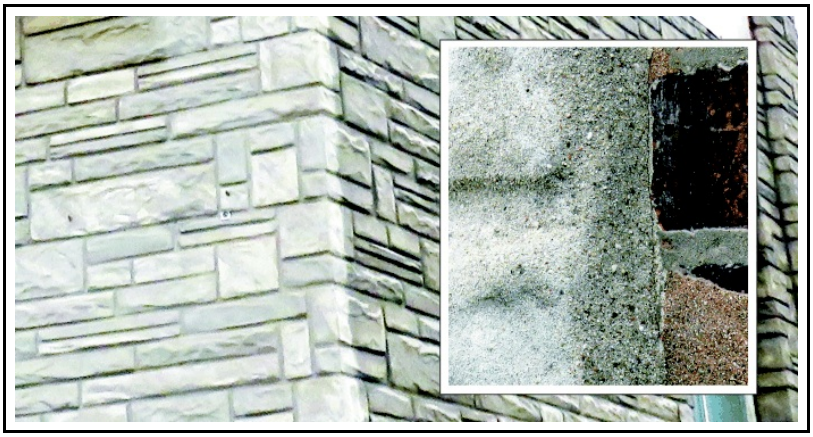


Photo 1 with inset image: The mortar was plastered over the brickwork to simulate the appearance of ashlar-coursed stone masonry. The minimum thickness varied but appeared to be a nominal 1-inch minimum within the simulated mortar joints.

4.2 Although sounding techniques were not used during the on-site assessment, from visual observations, the mortar appeared to be well-bonded to the brickwork - there was no visible evidence of delaminations.

4.3 The author does not know the reason why the plaster was applied to the then approximately forty to fifty-year-old brickwork. However, following a review of the side and rear elevations - where there was much evidence of badly weathered masonry and brick replacement - it is the author's opinion that the most likely and logical reason was therefore a concern regarding the evident poor quality of the bricks. (Photograph 2)

Photo 2 with inset image: There was much evidence of badly-weathered masonry and brick replacement within the side and rear elevations.

.1 At the time of the building's construction, the bricks would have been produced using the soft-mud method, whereby clay and sand were mixed with water to a plastic consistency and compacted into individual moulds. This would typically have resulted in bricks that were more porous than those manufactured during more modern times using the extrusion process.

.2 Also, it is well-known that the brick kilns of the 1900s period experienced wide temperature variations, so some bricks became under-burned - the degree depending upon their stacked locations within the kiln; this resulted in wide variations in the durability within manufactured batches - and in particular, the quality of the fired exterior "skin" of the bricks to the underlying brick matrix.

.3 Based on the previous observations, it is the author's opinion that the bond of the hardened mortar to the exterior skin of the brickwork is almost certainly greater than the flexural strength of the skin to the underlying brick matrix, Any attempt to remove the mortar would therefore most likely result in shearing/spalling of the exterior faces; it is the author's opinion that the extent of this damage would be extremely difficult to prevent or control.

4.4 There was also evidence within the side elevation that several attempts had been made to repoint deteriorated/cracked brickwork adjacent to window openings. It was also evident that joints have continued to deteriorate within the repointed areas.

Photo 3: Evidence of several attempts at repointing cracked or deteriorated mortar joints adjacent to window openings

.1 It is the author's opinion that the damage has been caused - and continues to occur - because the lintels were not designed nor constructed to extend far enough beyond the openings. This has resulted in a concentration of gravity loads at the openings from the effects of wind, snow-loading, thermal movement, etc.

.2 It is the author's opinion that similar damage must be anticipated to be revealed within other elevations, should the mortar be removed.

4.5 Although the extent is uncertain without further investigation, there was evidence that the mortar has cracked within some locations.

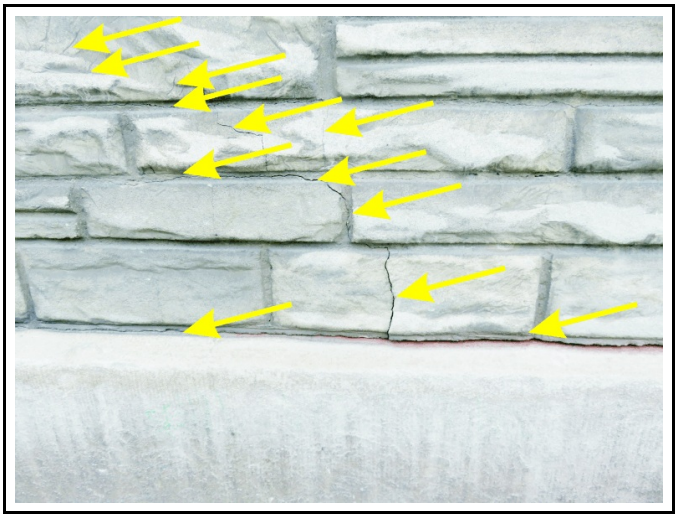


Photo 4: Evidence of cracks within the hardened mortar

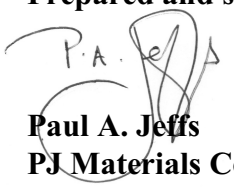
.1 It is the author's opinion that additional damage to the underlying brickwork will have occurred due to the penetration of rainwater through the cracks. Experience indicates that this damage is likely to be in the form of crumbling of the bricks due to the expansive forces created during ice formation within the saturated masonry.

FEASIBILITY ASSESSMENT REPORT

5.0 CONCLUSIONS

5.1 It is the author's considered opinion that it will not be possible for the mortar to be removed without causing damage to the underlying brickwork. This damage is likely to be considerable and extensive.

Prepared and submitted by:



Paul A. Jeffs
PJ Materials Consultants Limited 1st May 2023

Ref: Project/Hamilton~Philpott/Report230501

Author's Background Information

PJ Materials Consultants Limited

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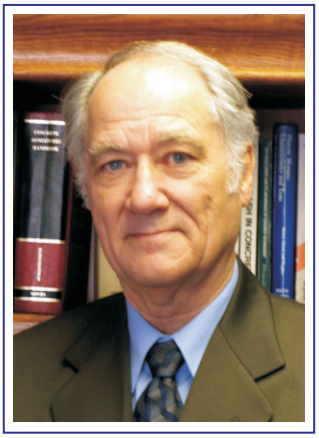
Specialist Consulting Services for Concrete & Masonry

Background



Paul Jeffs

As founder and principal of PJ Materials Consultants Limited, Paul Jeffs specializes in concrete and masonry. Prior to forming the operation in 1989, he was employed for over 25 years within the construction industry around the world, including Europe, the Middle East, South East Asia and the Far East. For the last eighteen years of this time he was employed by a multi-national group headquartered in the United Kingdom that manufactured a vast range of materials and products for construction-related industries.

Paul Jeffs has conducted investigations and building condition assessments and reported on the conservation of heritage structures and older buildings - either as Prime Consultant or Specialist Sub-Consultant - under such authorities as PWGSC, Parks Canada, (Atlantic Region), Niagara Parks, Halifax Regional Municipality, (NS), Region of Peel, Ont, Canadian Coast Guard (NF), Ministry of Transportation, Ontario, City of Belleville, Region of Waterloo, Hamilton Regional Conservation Authority, Niagara Region Housing and the Ontario Municipalities of Belleville, Collingwood, Guelph, St Catharines & Hamilton.

Investigations

Investigations have included the review of existing conditions - utilizing non-destructive testing techniques where appropriate, such as Ground Penetrating Radar, Infra-Red Thermography, & Boroscopes - identification of repairs, replacements and/or restoration of building components, including identification of potential costs for such work. Where appropriate the latest UAV technology is utilized to gain close-up access to structures.

Strategy Development, Bidding & Project Administration Services

Paul specializes in the development of conservation strategies which address the causes as well as the results of deterioration, damage and/or deficiencies. When appropriate, strategies have been developed and implemented to comply with the appropriate Heritage Foundation authority's requirements and the guiding principles of Parks Canada's "Standards & Guidelines for the Conservation of Historic Places in Canada". Paul has also developed or assisted in the development of specifications and contract documents, managing the bidding and award processes and providing review services for the project.

Projects & Clients

PJ Materials Consultants Limited has provided consulting or sub-consulting services for the investigation and/or conservation of many National Heritage Structures and/or historically significant structures, including, Cape Race Lighthouse, (NF), Church of Our Lady Immaculate, Guelph, (ON), Brampton Heritage Complex, (ON), the Old Arts Building, UNB, Saint John Carleton Martello Tower, (NB), the City Halls of Belleville & St Catharines, (ON), Fredericton, (NB), & Halifax, (NS), Dingle Memorial Tower, Halifax, (NS), Hammond House and the Owens Art Gallery, Sackville, (NB). PJ Materials Consultants Ltd received the City of Fredericton Development Committee's 2011 award in recognition of its contribution to the historic preservation of City Hall Fredericton. Under the authority of PWGSC, sub-consulting services have been provided for Condition Assessments of Federal Buildings in Toronto, Windsor and Brantford (ON). as well as Fredericton (NB).

continued .....

PJ Materials Consultants Limited

Specialist Consulting Services for Concrete & Masonry

Educational Services

Paul Jeffs provides technical professional development courses across Canada through PJ Materials Consultants Limited and has been an instructor for the Continuing Technical Education Division of Dalhousie University; attendees have included representatives from such authorities as PWGSC, Parks Canada & Defence Construction Canada. He was also an instructor for the Professional Development Centre of the University of Toronto providing course modules and special event courses as part of their Building Science Certificate Program. He has also presented for many organizations, such as the Capital Projects & Design, Precinct Properties Branch of the Legislative Assembly of Ontario, the National Capital Commission, the Canadian Society for Civil Engineering and the Ontario Building Envelope Council. Professional Development Technical Training Courses include such topics as Conservation of Heritage Structures & Older Buildings, Masonry Restoration Projects ~ Case Studies, Concrete Slabs on Grade, Modern Concrete Materials & Practices, and Concrete Repair & Protection. Paul has been a guest lecturer at several Canadian universities, he has authored and presented papers at many national and international conferences and has been a regular presenter of technical training courses in the Middle East.

Technical Articles

Paul has authored numerous technical articles, including: "Core Rubble Grouting of Heritage Structure Masonry Walls & Foundations Using Grouting Techniques ~ Canadian Case Studies" *9th Canadian Masonry Symposium*; Fredericton, NB, 2004; "Building Masonry with Natural Stone", *Construction Canada*, November, 2003; "Stabilizing Cracked Masonry" *Construction Canada*, January 2007; "Cape Race Lighthouse ~ A History of Restoration", *Construction Canada*, May 2007; "A Tale of Two Towers", *Construction Canada*, November 2008; "Masonry Restoration ~ The Importance of Cause Analysis", *Construction Canada*, November 2010. "Modern Materials & Techniques for Historic Masonry Structures" *Pushing the Envelope Canada* (OBEC) Spring 2011, "Traditional vs Modern Repointing Mortar", *Home Builder,* September 2014 "Restoring a Solid Foundation", *Pushing the Envelope* (OBEC) Fall 2013 & "Re-roofing Projects for Heritage Buildings & Damaged Masonry ~ Is there a Connection?", *Interface* (The Journal of Roofing Consultants Institute) January 2014; "Producing Quality Polished Concrete Floors" *Construction Canada*, May 2016; "Drones & Construction", *Construction Canada*, September 2016;& Concrete Cracking Problems - A Modern-Day Phenomenon?", *Construction Canada*, November 2016.

Published Books

Paul is the self-published author of three books: "Conservation of Heritage Masonry - Canadian Project Case Studies" (2021); , "Investigating Concrete Problems - Learning from Those Who Learned the Hard Way" (2022); and "Masonry Problems - Investigation, Identification & Restoration" (2022).

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Project References

South Niagara Gateway Family Housing Corporation, Port Colborne, Ontario

PJ Materials Consultants Ltd was retained as Prime Consultant to carry out a condition assessment of this non-profit apartment complex building. Although there was evidence of previous brick replacement work and some further deterioration, the overall condition was not visibly bad. It was only when portions of the exterior brick wythe were removed that the extent of the deterioration was discovered. The cause of the problem was poor design which did not adequately facilitate drainage of rainwater that infiltrated the cavity. The solution was to demolish the brickwork, apply urethane foam insulation and install a prefinished sheet metal cladding system.

Client: South Niagara Gateway Family Housing Corporation
(Funding provided by Niagara Region Housing)

Lions Douglas Heights Seniors Residence Centre, Fort Erie, Ontario

PJ Materials Consultants Ltd was retained to carry out a condition assessment of this seniors residence apartment building. A visual assessment confirmed evidence of water-damage to the architectural split-faced concrete block masonry and a considerable amount of cracks. A secondary investigation that created openings at the floor slab levels discovered the cause of the problems had been poor detailing at shelf angles, which did not provide for any expansion and contraction of the masonry during extremes of temperature change. The solution was to rebuild courses of block above and below the angles creating a positive “soft” immediately below the steel.

Client: Lions Douglas Heights Seniors Residence
(Funding provided by Niagara Region Housing)

Wallace McCain Student Centre, Sackville, NB

When this building underwent major rehabilitation and reconstruction during 2008, PJ Materials Consultants Ltd was retained by Mount Allison University to provide sub-consulting services to the Prime Consultant. Responsibilities included designing a masonry restoration strategy to include complete repointing of the masonry, as well as cleaning of the fabric.

Client: Mount Allison University, Sackville, NB

Justice Building Courthouse, Fredericton, NB

The current Justice building was constructed from the remains of the original 1876 Victorian property built as a Provincial Normal School for teacher training which was destroyed by fire in 1929. In 2017, PJ Materials Consultants Ltd was retained to carry out a comprehensive Condition Assessment of the exterior masonry during an evaluation of the potential purchase of the building from the Province of New Brunswick.

Client: City of Fredericton

Crabtree/Library Complex, Mount Allison University, Sackville, NB

PJ Materials Consultants was retained by Mount Allison University to design and implement a restoration project which included re-caulking sandstone cladding panels, providing corrosion protection to steel support units, rebuilding displaced masonry, re-paving a raised patio deck and repointing deteriorated mortar joints. The project, which was carried out in 2011, also included cleaning heavily soiled sandstone cladding panels.

Client: Mount Allison University, Sackville, NB

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Project References

Old Arts Building, University of New Brunswick

The first of several phases was carried out in 2013 and included dismantlement of the east entrance columns, canopy, step units and wing walls The columns and canopy units were repaired and replaced but the step units, platform and wing walls were rebuilt using new fabricated sandstone. PJ Materials Consultants were the Prime Consultant for the project with architectural services provided by Martin Patriquin Architect Inc.

Client: University of New Brunswick, Fredericton, NB

County of Peel Jail (now a Museum), Brampton, Ontario

As part of the Brampton Heritage Complex restoration programme, PJ Materials Consultants devised and supervised an appropriate strategy to address concerns regarding cracking and deterioration of masonry joints of the old jail building. The work - carried out in two stages during 2001 - included the installation of helical stainless steel masonry ties, installation of lintel joint reinforcement, crack repair and complete repointing of all masonry joints.

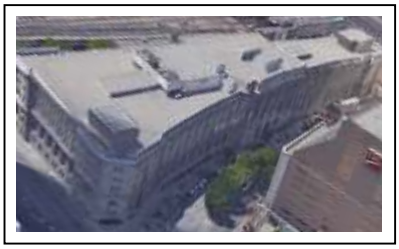
Client: Region of Peel, Brampton, Ontario

Saint Louis Convent, Waterloo, Ontario

The convent is a brick masonry structure supported on traditional mass masonry foundation wall. In 2000, PJ Materials Consultants investigated the cause of masonry damage and identified that the problem was related to deterioration of the inner core rubble within the below grade foundation walls. A restoration strategy was devised which included below grade waterproofing, grouting of the inner core, installation of helical stainless steel masonry ties, repair of a cracks and repointing of cracked and deteriorated masonry joints.

Client: St. Louis Parish Church, Waterloo, Ontario

Dominion Building, Front Street, Toronto



PJ Materials Consultants provided sub-consulting services to the Prime Consultants - who were retained by Public Works & Government Services, Canada - to carry out a comprehensive Condition Assessment of the exterior of this well-known heritage building in the heart of downtown Toronto. The study included the combined use a man-lift and a remote camera attached to an operator utilizing a bosun's chair to gain access to difficult-to-reach locations. Infrared thermography techniques were also used during the investigations.

Client: Dialog Architecture.

Peel County Courthouse (now Municipal Offices)

Also part of the Brampton Heritage Complex, the old courthouse building had suffered from deteriorated joints and cracked masonry. PJ Materials Consultants carried out a detailed investigation of the exterior of the building, devised an appropriate restoration strategy, prepared technical specifications and supervised the work. The restoration project, which was carried out in two stages during 2000 and 2001, included the installation of helical stainless steel masonry ties, crack repair and repointing of foundation wall masonry joints.

Client: Region of Peel, Brampton, Ontario

Government of Canada Building (Paul Martin Sr.) Windsor, ON

PJ Materials Consultants provided sub-consulting services to the Prime Consultants - who were retained by Public Works & Government Services, Canada - to carry out a comprehensive Condition Assessment of the exterior of this well-known heritage building in the heart of downtown Windsor, Ontario. Specification review services were also provided, together with on-site reviews.

Client: Dialog Architecture.

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Project References

New Residence Hall - New Brunswick

PJ Materials Consultants Limited were retained as Stone Consultant to the Prime Consultant to develop specifications and source the red sandstone masonry units and buff window and door surround units and to provide technical advice for the 2006 masonry construction of this beautiful new campus residence building.

Client: Mount Allison University, NB

Convocation Hall Building - New Brunswick

The sandstone cladding panels and columns were suffering the effects of inadequate movement accommodation due to the use of a hard cement mortar to joint the units. PJ Materials Consultants Limited was retained in 2004 to develop and implement a strategy to correct this problem. This included cutting out the mortar and installing a more appropriate elastomeric joint sealant. In 2012 extensive rebuilding of the granite entrance steps and platform was also carried out.

Client: Mount Allison University, New Brunswick

Marjorie Bell Music Conservatory, New Brunswick

The masonry walls of this attractive sandstone building suffered from cracking and many attempts had been made to repoint the step-crack patterns at several locations - each attempt failing to cure the problem. After an investigation by PJ Materials Consultants, it was determined that the original design lacked sufficient expansion joints to facilitate all of the movement due to temperature change. The answer was to “stitch” the cracks and install joints at key locations and install an elastomeric joint sealant that blended with the natural appearance of the sandstone. Following this work, which was carried out in 2000, the masonry has remained crack-free.

Client: Mount Allison University, New Brunswick

The Dunn Physics, Engineering & Geology Building, NB

The consulting services of PJ Materials Consultants were retained to develop specifications and assist in the sourcing and fabrication of the red sandstone masonry units and buff window and door surround units required for this attractive campus building. A quality assurance programme was also developed to provide for winter seasoning of the quarried stone prior to fabrication and outside storage. The building was opened in 2000.

Client: Mount Allison University, Sackville, NB (Prime Consultant: Architecture 2000)

Flemington Building, Sackville, New Brunswick

This masonry of this beautiful red sandstone building suffered extensive cracking which would continue to occur even after repair. In 2009, PJ Materials Consutants Ltd was retained to devise a restoration strategy which included the installation of stainless steel helical rods to transfer gravity loads away from window openings where the lintel projections were inadequate. Extensive crack repair and repointing work was also carried out.

Client: Mount Allison University

Battlefield Monument, Stoney Creek, Ontario

PJ Materials Consultants provided consulting services to the City of Hamilton for two stages of restoration work. The first, carried out in 2012, included waterproofing the observation deck and replacing the deteriorated quarry tiles. The second stage, carried out in 2013, included cutting out and repointing deteriorated joints and repairing cracked masonry units. Some re-dressing of deteriorated stone was also required.

Client: City of Hamilton, Ontario

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Project References

Hamilton Hall, McMaster University, Hamilton, Ontario

Restoration of this campus building was carried out in two phases from 2009 through to 2010. PJ Materials Consultants Ltd was retained by the University to carry out a Condition Assessment of the exterior and design an appropriate strategy to restore the cracked limestone masonry and repoint the deteriorated mortar joints. The work also included partial rebuilding of a gable end after replacement of a badly corroded hidden structural beam that had caused severe cracking.

Client: McMaster University, Hamilton, Ontario

Cape Race Lighthouse, Newfoundland

A National Historical Site, Cape Race Lighthouse is the oldest reinforced concrete lighthouse in North America and only the second of its type in the world. As part of previous attempts at restoration, two additional thicknesses of concrete were added to the original tower in 1937 and 1969. PJ Materials Consultants was retained in 1996 to carry out a detailed investigation and to develop a restoration strategy, complete with specifications, to counteract ongoing damage and deterioration. The restoration work, carried out in 1999, included utilizing the outer layer as a protective barrier, after stabilization and repair of the structure. The existing coating was removed from both the interior and exterior surfaces, flexible stainless steel ties were installed across all three layers and cracks were repaired. New joints were installed to accommodate movement of the outer layer.

Client: Oceans & Fisheries Canada (Formerly: Canadian Coastguard)

Memramcook Institute, NB.

PJ Materials Consultants Limited provided sub-consulting services to the Prime Consultant, who was retained by N.B. Dept of Supply & Services, to provide assistance during the investigation of deteriorated masonry and to provide technical advice during the development of a restoration strategy and specifications. The major restoration work was carried out in several phases over several years. The first phase, which was carried out in 2000, included the complete replacement of the outer brick wythe of one elevation of the building and the rebuilding of the corner of another elevation - including the repair of damaged sandstone quoin units.

Client: Arthur Arseneau Architects, Sackville, New Brunswick

Cranewood House, Sackville, NB

PJ Materials Consultants was retained to develop a restoration strategy and to supervise the first phase of the exterior restoration of historical (1836) Cranewood House - once the home of William Crane, a member of the New Brunswick legislature in the early 1800's. Carried out in 2000, the restoration work predominantly included localized repointing of the sandstone masonry joints using a lime-based mortar, but also required reconstruction of the main entrance porch, and localized pinning of damaged or dislodged sandstone window mullion units using stainless steel masonry ties.

Client: Mount Allison University, Sackville, New Brunswick

First Moncton United Baptist Church, Moncton, NB

PJ Materials Consultants carried out a detailed investigation of damage caused to the bell tower - devised an appropriate restoration strategy, prepared technical specifications and provided project reviews during the course of the work. The restoration was carried out during 2004, and included the installation of helical stainless steel masonry ties, crack repair, repointing of deteriorated masonry joints and selected rebuilding of the tower with new fabricated stone. Steel ring beams were also installed within the tower to provide improved movement accommodation. Further repointing work and stone re-dressing was carried out during 2010.

Client: First Moncton United Baptist Church

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Project References

Collingwood Town Hall, Collingwood, Ontario

PJ Materials Consultants Ltd was retained as Prime Consultant to carry out a condition assessment of this heritage municipal building and to design and implement a conservation strategy which addressed the concerns of cracking and brick masonry deterioration. The conservation work, which was carried out during 2019, included crack repair and brick replacement, as well as cutting out and repointing deteriorated mortar joints using a hydraulic lime mortar.

Client: Town of Collingwood

Guelph Civic Museum (formerly Loretto Convent), Guelph, Ontario

PJ Materials Consultants Ltd was retained as a sub-consultant to carry out a condition assessment of this heritage building, as well as to assist in the design and implement a conservation strategy which stabilized the foundations by core rubble grouting and masonry tie installation. This work also included total repointing of the dimension stone masonry.

Client: Tacoma Engineers for the City of Guelph

Black House (also known as Hammond House) Sackville, NB

This National Historic Site on Mount Allison University's campus had suffered from severe cracking of its masonry. PJ Materials Consultants Ltd was retained to investigate the cause of the cracking, as well as to design and implement a restoration strategy which stabilized the foundations by core rubble grouting and masonry tie installation. This work was carried out as Phase 1 in 2009. The second phase, which included below grade waterproofing, crack repair and repointing was carried out in 2010.

Client: Mount Allison University, Sackville, NB

Fredericton City Hall, NB

PJ Materials Consultants Limited was the Prime Consultant for both phases of the conservation of the National Historic Site in 1910 & 1911. Following a comprehensive condition assessment, a strategy was developed to address concerns regarding extensive cracking of the masonry. The work included the installation of helical stainless steel masonry ties, below grade foundation wall waterproofing and core rubble grouting, as well as the installation of lintel joint flexible reinforcement, crack repair and repointing of deteriorated masonry joints. The work also included entrance wing wall rebuilding and some dimension stone replacement.

Client: City of Fredericton

Officers' Quarters (Fredericton Museum) Fredericton, NB.

PJ Materials Consultants Ltd was the Prime Consultant for the 2018 conservation of this heritage building, carrying out the Condition Assessment - which included ground penetrating radar investigations. The conservation work included masonry repointing and complete replacement of the roof.

Client: City of Fredericton

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Appendix B – Jablonsky Condition Assessment

Condition Assessment of Existing Structure

89 Park Street North, Hamilton ON

Prepared For

Empire Communities

By

Jablonsky, Ast and Partners

Consulting Engineers

400-3 Concorde Gate

Toronto, ON M3C 3N7

Phone: (416) 447-7405

Project No. 23195

September 29, 2023

Table of Contents

INTRODUCTION:

Jablonsky, Ast and Partners was retained to investigate the property located at 89 Park Street North in Hamilton, Ontario, also known as the Philpott Memorial Church. The purpose of the report is to document the structural condition of the building and to give an opinion on the suitability of using the existing facades as permanent, non-load bearing façade in a potential future development. A visual inspection of the site was performed on May 17, 2023 and fill access to all areas was granted to the site. A comprehensive testing program was proposed and a report outlining the results has been prepared by Davroc Testing Laboratories. Additional reports were previously prepared by PJ Materials, Halsall, and WalterFedy are also appended to this report. As these reports contain photos of all of the areas discussed in this report, this report has not re-inserted the same photos.

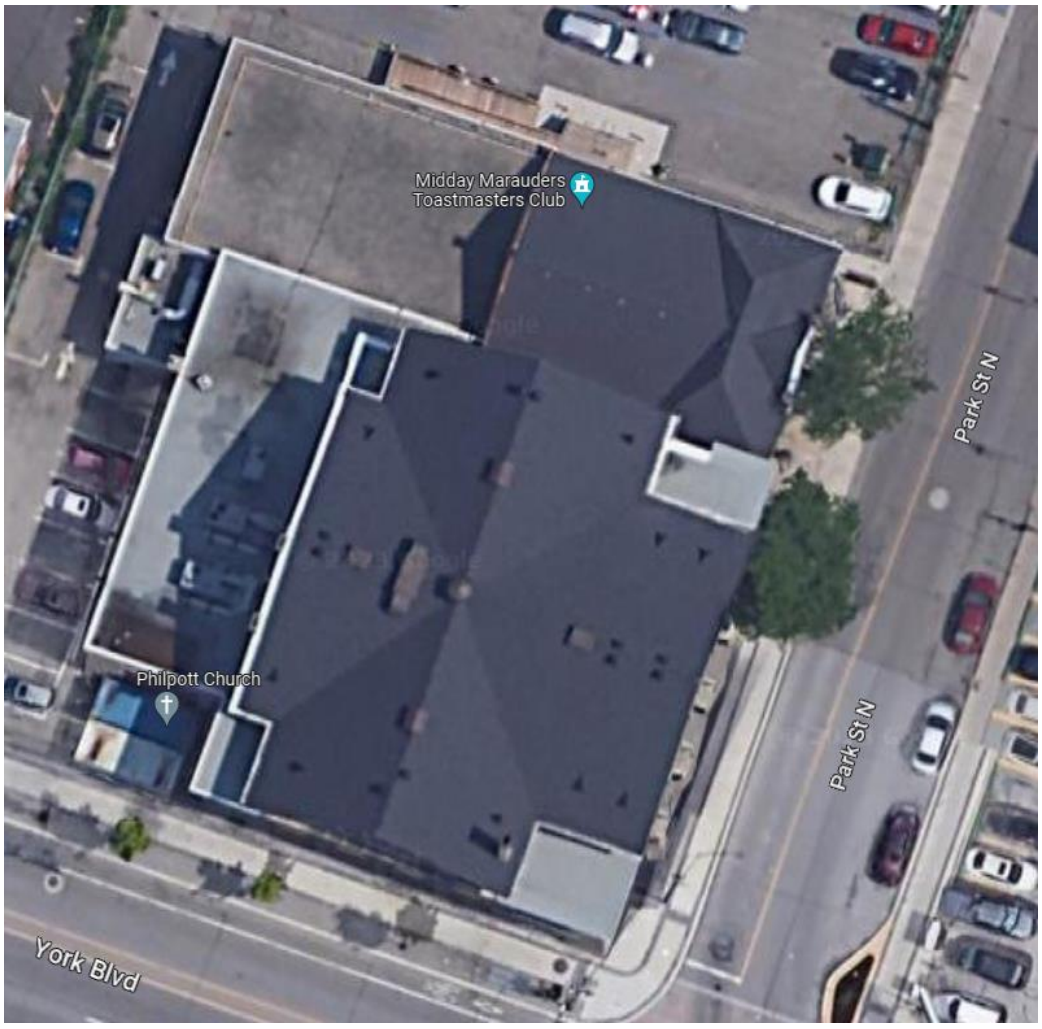

Figure A: Satellite View of 89 Park Street North

JABLONSKY, AST AND PARTNERS, CONSULTING ENGINEERS
400-3 CONCORDE GATE, TORONTO, ON M3C 3N7 T 416-447-7405 WWW.ASTINT.ON.CA

BUILDING DESCRIPTION:

There are four distinct parts to the existing building (refer to Fig. B). Building A was constructed in 1901 and is a two-storey masonry building with a basement. Building B was constructed in 1906 and is the main assembly of the church. There is a partial basement and a partial mezzanine. The roof is a steel truss roof with timber infill framing. Buildings C and D were later additions and were outside the scope of this review.

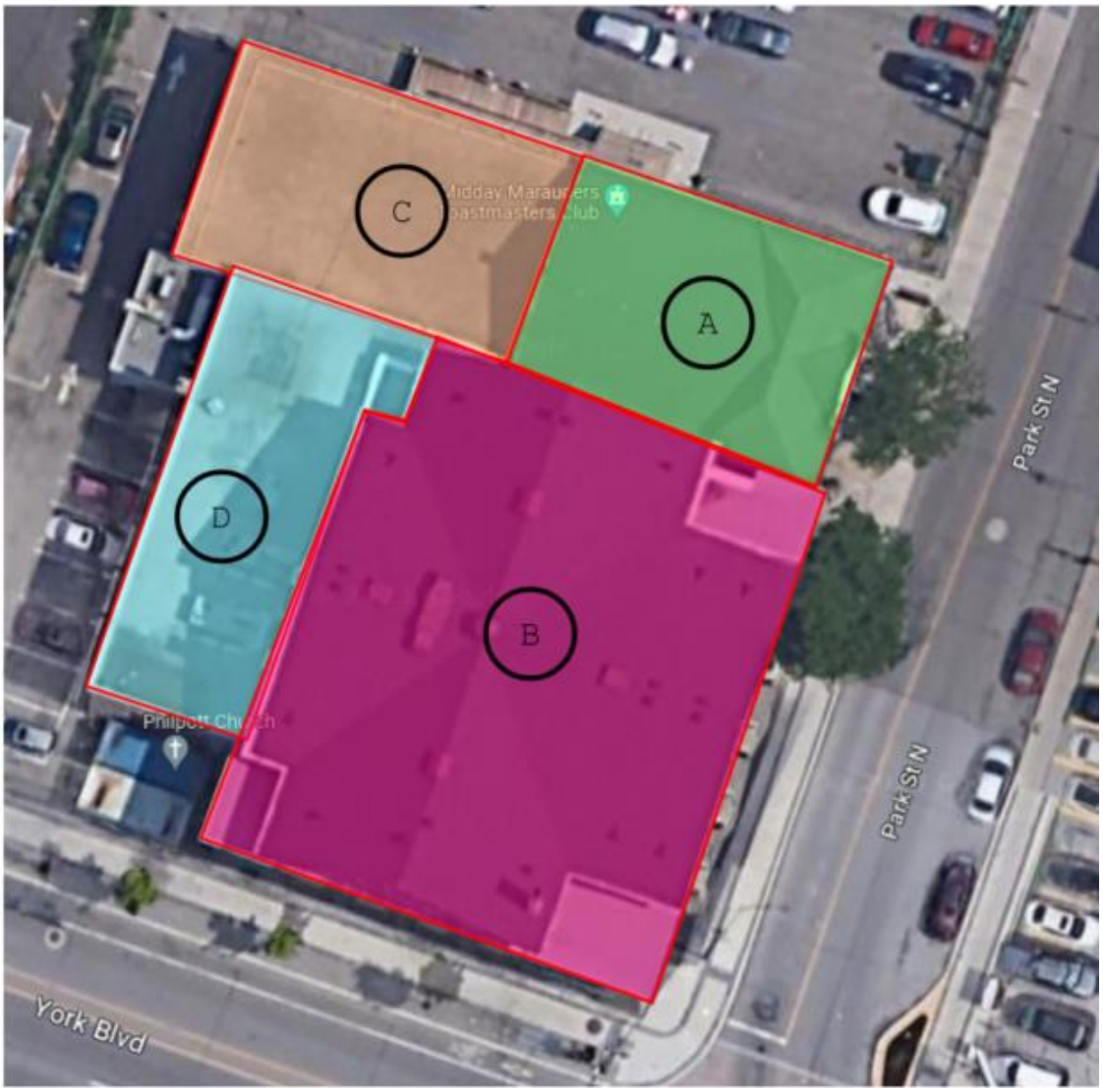

Figure B: Building Components

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STRUCTURAL CONDITION OF EXISTING EXTERIOR FAÇADE:

PART A FAÇADE

The façade is a four wythe thick clay brick façade built in 1901. In 1952, the east façade (facing Park Street North) was covered with a cement-based mortar. A mortar substrate up to ½" thick was applied to the base brick, with a steel mesh and 1" long steel nails in every second or third brick applied to the base masonry as a base for the cement-based mortar cladding. The application of the cement-based mortar to the masonry trapped moisture in between the porous brick and the less porous cement-based mortar. During the last 70 years of freeze-thaw cycles, this trapped moisture served to degrade the masonry behind it.

Three tests were carried out on the east exterior face of the Park Street North façade: a core sample, a prism test, and a pull out test. No tests were carried out on the north face of the façade (facing Vine Street). The north façade was assumed to be in as good or better condition as the east façade and constructed of the same brick; photos of the east façade where the cement-based mortar was removed seem to confirm this assumption. It is obvious that many bricks in the north facade have been replaced and some repointing done throughout the history of the building, so while the current state of the north façade is reasonably sound, it is difficult to determine which of the bricks are actually original.

After removal of the cement-based mortar on the east façade, approximately 10-20% of the face of the brick was found to be spalled. A prism test on the remainder of the brick (in the exterior wythe) provided a compressive strength of 3.5 MPa and failure through the brick (instead of through the mortar joint). The majority of the brick is in reasonable condition and the inner wythes are competently built. The inner wythes are not fully grouted and they appear to be built with lower quality bricks than the exterior face (both items are very common for walls of this age).

Pullout tests at this location were approximately 25% lower than expected based on published capacity tables provided by the manufacturer.

PART B FAÇADE

The façade is a four wythe thick clay brick façade built in 1906. In 1952, the south façade (facing York Boulevard) and east façade (facing Park Street North) were covered with a cement-based mortar. A

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mortar substrate up to ½" thick was applied to the base brick, with a steel mesh and 1" long steel nails in every second or third brick applied to the base masonry as a base for the cement-based mortar cladding. The application of the cement-based mortar to the masonry trapped moisture in between the porous brick and the less porous cement-based mortar. During the last 70 years of freeze-thaw cycles, this trapped moisture served to degrade the masonry behind it.

Four tests were carried out on the exterior façades: a core sample, a prism test, and two pull out tests. Two additional exploratory openings were provided in the façade, one where it appeared there was significant damage and one which appeared fairly typical.

After removal of the cement-based mortar, approximately 10-20% of the face of the brick was found to be spalled. A prism test on the remainder of the brick (in the exterior wythe) provided a compressive strength of 2.9 MPa and failure through the brick (instead of through the mortar joint). The majority of the brick is in reasonable condition and the inner wythes are competently built. The inner wythes are not fully grouted and they appear to be built with lower quality bricks than the exterior face (both items are very common for walls of this age).

Pull out tests at these locations were approximately 25% lower than expected based on published capacity tables provided by the manufacturer.

As expected, exploratory hole #2 was in extremely bad condition; surprisingly, exploratory hole #1 was also in poor condition. Both areas had heavy spalling, lots of missing mortar, and cracked masonry.

DISCUSSION:

The existing façade is capable of supporting its own weight and, if braced to a permanent structure behind it, will be able to resist wind forces and act as part of the new development. While the full extent of repair will not be known until all of the cement-based mortar is removed, based on the facing removed as part of this testing program it appears that approximately 20% of the wall will need to be rebuilt and significant repointing will be required.

It appears, however, that the entire exterior wythe is severely compromised behind the existing cement-based mortar. Approximately 10-20% of the brick face has delaminated at all locations examined. The entire mortar facing must be removed as it poses a risk to public safety. Although it is difficult to forecast

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a time frame, it is clear that with continued exposure to freeze/thaw cycles that the mortar facing will eventually separate and sections will start to fall off of the building face. It is highly unlikely that the entire face would separate and fall all at once; it is more likely to separate at areas of moisture infiltration. Based on current levels of delamination and locations observed, this does not appear to present an imminent danger, but should likely be monitored annually after the end of each freeze-thaw season. Once removed, the deterioration of the remaining façade, unfortunately, will accelerate as the faces of the brick are extremely porous and degraded. Additionally, every 2nd or 3rd brick has nails which will need to be removed.

RECOMMENDATIONS:

While the Park Street North (east) and York Boulevard (south) façades are in structurally reasonable condition (with obvious localized repairs required), the facades are unable to perform the function of a durable building envelope without significant repair of the exterior wythe of bricks. We believe this option is not feasible as there are not enough original exterior wythe bricks of suitable quality available to repair/replace significant portion(s) of either the Park Street North or York Boulevard façades. Repairing/replacing bricks from the exterior wythe using bricks from the interior wythes is not recommended as they are of lesser quality compared to the exterior face brick. Any attempt to retain the façade and cover over the deteriorated face brick (i.e. EFIS or similar) will likely result in a similar issue of trapping moisture and degrading the brick further. Thus, the recommended approach is to dismantle the building. As some of the masonry is salvageable, reuse of these salvageable bricks on the interior of the development may be explored.

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Should you have any questions, please do not hesitate to contact this office.

Your very truly,

JABLONSKY, AST AND PARTNERS
CONSULTING ENGINEERS

Craig Slama, P. Eng., P.E.

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APPENDIX 1 – Attached Reports

Final Property Condition Assessment for Philpott Memorial Church, prepared by Halsall Associates, dated October 13, 2011

Building Condition Assessment, Philpot Memorial Church, prepared by WalterFedy, dated June 26, 2019

Feasibility Assessment Report: Potential Exterior Plaster Removal: Philpott Memorial Church, Hamilton, Ontario, prepared by PJ Materials, dated May 2023

Masonry Sampling and Testing Services Report, prepared by Davroc Testing Laboratories Inc, dated August 16, 2023

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Final Property Condition Assessment for

Philpott Memorial Church
84 York Boulevard
Hamilton, ON

October 13, 2011

Prepared For:

Philpott Memorial Church
84 York Boulevard
Hamilton, Ontario, L8R 1R6
Contact: Mr. James Dean, Church Administrator

Prepared By:

Halsall Associates
3050 Harvester Road, Suite 100
Burlington, Ontario, L7N 3J1
Contact: David Heska, B.Eng.Mgt.

Project Number: 211zA031A/a

Halsall

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General Description

The property at 84 York Boulevard includes an original building (circa 1898), a sanctuary (circa 1906) and offices, a kitchen and gymnasium (circa 1968).

There are 3 asphalt paved parking lots with about 240 stalls. The church parking lot can be accessed by entrances from York Boulevard, Vine Street or Park Street.

The south and east elevations of the original building and sanctuary have had a cementious finish (simulating stone-texture) applied over the original brick masonry. The offices and gymnasium have painted concrete block walls. The flat roofs are protected with built-up roof membranes (felts and asphalt) with pea gravel protective surfacing and the sloped roofs have asphalt shingles.

The building is equipped with a Mirtone Series 7800 fire alarm system. The building is not sprinklered and does not have a standpipe system. Fire suppression is provided by portable fire extinguishers located throughout the building.

Heating is provided by 10 natural gas-fired furnaces located on the basement levels in each of the buildings. Supplementary heating in localized areas is provided by electric baseboard heaters.

Centralized ventilation and cooling is provided for the sanctuary and second floor offices by 2 packaged rooftop air conditioning units. Cooling for the first floor offices and chapel is provided by a direct-expansion coil installed in the furnace serving these areas. The condensing unit is located on the rooftop. Localized cooling in portions of the building is provided by window-mounted air conditioning units.

Electricity is supplied to the building via a pad mounted transformer on the church parking lot.

General Conditions

The property has undergone limited renewal, and has some significant deferred maintenance needs. Some renewal projects have been completed, including repaving the Park Street parking lot, repairing the church entrance tiling along Park Street and replacing the original building sloped roofing. Other renewal projects remain outstanding.

Capital expenditures are expected within the report term, as follows:
- The corner flat roofing at the sanctuary is aged and the membrane has well surpassed a typical service life. We have included a budget to replace this roofing.
- The sanctuary roofing fascia and cornices are deteriorated and in need of further investigation and repair.
- The windows are typically single glazed. The stained glass windows have bowed inward and the protective exterior storm glazing is cracked. We budgeted for window replacement.
- There are portions of the building that are not air conditioned. As per your request, preliminary budgets to add additional cooling are included.
- One of the packaged rooftop units is about 20 years old. Based on age, replacement is budgeted.
- The domestic water supply is reported to be inadequate and there are lead pipes that supply the original and sanctuary buildings. Replacement with a new single incoming service is budgeted.
- The electrical service capacity is reported to be inadequate. Preliminary budgets to increase the capacity are included.
- The gymnasium HID lighting does not appear to have protective lenses and it is reported that the lighting equipment fails often. Replacement is budgeted.

There is ash debris in the basement. A 2007/2008 proposal from an architect indicated if a new building is constructed the ash could be left in place and backfilled with gravel. We have not confirmed this and no budgets for the ash debris removal are included in this plan.

Based on our discussions, the plan assumes that the following work will be completed as part of maintenance, rather than capital, so no budgets are included here:
- interior finishes including carpet and ceiling tile replacement
- sound and technical equipment upgrades
- baptismal tank replacement
- emergency lighting and exit sign replacements
- window air conditioning unit replacements
- plumbing piping repair and localized replacement
- localized light fixture replacements

No part of this report should be read in isolation. It is intended to be read only in its entirety, including the scope of work and limitations.

Capital Expenditures

The following table summarizes our opinion of budgets for capital projects identified in this report with budgets above the annual threshold value of $2,500. Expenditures that are expected to be managed as part of normal operations are not shown. The budgets assume a prudent level of ongoing maintenance. Dollars shown are inflated, and include contingencies (typically 5 to 15%) and allowances for design/project management (5 to 15%), where relevant. Budgets include HST (13%).

Capital projects are classified as follows:

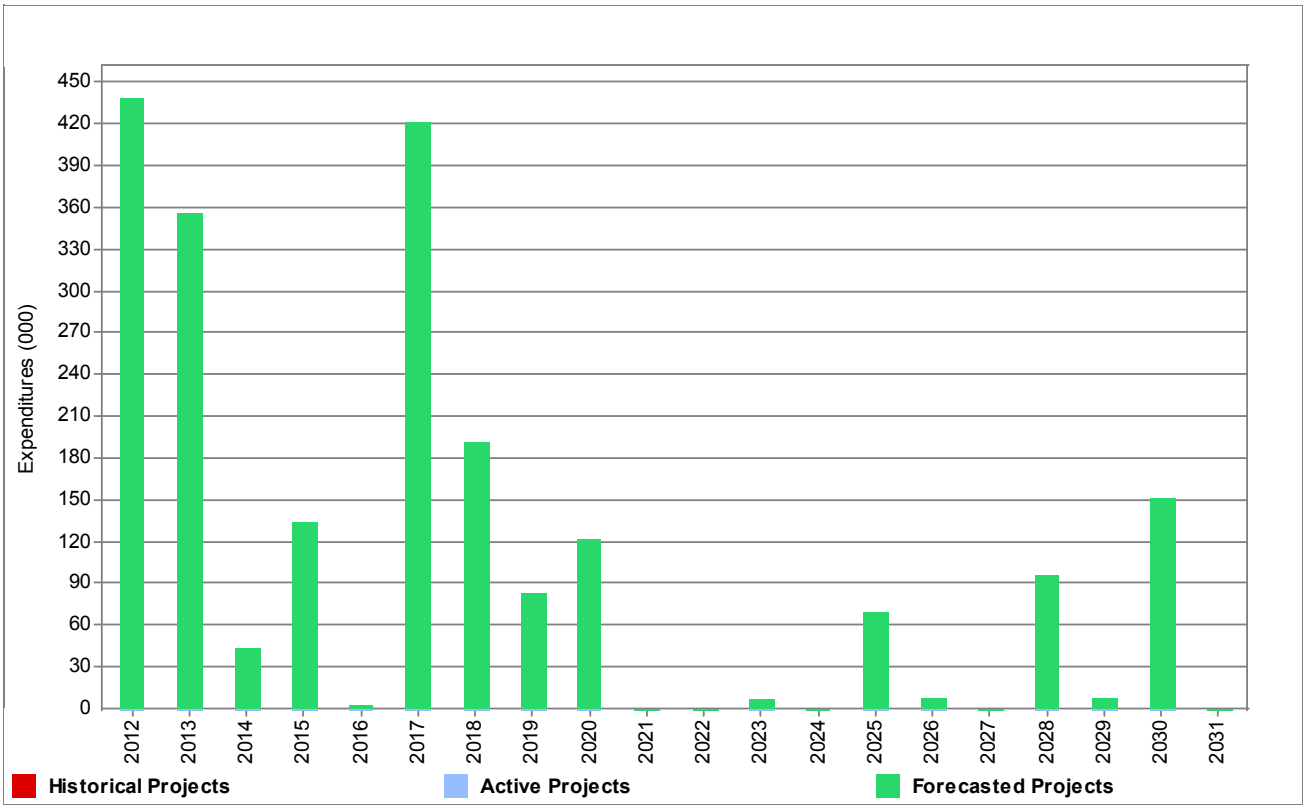
1 = Life Safety or Statutory Compliance
2 = Deferred Maintenance
3 = Normal/Life Cycle Renewal
4 = Upgrades/Discretionary Items

Budget Table

Annual Inflated Budgets																		
Project Description	**Class.**	**Status**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**20**
BUILDING ENVELOPE																		
Replace Sealant	2	Forecasted	$3,060															
Cut and Cap Chimneys	2	Forecasted							$11,487									
Masonry Repairs and Repointing	3	Forecasted							$180,748									
Wash, Clean, Repaint Exterior Walls	3	Forecasted								$15,226								
Replace Windows	2	Forecasted						$88,469										
Repair Stained Glass Windows	2	Forecasted						$326,489										
Replace Steel Framed Entrance Ramp	3	Forecasted	$59,648															
Replace Park Street Entrance Tiling	3	Forecasted								$21,846								
Install New Exterior Doors	3	Forecasted								$23,666								
Replace Concrete Landings and Handrails	3	Forecasted								$4,766								
Replace Corner Flat Roofs	2	Forecasted	$76,648															
Replace Office and Kitchen Roofs	3	Forecasted									$114,789							
Replace Gymnasium Flat Roof	3	Forecasted														$69,891		
Repair Sanctuary Fascia and Eavestroughs	2	Forecasted	$59,648															
Resecure Decorative Cornices at Sanctuary	2	Forecasted	$41,494															
Correction of Deferred Maintenance	2	Forecasted	$15,236															
Refinish Sanctuary Interior Dome Roof	2	Forecasted		$208,080														
Replace Sanctuary Sloped Roof	3	Forecasted																
Replace Roofing at Original Building	3	Forecasted																
FIRE SAFETY	**Class.**	**Status**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**20**
Prepare Fire Safety Plan	1	Forecasted	$6,339															
Replace Fire Alarm Panel	3	Forecasted				$38,223												
SITE	**Class.**	**Status**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**20**
Replace Fencing	3	Forecasted																
Replace Asphalt																		

Paving (Church lot)	2	Forecasted	$134,032															
Replace Asphalt Paving (Park Street lot)	3	Forecasted																
Replace Church Signs	3	Forecasted			$37,142													
HVAC	**Class.**	**Status**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**20**
Provide Additional Cooling for the Sanctuary	5	Forecasted		$14,956														
Install Rooftop Unit for the Gymnasium	5	Forecasted		$41,648														
Provide Cooling in the Original Building	5	Forecasted		$47,762														
Replace Rooftop Air Conditioner	3	Forecasted		$33,801														
Provide Zoning for the Heating Distribution System - Original Building	3	Forecasted		$6,349														
Replace Condensing Unit on Office Roof	3	Forecasted		$3,674														
PLUMBING	**Class.**	**Status**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**20**
Replace Main Incoming Water Service and Install Backflow Prevention Device	3	Forecasted	$33,138															
ELECTRICAL	**Class.**	**Status**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**20**
Upgrade Electrical Service	5	Forecasted				$95,711												
Replace Gymnasium Lighting	2	Forecasted	$9,941															
MISCELLANEOUS	**Class.**	**Status**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**20**
Replace CCTV System	4	Forecasted								$16,748								
Update Capital Plan	3	Forecasted			$5,996			$6,363			$6,752			$7,166			$7,604	
Replace Central Vacuum Systems	3	Forecasted					$3,119											
Total:			$439,182	$356,268	$43,138	$133,934	$3,119	$421,321	$192,235	$82,252	$121,541	$0	$0	$7,166	$0	$69,891	$7,604	

Total Annual Expenditures



Notes:

- Inflation Rate for Expenditures = 2%

Budget Summary Table

Summary from 2012 to 2031		
	Uninflated	Inflated
Total For 20-Year Reporting Period	$1,895,296	$2,132,109
Forecasted Projects Total	$1,895,296	$2,132,109
Active Projects Total	$0	$0
Historical Projects Total	$0	$0
Total Per Unit	N/A	N/A
Total Per ft²	N/A	N/A
Average Annual Budget	$94,765	$106,605
Average Annual Budget Per Unit	N/A	N/A
Average Annual Budget Per ft²	N/A	N/A
Total Number Of Units: 0	Total Area: 0 ft²	
Average Area Per Unit: 0 ft²	Inflation Rate: 2%	

1. STRUCTURE

1.1 Structural Frame

Description:

No drawings were available to confirm the concealed construction. However, based on our visual review, the structure appears to be as follows:

Original Building (circa 1898) and Sanctuary (circa 1906):
Stone foundation walls with an unknown footing structure. Solid brick masonry walls with interior wood beams, floor and columns. There are four masonry columns at the sanctuary corners which support the steel dome roof structure.

Offices / Kitchen and Gymnasium (circa 1968):
Concrete block foundation walls with concrete floor slabs. Open web steel joists support a corrugated steel roof deck.

Condition:

2011:

We did not observe visible evidence of settlement or structural cracking that would suggest structural distress, or that would lead us to anticipate capital expenditures for the concealed structures within the report term.

The interior portions of the structures are generally protected from the weather. These protected elements are not expected to require major repair within the life of the building. Structural elements that are exposed to wetting are likely to require repair, and are covered in other sections of this report.

2. BUILDING ENVELOPE

2.1 Walls

Description:

Original Building and Sanctuary: Solid brick masonry walls. The south and east elevations have had a cementious finish (simulating stone-texture) applied over the original brick masonry. Stone cornices remain in place at the roof line of the sanctuary and two stone columns exist at the Park Street east elevation building entrance.

Offices / Kitchen and Gymnasium: Painted concrete block walls with cores filled with pea gravel (according to building maintenance). Manufactured masonry units (simulating a stone-texture) and brick have been installed as a veneer at the south elevation of the office building.

There are five brick masonry chimneys (most of which are no longer required due to HVAC retrofits).

Sealant is located around windows and doors.

Repair History:

Prior to 1968 addition: Cementious finish coat applied over the brick masonry.

Condition:

2011:

The cementious finish over the original masonry appears to be functioning as intended and we expect it to not require major restoration in the next 20 years. An allowance to wash and clean all walls and repaint the exterior block walls has been included.

There are currently no reports of leakage through the walls.

We noted the following deterioration:
- There is some visible mortar joint deterioration (i.e., cracks, debonding, voids) below the north elevation sanctuary stained glass window and around the original building (nursery) windows. It appears there have been "tape and grout" repairs to the masonry in the past which are now beginning to deteriorate.
- There are small vertical cracks in the cementious finish coat and at building corners
- There are stains below windows indicating poor water shedding
- The stones below the columns at the Park Street entrance have shifted and need to be reset

Budgets are included for masonry repairs to address deteriorated mortar, bricks and localized shifting. Our budgets do not include an allowance to add wall insulation at the gymnasium or any other areas. We have included an allowance to cut and cap the obsolete chimneys.

Where reviewed, the exterior sealants are typically split, debonded and require replacement. Joints where the original buildings meets the office/gymnasium should be sealed. During future window and roof replacement projects new sealant will be installed, therefore our sealant replacement budget includes for new sealant around doors, building interfaces and at select window and roof locations where the failed sealant is allowing water penetration.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
2.1.1 Replace Sealant	$3,000	$3,060	2012	N/A	One time	2	Forecasted
2.1.2 Cut and Cap Chimneys	$10,000	$11,487	2018	N/A	One time	2	Forecasted
2.1.3 Masonry Repairs and Repointing	$157,352	$180,748	2018	N/A	One time	3	Forecasted
2.1.4 Wash, Clean, Repaint Exterior Walls	$12,995	$15,226	2019	N/A	One time	3	Forecasted

2.2 Windows

Description:

Original Building: 10 basement level windows, 10 first floor level windows and 12 second floor level windows at the north and east elevations. The windows are typically single pane with anodized aluminum frames.

Sanctuary: There are 4 rectangular stained glass windows at the first floor of the south elevation and 3 semicircular stained glass windows at the balcony level (on the north, south and east elevations). All of the stained glass windows are protected on the exterior with frosted, wired glass in wood frames. There are two basement level windows and windows at the prayer room, the men's washroom and the women's washroom which are typically single pane windows in aluminum frames.

Offices / Kitchen: 18 single pane sliders in aluminum frames.

Gymnasium: 6 single pane fixed windows in aluminum frames at the upper level of the gymnasium with fiberglass installed on the interior. There are 4 basement level windows.

Condition:

2011:

There is not any leakage currently reported at windows.

The windows appear to be over 30 years old. We understand the fiberglass on the interior side of the gymnasium windows was installed to help prevent heat loss and breakage. The windows have some exposed wood elements which will continue to deteriorate and although the frames appear solid.

Single glazed windows do not provide a level of service that would generally be considered acceptable by modern standards. They are prone to condensation, air and water leakage, and comfort concerns. Their energy performance is poor. Upgrading to double glazed windows in thermally broken frames would provide improved performance. We have budgeted to replace the existing windows with commercial quality, "break-in resistant" windows within the next 5-10 years. During this window replacement project the wood covering abandoned basement and first floor level windows of the should also be replaced.

The sanctuary stained glass windows have bowed inward over time and we have included a repair allowance to re-lead the glass. We have also budgeted for "storm glazing" where new clear, tempered glass is installed to replace the existing cracked wire mesh glass on the exterior of the stained glass. Costs are based on a preliminary quotation by Edwards Glass.

Due to the glare created on the projector screen during Sunday morning services the south and east elevation semicircular stained glass windows have been covered with shades as a temporary solution. We have included an allowance as part of the stained glass window project to install automated blinds at both of these windows. Costs are based on a preliminary quotation by Concord Shading.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
2.2.1 Replace Windows	$78,558	$88,469	2017	N/A	One time	2	Forecasted
2.2.2 Repair Stained Glass Windows	$289,913	$326,489	2017	N/A	One time	2	Forecasted

2.3 Exterior Doors

Description:

Exterior doors and entrances include the following:
- Park Street entrance: 3 double wood swing doors with tile at the exterior steps
- Lower office entrance: a single glass door with a concrete landing, steps and handrail.
- Kitchen entrance: a double glass door with a steel framed ramp to the parking lot
- Gymnasium exit doors: steel doors in steel frames (two at grade with concrete landings, steps and handrails, one at the basement with a locked gate)
- Alumicor glass doors: one from the original building onto Park Street and a double door from the sanctuary corridor onto York Boulevard.

The doors are not equipped with a power openers for barrier-free access. One door along the south elevation of the sanctuary has been boarded off and is no longer in service.

Repair History:

1989/1990: Handicap ramp $10,072
1991/1992: Handicap ramp $1,200
1993/1994: Park Street entrance tiling $6,000
2008/2009: Park Street entrance tiling repair $3,779

Condition:

2011:

The doors that we checked generally operated well. We noted that the kitchen entrance door and the lower office entrance door appear to be original from the 1968 addition and the perimeter weatherstripping has failed. Corrosion is visible on the lintel of a gymnasium entrance door and at the base of a steel frame. We have budgeted for the exterior doors to be replaced within the term of this report.

Where measured the steel framed entrance ramp rises 12" over 132" (9.1% gradient) and does not meet the current Ontario Building Code barrier-free design guidelines, which recommend a maximum 1" rise over 12" (8.3% gradient). The ramp is over 20 years old, is corroding and requires replacement. The replacement cost will depend on the design and materials used (ie. steel, concrete, etc). An allowance for consulting services to provide detail drawings and assistance with a permit application are included. We have aligned the projects so that the entrance ramp is replaced at the same time as the church parking lot asphalt replacement project.

The Ontario Building Code (OBC) requires a minimum height of 1,070mm, maximum clear opening of 100mm, and no elements that facilitate climbing within 140 to 900mm above slab surface for guards. We measured the clear opening between pickets at concrete landings to be 125mm and the top of the railing is only at a height of 810mm which is considerably lower than the 1,070mm height in the OBC. While existing buildings are not required to comply with current Code (unless a major renovation is completed), there is a moderate risk of injury and we have budgeted to remove these railings and resecure new railings into the existing concrete landings.

The Park Street entrance tiling was recently repaired and a modest allowance for future replacement has been included. We have not completed an investigation into the concealed conditions and the actual cost of repairs may be higher than the allowance we have included.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
2.3.1 Replace Steel Framed Entrance Ramp	$58,478	$59,648	2012	N/A	One time	3	Forecasted
2.3.2 Replace Park Street Entrance Tiling	$18,645	$21,846	2019	N/A	One time	3	Forecasted
2.3.3 Replace Concrete Landings and Handrails	$4,068	$4,766	2019	N/A	One time	3	Forecasted
2.3.4 Install New Exterior Doors	$20,199	$23,666	2019	N/A	One time	3	Forecasted

2.4 Flat Roofing

Description:

Sanctuary: There are 4 flat roof areas (one at each corner of the sanctuary building) consisting of pea gravel surfacing, 3 ply asphalt and felt built-up roofing membrane, 0.5" fibreboard, 2" polyisocyanurate insulation, with the original coal-tar pitch and felt roof membrane below. The north-east and south-east corner roofs have 7'x6' skylights which were covered in the past. The north-east skylight is covered with a piece of metal and the south-east skylight is covered with modified bitumen roofing membrane.

Gymnasium: Pea gravel surfacing, 4 ply asphalt and felt built-up roofing membrane, 0.5" fibreboard, 1.5" polyisocyanurate insulation, 1 ply asphalt and felt vapour retarder, supported on a steel deck.

Offices / Kitchen: Pea gravel surfacing, 4 ply asphalt and felt built-up roofing membrane, with 2" semi-rigid polystyrene insulation. The supporting structure at the kitchen roof is plywood, while the office roof is a prime-painted corrugated metal deck.

Repair History:

Date unknown: 4 corner roofs at the sanctuary were overlaid with insulation and asphalt roofing systems. Cost unknown
Date unknown: Covered the skylights on the flat roofs near Park Street. Cost unknown.
1993/1994: Office Flat Roof Repairs $11,716
1994/1995: Gymnasium and Kitchen Flat Roof Repairs $12,840
1995/1996: Office Flat Roof Repairs $6,374
1998/1999: Office Flat Roof Repairs $5,114
2005/2006: Gymnasium Flat Roof Replacement. Cost unknown

Condition:

2011:

Previous leakage had occurred around the 4 corner flat roofs damaging the interior walls and ceilings below. This is reported to have been initiated by blocked drains. Building maintenance installed caged drain covers at the north-west and north-east corners and debris has not blocked the drains and no active leakage is reported.

Based on our prior review (2010), the corner flat roof systems are at the end of service life. The top layer of the built-up roof assembly is deteriorated and brittle. Moisture was detected within the insulation during our review. Replacing the corner flat roofs and removing the existing skylights is budgeted in the near future.

The office and kitchen roofs are in generally serviceable condition. The roofs appears to be from the 1990s and we have budgeted for replacement in 5-10 years.

The gymnasium roof was replaced in 2005 and with on-going maintenance we have budgeted for replacement in 10-15 years.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
2.4.1 Replace Corner Flat Roofs	$75,145	$76,648	2012	N/A	One time	2	Forecasted
2.4.2 Replace Office and Kitchen Roofs	$96,050	$114,789	2020	N/A	One time	3	Forecasted
2.4.3 Replace Gymnasium Flat Roof	$52,969	$69,891	2025	N/A	One time	3	Forecasted

2.5 Sloped Roofing

Description:

Original Building: Architectural 2 piece laminated asphalt shingles with metal flashed valleys. Clay tile copings top the parapet of the west wall. An EPDM rubber membrane flashing with taped seams is installed where the Original Building meets the north wall of the Sanctuary. Ventilation is provided by the 6 attic vents. There are no soffit vents at the eaves.

Sanctuary: The sloped roof is supported by 2"x8" framing on the steel structure and brick walls, with the original 7" wide ship-lapped plank sheathing above. Plywood has been installed over the planked sheathing and it appears the same architectural laminated shingles are installed as on the Original Building with shingled valleys. Ventilation is provided by 27 attic vents and 1 original sheet metal circular vent. Along each of the 4 ridges there are "dog house" metal vents which are no longer functional. There are 6 decorative cornices as part of the sanctuary roof which are covered with sheet metal. The vaulted ceiling beneath the roof is lath and plaster nailed to wood joists with 2 layers of 3.5" glass fibre batt insulation above.

Repair History:

1989/1990: Sanctuary ceiling paint $1,375
1989/1990: Sheet metal on sides of the 4 rectangular metal louvers on the Sanctuary sloped roof $1,304
1991/1992: Sanctuary interior dome ceiling repair. $118,412
1991/1992: Original Building Sloped Roof Shingle Repairs $1,840
1996/1997: Gutter Repairs and Caulking $9,335
2005/2006: Sanctuary Sloped Roof Repairs $46,220
2008/2009: Original Building Sloped Roof Shingle Repairs. EPDM rubber membrane installed between sloped roof and Sanctuary brick wall due to water not properly draining. Wood beneath was rotten. $23,096

Condition:

2011:

In our 2010 Roof Condition Evaluation we identified that the sanctuary fascia, eavestrough and decorative cornices are deteriorating due to poorly maintained and inadequately sized drainage systems. The sheet metal lined eavestroughs at the corners of the sloped sanctuary roof are aged, not properly sloped and have open seams causing leakage into the cornices. The fascia and cornices are deteriorating due to age and water ingress At some locations the cornices have becoming displaced from the building. We recommend a detailed review of the cornices be performed to determine their securement and the need for remedial work. Where visible, weathering is causing rot and further review of the exposed and concealed components is required. We have included a preliminary budget allowance for this investigation and repair to the fascia, eavestrough and cornices.

Other defects such as debonded and failed sealant, a deteriorated circular vent and other obsolete vents we assume will be addressed as part of a project to correct deferred maintenance items.

Although interior finishes are not within the scope of this report, we have made one exception and have carried the cost to repaint the interior sanctuary dome roof. We have based our allowance primarily on the cost from 1991/1992. We expect that this previous cost may have been less than it should have been and so we have added an allowance and the appropriate inflation. The paint is peeling which suggests that an improper primer and/or paint was used during a past repair. We recommend discussions occur with a qualified paint contractor to obtain more detailed pricing.

The sanctuary and original building roofing assemblies are presently 4 and 6 years old and have a typical service life of 20-30 years assuming proper maintenance. At the original building roof, there is a rubber EPDM membrane installed where the near the north wall of the sanctuary. This is an unconventional transition and we expect the EPDM membrane will require replacement in advance of the shingles. At both buildings the ventilation has not been upgraded to modern standards which may lead to premature deterioration. We have included a conservative budget for shingle replacement which includes an allowance to repaint the fascia and soffits and allows for unforeseen repairs. No additional money has been included to address the ventilation at these buildings. As per our 2010 Roof Condition Evaluation we recommend a review of the attic spaces been completed to assess if ventilation modifications are required prior to the planned future roof replacement.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
2.5.1 Correction of Deferred Maintenance	$14,937	$15,236	2012	N/A	One time	2	Forecasted
2.5.2 Resecure Decorative Cornices at Sanctuary	$40,680	$41,494	2012	N/A	One time	2	Forecasted

2.5.3 Repair Sanctuary Fascia and Eavestroughs	$58,478	$59,648	2012	N/A	One time	2	Forecasted
2.5.4 Refinish Sanctuary Interior Dome Roof	$200,000	$208,080	2013	N/A	One time	2	Forecasted
2.5.5 Replace Roofing at Original Building	$30,538	$44,488	2030	N/A	One time	3	Forecasted
2.5.6 Replace Sanctuary Sloped Roof	$53,280	$77,619	2030	N/A	One time	3	Forecasted

3. FIRE SAFETY

3.1 Fire Safety Systems

Description:

The major occupancy is Group A2 (Assembly). The Original Building and Sanctuary are two-storey buildings of combustible construction. The Offices / Kitchen and Gymnasium addition are two-storey buildings of non-combustible construction.

Detection/Alarm: The building is equipped with a Mirtone Series 7800 fire alarm system. The main fire alarm control panel is located in the main floor corridor near the entrance to the lower office entrance off York Street. The fire alarm system has manual pull stations located beside exits, heat detectors in service rooms and storage rooms, audible signalling devices located in all occupied spaces and smoke detectors located throughout.

Suppression: The building not sprinklered and does not have a standpipe system. Fire suppression is provided by portable fire extinguishers located throughout the building.

Emergency Power: Emergency power is provided by battery packs connected to remote emergency light fixtures and exit signs.

Condition:

2011:

The building does not have an approved fire safety plan. The building is required to have a fire safety plan as described in Article 2.8.2 of the National Fire Code of Canada 2005 and according to the Ontario Fire Code. An allowance to have a fire safety plan prepared by a qualified contractor is included.

The Church Administrator reports that the fire alarm system is monitored by ADT. Nutech Fire Protection stated that the last inspection occurred in November 2010 with no major issues observed. This fire alarm panel is no longer manufactured, and we cannot predict how long replacement parts will remain available. While currently still available, replacement parts are expected to become increasingly scarce over time. We recommend planning for replacement. The plan allows for replacement. The budget assumes that the panel will be replaced with a similar, compatible, non-addressable system, re-using the majority of the existing field devices and wiring. Annual inspections, and any minor repairs that are found to be needed, are expected to continue as part of ongoing maintenance.

We noted the following code issues that we recommend that you should pursue with a code consultant:
- missing/incomplete firestopping in several rooms throughout the building that are required to be fire separated from the remainder of the building. Typically the locations consisted of unprotected openings in required fire separations in service rooms. These types of firestopping issues are required to be repaired on an ongoing basis as part of building maintenance.
- missing exit signage and pull stations at the south entrance vestibule in the sanctuary.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
3.1.1 Prepare Fire Safety Plan	$6,215	$6,339	2012	N/A	One time	1	Forecasted
3.1.2 Replace Fire Alarm Panel	$35,312	$38,223	2015	20 yrs	recurring	3	Forecasted

4. SITE

4.1 Site Features

Description:

Site features include the following:
- Fencing around the perimeter of the church parking lot
- Ticket booth at the Park Street parking lot
- Storage container
- Landscaping, shrubs and small trees are located at the north side of the church parking lot.

Catch basins within the asphalt paving provide drainage. Finishes are generally sloped to drain.

Repair History:

2005/2006: Replaced Fence $1,314
2006/2007: Landscaping after 89 Park Demolition, $14,777
2007/2008: Landscaping after 89 Park Demolition, $63,097

Condition:

2011:

We have assumed that landscaping maintenance will be covered out of the operating budget. The existing perimeter fencing is performing as intended and a budget is included for eventual replacement.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
4.1.1 Replace Fencing	$19,459	$28,348	2030	N/A	One time	3	Forecasted

4.2 Paving

Description:

There are three asphalt paved lots including the Church lot (109 stalls), Park Street lot (86 stalls) and Vine Street lot (45 stalls)

Hard site finishes include the following:
- asphalt paving at the church parking lot at the north side of the building and at the Park Street parking lot. There are poured concrete curbs at the pavement perimeter.
- aggregate surfacing at the Vine Street parking lot
- concrete sidewalks at along York Boulevard and Park Street which are shared responsibility with the City of Hamilton

Repair History:

1988/1989: $8,818
1989/1990: Park Street paving $22,682, Park Street sewers $8,500, Park Street lot survey $650
1990/1991: $642
1996/1997: $1,926
1997/1998: $1,160
1998/1999: $499
2000/2001: $13,796
2007/2008: An area of the church parking lot was repaved when 89 Park Street was demolished. Cost included in $63,097 Landscaping project.
2008/2009: Repave Park Street parking lot $45,609

Condition:

2011:

An area of the church parking lot was repaved in 2007/2008 when 89 Park Street was demolished and is generally level and serviceable. However, the majority of the lot has closely-spaced ("alligator") cracks and patch repairs completed at areas of settlement (i.e. around the catch basins). Near the electrical transformer, the Church Administrator reports that there is an area where repeated settlement occurs (likely a result of poor subgrade compaction when a previous building was demolished). The plan allows for renewal by milling and overlaying and includes for some localized deeper subgrade repairs in areas with chronic settlement.

The Park Street parking lot pavement is generally level and serviceable. We did not note widespread settlement or deterioration that would indicate general problems with the subgrade. Budgets for future resurfacing are included in this plan.

We have not budgeted for any improvements or maintenance at the Vine Street parking lot.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
4.2.1 Replace Asphalt Paving (Church lot)	$131,404	$134,032	2012	N/A	One time	2	Forecasted
4.2.2 Replace Asphalt Paving (Park Street lot)	$68,512	$95,933	2028	N/A	One time	3	Forecasted

4.3 Signs

Description:

There is a changeable letter church sign on the south corner of the west elevation and two smaller fixed signs on the south-east corner of the building.

Condition:

2011:

The changeable letter sign is damaged and in need of replacement. Past financial reports indicate that $35,000 was budgeted in 2010 for two new illuminated signs, but this was never completed. We have included an allowance for this amount in this plan.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
4.3.1 Replace Church Signs	$35,000	$37,142	2014	N/A	One time	3	Forecasted

5. HVAC

5.1 General HVAC

Description:

Heating is provided by 10 natural gas-fired furnaces located on the basement levels in each of the buildings. Supplementary heating in localized areas is provided by electric baseboard heaters.

Centralized ventilation and cooling is provided for the sanctuary building and second floor offices by 3 packaged rooftop air conditioning units. Cooling for the first floor offices and chapel is provided by a direct-expansion coil installed in the furnace serving these areas. The condensing unit is located on the rooftop. Localized cooling in portions of the building (Nursery, Hub, Missionary Hall) is provided by window-mounted air conditioning units.

Individual exhaust fans provide ventilation in the washrooms and storage rooms.

Condition:

2011:

Please refer to the individual sections below for further discussion.

5.2 Rooftop Unit(s)

Description:

There are 3 packaged rooftop air conditioning units on the office flat roof that provide cooling for the sanctuary and second floor offices. The units are as follows:

- One Carrier (Model # 48HJE 005---361) with a nominal cooling capacity of 4 tons, manufactured in 2008. This unit supplies the second floor offices.
- One Carrier (Model # 50TFF012-A-111) with a nominal cooling capacity of 10 tons, manufactured in 2004. This unit supplies the sanctuary.
- One Keeprite (Model # KCRT 10L-C) with an estimated cooling capacity of 10 tons. The unit is estimated to be approximately 20 years old. This unit supplies the sanctuary.

Repair History:

1988/1989: Air conditioner $35,000
1989/1990: Air conditioner $15,270
2003/2004: Air conditioner $10,335
2008/2009: Replaced Carrier rooftop unit serving the second floor $7,002

Condition:

2011:

The Church Administrator reports that there is a lack of cooling in the original building. The estimated gross areas within the buildings that are not provided with cooling is about 6,000 sq.ft. Using 'rule-of-thumb' sizing of 400 sq.ft./ton, about 15 tons of additional cooling capacity is required. It is difficult to provide budgets to provide cooling in these areas as many different types of systems would be considered. Based on our initial review, it seems that the best solution in most areas would be to install evaporator coils at the furnaces with rooftop or wall-mounted condensing units similar to the furnace that supplies the first floor offices and chapel. A rooftop unit for the gymnasium is probably the simplest solution. We have used an approximate cost of $2,500/ton but this may vary significantly depending on the location of the condensing units, length of refrigerant piping required and ease of installation. Pending further review, we have included a preliminary budget to provide cooling in these areas.

The Church Administrator also reports that on very warm days, the rooftop units supplying the sanctuary cannot maintain a

comfortable temperature within the space. These air conditioning units supply air to diffusers located at the ceiling level, which is about 2 storeys high and use ceiling fans to push the cool air down. Additional investigation is required to determine the best solution. This may include increasing the capacity of the older rooftop unit when it is replaced or installing evaporator coils in the furnaces that supply the space. Pending further review, a placeholder budget is included.

At the time of our site visit, the Keeprite rooftop air conditioning unit compressors were running but the evaporator fans were not. This unit was also vibrating abnormally. This air conditioning unit is estimated to be about 20 years old. This type of unit has an expected service life of about 20 years. Rooftop units will typically undergo regular maintenance repairs including component replacements over the service life of the unit. Component replacements are likely to include compressors (relatively expensive components, can be in excess of a thousand dollars), blowers, coils, condensate trays, and circuit boards (smaller, less expensive components). As with any building component, the decision to replace an entire rooftop unit versus repair/replace individual components is typically based on the history of past performance, maintenance costs, service requirements, availability of spare parts and unit responsibility which are different for each owner/tenant. We have seen some rooftop units replaced after only 15 years service and others which remain in use beyond 30 years service. Based on age, replacement is budgeted. We assume the existing ductwork will be re-used.

The two Carrier rooftop units are between 3 and 7 years old. Based on age, replacement is not anticipated within the report term.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
5.2.1 Provide Cooling in the Original Building	$45,907	$47,762	2013	N/A	One time	5	Forecasted
5.2.2 Install Rooftop Unit for the Gymnasium	$40,031	$41,648	2013	N/A	One time	5	Forecasted
5.2.3 Replace Rooftop Air Conditioner	$32,488	$33,801	2013	20 yrs	recurring	3	Forecasted
5.2.4 Provide Additional Cooling for the Sanctuary	$14,375	$14,956	2013	N/A	One time	5	Forecasted

5.3 Furnace(s)

Description:

The sanctuary was previously heated with a coal-fired furnace which has since been removed and the area filled with concrete. The church is now heated with 10 furnaces as follows:

- 2 furnaces in the basement of the original building with 1 common duct (serving the Nursery, Hub and Missionary Hall). The furnaces are manufactured by Payne
- 4 furnaces in the basement storage room of the offices (serving the gymnasium, offices, and the chapel). Three of these furnaces are manufactured by Carrier and one is manufactured by Payne. One furnace is equipped with an evaporator coil for cooling and serves the 1st floor offices and chapel. The condensing unit is located on the rooftop. One of the furnaces serving the basement area is equipped with a Nu-Air heat recovery ventilator (HRV).
- 4 furnaces in the basement of the sanctuary (serving the sanctuary and the hallway corridors). The furnaces are manufactured by Payne.

Repair History:

2005/2006: Replaced two original building furnaces and one office furnace $9,167
2006/2007: Replaced two office furnaces: $9,682
2007/2008: Replaced four sanctuary furnaces: $21,648

Condition:

2011:

No problems with heating in the building were reported. The ages of the furnaces range between 3 and 6 years old. Based on age, replacement is not anticipated within the report term.

Maintenance staff report that the furnaces serving the original building share a main supply duct and are controlled by one thermostat. According to maintenance staff, this results in uneven heat distribution in the building. The furnaces should be zoned to provide better control of the heating systems on each floor. This would include adding flow control dampers and additional thermostats. Further review is required to determine specific requirements and budgets. Pending further review, a placeholder budget is included.

The capacity of the condensing unit located on the office roof could not be determined as the dataplate was not legible. The unit has a sticker indicating that it was manufactured in 1984. Based on the age of this unit, we have included a budget for

replacement, assuming the existing refrigerant lines can be reused.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
5.3.1 Replace Condensing Unit on Office Roof	$3,531	$3,674	2013	20 yrs	recurring	3	Forecasted
5.3.2 Provide Zoning for the Heating Distribution System - Original Building	$6,102	$6,349	2013	N/A	One time	3	Forecasted

5.4 Air Conditioning Unit(s)

Description:

There are 7 window-mounted air conditioning units located on the north, south and east elevations that provide localized cooling.

Repair History:

Ongoing: Air conditioners replaced as required.

Condition:

2011:

No problem with the air conditioners were reported. Replacement of the individual air conditioners is assumed to be a maintenance expense.

6. PLUMBING

6.1 Hot Water Storage Tanks/ Heaters

Description:

Domestic hot water is provided by one natural gas-fired domestic water heater manufactured by Rheem. The heater is located in the basement of the gymnasium and is rated at 55,000 BTU/hr and has a storage capacity of 60 USG (227L). There are 2 smaller electric hot water tanks elsewhere in the building and an electric immersion heater for the baptismal tank.

Repair History:

2003: Domestic water heater installed.

Condition:

2011:

No problems with hot water capacity or pressure reported. The domestic water heater is about 8 years old. These type of water heaters have a typical service life of about 15 years. The cost to replace the water heater is not expected to exceed the report threshold, so no budget is included.

6.2 Domestic Water Systems

Description:

There are three incoming metered water lines serving the church. They are located and sized as follows:

- a 1" galvanized steel line from York Boulevard into the basement of the gym/office
- two 1/2" lead pipe lines from Park Street into the original building (one located in the closet of the basement washroom in the original building and another located below the sanctuary fed from York Boulevard).

There are no backflow prevention devices installed.

Condition:

2011:

Water supply pressure was reported by the Church Administrator to be inadequate. The incoming lines are reported to be original. Two of the incoming domestic water lines are reported to be lead. According to the Church Administrator, 2009/2010 they budgeted $20,000 to replace the 1" incoming line with a new 2" incoming line. This new incoming line would become the only incoming service and the two 1/2" lead incoming lines would be abandoned. This work has not yet been completed, so we have included the cost to install a new service in the capital plan. We assume this work will be done in conjunction with the parking lot asphalt replacement project. It is worth noting that the City of Hamilton has a funding program that enables eligible property owners access to a 10-year interest bearing loan for the replacement of private lead water pipes. The City of Hamilton requires that institutional properties have a backflow prevention device installed. A budget to install one is included.

No major plumbing leaks were reported. Given that this is an institutional building and water demand is relatively low (compared to a residential building), we assume the distribution piping will be repaired, as-needed, as a maintenance item.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
6.2.1 Replace Main Incoming Water Service and Install Backflow Prevention Device	$32,488	$33,138	2012	N/A	One time	3	Forecasted

6.3 Drainage Systems

Description:

Drainage systems include the following:

- the visible waste piping is combination of copper, cast iron and PVC.
- there are catch basins in the asphalt-paved areas.
- the type of buried storm drainage piping could not be confirmed

Roof drainage is as follows:
- Corner Flat Roofs: Each flat roof has one drain which drains water through the building via 3" copper pipe to the basement where they connect to the municipal system.
- Gymnasium: Drainage is provided through the original 2.5" diameter area drain and has since been supplemented by the addition of a scupper at the north side of the roof discharging to grade below.
- Office/Kitchen: Original drainage provisions are by one 2.5" diameter drain on kitchen roof and two drains on the office roofs. Two downspouts from the office roof onto the gymnasium roof were added as part of the 2006 sloped roof repairs. Maintenance has also added an additional scupper to the south side of the roof discharging to grade below.
- Original Building: Drainage is achieved by sloped eavestroughs at the east and north sides that lead to downspouts to grade.
- Sanctuary: Custom sheet metal lined eavestroughs which discharge to the flat roofs below at each corner.

Condition:

2011:

The Church Administrator reports there are some problems with drainage throughout the building. There is a cast iron drainage pipe located in the basement of the sanctuary that is broken. This section of piping should be repaired which we assume will be done as part of maintenance. The condition of the buried and concealed piping cannot be evaluated visually. We recommend that drains be flushed and scoped routinely. This maximizes the service life of the piping and also helps identify repair needs. Pending further review of the drainage piping, no budgets are included.

The condensate from the furnaces located in the sanctuary building are not piped to a drain and the condensate is discharged directly to the soil. We are not aware of any environmental or plumbing code requirements that do not permit such a discharge, but this would need to be confirmed. Pending confirmation, no budget is included.

The office roof drains reduce from 3.5" in diameter at the level of the roof to 2.5" at about two feet below the roof line (and from 2.5" in diameter to about 1.25" at two feet below the roof). This reduction in pipe sizes decreases the drainage capacity of the roof and increases the potential for water back-up and freezing in the winter. We have included drainage upgrade allowances in the future roof replacement projects.

7. ELECTRICAL

7.1 Electric Supply and Distribution

Description:

Electricity is supplied to the building underground via a pad-mounted transformer located in the parking lot near the northeast corner of the building. According to a stamp on the transformer, it is rated at 150 kVA. This transformer steps down the power to 347/600V.

The main disconnect switch is located in the original building basement and is rated at 200A, 600V, 3 phase. The power is metered and fed to various 600V disconnect switches for the air conditioning units and to a 150 kVA dry-type transformer that steps down the power to 120/208V. The main 120/208V disconnect switch is rated at 400A, 3 phase. This disconnect switch feeds various 120/208V switches and panelboards located in the basement electrical of the original building and main floor electrical room located in the gymnasium/office building.

Where seen, the wiring is generally copper, however some knob and tube wiring was observed in the sanctuary.

Condition:

2011:

The Church Administrator reports that the service capacity is inadequate and that breakers often trip. Additional panels may be required but this which would lead to replacing the main electrical distribution equipment (outdoor and indoor transformers, main disconnect switches) with higher capacity equipment. Some knob and tube wiring is present but does not appear to be widespread. We recommend that you confirm this with your electrician. Further review is required to determine how much additional capacity is required. Pending further review, a placeholder budget is included to replace the outdoor and indoor transformers, main disconnect switches, to add existing panels and remove the knob and tube wiring. Outdoor pad-mounted transformers are often the responsibility of the electric utility company, but this was not confirmed so we have included it in our budget.

Some of the electrical equipment in the original building basement electrical room was date stamped 1989. The other equipment appears to be about the same age. Major electrical equipment has an average service life of 40 to 50 years or more. Given that the panels, switches etc. are relatively small, we assume that individual switches and panels will be replaced individually, on an as-needed basis, as part of maintenance.

There is no ventilation in the original building basement electrical room. Rooms containing air-cooled transformers are required to have a form of ventilation to minimize heat build-up generated by the transformer. An exhaust fan should be provided in this room. The cost to install an exhaust fan is not expected to exceed the report threshold, so no budgets are included.

There are loose wires located on the kitchen roof which should be secured as they are a potential tripping hazard.

There are portions of electrical conduit located on the rooftop that are corroded. These portions should be painted or replaced as required. We assume this is a maintenance item.

We understand that thermographic scans are not carried out as part of regularly scheduled maintenance. We recommend having a thermographic scan of the main electrical distribution equipment carried out soon, and every few years thereafter, as part of regularly scheduled maintenance. Any defects or anomalies should be rectified at the time of discovery.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
7.1.1 Upgrade Electrical Service	$88,422	$95,711	2015	N/A	One time	5	Forecasted

7.2 Lighting

Description:

Lighting systems include the following:

- mostly T12 fluorescent with some T8 fluorescent in the offices and original building
- metal halide high intensity discharge (HID) lighting in the gymnasium
- mostly incandescent fixtures in the sanctuary
- incandescent lighting in the service rooms
- exterior wall-mounted HID fixtures

Repair History:

1989/1990: Park Street parking lot lights $6,392
1993/1994: Sanctuary Hallway lights $1,131
1997/1998: Platform Lighting system $8,263
1998/1999: Platform Lighting system $2,277

Condition:

2011:

The Church Administrator reports that the T12 fluorescent fixtures are being replaced with T8 as the ballasts fail (approximately 10% to date). The light levels in some areas are below that required by the current Building Code and many municipal by-laws (50 lux). However, we are not aware of any by-laws in Hamilton requiring lighting upgrades for existing buildings. Therefore, we have not included a budget in the plan. We assume that the gradual replacement of the T12 fixtures will continue to be completed as part of maintenance.

The gymnasium lighting includes high intensity discharge (HID) lights. These bulbs operate at high pressure and temperature and can shatter, so protective lenses or double-walled lamps need to be installed (as per the bulb manufacturer recommendations) to prevent a fire. The lenses also help prevent direct eye contact with the filament which can cause eye damage. From floor level, we cannot determine the type of lamp installed, and maintenance personnel report that there are no lenses. Where seen from the floor level, the lamps have only wire guards. We recommend you confirm the appropriateness of the existing installation against the lamp manufacturer's requirements. Additionally, maintenance reports that there are small transformers for every 2 HID lamps (6 in total) that require frequent replacement. We have budgeted for replacement of the lighting system in the gymnasium.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
7.2.1 Replace Gymnasium Lighting	$9,746	$9,941	2012	30 yrs	recurring	2	Forecasted

8. MISCELLANEOUS

8.1 Security Systems

Description:

The building has the following security/access control systems:

- CCTV system, with two cameras monitoring the handicap kitchen entrance and the lower office entrance
- Intercom system
- "ADT Focus 32" security panels which protect the upper offices.

Condition:

2011:

Past financial reports indicate that $8,000 was budgeted in 2008/2009 to install a security video camera in parking lot behind the church. This upgrade was not completed. The plan allows to replace the CCTV system, including a digital recorder and three video cameras.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
8.1.1 Replace CCTV System	$14,294	$16,748	2019	N/A	One time	4	Forecasted

8.2 Consulting Services

Description:

Repair History:

2007/2008: Architect Feasibility Study, $10,195
2008/2009: Architect Feasibility Study, $5,018 (final payment)

Condition:

2011:

The plan allows to update the capital plan every 3 years.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
8.2.1 Update Capital Plan	$5,650	$5,996	2014	3 yrs	recurring	3	Forecasted

8.3 Other

Description:

There are two Beam central vacuum systems. One is located in the gym basement storage room (Model 297, Serial 9120076) serving the offices and lower chapel. Another is located in the sanctuary basement (Model 294, Serial 123106) serving the sanctuary and Missionary Hall.

Condition:

2011:

No problems were reported by maintenance. The systems appear to be around 20 years old and we have budgeted for replacement within the term of the report.

Project Name	Present Cost	Inflated Cost	First Occur.	Cycle	# Occurrences	Class.	Status
8.3.1 Replace Central Vacuum Systems	$2,825	$3,119	2016	N/A	One time	3	Forecasted

Scope Of Work

Authorization

This report was prepared at the request of Mr. James Dean, Church Administrator of Philpott Memorial Church as a capital plan for the property.

Mandate

The purpose of this report is to provide a general indication of the present physical condition of the building with respect to easily visible portions of the structure; enclosure; site work; mechanical, electrical, and plumbing systems; active fire safety systems; and elevating devices. Passive fire safety systems (fire containment and egress provisions) are specifically excluded from our mandate. We were to record deficiencies or conditions noted during a single visual walk-through review which, in our opinion, will likely require capital expenditures by the Owner above those normally associated with routine maintenance in the next 20 years. Capital expenditures are defined as those that exceed an annual threshold of $2,500, which are not carried out as part of repetitive maintenance programs, and which are not voluntary upgrades or improvements. Budgeting for interior finishes, furniture, and equipment is excluded.

Our mandate was to complete a visual walk-through survey of items, components, and systems that are conspicuous, patent, and that may be observed visually during the walk-through survey without intrusion, removal of material, exploratory probing, and the use of special equipment or design calculations. Therefore, concealed physical deficiencies and design inadequacies are specifically excluded from our mandate. Our interviews of building personnel attempt to uncover known concerns in the building, but we cannot attest to the integrity or knowledge of the interviewees, nor can this process, or the scope of work in its entirety, be considered technically exhaustive or be considered to eliminate all risks related to owning this property. Only conditions actually seen during examination of representative samples can be said to have been appraised, and comments on the balance of the conditions are assumptions based upon extrapolation.

Our mandate does not include an exhaustive review of visible conditions against all Code, property standards by-law, or other legislative requirements that existed at the time of construction, or that may retroactively apply, including Human Rights Code violations. We do consider the adequacy and acceptability of guards (at stairs, retaining walls, etc.), window opening restrictors, daytime light levels (corridors, stairs and garages), and backflow preventers. In the course of our review, our site reviewers may also identify other potential compliance concerns, but the identification of these concerns should not be seen to indicate that an exhaustive review has been completed.

Our mandate is to provide opinions of probable costs that reflect the repair strategies that we foresee and should be considered preliminary budgets only. Accurate figures can only be obtained by establishing a scope of work and receiving quotes from suitable contractors. We cannot guarantee the actual age of equipment, apparent maintenance practices, or the service lives that we have predicted. Time frames given for undertaking work represent our opinion of when to budget for the work. Failure of the item, or the optimum repair/replacement process, may vary from our estimate. Typically further investigation and design will be needed to firm up construction budgets and timing for any significant projects.

In selecting repair strategies, we try to select strategies to match the client's business strategy for the building, when this is communicated to us. In many circumstances, more or less conservative repair approaches could be selected. Our opinions of costs apply only to the strategies described in our report.

Our review was intended to identify conditions resulting from past and current uses. Additional evaluation may be required if a change of use, renovations or additions are anticipated.

As per our Conditions of Assignment issued at the time of engagement, we note the following conditions related to this report:

- Our liability to the Client in Contract and Tort is limited to $2,000,000.

- The Client has made available all relevant information or data pertinent to the Project to the Consultant. The Consultant is entitled to rely upon the accuracy and completeness of such information and data furnished by or on behalf of the Client.

- The Client expressly agrees that the individuals engaged by the Consultant, including sub-consultant engaged to perform portions of the work which are not within the Consultant’s range of services, shall have no personal liability to the Client in respect of a claim, whether in contract, tort and/or any other cause of action in law. Accordingly, the Client expressly agrees that it will bring no proceedings and take no action in any court of law against any of the individuals in their personal capacity.

- This report is, and shall remain the property of the Consultant. Copies issued to the Client are for record purposes only. The

Client shall not use or permit use thereof for any other project without the consent of the Consultant.

Survey Method

Halsall Associates reviewed the building on July 28, 2011.

Our field observers were David Heska, Brendan Optis and Jay Leedale. The report was prepared by David Heska and Brendan Optis and reviewed by Jay Leedale of Halsall Associates.

In our proposal we offered to incorporate specialists on the team to review the electrical systems, but this option was not selected by the client.

The survey consisted of a visual review of samples of the following:

- the exterior walls and windows.
- the roofs.
- service rooms in the basement
- common areas (including the gymnasium, kitchen, upper offices, sanctuary, nursery, basement children's area and Missionary Hall).
- the perimeter site.

Information Provided

Mr. James Dean, Church Administrator and Mr. Don Nelson, Building Maintenance answered our questions about the history of performance of the various systems, described existing capital plans, etc.

A questionnaire was issued to the Owner requesting information regarding known problems, past repairs, the current status of leakage, etc. The information received was reviewed, and included in the report.

The following reports were reviewed:
- Roof Condition Evaluation by Halsall Associates (dated September 20, 2010).

No drawings were provided.

The following service contractors were contacted:
- NuTech Fire Protection
- Kent Heating and Air Conditioning

Limitations

- No party other than the Client shall rely on the Consultant's work without the express written consent of the Consultant. The scope of work and related responsibilities are defined in the Conditions of Assignment. Any use which a third party makes of this work, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Decisions made or actions taken as a result of our work shall be the responsibility of the parties directly involved in the decisions or actions. Any third party user of this report specifically denies any right to any claims, whether in contract, tort and/or any other cause of action in law, against the Consultant (including Sub-Consultants, their officers, agents and employees).

- The work reflects the Consultant's best judgement in light of the information reviewed by them at the time of preparation. Unless otherwise agreed in writing by Halsall, it shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. This is not a certification of compliance with past or present regulations. No portion of this report may be used as a separate entity; it is written to be read in its entirety.

- This work does not wholly eliminate uncertainty regarding the potential for existing or future costs, hazards or losses in connection with a property. No physical or destructive testing and no design calculations have been performed unless specifically recorded. Conditions existing but not recorded were not apparent given the level of study undertaken. Only conditions actually seen during examination of representative samples can be said to have been appraised and comments on the balance of the conditions are assumptions based upon extrapolation. We can perform further investigation on items of concern if so required.

- Only the specific information identified has been reviewed. The Consultant is not obligated to identify mistakes or insufficiencies in the information obtained from the various sources or to verify the accuracy of the information.

- Halsall is not investigating or providing advice about pollutants, contaminants or hazardous materials.

- Budget figures are our opinion of a probable current dollar value of the work 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.

- Time frames given for undertaking work represent our opinion of when to budget for the work. Failure of the item, or the optimum repair/replacement process, may vary from our estimate.

PHOTOS

Photo No. 1: Southeast Corner

Photo No. 2: East Elevation (Sanctuary)

Photo No. 3: East Elevation (Original Building)

Photo No. 4: North Elevation

Photo No. 5: Southwest Corner

Photo No. 6: West Elevation

Photo No. 7: East Elevation Entrance

Photo No. 8: Asphalt at Church Lot

Photo No. 9: Electrical Transformer

Photo No. 10: Office Flat Roof

Photo No. 11: Entrance Ramp

Photo No. 12: Roofing membrane at Original Building

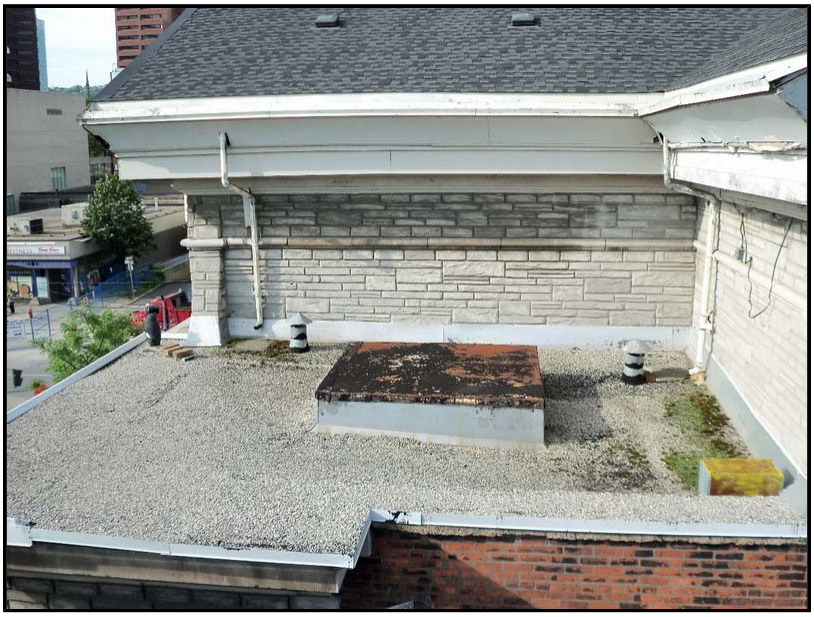


Photo No. 13: Sanctuary Corner Flat Roof

Photo No. 14: Sanctuary sloped roof deteriorated fascia

Photo No. 15: Chapel Windows

Photo No. 16: Office Windows

Photo No. 17: Stained glass window in sanctuary

Photo No. 18: Stained glass window at north viewed from roof

Photo No. 19: Cracked Windows

Photo No. 20: Corroded Door Frame at Emergency Basement Exit

Photo No. 21: Cracks in Cementious Wall

Photo No. 22: Deteriorated Chimney

Photo No. 23: Deteriorated Mortar

Photo No. 24: Deteriorated Sealant

Photo No. 25: Stone Foundation

Photo No. 26: Basement underneath Sanctuary

Photo No. 27: Exit Door along York Blvd

Photo No. 28: Interior Structure view from Sanctuary Roof

Photo No. 29: The Hub

Photo No. 30: Gymnasium

Photo No. 31: Interior Hallway

Photo No. 32: Kitchen

Photo No. 33: Children's Area at Basement of Gym

Photo No. 34: Basement Electrical Roof

Photo No. 35: Sanctuary roof interior

Photo No. 36: Fire Alarm Panel

Photo No. 37: Typical Furnace

Photo No. 38: Older Keeprite Packaged Air Conditioner

Photo No. 39: Newer Packaged Air Conditioner

Photo No. 40: Broken Drain Pipe

Photo No. 41: Typical Electrical Disconnects

Photo No. 42: Corroded Electrical Conduit

Photo No. 43: Gymnasium Lighting

BUILDING CONDITION ASSESSMENT

PHILPOT MEMORIAL CHURCH

84 YORK BOULEVARD, HAMILTON ON
Project No.: 2019-0326-10

June 26, 2019

WALTERFEDY

PHILPOT MEMORIAL CHURCH

BUILDING CONDITION ASSESSMENT

84 York Boulevard, Hamilton ON

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APPENDICES

EXECUTIVE SUMMARY

WalterFedy was engaged by Philpott Memorial Church to conduct a building condition assessment in order to identify the status quo condition of the Church and to identify needed repairs including cost estimates. The information gained in this assessment was then used to examine the benefits and disadvantages of completing the identified repairs, or constructing a new Church building.

Following a site visit on May 8, 2019 it was determined that while the current Church building is functioning, there are some significant physical deficiencies that can only be repaired with actions costing between an estimated $2.5M to $4M over the next ten years. Making these required changes may still leave the Church building functional, but not in full compliance with current building codes or design standards, and will not resolve all future repair and replacement requirements of the building.

Constructing a new Church building is estimated to cost about $8.6M and will result in a modern, more functional and safer building with fewer and less expensive investment requirements over the long-term future.

1.0 SCOPE OF WORK AND METHODOLOGY

Philpott Memorial Church has engaged WalterFedy to complete a Building Condition Assessment (BCA) of the Church building located at 84 York Blvd., Hamilton ON. On May 8, 2019 staff from WalterFedy visited the church to perform a visual inspection of the building in order to identify the status quo condition of the building and its individual elements, including the identification of any deficiencies with those elements.

Following the site visit a costing exercise was completed that developed cost estimates to correct the identified deficiencies and forecast element replacement needs due to normal lifecycles of the elements being reached.

As part of this assessment an estimate of the cost to construct a new Church building was completed using current design and construction rates. This enables the comparison of the identified repair and replacement costs against the cost to construct a new building (not including land costs).

There have been at least two (2) previous general building condition assessments completed since 2011 -one by Halsall Associates in Oct. 2011, and the other by Morrison-Hershfield in Nov. 2014. In addition, there have been studies of specific elements of the Church building, including,

- Designated substance survey (DSS) (2012)
- Geotechnical Investigation
- Roof cornice assessment
- Sanctuary Attic investigation and report
- An analysis of the coal-ash in the basement of the Church building

These reports were reviewed by WalterFedy and the information within them considered in the development of this report.

The Halsall and Morrison-Hershfield reports each included a recommended capital repair / replacement plan and are quite comprehensive in the details included……

2.0 DESCRIPTION OF PHILPOTT MEMORIAL CHURCH

The Church building is located at 84 York Blvd., Hamilton ON, on a corner property in the central downtown core of the city. The estimated site area is approximately 57,790ft² which includes a large parking area to the North side of the building and is accessible from either Park St. N., or Vine St. The building occupies the South-East corner of the property and has a footprint of approximately 16,600ft², or about 29% of the property. There is minimal vegetation on the property.

As it exists today the building form and size are the result of two major additions being added to the original building. The original section of the Church was constructed in 1892 and consists of the two-storey section at the North-East corner of the building. This area houses the Nursery and a large multi-use room known as the “Upper Room”.

The Sanctuary section was constructed in 1906. This is a two-storey section with a high domed ceiling and balconies surrounding the main “Auditorium” space where services take place.

The “Atrium” section was constructed in 1968, and underwent a major renovation in 2014/15. Within this area there is a large multi-use room (known as the “Atrium”) which was originally a gymnasium at the North-West corner of the building, a meeting room called the “West Room” and offices in a section along the West side, and a large commercial style kitchen between these two areas on the ground floor

Detailed drawings were not made available to be able to conduct proper quantity take-off measurements to determine the building gross floor area. Using a combination of information contained in the Halsall report and

measuring tools available through on-line sources an estimate of the building gross floor area is included in Table 1 below. The building gross floor area is relevant in determining recommended future actions.[1]

Table 1: Philpott Church Building Gross Area Estimate

Building Area	Size (ft²)	Comments
Original section	2,600	Halsall report; confirmed by site-map measurement
Upper Room & Hallway (2nd floor, original section)	2,600	Estimated from site-map measurement
Sanctuary section	8,500	Halsall report; confirmed by site-map measurement
Sanctuary balcony area (2nd floor)	2,000	Estimated from site-map measurement
Atrium section, ground level	5,500	Halsall report; confirmed by site-map measurement
Atrium section -second floor offices, hallways	4,000	Estimated from site-map measurement
Lower Level (Children's Church)	4,000	Estimated from site-map measurement
Total Estimated Gross Floor Area	**29,200**	

The building does not currently have any type of heritage recognition or designation, but Staff indicated that the City of Hamilton has the building on a "watch list". Despite no formal recognition, any future work done on the building should consider maintaining the heritage features and use specialized workers so as to maintain the integrity of the Church.

3.0 GENERAL DESCRIPTION OF BUILDING SYSTEMS AND COMPONENTS

3.1 Site Features

Philpott Memorial Church is located at the intersection of York Blvd. and Park Street North in Hamilton ON. The site is located in the urban downtown core of Hamilton. The total estimated property area is 57,790 ft², with the Church building occupying the South-West corner of the property and having a footprint of about 18,200 ft². The remainder of the property is nearly entirely used as a parking area, with a small area of grass and trees along the North edge of the parking lot bordering Vine St. Chain-link fencing is installed on the West border of the property.

According to Church staff the majority of the parking area is leased to a neighbouring business during weekdays, providing a source of revenue to the Church.

The asphalt is generally in a "fair" condition overall. There was cracking and deformation of the asphalt noted in various locations, but no major deficiencies observed. Regular preventive maintenance in the form of crack sealing and localized patching / filling is the only recommended requirement

The chain-link fencing defines the property boundary and also provides a first level of security. The fencing uses galvanized steel elements for protection from the elements. The fence posts were noted to remain securely founded in place, and the chain-link mesh in good condition overall.

[1] As described in the Halsall report: Original section – 3200ft², Sanctuary – 8500 ft², Atrium – 6500 ft² totalling 18,200 ft².

3.2 Structural

3.2.1 Original Church (1892)

This two-storey section of the building is constructed using solid masonry walls supporting wood floor beams and joists, and wood columns. The masonry also acts as the exterior wall cladding. The foundation walls were not visible as they were covered with finishes on the interior, but given the age of the building it is probable that stone masonry walls. No details related to the footings are available.

None of the structural elements were visible to be observed on the interior side, however, it was noted in the Upper Room of this section that the floor is no longer level and has noticeable deflections and slopes throughout the space. This is not necessarily a structural issue, but is evidence the age of the structure with the wood framing members deflecting with age.

No other issues of note were observed

3.2.2 Sanctuary (1906)

The Sanctuary forms the central area of the Church building with the main functional space being the Auditorium where services and other gatherings occur. To the best knowledge, this section of the building is constructed similarly to the original section, with solid masonry walls supporting wood floor beams and joists. From the basement it was observed that the wood structural members are – in some cases at least – constructed using 1” thick x about 12” wide multi-ply built-up beams.

The space within the auditorium is open to the high-domed ceiling, with balconies accessible from the second level surrounding the lower level. The domed ceiling is supported with four masonry columns which are covered with finishes that match the remainder of the finishes in the Sanctuary, and therefore not able to be observed. Cracks in the finishes around the columns were observed, however, it is felt that these are a result of the aging of the plaster-based finish material and not a result of any movement or deflection of the structural members.

The hip-roof structure was not directly observed due to access issues, but according to a report prepared by Quinn Dressel Associates Consulting Engineers the structure consists of “1” nominal plank sheathing spanning 1’-4 c/c onto 2 x 8 timber roof joists. The joists span over and are in turn supported by 2 ply full section 2x10 undressed timber purlins spanning between steel trusses. The purlins are constructed continuously over the top chord of the truss. The trusses were manufactured with double angles of various sizes, gusset plates, all connected via steel rivets.”
The Quinn Dressel report did not identify any structural issues with the roof that require attention.

The only access available to the attic space above the Sanctuary is via a hatch in the ceiling which itself can only be accessed by using a portable ladder to reach the space. Because of this reason, and based on the description of potential risks to persons entering the attic space that were highlighted in the Quinn Dressel report, it was determined to be unsafe to enter the attic space.

The foundation of this section of the building was visible from the South-East corner of the basement. Stone masonry walls of unknown thickness surround the perimeter of the building with load bearing brick masonry walls and columns used within the perimeter. The mortar of both the stone and brick foundation members was observed to be in a Fair condition over most of the building: all of the masonry visible was noted to have areas of loose and/or flaking mortar. The paint finish on the stone wall was flaking off – potentially due to moisture infiltration through the wall – and there was some notable damage in the mortar, especially on the lower sections of the wall.

The majority of the basement structural elements could not be observed due to the presence of coal-ash being stored in the basement to a volume where nearly the entire floor space and basement height is filled, complete encasing the interior brick masonry columns. The coal-ash is the residue remaining from the time period when the building was heated by coal burning furnaces. Samples of the material have been tested with

the analysis concluding that the material does not contain any PCBs, and any material elements within the material are of low enough concentration that the coal-ash can be considered a non-hazardous waste material.

3.2.3 Atrium (1968)

The newest section of the building is constructed on a concrete block foundation wall with concrete floor slabs. The former gymnasium section as well as the entry was renovated in 2014/15.

The flat roof structure consists of open web steel joists bearing on the concrete block masonry, with a corrugated steel deck for the floor and roof. The surface of the concrete slab was not observable since it is covered with a rubberized type flooring finish. The concrete block masonry wall was observed to have some deficiencies on the exterior side (noted in following section) but these are not considered to present a concern to the structure.

The rest of this section of the building contains a large commercial style kitchen, a multi-purpose room (the West room), washrooms, and administrative and staff offices on the second floor.

4.0 BUILDING ENVELOPE

4.1 Roofs

The roof of the 1892 section and the 1906 Sanctuary section both have sloped roofs with an asphalt shingle covering. The shingles were most recently replaced in 2017.

The Sanctuary also has four flat roofs at the corner cornices. These have recently been replaced following interior flooding caused by suspected ice damming and blocked roof drains at one of the cornices.

The Atrium section has three different flat roof sections. These could not be accessed during the assessment but according to information provided by Church staff, the roof over the Atrium (former gymnasium) was last replaced in 2005/06, while the other roofs over the kitchen and offices were replaced in 2017. Flat roofs are typically estimated to have about a twenty-year lifecycle, although it is possible that they can remain in good condition longer than that. Based on a twenty-year lifecycle, it is recommended to plan for replacing the Atrium roof within the next ten years.

The fascia and soffit around the roof of the Sanctuary system consists of decorative wood elements and forms a distinguished part of the look of the Church. The wood elements were observed to require repainting and patching of cracks etc. Some of the pieces were noted to be misaligned, possibly indicating the piece is no longer properly secure. However, Church staff noted that a project to correct and repair the Sanctuary soffits and fascia was already scheduled for summer 2019, so no action for this deficiency will be included in this assessment.

4.2 Walls

On all sections of the building the structural wall assemblies also act as the exterior wall finishes. The 1892 and 1906 sections consist of exposed brick masonry with the South and East elevation of the Sanctuary section having a decorative Cementous material applied directly over the masonry.

The cement veneer is patterned to appear to be cut-stone masonry. There are stains and discolored sections of the material observed, and possibly some delamination issues (see following sections for more detail).

The visible brick is part of a multi-wythe brick assembly and besides appearing weathered and aged, is generally in GOOD condition. Evidence of past repair work is visible. An exception to the good condition note is the parapet wall on the West elevation of the Sanctuary dome – brick damage here resulting from moisture and exposure to freeze-thaw cycles as a result of the characteristics of the parapet wall as well as probable past problems with flashing details between the roof and parapet wall, have caused failure and flaking of

material off the faces of individual brick units in this area. Up-close assessment of this wall area was not possible due to the limitations with accessing the area, however, using zoomed-in photographs, besides the brick flaking and discoloration there were no other issues identified. No mortar appears missing, though there is evidence of past repointing repairs being done judging by the colour of the mortar in parts of the wall. While the damaged bricks do present a deficiency that needs addressing, it is not a type or scope of deficiency that would be considered a major issue.

The Atrium section has exposed concrete block masonry walls with a painted finish. Evidence of previous repairs to repoint step cracking through the mortar as well as some recession (i.e. erosion) of mortar in some locations was noted. There remains some other minor cracking noted through the masonry walls. None of the issues are considered to create a structural problem, but future repairs will likely be required in order to ensure the longevity of the wall assembly. The paint finish on the masonry is peeling and scaling, and will continue to do so over time.

Neither of the main wall assembly types is considered energy efficient, having been constructed at a time when such a concern was not a focus of building design. As a result of this, the building likely experiences heat gain in the summer and heat loss during the winter at a high rate, in turn requiring high capacity heating and cooling systems. Temperature and comfort issues were noted by staff as a concern.

4.3 Doors and Windows

The doors and windows in the building are on average in FAIR condition with some individual units in POOR condition and recommended for replacement (noted in following sections). The majority of the windows have wood frames, all of which require at minimum repairs to the wood and refinishing in order to maintain the integrity of the existing window frames. That limited step would not provide any improvement to the poor energy efficiency qualities of the existing windows.

On the South and East elevations, at the top of the Sanctuary area gables are two stained glass window assemblies. Due to the height, location and access issues these windows could not be closely assessed. However, it is clear that these are one-of-a-kind window assemblies that have been custom designed and constructed to fit the locations they are in. These windows have wood frames around the perimeter with vertical mullions. The actual stained-glass windows are behind a clear-glass “storm” window assembly.
The paint finish on the wood is flaking and peeling which if left uncorrected will eventually allow the wood to rot. The stained-glass windows themselves were not able to be assessed.

The entry door from the North side parking to the Atrium is in GOOD condition but all other doors are considered in FAIR or POOR condition. The only door with an auto opener is the Atrium entry - all other doors can only be opened manually. They are steel doors with glazing units set in steel frames. Common issues noted were the steel parts requiring refinishing, and poor sealing features (i.e. there is not a tight seal against air leakage when the doors are closed).

There is a single steel entry door on the West elevation that leads to the kitchen area. This door is newer than the other doors, and is of a more durable construction style. It does not appear to be an entry that is heavily used, so with regular maintenance and occasional repair on an as-needed basis it should remain in good working condition beyond ten years.

4.4 Interior Finishes

With the exception of the Sanctuary, interior finishes are generally simple and utilitarian as opposed to superfluous and ornate. Most rooms are finished with drywall, or the interior concrete block walls are painted. Ceiling finishes vary between T-bar acoustical tile assemblies, drywall, or are left unfinished. Floor finishes vary from carpet, laminate and rubberized membrane, with older vinyl composite tile (VCT) remaining in rooms not yet renovated.

The ages of the finishes vary, depending on the dates of renovations. Most of the finishes were noted to be in FAIR to GOOD condition on average. With the exception of replacing some stained ceiling tiles no issues with

the finishes were observed that would require immediate action. It is expected that rooms with older finishes will be renovated in the future, but these will not be included in this assessment.

Within the Sanctuary the level of decoration and therefore complexity of the finishes is greater than the rest of the Church. The ceiling is plaster based, and suffering from extensive paint peeling and some cracking. The suspected cause of this is condensation within the attic space above as warm humid air leaks into the attic and mixes with cold air. The 2014 Morrison Hershfield report identified that there is insulation, but no vapour barrier installed in the attic. Due to the attic access issues this was not able to be confirmed. The condensation issue would be most prevalent during winter months, so this also could not be confirmed.

Regardless, the Sanctuary ceiling requires significant work to return it to a good condition. Combined with improvements to the attic insulation and vapour barrier, plaster repair and repainting will be required, and because of the design of the space this would only be possible with the installation of scaffolding on the floor of the Sanctuary, thus causing a temporary closure of the room so that the work could be done.

Figure 1: View of typical damage on Sanctuary ceiling

The walls in the Sanctuary, including the balcony fronts, are also suspected to be a plaster material including some decorative detailing. No major issues were noted with the walls, however, if work were to be completed on the ceiling it would be recommended to include completion of any needed minor repair and refinishing work on the walls at the same time

5.0 MECHANICAL AND ELECTRICAL SERVICES

5.1 Heating and Cooling

Primary heating is provided by a series of ten (10) gas fired forced air furnaces installed in such a manner that each furnace supplies conditioned air to a specific zone or set of rooms within the building. The furnaces serving the first-floor offices and West Room area each include a condensing unit and cooling coil (i.e. air conditioning). All of the furnaces are located at the basement level, in three different groupings, with supply and return air ducting routed through the building and diffuser grills installed at the end-points of the duct runs.

The Sanctuary and second floor office area has ventilation and cooling provided by two roof-top mounted air-handling units. Temperature control in the various zones is provided via separate thermostats for each zone – there is no central control system.

The furnaces vary in age from five to twelve years and are of a durable, good quality construction. There is evidence that the Church completes good maintenance on the units and there is an ad-hoc lifecycle program being practiced where individual units are replaced before they reach a failure point.

To assist with cooling in areas of the building that are not served with centralized cooling, window mounted air conditioner units have been installed in localized areas to suit the occupants desired comfort levels. While this method can be somewhat of a solution, it is recommended that to improve the cooling capabilities and

occupant comfort levels that the next time the furnaces require replacement a A/C condensor be added to those units not currently equipped with one.

Electric baseboard heaters were noted in some of the smaller rooms (offices, washrooms) where air distribution ducts did not serve. The age of these units was not known or able to be confirmed, and electric heating is relatively more expensive compared to gas heating systems, however, due to the complexity and cost of installing ductwork to serve these areas there is no recommendation at this time to change this system.

A listing of the HVAC equipment including model numbers and serial numbers is included in Appendix B.

5.2 Plumbing – Domestic Water Supply

There are three water supply lines from the City of Hamilton mains to the building. Two of these lines retain the lead pipes that were installed originally. Further to this issue Staff consider the church to have below adequate water pressure, causing inconvenience to staff and users. To mitigate all these problems replacement of the water supply mains is required. More info on this issue is included in following sections of this report.

5.3 Plumbing – Washroom Fixtures

There are a total of ten bathrooms in the church, each having typical toilets and sinks. The age of the fixtures varied, with the replacement of the fixtures done on an as needed basis. All checked were noted to be functional, with low pressure noted.

5.4 Plumbing – Kitchen Fixtures

A commercial type kitchen is located on the ground level in the Atrium section. There is a high capacity dish-washer and sinks installed here, as well as a grease trap. NO issues were noted with these items and repair or replacement on an as-needed basis would be the only recommendation.

5.5 Plumbing – Sanitary Waste System

The Church is connected to the City of Hamilton sanitary waste collection sewers. Within the building visible sections of the system were constructed of cast iron or ABS piping. No issues were reported but due to the age of the various components there is a risk of failure or blockage of pipes.

6.0 ELECTRICAL

6.1 Primary Service and Distribution

Electrical service to the building is provided by the local provider via underground cables. Because the building was constructed in phases, there is no single electrical service room but instead two main locations where distribution panels and switchgear is installed. These are a basement service room near the Children's Church and a service closet located near the kitchen.

In the basement service room there is a 150kVa transformer and a 400Amp – 600V distribution panel.
The electrical closet near the kitchen contains a 200Amp and a 250Amp distribution panel.

The main panels and switchgear all appeared in good condition, and no electrical problems were noted by staff. Electrical elements within the building include the mechanical equipment, lighting and power outlets with no high amperage units or process equipment that would require a high electrical power draw.

6.2 Lighting

Lighting elements in the building are a mix of T12 and T8 fluorescent fixtures, incandescent fixtures and some LED fixtures installed during retrofit activities. With the exception of the issues with access to the suspended lighting in the Sanctuary there were no functional issues or areas with insufficient lighting noted. However, converting existing incandescent and fluorescent to LED fixtures will result in lower operating costs and longer lifecycles between equipment failure. Such a replacement program would be recommended as part of other renovation work in a phased approach.

Aged incandescent fixtures remain in use in the Sanctuary and due to the noted access issues are difficult to maintain, including the need to change bulbs. These units are very decorative as well as providing lighting to the Sanctuary space, but due to their age, poor efficiency compared to modern fixtures, and difficult maintenance issues, replacement is recommended in the near future.

7.0 OTHER SERVICES

7.1 Fire and Life Safety Systems

The building is not protected by a fire sprinkler system, nor was a fire department standpipe connection identified.

There is a fire detection system with a combination of smoke and heat detectors and manual alarm pull stations connected to a central, monitored fire alarm panel. Detection devices were located in appropriate locations throughout the building and based on inspection tags the system was last inspected in 2017.

Emergency EXIT signage and back-up emergency lighting units were installed however, some of the EXIT signage was of a style no longer recommended by the current building Codes (i.e. red EXIT wording instead of “green runner”), and at least two exit signs were noted to not be illuminated (likely a maintenance issue only to replace the bulbs). While the current installation of exit signage was most probably done in accordance with Code requirements at the time of the installation, installing more Exit signage identifying the locations of, and routes to the doorways in the East Sanctuary hallway would be recommended as a step to improving occupant safety.

Given the age of the different sections of the building, the materials in use and the layout of the interior walls, it was difficult to assess if proper fire separation and fire rated construction methods are in use.
At locations where pipes or electrical cabling or air ducts pass through an interior wall it was noted that not all of the wall openings were fully sealed, and in some areas, what appeared to be spray-foam insulation was used to seal the opening – such material typically does not have appropriate fire resistance properties to be used as a fire separation.

8.0 SIGNIFICANT FINDINGS

8.1 Accessibility

All sections of the building were constructed prior to any consideration or requirement to design features for people requiring mobility or other types of assistance. In January 2015 the provisions included in the Accessibility for Ontarians with Disabilities Act (AODA) were incorporated into the latest edition of the Ontario Building Code (OBC) under section 3.8. These requirements outline minimum standards for building design and construction features to ensure all persons have the ability to access buildings, and include standards for:

- Universal washrooms
- Barrier free paths of travel
- Minimum dimensions for doorways and hallways
- Power door operators
- Etc.

Although these requirements came into force for new construction in 2015, they do not necessarily have to be applied to existing building, unless "extensive renovations" as defined by the OBC are undertaken[2]. In brief, extensive renovations include changes including removal of existing walls, ceilings, floor assemblies, roof assemblies and of course structural elements, and construction of new elements in their place. The Code states when the elements are "substantially removed", which leaves the extent of changes allowed before the Code requirements would be mandated to the judgement of the City of Hamilton Building Department.
The intent of the Provincial Legislation regarding accessibility is that all buildings should meet at least minimum requirements for people requiring assistance by 2025.

Although the scope of this report does not constitute a detailed accessibility audit, it is clear that the building would not be considered accessible. The entry door at the Atrium, from the parking area, is accessible by a ramp and has an auto-opener. From the Atrium section people would be able to access the rooms on the ground floor including the Sanctuary auditorium, but doing so may be challenging due to the narrow width of some doorways and the width of hallways potentially limiting wheelchair turning ability. Other non-compliant issues within the Church include:

- No elevator, thus persons in a wheelchair or otherwise requiring mobility assistance cannot access the second floor or the basement levels of the building
- Lack of automatic door openers on most entry doors, and nearly all interior doors
- Lack of visual fire alarm signals (i.e. no strobe light alarm)
- Lack of universal washroom
- Smaller than required doorway and hallway dimensions
- Etc.

Implementing any one of these requirements would be very costly and present a challenge to be able to incorporate the needed changes within the existing building floor plan design. And trying to implement one of the requirements might trigger the "extensive renovations" requirements of the OBC therefore requiring all the requirements to be implemented. In order to incorporate the accessibility features it is likely that the location of some walls would be required, doorways would be required to be enlarged, each of these activities further requiring potential structural upgrades to the building.

Given the change in elevation from the grade level sidewalk to the interior floor level at the entries along the East and South elevations of the building, and the limited available space on the sidewalk in front of these entries it is not clear at this preliminary stage that it would be possible to incorporate needed features to allow these building entries and exit points to be considered accessible. A detailed design study would be required to examine the feasibility of changes. For the purposes of this study, it will be assumed that there is sufficient space and cost allowances for alterations have been provided.

8.2 Domestic Water Supply

Domestic water service to the building is provided via underground pipes connect to the City of Hamilton water supply network at three locations:

- a 1" galvanized steel line from York Blvd. into the basement of the Atrium section offices
- a ½" lead pipe line from Park Street into the original building section
- a ½" lead pipe line from York Blvd. into the South-East corner of the Sanctuary
  No backflow prevention devices were noted on the incoming water lines.

The use of lead pipes - although common at the time they would have been installed - is problematic due to the potential for human health issues from the ingestion of lead particles. Young children and pregnant women are most susceptible to the effects of lead ingestion, and the risk is highest after long term exposure to lead. However, it is in the best interests to remove all potential risk. This issue was identified in the 2011 Halsall report, but has not yet been resolved.

[2] See Appendix A for copies of the relevant sections of the Ontario Building Code that outline "Extensive Renovations"

Staff also indicated that the water pressure in the building is generally lower than expected and at times very poor. A detailed assessment of the water pipe network within the building was not possible since most of the pipes are hidden inside finished walls or ceilings, but it is suspected that the ½" supply pipes are too small to provide the necessary volume of water required at peak times in the Church.

In the 2011 Halsall report the cost to replace the three existing water supply lines with one 2" supply line and related equipment was estimated at $20,000. It does not appear that this estimate considered potential changes to pipe network inside the building, re-routing the pipes from the incoming service point to the desired end-points. Halsall also identified a City of Hamilton financial assistance program for property owners replacing lead service pipes. WalterFedy has confirmed that this program remains in place with up to $2,500 per service through a loan program available from the City of Hamilton to help property owners offset the costs required to upgrade[3].

Given the combination of lead pipes and low-pressure problems, it is recommended to install a new domestic water service supply line.

8.3 Sanctuary Attic Access and Roof Access

Access to the Sanctuary space is available through a single ceiling hatch from a hallway on the second level. There is no permanent ladder to this hatch, so anyone wishing to access the attic must use a portable ladder. Once within the attic space there is no catwalk available for workers to walk on – there are some purpose-built ladders within the space, and some narrow planks intended to be used as a walking surface, but despite these items, persons working within the attic generally must be extremely careful with their foot placement so as to not fall through the ceiling.

This access arrangement is not safe, does not meet current health and safety standards, and therefore should not be used.

Access to the ceiling is required in order to change light bulbs in the suspended lighting fixtures over the auditorium space: the fixtures are manually lowered from within the attic to accomplish this task. At the time of the assessment there were at least two of the fixtures with non-working bulbs. There are also ceiling fans, air-distribution ducts and loudspeakers suspended from the ceiling, all of which will require occasional maintenance.

Due to the access issues, the Quinn-Dressel report recommended the installation of fall-arrest equipment and training of personnel who would be accessing the roof in the proper use of this equipment. This recommendation has not been implemented, leaving the Church without an effective safe method to conduct needed maintenance.

As an alternative to installing fall arrest equipment and training staff, it may be possible to install a motorized winch system where each fixture would be connected to a winch that can be controlled from floor level to be able to lower the fixture for easier access. The installation of such a system would require at minimum extensive one-time work within the attic, and though a detailed design and feasibility study of such a system is beyond the scope of this report, the cost required would likely outweigh the benefits of having such a system for the relatively low frequency of use that would be required.

There are no permanent ladders installed in the building that would allow access to the roof. To be able to assess or maintain the roof or the HVAC equipment installed on the roof currently requires the use of a portable ladder. Due to the height of the roof this presents health and safety risks to persons using a ladder – the roof height is estimated at 8m (24ft) so a portable ladder between 32-36ft in length would be required.

[3] See https://www.hamilton.ca/home-property-and-development/water-sewer/water-service-line for more information

The lack of permanent ladder contravenes the current Code requirements which require a new building such as the Church to include a permanently fixed ladder in order to allow access to the HVAC equipment, and to provide a safe access method for other roof or wall maintenance activities at height[4].

8.4 Heating And Cooling

Staff reported that many areas of the building are difficult to cool during hot summer months. Without a focussed, detailed HVAC study it is difficult to accurately identify the reasons way, but possibilities include:

- Insufficient cooling / ventilation capacity from the units currently installed (This was identified in the 2011 Halsall report)
- Ineffective routing of supply air ducts to the building spaces
- Low energy efficient building envelope, resulting in high heat load gain within the building requiring high cooling capacity

A modern building would likely be constructed using a zoned heating system controlled by a centralized Building Automation System (BAS) that would monitor the temperature in various locations around the building and adjust airflow to the areas where needed using variable air volume ducts. The heating and cooling in this could be provided one or more HVAC units, depending on the layout of a building and where units could be installed. Upgrading to such a system within the confines of the existing equipment installed might be possible, but would come with the expense and disruption required to install the necessary sensors and control devices required. With the existing floor layout and routing of the supply air ducts, the full benefits of using a BAS may not be possible.

For the future, it would be recommended to continue to manage and maintain the existing HVAC units on an as needed basis. None of the observed units were of an age where obsolescence is a concern, but replacing units as they age through the normal lifecycle of mechanical equipment will be required. HVAC equipment is typically estimated to have a twenty-year lifecycle, therefore within the next ten years it would be normal to require replacement of about half of the existing units in place.

In order to improve the air conditioning and ventilation concerns further detailed study would be required in order to assess the capacity requirements and possible issues with the routing of supply air ducting. The 2011 Halsall report identified the possibility of installing an additional roof top mounted unit on the Atrium roof – as of 2019 this has not been completed. As the existing HVAC equipment is changed for lifecycle or repair needs, installing replacement units with increased capacity is a possible solution.

Improving the energy efficiency of the building envelope would lower the heat gain capacity of the building thus reducing the amount of cooling required (and heating during winter months), however, the cost and feasibility of this option precludes making this recommendation.

8.5 Building Façade – South and East Elevations

At some stage in the history of the Church building the brick masonry facades of the East and South elevations were top coated with a cement product acting as a veneer. The cement finish was carved and shaped to resemble cut stone masonry. The product and application details of this cement finish are not known, nor an exact age, but it is suspected that this work was done prior to 1968 according to the recollection of Church staff.

Only the lower 4'-6' of the finish was visible for close observation – the higher sections of the roof were not accessible. The cement appears in generally good condition with only a small number of small (i.e. hairline width) cracks noted. A section of the finish about 4"x6" in a triangular shape had fallen off a low part of the wall, but this was the only instance of this noted. However, when checking for possible delamination by hitting the wall with a solid fist, hollow sounds were heard at some locations, indicating delamination is possibly

[4] According to the Natural Gas and Propane Installation Code Handbook B149.1HB-15, published by the Canadian Standards Association, section 3.14.5(a), gas-fired HVAC appliances are not allowed to be installed on a roof greater than 13ft (4m) in height from grade to roof elevation unless fixed access method to the roof is provided

occurring. There was no indication of damage or potential damage to the cement finish that would indicate some or all of the cement finish may completely delaminate and fall off the masonry, but prior to making further recommendations a more detailed assessment of the structural strength and adherence properties of the cement finish is recommended. Only by doing this can an accurate condition of the finish and possible repair or improvement strategies developed.

A major feature of the East elevation is a pair of decorative stone columns in a Corinthian style, with four matching bases. This assembly forms the main entry from Park St. with the bases forming the boundaries of, and defining the stairway at this location into three sections. The stone is exhibiting signs of weathering and deterioration. The original sharp edges of the features are rounded and dull, and there is staining from being exposed to the elements since 1906. There does not appear to be any cracking or other issues that would cause a concern about the structural capacity of the stones, however, any joints between adjacent stone pieces no longer have any sealant protecting them, allowing water to enter the interior cavity of the bases. On one of the bases this has caused significant movement within the assembly due to the freeze-thaw action affecting the water being able to displace the stones. Sealing all the joints and cleaning the stone is recommended in order to ensure these prominent assemblies do not worsen in condition.

Figure 2: East Elevation

Figure 3: Views of the base stones at the East entry

8.6 Building Façade – North and West Elevations

The North and West elevations each consist of a mix of clay-brick masonry or concrete block masonry. The concrete block is used as the cladding on the 1968 addition to the Church building, and has a painted finish. There were several areas of the wall that were noted to have damage in the form of:

- Mortar joints with receding mortar
- Step cracking through the mortar lines
- Paint flaking and peeling

Figure 4: Views of typical masonry condition on North elevation

Evidence of past repairs including masonry repointing and infilling of former window openings was also noted. None of the individual areas or types of damage noted are considered significant, but when the sum of the damage is considered the actions required to make effective repairs can be considered a moderate size of project. It is estimated that about 25% of the wall area (2,000ft²) may require masonry repointing or other types of masonry repair while the entire concrete block wall masonry (8,000ft²) should be re-painted. An alternative to consider would be installing a new, more weather resistant and lower maintenance cladding system like pre-finished steel panels or similar, however, the initial cost to do this will be significantly more than the repairs.

The brick masonry encases the original 1892 and 1906 sections of the Church. Overall the brick is in good condition especially when considering the age of the building. Small localized damage was noted, such as minor mortar recession and some cracked mortar, and evidence of past re-pointing was also observed, but as discussed, the majority of the brick area is in good condition.

On the West side parapet wall above the Sanctuary roof (overlooking the office roof area) the masonry could not be closely observed due to distance and access issues – to be able to access this area would require either fixed ladder access to the roof levels, or use of a portable lifting platform with the ability to extend from ground level to the wall. There are no permanent ladders installed and the use of a portable lift device was not approved therefore observations were limited to what could be viewed from ground level.

Clearly observed were bricks with delaminating faces (i.e. flaking brick material), most likely due to these walls not being insulated and being exposed to cold and moisture from snow and ice build-up against the back of the parapet on the roof side of the wall. Zoomed-in photographs show that besides the brick flaking and discoloration there were no other issues identified. No mortar appears missing, though there is evidence of past repointing repairs being done judging by the colour of the mortar in parts of the wall. While the damaged bricks do present a deficiency that needs addressing, it is not an uncommon type of deficiency in masonry buildings the age of Philpott Church, and could be repaired.

Figure 5: Parapet wall on West side of Sanctuary roof

8.7 Fire and Life Safety

There is no permanent fire-suppression system (i.e. sprinklers), nor a fire department standpipe connection installed in the Church building – this item would not have been a Code required element at the time of construction of the original or additional sections of the building. Fire extinguishers are located in many locations throughout the building, but these would only be effective on small fires and not provide sufficient coverage in the event of a larger fire event.

It is possible to retrofit a building with a sprinkler system. This work would require:

- Identification of a space for installation of a sprinkler valve assembly and water booster pump
- Installation of a dedicated fire-water supply service
- Installation of a pipe network throughout all the building spaces, itself requiring partial demolition and reconstruction of ceiling assemblies where the sprinkler heads would protrude

The installation of a sprinkler system in new construction ranges in estimated cost from $4.50 - $9.00 per ft[25] - for the Church building this would equate to an estimated cost between $81,000 - $162,000 and does not include the required costs to modify ceiling or wall elements to allow the sprinkler heads and pipes to be routed where needed. The post-occupancy of a sprinkler system would also cause disruption to the day to day activities of the Church, very likely requiring temporary closure of the building while work is undertaken.

As with the accessibility requirements, if “extensive renovations” are undertaken to the Church building, the City of Hamilton Building Department would likely require that the renovated building include fire safety features that meet the requirements of the current Code

There is a monitored fire alarm system in the building with smoke detectors, heat detectors and manual pull stations installed in locations throughout the building. The system was not tested during this assessment but is inspected regularly and no issues are identified.

Emergency EXIT signs in red lighted letters and battery powered lighting units are installed throughout the building. The location of these units was generally observed to be good, though some improvements could be made. Modern building codes would require EXIT signs to be of the “green runner” style, and these elements to be connected to a back-up generator so that they continue to function in the event of a power outage or fire, but at present there is no generator installed.

Figure 6: Examples of modern "Green Runner" emergency exit signs

8.8 Sanctuary Balcony and Stairway Railings

Balcony seating sections surround three sides of the auditorium on the second level of the building. The front of the balcony is protected by a short wall which acts as a guardrail for the balcony.

According to the Ontario Building Code (Sections 3.3.1.1.17 and 3.3.2.8) guards are required to be a minimum height of 760mm (about 30”) in front of balcony seating, and minimum 920mm (about 36”) in front of the stairways where they end at the lowest seating level on the balconies. The reason for this is to maximize the fall protection of capacity the guard.

The height of the wall at the front of the balconies was measured at between 22” and 24” (56cm – 60cm), including the sections at the foot of the stairways. This is significantly lower than current Code requirements permit and does present a potential health and safety issue to users of the balconies.

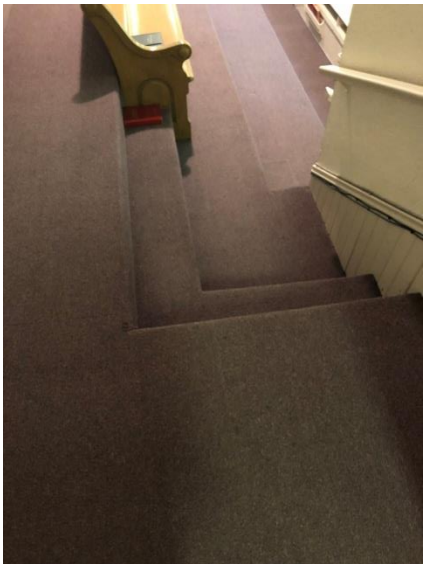
[5] RS Means Cost Estimator online

Figure 7: Views of the balcony overlooking Sanctuary

In order to correct this a possible solution is to install a handrail on top of the wall to the minimum heights required by the OBC. This could be a simple upgrade, but at a moderate cost point.

To access the balconies, users climb a main stairway (one at each corner of the East side of the Sanctuary) to reach the second-floor level, then descend another short flight of stairs to the balconies. These second stairways end with “L” shape stair treads in a corner, with a low railing on one of the stairways, but no railing on the other. The layout of the stairs combined with the low railings presents a potentially difficult access path for users, and one that could present a risk of falling to some users. This design should be reconsidered to incorporate a better railing system that minimizes the difficulty of using these stairs.

Figure 8: “L” Shape Stairway at Balcony Seating Area



8.9 Windows

Windows in the Sanctuary section of the building, including the office wing on the West side, consist of wood framed single pane glazing units. The lower portion of the office windows and the windows on the Upper Room include a horizontal sliding section to allow ventilation into the building. The large windows on the Sanctuary South and East walls are fixed units. The age of the window units is not known however, they are assumed to not be from the original construction of the building sections but replacements that appear between 30-50 years old.

The wood frames require, at minimum, cleaning and repainting, including the patching of damaged wood. Re-caulking around the window openings is also required. These tasks will help improve the look of the building and provide a minor improvement to the air-resistance of the windows. However, because of the age and single glazing characteristics of the windows, full replacement with sealed double-glazed units with other energy efficiency features would be recommended. These units can be designed to match the heritage characteristics of the building.

Figure 9: Typical windows on South or East elevation

On the East and South walls of the upper elevations of the Sanctuary there is a roughly semi-circular shape stained glass window that fills about half of the space in the wall. These windows are irreplaceable, so care must be taken in their maintenance. Close inspection was not possible due to access limitations, but on the exterior side of the stained-glass window is a wood frame glazed window assembly that provides some weather protection to the stained glass. This is good, but the condition of the protective windows is similar to that of the other building windows: the wood requires repainting and patching, and re-caulking is likely also required. Replacement with an improved window assembly would be recommended in these two locations.

Figure 10: View of stained-glass window on South elevation

Windows on the 1968 Atrium addition are also of an unconfirmed vintage, but based on observations appear that they may date from the original construction of the Atrium. These windows are set high in the elevations and therefore difficult to assess, however, they do appear to be vertical sliding type windows with metal

frames and most likely single pane glazing. Due to their height they are likely not operated regularly. Replacing these windows with modern assemblies would provide some minor improvements to the overall energy efficiency of the building, but this would be a lower priority project compared to other windows.

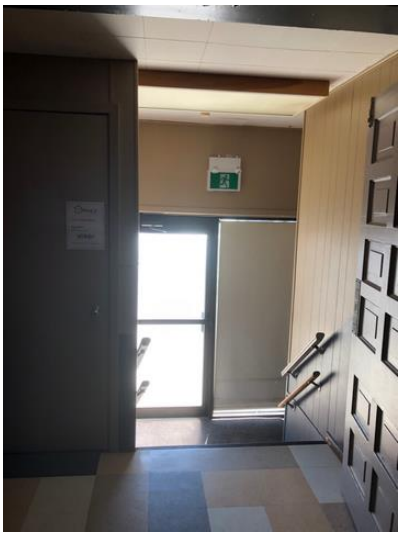
Figure 11: Typical window on Atrium section

Doorways and Entryways

From the parking lot on the North side entry to the Church is through a set of steel double doors with glazing that can be controlled by an automatic opener system. This entry point is considered an accessible entry. These doors appear less than ten years old and were noted to be in good condition.

On the East side (Park St.) there are two main entry points. A set of double doors with steel frames and glazing provide entry to the Nursery area. These doors were observed to be in Poor condition, with the steel requiring re-finishing but more importantly, the doors were not sealing properly in the frame leaving a large gap for air leakage. This entry point is not accessible and making it so would be very difficult: there is a curb between the sidewalk level and the entryway floor level, and the doors open to a stairway up to the floor level of the building. These doors should be replaced.

Figure 12: Double entry door from Park St. N.



The entry area to the Sanctuary section consists of three sets of wooden double doors with glazing units set in wooden frames. This entry was formerly the main entry to the Sanctuary, though it is not clear if it remains so. The doors require refinishing of the wood, and one of the glazing units is currently replaced with a piece of plywood. The entry point is not accessible: installation of a ramp that meets AODA guidelines would be difficult within the available space, so installation of a handicap lift system would be required.

While the doors are of an age and in a condition where replacement would be recommended, given that this entry forms a major visual feature of the Church and the doors are a part of that, it is recommended instead that the doors be repaired and refinished in order to return them to good condition.

Figure 13: Main entry to Sanctuary from Park St. N.

There are two other entry doors, one at the South-East corner on York Blvd., and the other leading to the office area on the South side of the building and accessed from York Blvd. These are each steel frame doors with glazing units. The York Blvd. doorway leads to a stairway to the main floor of the Sanctuary and is not accessible. Installation of a handicap lift would be necessary to make it so. The door itself is similar age and condition to the Park St. entry door with poor sealing characteristics and an aged worn look. Replacement is recommended.

The door to the office area is in better condition, but also would be recommended for replacement. It is a metal framed glazed door. It is newer than the other doorways noted, but installation of a new door with better energy efficiency and security properties is recommended. Access to this door is via a concrete stairway and is not of an accessible design. With the amount of space available it would be difficult to install an accessibility ramp at this entryway.

Figure 14: Entry to office area from York Blvd.

8.10 Electrical Distribution System

The electrical system and elements of the system have been upgraded to current standards (or near those standards) throughout the majority of the building. This includes distribution panels, disconnect switches and cabling.

Within the basement area at the South-East corner of the building (near the furnace room in this area) knob and tube wiring was noted installed under the ground level floor assembly. According to the Electrical Safety Authority (ESA)[6] this type of wiring was used between the early 1900's to the 1940's. From what was visible in the Church basement it is not clear what elements the knob and tube wiring is serving, nor the total extent of the wiring installed in the Church building. What is visible is the inclusion of tape wrapped around the cabling in use, the purpose of which is not clear, but possibly the tape is used as a material to protect damaged areas of the original cable casing.

Provided that the knob and tube wiring is maintained properly and not allowed to deteriorate in condition, the ESA indicates that it may remain in use. However, this is not advised, and in the
Church building the cable casing appears to be decaying. Knob and tube wiring circuits do not have the same safety systems that modern wiring systems have. Circuits are limited to 15Amp capacity and require specialized treatment to ensure the circuit is grounded. There also exists a higher risk of fire if the materials deteriorate. Furthermore, some property insurance companies will not provide coverage if knob and tube wiring remains in use.

[6] Electrical Safety Authority website: https://www.esasafe.com/consumers/home-buying-selling-and-renovating/buying-selling-a-home/knob-and-tube-wiring

Figure 15: Examples of knob and tube wiring in basement

It is recommended that all the full extent of the knob and tube wiring elements be determined and replaced with modern electrical components. Due to the unknown details regarding this item a firm cost estimate for the recommended work cannot be determined, however an estimate is provided that includes a high contingency allowance in order to account for unknowns with this type of work.

8.11 Designated Substances

Due to the ages of the different sections of the building and the materials in common use at those times of construction, plus the probability of other unknown renovation work being done in the past, it is probable that materials were used that are now considered designated substances, and no longer allowed to be used in new construction. Within the Church, the 2012 Designated Substances Survey identified the following materials are in use:

- Asbestos pipe insulation - confirmed asbestos material in a friable state was observed in the basement area
- Asbestos based material in floor tiles (non-friable state)
- Suspected asbestos based material in roof membrane
- Lead based paints, lead based pipe and electrical solder, lead in ceramic tile products
- Mercury in thermostats or fluorescent light fixtures
- PCB product in fluorescent light ballasts
- Silica in crystalline form in concrete and masonry

Figure 16: Likely asbestos based material (pipe insulation) noted in basement

Because of the known existence of these materials – particularly the asbestos – any future renovation work in the Church will require a detailed DSS study of the materials in the work area, and most likely adherence to strict abatement requirements to ensure the materials are removed safely and without harm to workers and occupants of the Church, as well as neighbours of the Church, adding to any renovation costs.

9.0 FUNCTIONAL ISSUES

9.1 Storage Space

From observations and staff comments it is evident that a lack of dedicated storage space is impacting how the Church staff work and serve the congregation. Staff are making do with the space available but it is causing extra work and inconvenience. Several rooms were crowded with material and / or equipment around the existing office work spaces.

As an attempt to improve the storage capacity two 20' steel containers are located in the parking area of the Church and are only accessible from outside. While the extra space provided is good, it is inconvenient to use and insufficient to solve the capacity issues.

Within the current floor plan of the Church it is difficult to identify where more storage space could be found without a major exercise to create new space by renovation which would likely involve re-aligning of the floor plan layouts.

9.2 Small Rooms And Offices

Along the West side of the Sanctuary on both the ground and second levels are a series of offices and rooms serving differing purposes. Many of these rooms are small and crowded with furniture or other items. The size and shape of these rooms is partly defined by the location of structural elements of the building, therefore altering them is difficult or not possible.

9.3 Changing Floor Elevations

Throughout the building, as a person passes from one section or room of the Church to another, regular changes in floor elevation occur. These changes range from a difference of a few inches, where the transition is accomplished using a low-slope ramp, while in other sections the change is two to three steps high requiring a small staircase. These areas clearly do not meet accessibility requirements and create an inconvenience to people working in or visiting the Church. Unfortunately, there is no simple solution to removing these items without major renovation work.

10.0 FINANCIAL REVIEW

10.1 Deficiency Repair And Replacement Costs

From the description of the Church building elements and the deficiencies outlined in previous sections of this report, a series of repair or replacement action items has been developed. The action items are separated into required repairs to correct a deficiency, and normal lifecycle replacement costs expected within the next ten years. Estimated costs to correct the identified deficiencies have been developed to implement these items. For each item a low and a high cost estimate has been provided. With the high-level type analysis of this report, it is difficult to determine truly accurate costs without knowing the full details of potential work. When the age of some parts of the Church building is taken into consideration, it is even more difficult because working on older buildings often present surprises or requires specialized contractors to be able to complete some work items. Presenting a range of costs is an attempt to provide a balanced view of potential work.

The action list is not 100% inclusive – items such as repainting, replacement of floor finishes and upgrades to furniture or items related to the functions occurring within the Church building are not included. While these are all tangible costs, their impact on the capital needs of the building is limited.

The estimated work costs over the next ten years ranges from $1,686,400 to $2,630,800. When consideration is given to “soft costs” such as architects, engineers or project manager fees, and the very likely requirements for DSS abatement measures, the costs increase to $2,529,600 and $3,946,200.
The list of actions is detailed in Table 2.

The final column in the table includes relevant comments regarding the scope of the work estimated, and occasionally the rationale behind the cost estimates. Cost estimates were determined using a combination of construction industry reference cost databases form RS Means[7] and WalterFedy’s own experience on similar projects.

[7] RS Means online construction cost database https://www.rsmeansonline.com/ManageAccount/QuickStart

Table 2: Recommended Actions and Estimated Costs

	ITEM	QTY	UNIT	RATE per UNIT (LOW)	LOW TOTAL	RATE per UNIT (HIGH)	HIGH TOTAL	Comments
				Running Total ->	**$1,676,400**	**Running Total ->**	**$ 2,550,800.00**	
n/a	contractor % (20% of total)				$ 335,280.00		$516,160.00	architects, engineers, project managers etc.
4.12	DSS abatement prior to repairs / demolition (30% of total)				$ 502,920.00		$765,240.00	Preliminary estimate: final costs depend on extent of material identified prior to work commencing
	Estimated Sub-Total				$2,514,600.00		$ 3,826,200.00	
Report Reference	**REPAIRS / NEEDED UPDATES**							
	Accessible features							
4.1	install elevator	1	unit	$ 250,000.00	$ 250,000.00	$ 500,000.00	$500,000.00	* hydraulic unit; required architectural and structural costs included; Low cost = $250,000, high cost = $500,000
4.1, 4.10	install handicap lifts	3	unit	$ 45,000.00	$ 135,000.00	$ 60,000.00	$180,000.00	at Park St door to nursery, Park St. main entry and York Blvd. entry
4.1	changes to washrooms	4	unit	$ 10,000.00	$ 40,000.00	$ 15,000.00	$60,000.00	low estimate assuming it's possible to convert 4 of the existing washrooms to accessible standards. This may or may not be possible depending on architectural and structural limitations
4.1	adding auto door openers	5	unit	$ 12,000.00	$ 60,000.00	$ 15,000.00	$75,000.00	2 exterior and 3 interior doors.
4.1	upgrades to fire alarm (strobes)	10	unit	$500.00	$ 5,000.00	$500.00	$5,000.00	
	Other							
4.7	Install fire sprinkler	29200	SF	$4.50	$ 131,400.00	$9.00	$262,800.00	
4.5	repairs to Stone decorative details	1	unit	$ 20,000.00	$ 20,000.00	$ 30,000.00	$30,000.00	
4.5	study to determine extent of possible delamination of cement veneer	1	unit	$ 5,000.00	$ 5,000.00	$ 5,000.00	$5,000.00	detailed engineering study including minor intrusive testing
3.3.2	Repairs to concrete finish on South and West walls	1	unit	$ 90,000.00	$ 90,000.00	$ 180,000.00	$180,000.00	* Low estimate assumes half of area requires repair; high estimate assumes all areas require repair
4.3	Improvements to Sanctuary attic access	1	unit	$ 50,000.00	$ 50,000.00	$ 125,000.00	$125,000.00	includes installation of permanent access ladder or stairway and catwalk within attic plus fall arrest equipment
8.3	Installation of permanent roof access	1	unit	$ 10,000.00	$ 10,000.00	$ 15,000.00	$15,000.00	ladder installation with safety cage: one ladder ground to roof of kitchen one ladder kitchen to atrium roof. One ladder atrium to office roof.
4.8	improvements to railings in Sanctuary balcony	100	LF	$300.00	$ 30,000.00	$400.00	$40,000.00	bronze or stainless-steel railing with support posts to elevate railing to proper height.
4.8	improvements to stairway railings	200	LF	$50.00	$ 10,000.00	$65.00	$13,000.00	Wood railings to match existing
4.9	Window Replacement: Sanctuary stained glass storm windows	2	unit	$ 15,000.00	$ 30,000.00	$ 20,000.00	$40,000.00	The size and shape will require customized windows to be constructed (windows are estimated at 140SF. High cost for installation due to height of wall

	ITEM	QTY	UNIT	RATE per UNIT (LOW)	LOW TOTAL	RATE per UNIT (HIGH)	HIGH TOTAL	Comments
4.9	Window replacement: all other windows	44	unit	$ 3,500.00	$ 154,000.00	$ 4,000.00	$176,000.00	Different size windows in building: this is an estimated Average price per window for double pane, wood frame windows with security features and good energy efficiency rating
4.10	Replacement of double doorway: Park St. entry	1	unit	$ 7,500.00	$ 7,500.00	$ 10,000.00	$10,000.00	
4.10	Replacement of single doorways: York Blvd.	3	unit	$ 3,000.00	$ 9,000.00	$ 4,500.00	$13,500.00	
4.10	Repair to Park St. main entry doors	3	unit	$ 6,000.00	$ 18,000.00	$ 8,000.00	$24,000.00	
4.2	new domestic water service with backflow / removal of lead lines	1	flat rate	$ 35,000.00	$ 35,000.00	$ 40,000.00	$40,000.00	not including benefits available from City of Hamilton
3.1.1	parking lot - repair cracks / potholes /seal surface	40000	SF	$1.00	$ 40,000.00	$1.50	$60,000.00	
3.4	Improve insulation; install vapour barrier in Sanctuary roof; repair damage to Sanctuary ceiling	6000	SF	$35.00	$ 210,000.00	$40.00	$240,000.00	Cost estimate includes plastering curved surface and allowances for scaffolding and special requirements to access height
4.11	update electrical distribution (remove knob and tube)	1	flat rate	$ 40,000.00	$ 40,000.00	$ 60,000.00	$60,000.00	Estimates range from $9,000 - $15,000 for a house up to 3,000sf. Area affected in Church = original section and sanctuary = 11,000 (3.6x house) -> 3,6x$15,000 = $54,000. Cost also includes repairs to walls post-completion.
3.4	ceiling tile replacement	100	per tile	$10.00	$ 1,000.00	$10.00	$1,000.00	
4.6	concrete block wall repairs	2000	SF	$5.00	$ 10,000.00	$7.00	$14,000.00	
4.6	repaint North & East block wall	8000	sf	$1.75	$ 14,000.00	$2.25	$18,000.00	
4.11	LED light fixture upgrade	50	each	$500.00	$ 25,000.00	$600.00	$30,000.00	estimated average cost per new LED fixture including installation
	PLANNED LIFECYCLE REPLACEMENT (NEXT 10 YEARS)							
	HVAC							
4.4	Furnace replacements	5	unit	$ 12,000.00	$ 60,000.00	$ 15,000.00	$75,000.00	
	new condensors	5	unit	$ 4,000.00	$ 20,000.00	$ 5,000.00	$25,000.00	allowance to add more cooling capacity
	roof top air handlers	2	unit	$ 35,000.00	$ 70,000.00	$ 45,000.00	$90,000.00	allowance to add more cooling capacity
	Plumbing							
	hot water tanks	4	unit	$ 3,500.00	$ 14,000.00	$ 5,000.00	$20,000.00	
	plumbing fixtures	1	unit	$ 2,500.00	$ 2,500.00	$ 5,000.00	$5,000.00	expected 10-year cost for as-needed plumbing fixture repair / replacement
	Roofs							
3.3	Atrium	2600	SF	$25.00	$ 65,000.00	$35.00	$91,000.00	
	Kitchen Equipment							
	dishwasher	1	unit	$ 5,000.00	$ 5,000.00	$ 10,000.00	$10,000.00	
	fridge	1	unit	$ 5,000.00	$ 5,000.00	$ 10,000.00	$10,000.00	
	sealants (window and door caulking; masonry caulking)	1	unit	$ 5,000.00	$ 5,000.00	$ 7,500.00	$7,500.00	one-time activity during 10-year period.

10.2 Building Replacement Costs

In order to determine if the identified deficiency repairs and planned ten-year lifecycle replacement program should be implemented, it is necessary to compare those costs to the cost of constructing a new Church building.

This building replacement cost will represent:

- The construction costs to build a new Church building, of equivalent size to the existing building to modern Code and functionality standards
- Does not include land costs
- Does not include special construction costs related to unique site features
- Does include required contractor costs (architects, engineers construction project managers etc.)

A square-foot method provides the most efficient method of determining a replacement cost.
This is simply an estimated unit cost per square foot for construction multiplied by the size of the building. Three different sources for a unit construction cost were referenced and using the estimated gross area of the building from Table 1, estimated replacement costs were calculated and the results outlined in Table 3. Note: while the building replacement cost would not normally include basement space, for estimating the costs of a new Philpott Memorial Church the function currently occupying the basement space have been included.

Table 3: Estimated Building Replacement Costs for a new Church building in Hamilton ON

Estimated Replacement Cost			
		$/ ft²	Estimate
RS Means		$ 216.00	$6,307,200
ALTUS[8]	$301-$457 per ft² range (library to courthouse type building; church not listed); GTA construction costs adjusted for Hamilton, ON.		
	Low	$ 302.00	$8,818,000
	High	$ 457.00	$13,344,400
WalterFedy[9]	Low	$ 233.00	$6,803,600
	High	$ 275.00	$8,030,000
Average		$ 296.60	$8,660,720

As described in the table, building replacement costs range from $6.3M to $13.3M. Based on WalterFedy's experience the high value from Altus is too high and represents a complex building with many special design features while the low value from RS Means is considered too low to be realistic in the 2019 Hamilton construction market.

For the purposes of the financial analysis of this report the **average square foot replacement cost of $296,60 per ft²** is used to determine a resulting in **building replacement cost of $8,660,720.**

[8] Altus Group 2019 Canadian Cost Guide https://www.altusgroup.com/canadian-cost-guide-2019/

[9] combination of published reference costs and internal experience

10.3 Facility Condition Index

Comparing the ratio of the repair and replacement cost estimate – often summarized as the "deficiency costs" - to the building replacement cost estimate is a standard asset management key performance indicator called the Facility Condition Index (FCI). The FCI is calculated as follows:

$$FCI = \frac{\text{repair + replacement costs}}{\text{building replacement costs}}$$

This index has been used by building owners to help make decisions regarding future repair or replacement needs since the early 1990's. Since that time a standard condition rating based on the FCI value has been established that is widely accepted across the building industry. These rating definitions are outlined in Table 4.

Table 4: FCI Condition Rating Matrix

FCI Value	Condition Rating	Comments
0 – 5%	Good	Regular investment in planned maintenance and quick repair actions when needed will ensure the building remains in good condition over its design lifecycle
5% – 10%	Fair	The building is still adequately functional but higher than normal investment in maintenance and repair activities is required to keep this status.
10% - 30%	Poor	The building is in a deteriorating condition and may no longer be meeting the functional needs. Significant investment is required, most likely major recapitalization efforts, in order to keep the building in an operational state
> 30%	Critical	The building is reaching, or past its functional lifecycle and only major recapitalization efforts will enable the building to continue to meet desired functional goals. Consideration for replacing the existing building is often the decided outcome

Using the repair and replacement cost estimates summarized in section 10.0 and the building replacement cost of $8,660,720 from section 10.1, the FCI for the Philpott Church building is;

Table 5: Facility Condition Index Scores

Item	Value	FCI Value	Condition Rating
Low Repair / Replacement Cost Estimate	$2,514,280	29%	POOR (nearly critical)
High Repair / Replacement Cost Estimate	$3,826,200	44%	CRITICAL

Very clearly, using either the low-cost estimates or the high cost estimates, the existing Church building can be considered – from a financial needs perspective for upgrading the physical condition of the building – as being in critical condition, or fast nearing what would be considered the end of its useful lifecycle.

10.4 Expansion And Alteration Of Existing Building

Expanding and/or extensively renovating the Church building is another possible option that could provide Philipott Memorial Church improved functional space built to modern standards (i.e. improving the physical condition). In order to gauge the feasibility of this option an Adequacy Index (AI) score is determined. The AI is the ratio of the costs required for a proposed renovation / expansion project that improve the functionality of the building compared to the cost of a new building designed with the new functionality in mind (i.e. the replacement cost as determined in Section 1.1).

$$AI = \frac{\text{Functional Upgrade Costs}}{\text{Cost to Replace the Building with its Functional Equivalent}}$$

When considering what to include in the AI calculation, costs for work required to improve the functional usage of the space within the building are the primary factors. In the case of the Church building, the items listed in Table 6 have been included. This includes a 2,500ft² addition to the building which would provide the additional storage space required, plus improved washrooms and entry areas[10]. Also included is an allowance for modifications to the existing interior spaces like hallways, doorways, ramps etc. to better meet the Code Required accessibility requirements.

Because of the scope of this type work it is probable that the Code defined standard for "extensive renovations" will be met, therefore costs for items that will be required by that standard are also included.

Table 6: Estimated Costs to Include in Adequacy Index Review

Item	Low Cost	High Cost
Sanctuary attic improvements	$210,000.00	$240,000.00
Sanctuary attic access	$ 50,000.00	$125,000.00
Elevator Installation	$250,000.00	$500,000.00
Sanctuary balcony railings	$ 30,000.00	$ 40,000.00
Addition to the building of 2,500SF @ $296.60 per SF includes new storage space and improved washrooms, entries etc.	$741,500.00	$741,500.00
fire sprinklers	$131,400.00	$262,800.00
Other Interior modifications to hallways, doorways ramps etc. to accommodate accessibility requirements. Assume 1,000SF @ $200 per SF	$200,000	$200,000
Sub-total	$ 1,612,900.00	$ 2,109,300.00
Contractor costs (20%)	$322,580.00	$421,860.00
DSS Mitigation (30%)	$483,870.00	$632,790.00
Totals	$ 2,419,350.00	$ 3,163,950.00
Adequacy Index	**28%**	**37%**

[10] This is a very preliminary estimate of the size of needed space based on comparing the size of the existing building spaces. A full design study would be required in order to determine actual needed space.

Plotting the Facility Condition Index values vs. the Adequacy Index values provides a visual representation of the comparison between the two, and aids in determining a recommended direction forward with regards to the needs of the building. The graph in Figure 17 provides this tool for the Church building using the combination of FCI and AI values listed in Table 7. Within the figure are recommended actions related to the future of the building based on where the points fall on the graph.

Table 7: FCI and AI combinations

Item	FCI	AI
Point 1 (Low FCI, Low AI)	29%	28%
Point 2 (Low FCI, High AI)	29%	37%
Point 3 (High FCI, Low AI	44%	28%
Point 4 (High FCI, High AI)	44%	37%

Figure 17: Facility Condition Index vs. Adequacy Index

Using the comparison of FCI vs. AI and the recommendations that are defined in that comparison, it is clear that three out of four of the possible combinations of FCI vs. AI result in a recommendation for replacing the building. The fourth point (point 1) is very nearly in the same recommendation zone, but by one percentage point, it meets the criteria for investing in the current building. When the variables in construction cost estimates are considered, it is unlikely that this would be the actual resulting placement on the FCI vs. AI comparison, and so this should not be considered a likely scenario.

10.5 Repair Or Replace: Benefits And Disadvantages

While financial considerations are important there are other factors to be used when determining the best course of action regarding whether to make repairs to the Church building, or construct a new building. A full user analysis of this issue is beyond the scope of this report, but a brief comparison is listed below

Table 8: Benefits vs. Disadvantages of Building New or Repair Existing

Build a new building	
Benefits	**Disadvantages**
▪ Modern building with modern features ▪ Fully accessible to current Code requirements ▪ More energy efficient than existing building (lower electrical, heating and cooling costs) ▪ Can include a modern, style and design ▪ Constructed using modern materials: the building will be more fire resistant, not include materials that are damaging to human health, and be more comfortable to use ▪ Increased storage and activity space ▪ Church activities can continue to occur while a new building is constructed	▪ Loss of a significant part of the Church history ▪ Construction costs can be variable and difficult to predict, so final costs may be greater (or less) than predicted in this report ▪ Unknown land costs may elevate the cost beyond what is reasonable for the Church to consider
Make needed repairs to existing building	
Benefits	**Disadvantages**
▪ Church activities remain at the historic and emotional site of the Church ▪ Lower initial capital costs	▪ Some of the needed repair items will necessitate temporary closure of parts of the Church building, forcing a halt to activities ▪ The recommended repairs will still leave a building of insufficient size (unless an addition is constructed) ▪ The feasibility of all the recommendations is unknown: due to the available site space, the current floor plan and structural systems in use, some of the recommended actions might not be possible (i.e. installation of an elevator and accessibility lifts)

11.0 FINAL RECOMMENDATIONS

While the existing Church building is functional and remains an active building for its users, there are several physical deficiencies that can only be resolved with significant capital investment. The total of the recommended repairs and needed lifecycle replacement actions is estimated to be between 29% and 44% of the estimated cost to construct a new Church building.

At this early analysis phase, it is not clear that all of the recommended actions could be implemented due to inherent limitations with the current building and the building site, which would result in a building with ongoing physical and functional issues. Due to the age of the building, future significant cost investments will be required beyond the ten-year focus of this report.

Construction of a new building - although it means the Church will leave a location of significant historical importance to the Church and its congregation - will provide a modern building that will meet all the current requirements for energy efficiency, user accessibility, and health and safety. And while any building will have ongoing repair and equipment replacement requirements, the number and scope of those items will be significantly less in a new, modern building compared to a building with core parts more than 125 years old.

For these reasons, it is recommended that Philpott Church consider the option of building a new Church building as the most effective direction for the future economic sustainability of the Church.

12.0 REFERENCES

Building Condition Assessment - Philpott Memorial Church, Daniel Martis P. Eng, Morrison Hershfield, November 27, 2014

Final Property Condition Assessment for Philpott Memorial Church, XXXXXX, Halsall Associates, Oct. 13, 2011

Sanctuary Roof Visual Structural Review for Philpott Memorial Church, Grant Milligan P. Eng, Quinn Dressel Associates, date unknown

Letter to Philpott Memorial Church re: Analysis of Stored Coal Ash, Dan Seguin, SPL Consultants Limited, January 20, 2012

Designated Substances & Hazardous Materials Survey, 84 York Blvd. Hamilton, Ontario, David Lewis P. Eng, SPL Consultants Limited, January 20, 2012

APPENDIX A

APPENDIX A – ONTARIO BUILDING CODE EXCERPT - "EXTENSIVE RENOVATIONS"

Part 11

Renovation

Section 11.1. General

11.1.1. Scope

11.1.1.1. Scope

(1) The scope of this Part shall be as described in Subsection 1.1.2. of Division A.

11.1.1.2. Definitions

(1) In this Part,

Building system means a combination of elements or components that form a complete major division of *construction* in the design of a *building* or part of a *building*, including a structural or framing system, a waterproofing system, a *drainage system*, an *exterior cladding* system, a roofing system, a window system, a *partition* system, a corridor system, a stair system, a fire alarm and detection system, a sprinkler system or a heating, ventilation or *air-conditioning* system, a *foundation* system, a standpipe and hose system, a flooring system, a *plumbing system*, a *sewage system* or an electrical system.

11.1.2. Application

11.1.2.1. Extension, Material Alteration or Repair

(1) Where an existing *building* is subject to extension, material alteration or repair,
(a) the proposed *construction* shall comply with Section 11.3., and
(b) the *performance level* of the *building* shall be evaluated and compensating *construction* shall be undertaken in accordance with Section 11.4.

Section 11.2. Classification of Existing Buildings

11.2.1. Classification

11.2.1.1. Construction Index and Hazard Index

(1) Where proposed *construction* will result in the change of *major occupancy* of all or part of an existing *building* to another *major occupancy*, the *building* shall be classified as to its,
(a) *construction* on the basis of its *construction index* as provided for in this Part, including Table 11.2.1.1.A., and (See Appendix A.)
(b) *occupancy* on the basis of its *hazard index* as provided for in this Part, including Tables 11.2.1.1.B. to 11.2.1.1.N. (See Appendix A.)

(2) Small or medium sized existing *buildings* as determined in Tables 11.2.1.1.B. to 11.2.1.1.N. facing multiple *streets* may be assigned a *hazard index* credit of 1, which may be subtracted from the *hazard index* of the proposed *major occupancy* to reduce the additional upgrading required by Table 11.4.3.4.A. provided,
(a) the *building* does not contain a Group B, Division 1, a Group C, or a Group F, Division 1 *occupancy*, and
(b) firefighting access complying with Articles 3.2.5.1. to 3.2.5.5. or Subsection 9.10.20. is provided.

(3) The requirements of Articles 3.2.2.20. to 3.2.2.83. do not apply to this Part.

11.2.1.2. Multiple Occupancies

(1) The classification of an existing *building* of multiple *occupancy* under Article 11.2.1.1. shall be applied according to Articles 3.2.2.5. to 3.2.2.8.

11.2.1.3. Prohibition of Occupancy Combinations

(1) Nothing in this Part relieves an applicant from complying with the requirements of Article 3.1.3.2. or 9.10.9.12.

Section 11.3. Proposed Construction

11.3.1. New and Existing Building Systems

11.3.1.1. Material Alteration or Repair of a Building System

(1) Where an existing *building system* is materially altered or repaired, the *performance level* of the *building* after the material alteration or repair shall be at least equal to the *performance level* of the *building* prior to the material alteration or repair. (See Appendix A.)

11.3.1.2. New Building Systems and Extension of Existing Building Systems

(1) Except as provided in Article 11.3.3.1. and Section 11.5., the design and *construction* of a new *building system* or the extension of an existing *building system*, shall comply with all other Parts. (See Appendix A.)

11.3.2. Extension of Buildings

r3 11.3.2.1. Portion of Extended Buildings

(1) Where an existing *building* is extended,
(a) this Part applies to the existing portion of the *building*, and
(b) the extended portion of the *building* shall comply with all other Parts.

11.3.3. Renovation

11.3.3.1. Basic Renovation (See Appendix A.)

(1) Except as provided in Sentence (2) and Article 11.3.3.2., *construction* may be carried out to maintain the existing *performance level* of all or part of an existing *building*, by the reuse, relocation or extension of the same or similar materials or components, to retain the existing character, structural uniqueness, heritage value, or aesthetic appearance of all or part of the *building*, if the *construction* will not adversely affect the early warning and evacuation systems, *fire separations* or the structural adequacy or will not create an unhealthy environment in the *building*.

r6 (2) *Construction* in respect of a Group B, Division 3 *occupancy*, a *hotel* or a *retirement home* may be carried out in accordance with Sentence (1) only if the *construction* will be in conformance with the Fire Code made under the *Fire Protection and Prevention Act, 1997*.

r4 11.3.3.2. Extensive Renovation (See Appendix A.)

(1) Where existing interior walls or ceilings or floor assemblies or roof assemblies are substantially removed in an existing *building* and new interior walls, ceilings, floor assemblies or roof assemblies are installed in the *building*, structural and fire-resistance elements shall be constructed in compliance with the requirements of the other Parts.

(2) Except as provided in Section 11.5., the proposed *construction* within an existing *suite* shall comply with the requirements of Section 3.8. where,
(a) new interior walls or floor assemblies are installed,
(b) the *suite* has an area greater than 300 m^2, and
(c) the *suite* is located in,
  (i) a *floor area* where the existing difference in elevation between the adjacent ground level and the floor level is not more than 200 mm, or
  (ii) a normally occupied *floor area* which is accessible by a passenger type elevator or other platform equipped passenger elevating device from an entrance *storey* where the existing difference in elevation between the adjacent ground level and the entrance *storey* level is not more than 200 mm.

r5 (3) Except as provided in Section 11.5., the proposed *construction* within an existing *suite*, other than a *suite* described in Sentence (2) or a *suite* in a *building* described in Clause 3.8.1.1.(1)(a), (b), (c) or (d), shall comply with the requirements of Sentences 3.8.1.3.(6), 3.8.2.3.(6), 3.8.3.1.(6), 3.8.3.3.(19), 3.8.3.7.(1), 3.8.3.15.(5) and 3.8.3.16.(4) where new interior walls or floor assemblies are installed. (See Appendix A.)

(4) Except as provided in Sentence (5), where existing interior walls or ceilings or floor assemblies or roof assemblies are substantially removed on any *storey* in an existing *building* and new interior walls, ceilings, floor assemblies or roof assemblies are installed, the *storey* shall be *sprinklered* if,
(a) the *storey* will contain a Group C *major occupancy*, and
(b) the *building* is over 3 *storeys* in *building height*.

(5) Sentence (4) does not apply where the *building*,
(a) conforms to Subclause 3.2.2.44.(1)(a)(ii), and
(b) contains *dwelling units* having *means of egress* conforming to Sentence 3.3.4.4.(8).

r6 (6) Where existing interior walls or ceilings or floor assemblies or roof assemblies are substantially removed and new interior walls, ceilings, floor assemblies or roof assemblies are installed in an existing *building* or part of an existing *building* that is a *retirement home*, the following requirements apply:
(a) the *retirement home* shall be *sprinklered*,
(b) a voice communication system conforming to Article 3.2.4.23. shall be provided in the *building*, if Clause 3.2.6.8.(1)(b) or (c), as applicable, requires that such a voice communication system be provided in the *building*, and
(c) doors to *suites* and sleeping rooms not within *suites* in the *retirement home*, other than doors leading directly to the exterior, shall be equipped with self-closing devices.

11.3.4. Plumbing

11.3.4.1. Extension, Material Alteration or Repair

(1) Despite Subsections 11.3.1. to 11.3.3., when an existing *building* is extended or subject to material alteration or repair, Part 7 applies,
(a) to the design and *construction* of *plumbing* in the extensions and those parts of the *building* subject to material alteration and repair, and
(b) to *plumbing* which is adversely affected by the extension, alteration or repair.

11.3.5. Sewage Systems

11.3.5.1. Existing Septic Tanks

(1) Despite Subsections 11.3.1. to 11.3.3., where an existing *septic tank* is subject to material alteration, repair or replacement, the *construction* of the *septic tank* shall comply with Part 8.

r3 11.3.5.2. Vertical Separations and Existing Sewage Systems

(1) Despite Subsections 11.3.1. to 11.3.3., where an existing *sewage system* is extended or is subject to material alteration or repair, the requirements respecting the vertical separation to the water table set out in Part 8 apply to the extended, altered or repaired portions of the *sewage system* as well as to the existing portions of the *sewage system*.

Section 11.4. Performance Level Evaluation and Compensating Construction

11.4.1. General

11.4.1.1. Performance Level

(1) The *performance level* of a *building* after *construction* shall not be less than the *performance level* of the *building* prior to *construction*.

(2) For the purposes of Sentence (1), reduction of *performance level* shall be determined in accordance with Subsection 11.4.2.

(3) Where the proposed *construction* would reduce the *performance level* of an existing *building*, compensating *construction* shall be required in conformance with Subsection 11.4.3.

11.4.2. Reduction in Performance Level

11.4.2.1. Structural

(1) The *performance level* of an existing *building* is reduced where after proposed *construction* in all or part of an existing *building*,

(a) the *major occupancy* will change to a different *major occupancy*,
(b) the *occupant load* will increase by more than 15%, or
(c) the *live load* will increase due to change in use within the same *major occupancy*,

and the existing structural floor and roof framing systems and their supporting members after the *construction* are not adequate to support the proposed *dead loads* and *live loads*.

11.4.2.2. Increase in Occupant Load

(1) Except as provided in Sentences 11.4.2.5.(2) and (3), the *performance level* of an existing *building* is reduced where proposed *construction* will increase the *occupant load* of an existing *building* by more than 15%.

(2) The *performance level* of an existing *building* is reduced where proposed *construction* will increase the *occupant load* by 15% or less and the new *occupant load* will be more than 15% above the *occupant load* for which a fire alarm system is required under Sentence 3.2.4.1.(2).

(3) The *performance level* of an existing *building* is reduced where proposed *construction* will increase the *occupant load* by 15% or less and the new *occupant load* will be more than 15% above the existing *exit* capacity as required under Article 3.4.3.2.

11.4.2.3. Change of Major Occupancy

r1 (1) Except as provided in Sentence 11.4.2.5.(4), the *performance level* of an existing *building* is reduced where proposed *construction* will result in,

(a) the change of the *major occupancy* of all or part of an existing *building* to another *major occupancy* of a greater *hazard index*,

(b) the conversion of a *suite* of a Group C *major occupancy* into more than one *suite* of Group C *major occupancy*,

(c) the conversion of a *suite* or part of a *suite* of a Group A, Division 2 or a Group A, Division 4 *major occupancy* into a *gaming premises*,

(d) the change of a *farm building* or part of a *farm building* to a *major occupancy*,

(e) the change of a *building* or part of a *building* to a *post-disaster building*,

r6 (f) the change of a *building* or part of a *building* to a *retirement home*, or

(g) the change in use of a *building* or part of a *building* where the previous *major occupancy* of the *building* or part of the *building* cannot be determined.

r1 (2) For the purpose of this Article and Sentences 11.4.2.1.(1) and 11.4.2.5.(4), the change of use set out in Clauses (1)(b) to (g) is also deemed to constitute a change in *major occupancy*.

(3) The *performance level* of an existing *building* is reduced where the early warning and evacuation systems requirements of other Parts for the proposed *major occupancy* exceed those of the existing *building*.

(4) The *performance level* of an existing *building* is reduced where the proposed *major occupancy* in the *building* is not separated from the adjoining *major occupancies* by *fire separations* having *fire-resistance ratings* conforming to Tables 3.1.3.1. and 11.4.3.4.B.

r5 (5) The *performance level* of an existing *building* is reduced where the *occupancy* of all or part of an existing *building* of *combustible construction* is changed to a new *major occupancy* that would require the *building*, if it were a new *building*, to be of *noncombustible construction* or to be constructed in accordance with Article 3.2.2.43A. or 3.2.2.50A.

(6) Despite Clause (1)(a), the *performance level* of an existing *building* is reduced where proposed *construction* will result in the change of the *major occupancy* of all or part of an existing *building* to a Group C *major occupancy* in a *building* over 3 *storeys* in *building height*, except in a *building* conforming to Subclause 3.2.2.44.(1)(a)(ii) and having an egress facility conforming to Sentence 3.3.4.4.(8).

11.4.2.4. Plumbing

(1) The *performance level* of an existing *building* is reduced where the existing *building* is extended or subject to material alteration or repair, and *plumbing* in the existing *building* is adversely affected by the extension, alteration or repair.

11.4.2.5. Sewage Systems

(1) The *performance level* of an existing *building* is reduced where the existing *building* is extended or subject to material alteration or repair and a *sewage system* serving the existing *building* is adversely affected by the extension, alteration or repair of the existing *building*.

(2) Except as provided in Sentence (3), the *performance level* of an existing *building* is reduced where proposed *construction* will increase the *occupant load* of an existing *building*, and the new *occupant load* will result in the total daily design *sanitary sewage* flow of the *building*, calculated in accordance with Article 8.2.1.3., exceeding the capacity of any component of a *sewage system* serving the *building*.

(3) The *performance level* of an existing *dwelling unit* is reduced where *proposed construction* that,
(a) increases the number of bedrooms in the *dwelling unit*,
(b) exceeds 15% of the finished area of the *dwelling unit*, or
(c) adds new *plumbing fixtures* to the *dwelling unit*,

will result in the total daily design *sanitary sewage* flow of the *dwelling unit*, calculated in accordance with Article 8.2.1.3., exceeding the capacity of any component of a *sewage system* serving the *dwelling unit*.

(4) The *performance level* of an existing *building* is reduced where proposed *construction* will result in the change of a *major occupancy* of all or part of the existing *building* to another *major occupancy* and,
(a) the total daily design *sanitary sewage* flow of the proposed *major occupancy*, calculated in accordance with Article 8.2.1.3., exceeds the capacity of any component of a *sewage system* serving the *building*, or
(b) the type or amount of *sanitary sewage* which will, under the proposed *major occupancy*, be discharged to a *sewage system* serving the *building*, is prohibited by Article 8.1.3.1.

r5 11.4.2.6. Extension of Buildings of Combustible Construction

(1) The *performance level* of an existing *building* of *combustible construction* is reduced where the existing *building* is extended by adding a *storey* or *storeys* such that the extended *building* will be more than four *storeys* in *building height*.

11.4.3. Compensating Construction

11.4.3.1. General (See Appendix A.)

(1) Where the *performance level* of an existing *building* is reduced under Subsection 11.4.2., compensating *construction* shall be carried out in accordance with this Subsection.

(2) Except as provided in Sentence (3), compensating *construction* required under this Subsection applies to the part of the *building* being altered and shall include,
(a) *fire separations*, with the required *fire-resistance ratings*, separating the part being altered from the *floor areas* immediately above and below and from the immediate adjacent areas, and
(b) *access to exits* and *exits* from the *building*, where the alteration adversely affects the *exit* system of the *building*.

(3) Compensating *construction* required under this Subsection applies to the existing *building systems* that are adversely affected by the proposed *construction*.

11.4.3.2. Structural

(1) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.1.(1),
(a) remedial measures shall be taken to support the proposed loads, or
(b) the portion of the floor affected by the proposed loads shall be restricted to the loading it will support and signs stating the restrictions shall be posted.
(See Appendix A.)

11.4.3.3. Increase in Occupant Load (See Appendix A.)

(1) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.2.(1), (2) or (3), the *building* shall be evaluated, and the early warning and evacuation systems shall be upgraded, in conformance with the applicable requirements of Table 11.4.3.3.

(2) Sentence (1) does not apply in a Group C *occupancy* where the new total *occupant load* is,
(a) 14 persons or fewer in a *boarding, lodging or rooming house*, except that where the *occupant load* is between 10 and 15 persons, an interconnected system of *smoke alarms* in corridors near stairways is required, or

(b) 16 persons or fewer in a *building* containing residential *suites* which are *dwelling units*, except that where the *occupant load* is between 10 and 17 persons, an interconnected system of *smoke alarms* in corridors near stairways is required.

(3) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.2.(1), additional *construction* shall be required in order that the *building* or part of the *building* subject to the increase in *occupant load* conforms to the requirements of Sentence 6.2.2.1.(2), Subsection 3.7.4. and Article 9.31.1.1.

11.4.3.4. Change in Major Occupancy (See Appendix A.)

r_1 **(1)** Where the *performance level* of an existing *building* is reduced under Clause 11.4.2.3.(1)(a), (b), (c), (d), (e), or (g), additional upgrading shall be required in conformance with Table 11.4.3.4.A. and so that the *construction index* of the *building* is increased to at least equal the *hazard index* of the new *major occupancy* that the *building* is to support.

(2) A *building* or part of the *building* subject to a change of *major occupancy* shall conform to the requirements of Subsection 3.2.6., Sections 3.7., 3.11., 3.12., Sentences 6.2.2.1.(2), 6.2.3.9.(1) and 6.2.4.7.(10), Subsections 9.5.1. and 9.5.3. to 9.5.10., Section 9.7., Subsection 9.10.17., Sections 9.31. and 9.32., and Subsections 9.34.1. to 9.34.3. as they apply to the new *major occupancy* that the *building* or part of the *building* is to support.

(3) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.3.(3), the *building* shall be evaluated, and the early warning and evacuation systems shall be upgraded, in conformance with the applicable requirements of Table 11.4.3.3.

(4) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.3.(4), upgrading of the *fire separations* shall be required in conformance with the applicable requirements of Article 3.1.3.1. and Table 11.4.3.4.B.

r_5 **(5)** Where the *performance level* is reduced under Sentence 11.4.2.3.(5), the requirement for the *building* to be of *noncombustible construction* or to be constructed in accordance with Article 3.2.2.43A. or 3.2.2.50A. is satisfied if the *building* is *sprinklered.*

(6) Where the *performance level* is reduced under Sentence 11.4.2.3.(6), the *storey* subject to the change shall be *sprinklered.*

r_6 **(7)** Where the *performance level* of an existing *building* is reduced under Clause 11.4.2.3.(1)(f), the following requirements apply:

(a) the *retirement home* shall be *sprinklered,*
(b) a voice communication system conforming to Article 3.2.4.23. shall be provided in the *building*, and
(c) doors to *suites* and sleeping rooms not within *suites* in the *retirement home*, other than doors leading directly to the exterior, shall be equipped with self-closing devices.

11.4.3.5. Plumbing

(1) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.4.(1), upgrading of *plumbing* in the existing *building* which is adversely affected by the extension, alteration or repair shall be required in conformance with Part 7.

11.4.3.6. Sewage Systems

(1) Where the *performance level* of an existing *building* is reduced under Article 11.4.2.5., upgrading of a *sewage system* which is adversely affected by the *construction*, increase in *occupant load,* increase in the total daily design *sanitary sewage* flow or change in amount or type of *sanitary sewage* shall be required in conformance with Part 8.

r_5 11.4.3.7. Extension of Buildings of Combustible Construction

(1) Where the *performance level* of an existing *building* is reduced under Article 11.4.2.6., the *building* shall be *sprinklered.*

Section 11.5. Compliance Alternatives

11.5.1. Compliance Alternatives (See Appendix A.)

11.5.1.1. Compliance Alternatives

(1) A *compliance alternative* shown in Table 11.5.1.1.A., 11.5.1.1.B., 11.5.1.1.C., 11.5.1.1.D/E. or 11.5.1.1.F. may be substituted for a requirement contained in Part 3, 4, 6 or 8 where the *chief building official* is satisfied that compliance with the requirement is impracticable because,
(a) of structural or *construction* difficulties, or
(b) it is detrimental to the preservation of a *heritage building*.

(2) A *compliance alternative* shown in Table 11.5.1.1.A., 11.5.1.1.B., 11.5.1.1.C., 11.5.1.1.D/E. or 11.5.1.1.F. may be substituted for a requirement contained in Part 9 or 12 without satisfying the *chief building official* that compliance with the requirement is impracticable.

Table 11.2.1.1.A.
Construction Index
Forming Part of Sentence 11.2.1.1.(1)

Fire-Resistance Rating			Type of *Construction*	*C.I.*(2)
Floors over *Basement*	Other Floors	Roof		
3 h	3 h	1.5 h	*Noncombustible*	8(1)
2 h	2 h	1 h	*Noncombustible*	7
1 h	1 h	45 min	*Noncombustible*	6
45 min	45 min	0 h	*Noncombustible*	5
45 min	45 min	45 min	*Heavy Timber*	5
45 min	45 min	45 min	*Combustible*	5
45 min	0 h	0 h	*Noncombustible*	4
45 min	45 min	0 h	*Combustible*	4
30 min	0 h	0 h	*Noncombustible*	3
30 min	30 min	0 h	*Combustible*	3
0 h	30 min	0 h	*Combustible*	2
0 h	0 h	0 h	*Combustible*	1(1)
Column 1	2	3	4	5

Notes to Table 11.2.1.1.A.:
(1) *C.I.* of 1 is lowest fire protection *performance level* and *C.I.* of 8 is highest.
(2) Take highest rating for *C.I.* from Table 11.2.1.1.A. for existing *building*.

A-11.3.1.2.(1) New and Extension of Existing Building System.

Generally, new or extended building systems should follow the Building Code for new construction, and where necessary, may seek some relief through compliance alternatives, alternative measures or match existing.

A-11.3.3.1. Basic Renovation.

The basic renovation is the simplest form of renovation; the work area is limited in size (within a suite or room), and does not involve a decrease in performance level of the building. The limit in size assures that accesses to exits, corridor separations, or other life safety systems are left intact, where less than a full floor area is under renovation.

A-11.3.3.2. Extensive Renovation.

In cases where extensive renovation of the building is proposed, there is generally no reason why the new systems should not comply with new construction requirements; in this case the applicant may seek relief only through "alternative measures", should a construction difficulty arise that requires such relief. This would apply to the substantial renovation of the entire building.

$a_{2.1}$ A-11.3.3.2.(3) Application of Limited Barrier-Free Design Requirements in Renovations.

Certain barrier-free design provisions must be incorporated into all renovations where new interior walls or floor assemblies are installed other than in a suite described in Sentence (2) or in a suite in a building described in Sentence 3.8.1.1.(1). This includes construction within suites less than 300 m^2 and suites on storeys or floor levels not accessible by a barrier-free path of travel. In those cases, any new construction is subject to the barrier-free design provisions listed in 11.3.3.2.(3). Sentence 1.1.2.7.(1) of Division A continues to apply, so that any existing construction that is not being materially altered as part of the renovation need not include barrier-free design features.

The intent of these provisions is to make more suites and buildings accessible for people with sensory and other non-mobility disabilities. Not every person with a disability uses a wheelchair. Many people who use mobility aids such as canes or service animals or who have sensory disabilities are able to navigate stairs but would benefit from certain barrier-free elements such as lever door handles or an ambulatory washroom stall.

A-11.4.3.1. Compensating Construction.

Where the performance level of the building or part of the building is reduced through Subsection 11.4.2., compensating construction will be required to restore the performance level to its former state, of the early warning and evacuation systems, the fire and structural protection construction of the building. The amount of upgrading required depends on the results of a performance level evaluation.

The extent, or areas covered, of this upgrading include the protection of the surrounding existing areas from the portion being renovated, and the means of egress from the building if adversely affected by the renovation.

A-11.4.3.2.(1) Structural.

Provides, subject to any of three conditions, for adequacy of support for floors that will be receiving increased dead or live loads: options are restriction of loads, or upgrading of support systems.

A-11.4.3.3. Increase in Occupant Load.

Where the increase is greater than 15%, and construction takes place, the performance level is reduced and must be restored as required in Table 11.4.3.3.

Where the increase is 15% or less, and construction takes place, the performance level is reduced. Where the new occupant load is more than 15% above the exit capacity or for which a fire alarm system is required. The performance level must be restored as required by Table 11.4.3.3.

Smaller buildings, of 14 persons or less in boarding houses, and 16 persons or less in dwelling units, are exempt.

A-11.4.3.4. Change in Major Occupancy.

Provided construction takes place, a change in major occupancy to one of a greater hazard index reduces the performance level. An increase of the hazard index will trigger the classification of the entire building as to its construction index and hazard index under Table 11.4.3.3., Table 11.4.3.4.A. and B, to determine what upgrading, if any is required to ensure that the building will support that new hazard.

A-11.5.1. Compliance Alternative.

Subsection 11.5.1. allows compliance alternatives to be used, in lieu of certain requirements in other Parts of Division B. Alternatives to requirements in Part 3, 4, 6 or 8 may be used subject to the chief official's satisfaction, while alternatives to Parts 9 and 12 requirements are not subject to this condition.

a5 ### A-12.3.1.5.(1) Residential Furnaces.

Where an existing furnace without a brushless direct current motor is replaced in a dwelling unit or house, replacement with a furnace with similar characteristics would provide an acceptable performance level, since the furnace flow rate and ductwork size would be compatible and this alteration to the heating and cooling system would not reduce the performance level.

Explanatory Material for Division C

A-1.2.1.1. Design by Architect or Professional Engineer.

The practice of architecture is regulated by the Architects Act. The practice of professional engineering is regulated by the Professional Engineers Act. Professional design requirements related to the design of buildings are regulated by the Professional Engineers Act and the Architects Act.

Certain foundations, sprinkler protected glazed wall assemblies, shelf and rack storage systems, tent framing and sign structures are required to be designed by a suitably qualified and experienced person. Refer to Article 1.2.2.1. for general review by an Architect or a Professional Engineer of these assemblies and systems.

Refer to the "Use of the Professional Engineer's Seal" published by Professional Engineers Ontario for guidance on the proper use of a Professional Engineer's seal.

A-1.2.2.1. General Review by Architect or Professional Engineer.

In addition to the general review of the construction of buildings described in Table 1.2.2.1. by an Architect or Professional Engineer, Sentences 1.2.2.1.(4) to (9) require general review by an Architect or a Professional Engineer of certain foundations, sprinkler protected glazed wall assemblies, shelf and rack storage systems, tent framing and sign structures. These assemblies and systems are required to be designed by a suitably qualified and experienced person, as detailed in Article 1.2.2.1.

A-1.3.6.1. As Constructed Plans.

The intent of the provision for as constructed plans is to provide the municipality with authority to ask for information that is necessary for the enforcement of the Act and the Building Code. The intent of the provision is not to duplicate the permit approval process and require similar information to be filed upon completion of the project. Similarly, the provision is not intended to require information and documentation beyond those that are normally generated in the building permit approval process.

A-3.2.2.2.(1) Other Designers.

The qualifications for the designer of a public pool located in a building are based on the size and occupancy of the building. An outdoor public pool is a designated structure. The occupancy of an outdoor public pools depends on the major occupancy of the building it serves. In the case where the outdoor public pool is a stand-alone structure with ancillary change facilities, the major occupancy of the pool would be Group A, Division 4 where it is used for social, education, recreational or similar purposes.

APPENDIX B

APPENDIX B - INVENTORY OF MECHANICAL EQUIPMENT

NOTES:

1) For many of the equipment items there was no manufacturers data-tag visible. On furnaces these tags are often installed on the interior side of an access panel – the panels on Payne brand furnaces are bolted to the main unit casing and WalterFedy employees are not permitted to open these panels.
2) The roofs were not accessible and so the information regarding the roof-top units (RTU) is taken from the Morrison-Herschfield report provided
3) On some data-tags the lettering was obscured or damaged: in these instances we attempted to identify the text as best we could – XXX in the table below means that text was not clearly visible

Item #	Location	Item Type	Manufacturer	Model #	Serial #	Comments
RTU 1	Office roof	RTU - AHU	Carrier	48HJE 005---361	n/a	4 ton cooling not confirmed: info from Morrison-Hershfield Report
RTU 2	Office roof	RTU - AHU	Carrier	50TFF012-A-111	n/a	10 ton cooling not confirmed: info from Morrison-Hershfield Report
RTU 3	Office roof	RTU - AHU	Keeprite	KCRT 10L-C	n/a	10 ton cooling not confirmed: info from Morrison-Hershfield Report
FAF-1	SW basement corner	Forced Air Furnace	Payne	PG9MAB048100ABSA	3807A06621	2007; Data tag not visible Approx 100,000btu/hr
FAF-2	SW basement corner	Forced Air Furnace	Payne	PGXXXCX4X100CAAA	2815A577X5	2015; Data tag not visible Approx 100,000btu/hr
FAF-3	Mech room near Children's Church area	Forced Air Furnace	Carrier	58MXB080-12	1906A02031	Labelled Furnace 2 2006; Data tab Suppplies Youth Fellowship Hall
FAF-4	Mech room near Children's Church area	Forced Air Furnace	Carrier	58MXB080-12	1906A01926	Labelled Furnace 1 2006; Supplies Junior Department
FAF-5	Mech room near Children's Church area	Forced Air Furnace	Carrier	PG8MAA048135AAJA	4402A42720	Labelled Furnace 2 2002; Supplies Gymnasium

Item #	Location	Item Type	Manufacturer	Model #	Serial #	Comments
ERV-1	Mech room near Children's Church area	Air Exchanger	Nu-Air	n/a	n/a	Energy Recovery Ventilator - connected to Furnace supplying Childrens Area: data tag not visible
FAF-6	Mech room near Children's Church area	Forced Air Furnace	Payne	58MXB080-F-10112	1906A01986	2006; data tag not visible Approx 74,000BTU/hr
FAF-7	Basement Workshop	Forced Air Furnace	Carrier	n/a	n/a	Data tag not visible; Approx 75,000btu/hr
FAF-8	Basement Workshop	Forced Air Furnace	Carrier	n/a	n/a	Data tag not visible; Approx 75,000btu/hr
FAF-9	Basement Workshop	Forced Air Furnace	Carrier	n/a	n/a	Data tag not visible; Approx 75,000btu/hr
FAF-10	Basement Workshop	Forced Air Furnace	Payne	n/a	n/a	Data tag not visible; Approx 50,000btu/hr
TX-1	Basement Electrical room	150 kVa	Marcus	n/a	94Q3-989	150kVa, 3phase, 600 - 120/208V
FA-1	Sanctuary hallway	Fire Alarm Panel	Mircom	FA-1000	n/a	
DWH #1	SW basement corner	GSW		E1F20US015VC	S1141F703344	2011; Electric, 1500W, 67Litre
DWH #2	Mech room near Children's Church area	RHEEM		RP220	1102J15400	2002; Gas Fired, 55,000BTU; 227Litre

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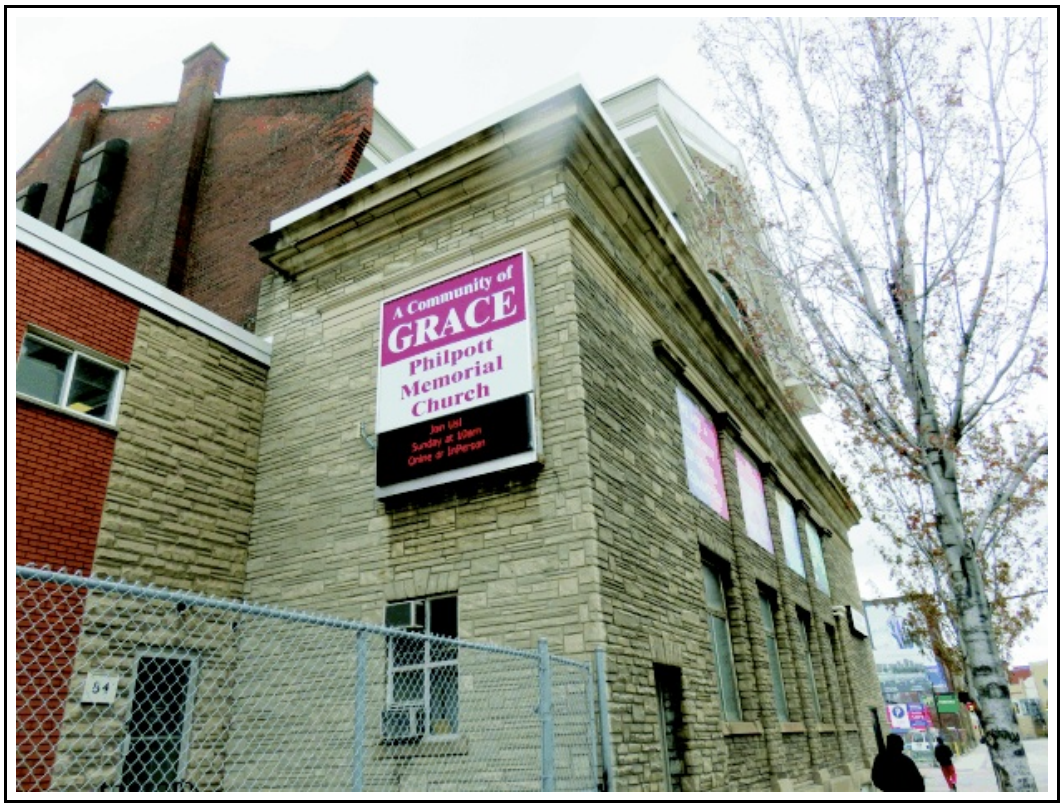
FEASIBILITY ASSESSMENT REPORT

Potential Exterior Plaster Removal
Philpott Memorial Church, Hamilton, Ontario



Prepared for:
Armstrong Planning | Project Management

Project Ref: C202313
May 2023

FEASIBILITY ASSESSMENT REPORT

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PJ Materials Consultants Ltd
Potential Exterior Plaster Removal
Philpott Memorial Church, Hamilton, Ontario

May 2023

FEASIBILITY ASSESSMENT REPORT

1.0 INTRODUCTION

1.1 This report has been prepared to confirm the author's opinion regarding the effects that should be anticipated in the event that a cement-based mortar is removed from brick masonry at the referenced project. An on-site visual assessment of the exterior elevations of the church was carried out by the author on Monday 1st May 2023 in the presence of Scott Borden, Armstrong Planning | Project Management.

1.1 This report is based on the following Terms of Reference.

2.0 TERMS OF REFERENCE

2.1 Visit the referenced project and review the condition of the exterior masonry, with particular reference to the integrity of the post-construction applied cement-based mortar.

2.2 Prepare and submit a "short-form" report which provides an opinion regarding the feasibility of removing the mortar to restore the underlying brick masonry to a former appearance and condition.

3.0 BACKGROUND

3.1 It is understood that the church building was constructed circa 1906, but the cement-based mortar was not applied to the brickwork until the 1950s.

3.2 It is understood that the feasibility of removing the plaster and restoring the underlying brickwork to a former appearance and condition is under evaluation.

4.0 OBSERVATIONS, DISCUSSION & OPINIONS

4.1 It was observed that the cement-based mortar had been plastered/parged over the brickwork to simulate rock-faced ashlar modular-coursed stone masonry. (Photograph 1) Although it varied, from a review of the termination joint with the side elevation brickwork, the mortar appeared to have been applied at a nominal minimum one-inch thickness within the simulated mortar joints. (Inset image)

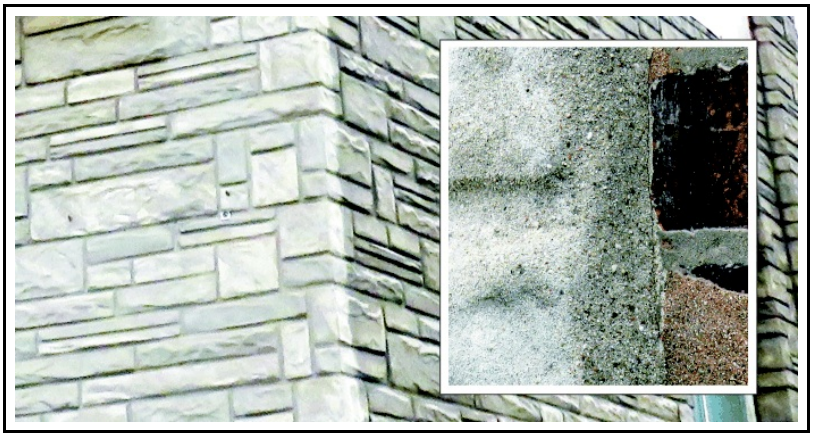


Photo 1 with inset image: The mortar was plastered over the brickwork to simulate the appearance of ashlar-coursed stone masonry. The minimum thickness varied but appeared to be a nominal 1-inch minimum within the simulated mortar joints.

4.2 Although sounding techniques were not used during the on-site assessment, from visual observations, the mortar appeared to be well-bonded to the brickwork - there was no visible evidence of delaminations.

4.3 The author does not know the reason why the plaster was applied to the then approximately forty to fifty-year-old brickwork. However, following a review of the side and rear elevations - where there was much evidence of badly weathered masonry and brick replacement - it is the author's opinion that the most likely and logical reason was therefore a concern regarding the evident poor quality of the bricks. (Photograph 2)

Photo 2 with inset image: There was much evidence of badly-weathered masonry and brick replacement within the side and rear elevations.

.1 At the time of the building's construction, the bricks would have been produced using the soft-mud method, whereby clay and sand were mixed with water to a plastic consistency and compacted into individual moulds. This would typically have resulted in bricks that were more porous than those manufactured during more modern times using the extrusion process.

.2 Also, it is well-known that the brick kilns of the 1900s period experienced wide temperature variations, so some bricks became under-burned - the degree depending upon their stacked locations within the kiln; this resulted in wide variations in the durability within manufactured batches - and in particular, the quality of the fired exterior "skin" of the bricks to the underlying brick matrix.

.3 Based on the previous observations, it is the author's opinion that the bond of the hardened mortar to the exterior skin of the brickwork is almost certainly greater than the flexural strength of the skin to the underlying brick matrix, Any attempt to remove the mortar would therefore most likely result in shearing/spalling of the exterior faces; it is the author's opinion that the extent of this damage would be extremely difficult to prevent or control.

4.4 There was also evidence within the side elevation that several attempts had been made to repoint deteriorated/cracked brickwork adjacent to window openings. It was also evident that joints have continued to deteriorate within the repointed areas.

Photo 3: Evidence of several attempts at repointing cracked or deteriorated mortar joints adjacent to window openings

.1 It is the author's opinion that the damage has been caused - and continues to occur - because the lintels were not designed nor constructed to extend far enough beyond the openings. This has resulted in a concentration of gravity loads at the openings from the effects of wind, snow-loading, thermal movement, etc.

.2 It is the author's opinion that similar damage must be anticipated to be revealed within other elevations, should the mortar be removed.

4.5 Although the extent is uncertain without further investigation, there was evidence that the mortar has cracked within some locations.

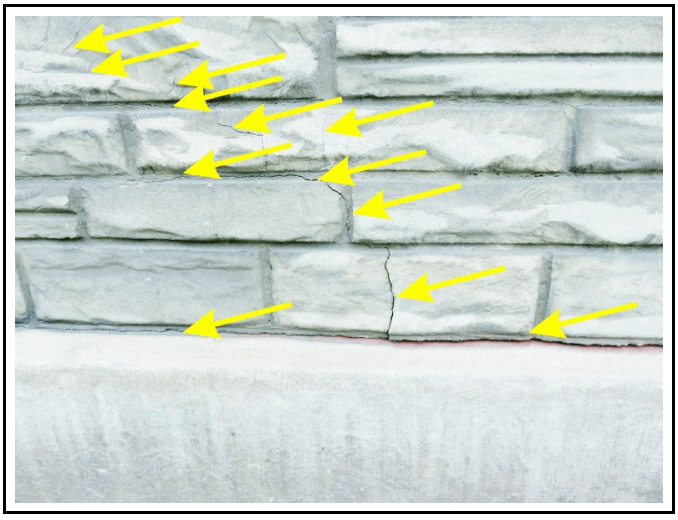


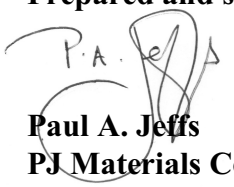
Photo 4: Evidence of cracks within the hardened mortar

.1 It is the author's opinion that additional damage to the underlying brickwork will have occurred due to the penetration of rainwater through the cracks. Experience indicates that this damage is likely to be in the form of crumbling of the bricks due to the expansive forces created during ice formation within the saturated masonry.

5.0 CONCLUSIONS

5.1 It is the author's considered opinion that it will not be possible for the mortar to be removed without causing damage to the underlying brickwork. This damage is likely to be considerable and extensive.

Prepared and submitted by:



Paul A. Jeffs
PJ Materials Consultants Limited 1st May 2023

Ref: Project/Hamilton~Philpott/Report230501

Author's Background Information

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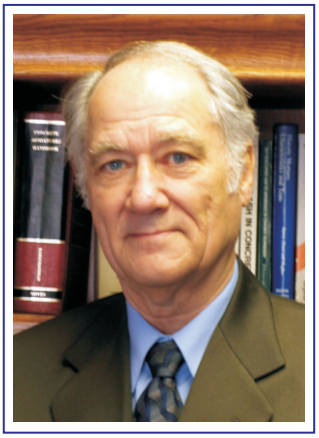
Specialist Consulting Services for Concrete & Masonry

Background


Paul Jeffs

As founder and principal of PJ Materials Consultants Limited, Paul Jeffs specializes in concrete and masonry. Prior to forming the operation in 1989, he was employed for over 25 years within the construction industry around the world, including Europe, the Middle East, South East Asia and the Far East. For the last eighteen years of this time he was employed by a multi-national group headquartered in the United Kingdom that manufactured a vast range of materials and products for construction-related industries.

Paul Jeffs has conducted investigations and building condition assessments and reported on the conservation of heritage structures and older buildings - either as Prime Consultant or Specialist Sub-Consultant - under such authorities as PWGSC, Parks Canada, (Atlantic Region), Niagara Parks, Halifax Regional Municipality, (NS), Region of Peel, Ont, Canadian Coast Guard (NF), Ministry of Transportation, Ontario, City of Belleville, Region of Waterloo, Hamilton Regional Conservation Authority, Niagara Region Housing and the Ontario Municipalities of Belleville, Collingwood, Guelph, St Catharines & Hamilton.

Investigations

Investigations have included the review of existing conditions - utilizing non-destructive testing techniques where appropriate, such as Ground Penetrating Radar, Infra-Red Thermography, & Boroscopes - identification of repairs, replacements and/or restoration of building components, including identification of potential costs for such work. Where appropriate the latest UAV technology is utilized to gain close-up access to structures.

Strategy Development, Bidding & Project Administration Services

Paul specializes in the development of conservation strategies which address the causes as well as the results of deterioration, damage and/or deficiencies. When appropriate, strategies have been developed and implemented to comply with the appropriate Heritage Foundation authority's requirements and the guiding principles of Parks Canada's "Standards & Guidelines for the Conservation of Historic Places in Canada". Paul has also developed or assisted in the development of specifications and contract documents, managing the bidding and award processes and providing review services for the project.

Projects & Clients

PJ Materials Consultants Limited has provided consulting or sub-consulting services for the investigation and/or conservation of many National Heritage Structures and/or historically significant structures, including, Cape Race Lighthouse, (NF), Church of Our Lady Immaculate, Guelph, (ON), Brampton Heritage Complex, (ON), the Old Arts Building, UNB, Saint John Carleton Martello Tower, (NB), the City Halls of Belleville & St Catharines, (ON), Fredericton, (NB), & Halifax, (NS), Dingle Memorial Tower, Halifax, (NS), Hammond House and the Owens Art Gallery, Sackville, (NB). PJ Materials Consultants Ltd received the City of Fredericton Development Committee's 2011 award in recognition of its contribution to the historic preservation of City Hall Fredericton. Under the authority of PWGSC, sub-consulting services have been provided for Condition Assessments of Federal Buildings in Toronto, Windsor and Brantford (ON). as well as Fredericton (NB).

continued .....

PJ Materials Consultants Limited

Specialist Consulting Services for Concrete & Masonry

Educational Services

Paul Jeffs provides technical professional development courses across Canada through PJ Materials Consultants Limited and has been an instructor for the Continuing Technical Education Division of Dalhousie University; attendees have included representatives from such authorities as PWGSC, Parks Canada & Defence Construction Canada. He was also an instructor for the Professional Development Centre of the University of Toronto providing course modules and special event courses as part of their Building Science Certificate Program. He has also presented for many organizations, such as the Capital Projects & Design, Precinct Properties Branch of the Legislative Assembly of Ontario, the National Capital Commission, the Canadian Society for Civil Engineering and the Ontario Building Envelope Council. Professional Development Technical Training Courses include such topics as Conservation of Heritage Structures & Older Buildings, Masonry Restoration Projects ~ Case Studies, Concrete Slabs on Grade, Modern Concrete Materials & Practices, and Concrete Repair & Protection. Paul has been a guest lecturer at several Canadian universities, he has authored and presented papers at many national and international conferences and has been a regular presenter of technical training courses in the Middle East.

Technical Articles

Paul has authored numerous technical articles, including: "Core Rubble Grouting of Heritage Structure Masonry Walls & Foundations Using Grouting Techniques ~ Canadian Case Studies" *9th Canadian Masonry Symposium*; Fredericton, NB, 2004; "Building Masonry with Natural Stone", *Construction Canada*, November, 2003; "Stabilizing Cracked Masonry" *Construction Canada*, January 2007; "Cape Race Lighthouse ~ A History of Restoration", *Construction Canada*, May 2007; "A Tale of Two Towers", *Construction Canada*, November 2008; "Masonry Restoration ~ The Importance of Cause Analysis", *Construction Canada*, November 2010. "Modern Materials & Techniques for Historic Masonry Structures" *Pushing the Envelope Canada* (OBEC) Spring 2011, "Traditional vs Modern Repointing Mortar", *Home Builder,* September 2014 "Restoring a Solid Foundation", *Pushing the Envelope* (OBEC) Fall 2013 & "Re-roofing Projects for Heritage Buildings & Damaged Masonry ~ Is there a Connection?", *Interface* (The Journal of Roofing Consultants Institute) January 2014; "Producing Quality Polished Concrete Floors" *Construction Canada*, May 2016; "Drones & Construction", *Construction Canada*, September 2016;& Concrete Cracking Problems - A Modern-Day Phenomenon?", *Construction Canada*, November 2016.

Published Books

Paul is the self-published author of three books: "Conservation of Heritage Masonry - Canadian Project Case Studies" (2021); , "Investigating Concrete Problems - Learning from Those Who Learned the Hard Way" (2022); and "Masonry Problems - Investigation, Identification & Restoration" (2022).

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Project References

South Niagara Gateway Family Housing Corporation, Port Colborne, Ontario

PJ Materials Consultants Ltd was retained as Prime Consultant to carry out a condition assessment of this non-profit apartment complex building. Although there was evidence of previous brick replacement work and some further deterioration, the overall condition was not visibly bad. It was only when portions of the exterior brick wythe were removed that the extent of the deterioration was discovered. The cause of the problem was poor design which did not adequately facilitate drainage of rainwater that infiltrated the cavity. The solution was to demolish the brickwork, apply urethane foam insulation and install a prefinished sheet metal cladding system.

Client: South Niagara Gateway Family Housing Corporation
(Funding provided by Niagara Region Housing)

Lions Douglas Heights Seniors Residence Centre, Fort Erie, Ontario

PJ Materials Consultants Ltd was retained to carry out a condition assessment of this seniors residence apartment building. A visual assessment confirmed evidence of water-damage to the architectural split-faced concrete block masonry and a considerable amount of cracks. A secondary investigation that created openings at the floor slab levels discovered the cause of the problems had been poor detailing at shelf angles, which did not provide for any expansion and contraction of the masonry during extremes of temperature change. The solution was to rebuild courses of block above and below the angles creating a positive "soft" immediately below the steel.

Client: Lions Douglas Heights Seniors Residence
(Funding provided by Niagara Region Housing)

Wallace McCain Student Centre, Sackville, NB

When this building underwent major rehabilitation and reconstruction during 2008, PJ Materials Consultants Ltd was retained by Mount Allison University to provide sub-consulting services to the Prime Consultant. Responsibilities included designing a masonry restoration strategy to include complete repointing of the masonry, as well as cleaning of the fabric.

Client: Mount Allison University, Sackville, NB

Justice Building Courthouse, Fredericton, NB

The current Justice building was constructed from the remains of the original 1876 Victorian property built as a Provincial Normal School for teacher training which was destroyed by fire in 1929. In 2017, PJ Materials Consultants Ltd was retained to carry out a comprehensive Condition Assessment of the exterior masonry during an evaluation of the potential purchase of the building from the Province of New Brunswick.

Client: City of Fredericton

Crabtree/Library Complex, Mount Allison University, Sackville, NB

PJ Materials Consultants was retained by Mount Allison University to design and implement a restoration project which included re-caulking sandstone cladding panels, providing corrosion protection to steel support units, rebuilding displaced masonry, re-paving a raised patio deck and repointing deteriorated mortar joints. The project, which was carried out in 2011, also included cleaning heavily soiled sandstone cladding panels.

Client: Mount Allison University, Sackville, NB

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Project References

Old Arts Building, University of New Brunswick

The first of several phases was carried out in 2013 and included dismantlement of the east entrance columns, canopy, step units and wing walls The columns and canopy units were repaired and replaced but the step units, platform and wing walls were rebuilt using new fabricated sandstone. PJ Materials Consultants were the Prime Consultant for the project with architectural services provided by Martin Patriquin Architect Inc.

Client: University of New Brunswick, Fredericton, NB

County of Peel Jail (now a Museum), Brampton, Ontario

As part of the Brampton Heritage Complex restoration programme, PJ Materials Consultants devised and supervised an appropriate strategy to address concerns regarding cracking and deterioration of masonry joints of the old jail building. The work - carried out in two stages during 2001 - included the installation of helical stainless steel masonry ties, installation of lintel joint reinforcement, crack repair and complete repointing of all masonry joints.

Client: Region of Peel, Brampton, Ontario

Saint Louis Convent, Waterloo, Ontario

The convent is a brick masonry structure supported on traditional mass masonry foundation wall. In 2000, PJ Materials Consultants investigated the cause of masonry damage and identified that the problem was related to deterioration of the inner core rubble within the below grade foundation walls. A restoration strategy was devised which included below grade waterproofing, grouting of the inner core, installation of helical stainless steel masonry ties, repair of a cracks and repointing of cracked and deteriorated masonry joints.

Client: St. Louis Parish Church, Waterloo, Ontario

Dominion Building, Front Street, Toronto

PJ Materials Consultants provided sub-consulting services to the Prime Consultants - who were retained by Public Works & Government Services, Canada - to carry out a comprehensive Condition Assessment of the exterior of this well-known heritage building in the heart of downtown Toronto. The study included the combined use a man-lift and a remote camera attached to an operator utilizing a bosun's chair to gain access to difficult-to-reach locations. Infrared thermography techniques were also used during the investigations.

Client: Dialog Architecture.

Peel County Courthouse (now Municipal Offices)

Also part of the Brampton Heritage Complex, the old courthouse building had suffered from deteriorated joints and cracked masonry. PJ Materials Consultants carried out a detailed investigation of the exterior of the building, devised an appropriate restoration strategy, prepared technical specifications and supervised the work. The restoration project, which was carried out in two stages during 2000 and 2001, included the installation of helical stainless steel masonry ties, crack repair and repointing of foundation wall masonry joints.

Client: Region of Peel, Brampton, Ontario

Government of Canada Building (Paul Martin Sr.) Windsor, ON

PJ Materials Consultants provided sub-consulting services to the Prime Consultants - who were retained by Public Works & Government Services, Canada - to carry out a comprehensive Condition Assessment of the exterior of this well-known heritage building in the heart of downtown Windsor, Ontario. Specification review services were also provided, together with on-site reviews.

Client: Dialog Architecture.

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Project References

New Residence Hall - New Brunswick

PJ Materials Consultants Limited were retained as Stone Consultant to the Prime Consultant to develop specifications and source the red sandstone masonry units and buff window and door surround units and to provide technical advice for the 2006 masonry construction of this beautiful new campus residence building.

Client: Mount Allison University, NB

Convocation Hall Building - New Brunswick

The sandstone cladding panels and columns were suffering the effects of inadequate movement accommodation due to the use of a hard cement mortar to joint the units. PJ Materials Consultants Limited was retained in 2004 to develop and implement a strategy to correct this problem. This included cutting out the mortar and installing a more appropriate elastomeric joint sealant. In 2012 extensive rebuilding of the granite entrance steps and platform was also carried out.

Client: Mount Allison University, New Brunswick

Marjorie Bell Music Conservatory, New Brunswick

The masonry walls of this attractive sandstone building suffered from cracking and many attempts had been made to repoint the step-crack patterns at several locations - each attempt failing to cure the problem. After an investigation by PJ Materials Consultants, it was determined that the original design lacked sufficient expansion joints to facilitate all of the movement due to temperature change. The answer was to “stitch” the cracks and install joints at key locations and install an elastomeric joint sealant that blended with the natural appearance of the sandstone. Following this work, which was carried out in 2000, the masonry has remained crack-free.

Client: Mount Allison University, New Brunswick

The Dunn Physics, Engineering & Geology Building, NB

The consulting services of PJ Materials Consultants were retained to develop specifications and assist in the sourcing and fabrication of the red sandstone masonry units and buff window and door surround units required for this attractive campus building. A quality assurance programme was also developed to provide for winter seasoning of the quarried stone prior to fabrication and outside storage. The building was opened in 2000.

Client: Mount Allison University, Sackville, NB (Prime Consultant: Architecture 2000)

Flemington Building, Sackville, New Brunswick

This masonry of this beautiful red sandstone building suffered extensive cracking which would continue to occur even after repair. In 2009, PJ Materials Consutants Ltd was retained to devise a restoration strategy which included the installation of stainless steel helical rods to transfer gravity loads away from window openings where the lintel projections were inadequate. Extensive crack repair and repointing work was also carried out.

Client: Mount Allison University

Battlefield Monument, Stoney Creek, Ontario

PJ Materials Consultants provided consulting services to the City of Hamilton for two stages of restoration work. The first, carried out in 2012, included waterproofing the observation deck and replacing the deteriorated quarry tiles. The second stage, carried out in 2013, included cutting out and repointing deteriorated joints and repairing cracked masonry units. Some re-dressing of deteriorated stone was also required.

Client: City of Hamilton, Ontario

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Project References

Hamilton Hall, McMaster University, Hamilton, Ontario

Restoration of this campus building was carried out in two phases from 2009 through to 2010. PJ Materials Consultants Ltd was retained by the University to carry out a Condition Assessment of the exterior and design an appropriate strategy to restore the cracked limestone masonry and repoint the deteriorated mortar joints. The work also included partial rebuilding of a gable end after replacement of a badly corroded hidden structural beam that had caused severe cracking.

Client: McMaster University, Hamilton, Ontario

Cape Race Lighthouse, Newfoundland

A National Historical Site, Cape Race Lighthouse is the oldest reinforced concrete lighthouse in North America and only the second of its type in the world. As part of previous attempts at restoration, two additional thicknesses of concrete were added to the original tower in 1937 and 1969. PJ Materials Consultants was retained in 1996 to carry out a detailed investigation and to develop a restoration strategy, complete with specifications, to counteract ongoing damage and deterioration. The restoration work, carried out in 1999, included utilizing the outer layer as a protective barrier, after stabilization and repair of the structure. The existing coating was removed from both the interior and exterior surfaces, flexible stainless steel ties were installed across all three layers and cracks were repaired. New joints were installed to accommodate movement of the outer layer.

Client: Oceans & Fisheries Canada (Formerly: Canadian Coastguard)

Memramcook Institute, NB.

PJ Materials Consultants Limited provided sub-consulting services to the Prime Consultant, who was retained by N.B. Dept of Supply & Services, to provide assistance during the investigation of deteriorated masonry and to provide technical advice during the development of a restoration strategy and specifications. The major restoration work was carried out in several phases over several years. The first phase, which was carried out in 2000, included the complete replacement of the outer brick wythe of one elevation of the building and the rebuilding of the corner of another elevation - including the repair of damaged sandstone quoin units.

Client: Arthur Arseneau Architects, Sackville, New Brunswick

Cranewood House, Sackville, NB

PJ Materials Consultants was retained to develop a restoration strategy and to supervise the first phase of the exterior restoration of historical (1836) Cranewood House - once the home of William Crane, a member of the New Brunswick legislature in the early 1800's. Carried out in 2000, the restoration work predominantly included localized repointing of the sandstone masonry joints using a lime-based mortar, but also required reconstruction of the main entrance porch, and localized pinning of damaged or dislodged sandstone window mullion units using stainless steel masonry ties.

Client: Mount Allison University, Sackville, New Brunswick

First Moncton United Baptist Church, Moncton, NB

PJ Materials Consultants carried out a detailed investigation of damage caused to the bell tower - devised an appropriate restoration strategy, prepared technical specifications and provided project reviews during the course of the work. The restoration was carried out during 2004, and included the installation of helical stainless steel masonry ties, crack repair, repointing of deteriorated masonry joints and selected rebuilding of the tower with new fabricated stone. Steel ring beams were also installed within the tower to provide improved movement accommodation. Further repointing work and stone re-dressing was carried out during 2010.

Client: First Moncton United Baptist Church

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Project References

Collingwood Town Hall, Collingwood, Ontario

PJ Materials Consultants Ltd was retained as Prime Consultant to carry out a condition assessment of this heritage municipal building and to design and implement a conservation strategy which addressed the concerns of cracking and brick masonry deterioration. The conservation work, which was carried out during 2019, included crack repair and brick replacement, as well as cutting out and repointing deteriorated mortar joints using a hydraulic lime mortar.

Client: Town of Collingwood

Guelph Civic Museum (formerly Loretto Convent), Guelph, Ontario

PJ Materials Consultants Ltd was retained as a sub-consultant to carry out a condition assessment of this heritage building, as well as to assist in the design and implement a conservation strategy which stabilized the foundations by core rubble grouting and masonry tie installation. This work also included total repointing of the dimension stone masonry.

Client: Tacoma Engineers for the City of Guelph

Black House (also known as Hammond House) Sackville, NB

This National Historic Site on Mount Allison University's campus had suffered from severe cracking of its masonry. PJ Materials Consultants Ltd was retained to investigate the cause of the cracking, as well as to design and implement a restoration strategy which stabilized the foundations by core rubble grouting and masonry tie installation. This work was carried out as Phase 1 in 2009. The second phase, which included below grade waterproofing, crack repair and repointing was carried out in 2010.

Client: Mount Allison University, Sackville, NB

Fredericton City Hall, NB

PJ Materials Consultants Limited was the Prime Consultant for both phases of the conservation of the National Historic Site in 1910 & 1911. Following a comprehensive condition assessment, a strategy was developed to address concerns regarding extensive cracking of the masonry. The work included the installation of helical stainless steel masonry ties, below grade foundation wall waterproofing and core rubble grouting, as well as the installation of lintel joint flexible reinforcement, crack repair and repointing of deteriorated masonry joints. The work also included entrance wing wall rebuilding and some dimension stone replacement.

Client: City of Fredericton

Officers' Quarters (Fredericton Museum) Fredericton, NB.

PJ Materials Consultants Ltd was the Prime Consultant for the 2018 conservation of this heritage building, carrying out the Condition Assessment - which included ground penetrating radar investigations. The conservation work included masonry repointing and complete replacement of the roof.

Client: City of Fredericton

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DAVROC
TESTING LABORATORIES INC.

CONSULTING ENGINEERS
Materials Testing and Inspection

File: L23-0493BT

Armstrong Planning & Project Management
1600 Steeles Avenue West, Suite 318
Vaughan, ON
L4K 4M2

August 16, 2023

Attention: **Scott Borden**
Senior Planner, Project Manager
scott@armstrongplan.ca

Masonry Sampling & Testing Services
Philpott Memorial Church
89 Park Street North
Hamilton, Ontario

Further to your e-mail dated June 27, 2023, giving ***Davroc Testing Laboratories Inc.*** authorization to proceed with ***Masonry Sampling & Testing Services*** at the above noted project location, as detailed in our proposal letter dated June 27, 2023, with the following Scope of Work.

Scope of Services

1. Apply and pay for the City of Hamilton Street/sidewalk permit to facilitate the work below.

2. Installation of safety fencing to close off the work area.

3. Supply of Genie Boom lift, operator (supervisor) and one labourer as necessary to remove and replace areas, and provide access openings for investigative work.

4. Saw cutting to remove of two (2) brick prism (approximately one (1) brick long x four (4) bricks in height x one wythe in depth) at the selected locations. The removed brick prisms will be returned to our laboratory for compressive strength testing.

5. Grind/chip out to create a total of five (5) openings in the stone veneer, to examine and document the condition of the underlying brick masonry, and stone veneer gaps and ties if any. For three (3) of the openings, one (1) 3/8-inch diameter, and one (1) ½-inch diameter by 8" long Hilti threaded rod anchors were installed by Empire Staff using Hilti adhesive product, for the purpose of conducting anchor pull-out testing.

6. At all opening locations, a light hammer tapping was performed to detect hollow sounding masonry at randomly selected areas, including masonry at roof and u/s of roof and soffits adjacent to Exploratory Opening Location No. 1 East Elevation, above column, was performed by Davroc staff, with access help by our Sub-Contractors forces.

7. Davroc staff verified the wall thicknesses at all opening locations.

8. A total of six sets (6) of two (2) Hilti threaded rod anchors; three (3) sets in interior wall locations, and three (3) sets in exterior wall locations, were installed by Empire Staff. At each location, one (1) 3/8-inch diameter, and one (1) ½-inch diameter Hilti anchors pull-out tests were performed to determine the pull-out strength of the anchors. One (1) 3/8-inch diameter anchor for both one interior location and one exterior location was installed in the mortar joint to determine the pull-out strength in mortar joints. All remaining 3/8-inch diameter, and ½-inch diameter anchors were installed in brick to determine the pull-out strength in bricks.

9. Removal of two (2) approximately 100mm diameter core samples at locations noted in the photographs provided. The core samples were returned to our laboratory for Logging and Photographs to describe any unusual features seen in the cores.

Sampling & Testing Locations

See attached photographs showing the locations of the exterior openings for visual observations and testing purposes in Appendix “A”. Note that we understand that these locations were selected by others in consultation with the structural design engineer.

Brick Prism Sampling & Testing

For Brick Prism No. 1 and the opening size created was approximately 500mm in height, and 415mm wide. From each opening, one (1) brick prism from each opening, approximately 213mm length by 105mm wide by 300mm in height was extracted, at the selected locations for compressive strength testing in general accordance with the CSA S304 Design of Masonry Structures. Note that the CSA S304 standard requires a minimum of ten (10) prism tests for design purposes, and that the intent of this testing was to obtain an indication of the compressive strength level of the masonry.

The approximate brick prism opening locations are shown on the attached Photographs No.’ s 1 and 2 in Appendix “A”.

Prism removal procedures included hammer sounding of the stone veneer prior to removal, to determine if there were any delamination's, removal of the stone veneer, examination and hammer sounding of exposed clay brick to determine if the bricks were damaged. In addition, an electric rotary hammer drill, with an ~13mm diameter drill bit was used to determine the total wall thickness. Observations made during the removal procedures are summarized as follows:

Brick Prism Location No. 1

1. Hammer sounding of the stone veneer, indicated the stone was partially bonded to the underlying brick facing.
2. Upon removal of the stone facing, some brick spalling was evident to a depth of approximately 10 to 17mm (see Photograph No. 5).
3. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~8 to 12mm in thickness), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails (see Photograph No. 4).
4. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. A total of three (3) steel concrete nails were seen holding the expanded mesh to the brick for a total area of ~415mm wide by 500mm in height.
5. Wall thickness as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit was ~420mm. Using this wall thickness and a typical depth ~104mm of the clay brick units, this would translate to four (4) wythes of brick being used to construct the wall.

Brick Prism Location No. 2

1. Hammer sounding of the stone veneer, indicated the stone was partially bonded to the underlying brick facing.
2. Upon removal of the stone facing, brick spalling was evident to a depth of approximately 4 to 7mm (see Photograph No. 8).
3. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~6 to 12mm thick), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails (see Photograph No. 7).
4. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. A total of four (4) steel concrete nails were seen holding the expanded mesh to the brick for a total area of ~400mm wide by 500mm in height.
5. Wall thickness as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit was ~470mm. Using this wall thickness and a typical depth ~104mm of the clay brick units, this would translate to four (4) wythes of brick being used to construct the wall.

The results of the brick prism compressive strength tests are shown on the attached Table No. 1, along with related photographs in Appendix "B".

Exterior Openings in Stone Veneer

A total of five (5) openings in the exterior stone veneer were made using masonry saw cutting and hand-held chisel. The purpose of the openings was to examine and document the condition of the stone veneer and underlying brick masonry, air gaps and anchorage ties if any. For three (3) of the openings, one (1) 3/8-inch diameter, and one (1) ½-inch diameter by 8" long Hilti threaded rod anchors were installed by Empire Staff using Hilti adhesive product, for the purpose of conducting anchor pull-out testing, to determine the ultimate capacity of the installed anchors.

Opening removal procedures included hammer sounding the stone veneer prior to removal to determine if there were any delamination's, removal of the stone veneer, examination and hammer sounding of exposed clay brick to determine if the bricks were damaged internally. In addition, an electric rotary hammer drill, with an ~13mm diameter drill bit was used to determine the total wall thickness.

Details of our observations are shown as follows, along with wall thicknesses as determined by electric rotary hammer drilling with a ~13mm diameter drill bit.

Exploratory Opening No. 1

1. The opening was located on the East Elevation, just above the column directly over visible cracking in the stone, to investigate the nature of the cracking.
2. The size of the opening was ~420mm wide by 395mm in height.
3. Hammer sounding of the stone veneer, indicated a hollow sound, indicating that either the stone facing was debonded, or the underlying brick facing was damaged.
4. Upon removal of the stone facing, brick spalling occurred to a depth of ~35mm (see attached Photograph No.'s 17 and 18).
5. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~8 to 12mm in thickness), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails.
6. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. A total of two (2) steel concrete nails were seen holding the expanded mesh to the brick for a total area of ~420mm wide by 395mm in height.
7. Wall thickness as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit was ~435mm. Using this wall thickness and a typical depth ~104mm of the clay brick units, this would translate to four (4) wythes of brick being used to construct the wall.
8. Open cracks were observed above and below the opening area, which could allow water ingress, and subsequent freeze-thaw damage in this location.
9. On the East elevation we noted debonding of the stonework in line with the down spout for the eve's trough (see Photographs No.'s 20 and 21).

Exploratory Opening No. 2

1. The opening was located on the south elevation of the church, adjacent to the East side of a door opening, to investigate visible debonding and gap between the stone veneer and the clay brick.
2. The size of the opening was ~700mm wide by 300mm in height.
3. Hammer sounding of the stone veneer, indicated a hollow sound for the opening area, and surrounding stone work. Visually we noted the stone veneer facing had debonded from the underlying clay brick, with an ~15 to 20mm air gap between the stone setting bed mortar and the brick, with visible spalling damage of the brick to a depth of ~35mm, with loose and missing (disintegrated) brick (see attached Photograph No. 23).
4. Upon removal of the stone facing, brick spalling occurred to a depth of ~15 to 20mm.
5. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~8 to 12mm in thickness), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails (see Photograph No.'s 24, 25 and 26).
6. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. A total of six (6) steel concrete nails were seen holding the expanded mesh to the brick for a total area of ~700mm wide by 300mm in height.
7. Wall thickness as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit was ~450mm. Using this wall thickness and a typical depth ~104mm of the clay brick units, this would translate to four (4) wythes of brick being used to construct the wall.

Anchor Pull-Out Opening No. 1

1. The opening was located on East Elevation, close to the North side of the church, ~2m above ground level.
2. The size of the opening was ~750mm wide by 200mm in height.
3. Hammer sounding of the stone veneer, indicated a solid sound, indicating the stone facing was bonded to the underlying brick.
4. Upon removal of the stone facing, the brick-and-mortar joints were seen to be in a generally intact condition (see attached Photograph No. 37, also typical pull-out test apparatus, Photograph No. 38 and 39 (backside of stonework). Hammer sounding of the brick indicated a hollow condition, indicating possible internal damage to the brick, or lack of bedding mortar.
5. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~8 to 12mm in thickness), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails.
6. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. A total of six (6) steel concrete nails were seen holding the expanded mesh to the brick for a total area of ~750mm wide by 200mm in height.

7. Wall thickness as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit was ~450mm. Using this wall thickness and a typical depth ~104mm of the clay brick units, this would translate to four (4) wythes of brick being used to construct the wall.

Anchor Pull-Out Opening No. 2

1. The opening was located on East Elevation, on the North side of the main entrance of the church, ~1.74m above ground level.
2. The size of the opening was ~620mm wide by 310mm in height.
3. Hammer sounding of the stone veneer, indicated a solid sound, indicating the stone facing was bonded to the underlying brick.
4. Upon removal of the stone facing, the brick-and-mortar joints were seen to be in an intact condition. Hammer sounding of the brick indicated a solid condition, indicating no damage to the brick, with exception to shallow ~3 to 4mm spalled facing of brick (see Photograph No. 40).
5. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~8 to 12mm in thickness), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails.
6. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. A total of seven (7) steel concrete nails were seen holding the expanded mesh to the brick for a total area of ~620mm wide by 310mm in height.
7. Wall thickness as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit was ~445mm. Using this wall thickness and a typical depth ~104mm of the clay brick units, this would translate to four (4) wythes of brick being used to construct the wall.

Anchor Pull-Out Opening No. 3

1. The opening was located on South Elevation, (middle area) ~1.35m above ground level.
2. The size of the opening was ~600mm wide by 300mm in height.
3. Hammer sounding of the stone veneer, indicated a hollow sound, indicating the stone facing was not bonded to the underlying brick.
4. Upon removal of the stone facing, the brick-and-mortar joints for the upper three (3) brick courses were seen to be in an intact condition, while for the lower one to two courses of brick exhibited spalling of the brick to a depth of ~5 to 7mm. Hammer sounding of the brick indicated a solid condition (~50% of the opening size), and hollow sounding condition, indicating there was damage to the brick as evidenced by the spalling of the brick that occurred.
5. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~8 to 12mm in thickness), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails.

6. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. A total of four (4) steel concrete nails were seen holding the expanded mesh to the brick for a total area of ~600mm wide by 300mm in height.
7. Wall thickness as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit was ~450mm. Using this wall thickness and a typical depth ~104mm of the clay brick units, this would translate to four (4) wythes of brick being used to construct the wall.

Anchor Pull-Out Testing

A total of six sets (6) of two (2) Hilti threaded rod anchors; three (3) sets in interior wall locations, and three (3) sets in exterior wall locations, were installed by Empire Staff. At each location, one (1) 3/8-inch diameter, and one (1) ½-inch diameter Hilti anchor pull-out tests were performed to determine the pull-out strength of the anchors. One (1) 3/8-inch diameter anchor for both one interior location and one exterior location was installed in the mortar joint to determine the pull-out strength in the mortar joints. All remaining 3/8-inch diameter, and ½-inch diameter anchors were installed in brick to determine the pull-out strength in the bricks.

The results of these tests are shown in Table No. 2 and 3, including related photographs are attached in Appendix “B”.

Core Sampling & Examination

At two (2) selected locations, one (1) approximately 100 mm diameter core sample was removed for visual examination of the masonry wall structure. Prior to coring the stone veneer was hammer sounded prior to coring to determine if the stone veneer was delaminated. Sounding indicated a solid condition, meaning the stonework was bonded to the underlying brick.

Note that during the core drilling procedures for Core Sample No. 1, the installed drill coring machine stand expansion anchors did not hold the drill stand weight, and as such we were only able to drill through the first two wythes of the brick. For the remaining Core Sample No. 2, we were able to drill through the entire thickness of the wall (four (4) brick wythes ~420mm in thickness).

The retrieved core samples were returned to our laboratory for logging and photographs of the samples.

Photographs of the coring equipment, drilled locations, and core samples are attached in Appendix “E”.

Cog Logs of the retrieved core samples is given as follows:

Core Sample No. 1

-Retrieved core length was ~210mm.
-Core was retrieved in pieces, meaning the brick to mortar bond appeared to be poor in some joints, while in other joints the mortar appeared to be well bonded.
-From the retrieved brick pieces, the brick units were seen to be in good condition.
-The retrieved mortar pieces indicated the mortar had adequate strength for its intended use.

Core Sample No. 2

-Retrieved core length was ~420mm.
-Core was retrieved in numerous pieces, meaning the brick to mortar bond appeared to be poor in some joints, while in other joints the mortar appeared to be well bonded.
-From the retrieved brick pieces, the brick units were seen to be in good condition.
-The retrieved mortar pieces indicated the mortar had adequate strength for its intended use.

Summary Comments

The following provides you with a summary of the Masonry Investigation and Testing Program that was conducted:

Brick Prisms

The corrected compressive strength results for length: thickness ratio for Brick Prism No. 1 was 3.5 MPa, and for Brick Prism No. 2 was 2.9 MPa, with failure occurring mostly in cracking of brick, and some localized crushing of mortar. Note that the interior side of brick prism was missing mortar in the vertical joints.

Exterior Openings in Stone Veneer

The following provides you with a summary of our findings for the seven (7) exterior openings; two (2) for brick prism removal, two (2) for exploratory investigation, and three (3) for test areas where pull-out tests were performed on 3/8" and ½" diameter by 8" long anchor rods that had been installed with Hilti adhesive epoxy product.

Brick Prism Openings

1. Brick prism opening size was ~500mm in height by 415mm wide for both openings.
2. Hammer sounding of the stone veneer, indicated the stone was partially bonded to the underlying brick facing, for both openings.

3. Upon removal of the stone facing, brick spalling was evident to a depth of approximately 10 to 17mm for Brick Prism No. 1, and for Brick Prism No. 2 brick spalling was evident to a depth of approximately 4 to 7mm.
4. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~8 to 12mm in thickness), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails.

5. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. A total of three (3) steel concrete nails were seen holding the expanded mesh to the brick for Brick Prism Location No. 1, and a total of four (4) steel concrete nails were seen holding the expanded mesh to the brick for Brick Prism Location No. 2.
6. Wall thickness as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit was ~420mm for Brick Prism No. 1, and ~470mm for Brick Prism No. 2. Using this wall thickness and a typical depth ~104mm of the clay brick units, this would translate to four (4) wythes of brick being used to construct the wall.

Anchor Pull-Out Tests

From the attached Table No. 2, you will note that the mean maximum applied failure load for the 3/8-inch diameter anchors was 10.8 kNs, with a range in failure loads for the six (6) anchors tested of 8.5 to 15.1 kNs. From the attached Table No. 3, you will note the mean maximum applied failure load for the ½-inch diameter anchors was 11.7 kNs, with a range in failure load of 9.2 to 13.3 kNs. Mode of failure for both 3/8-inch and ½-inch diameter anchors, was in pull-out of the anchors as noted on the attached Table No.'s 2 and 3 in Appendix "D".

Exploratory & Pull-Out Test Openings

Exploratory Openings

1. Exploratory opening size was ~420mm in height by 395mm wide for Opening No. 1, and ~700mm in height by 300mm.
2. Hammer sounding of the stone veneer, indicated the stone was debonded to the underlying brick facing, and/or that there was underlying damaged brick for both openings.
3. For Exploratory Opening No. 2, hammer sounding of the stone veneer, indicated a hollow sound for the opening area, and surrounding stone work. Visually we noted the stone veneer facing had debonded from the underlying clay brick, with an ~15 to 20mm air gap between the stone setting bed mortar and the brick, with visible spalling damage of the brick to a depth of ~35mm, and with loose bricks.
4. Upon removal of the stone facing, brick spalling was evident to a depth of approximately ~35mm for Opening No. 1.

5. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~8 to 12mm in thickness), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails.
6. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. A total of two (2) steel concrete nails were seen holding the expanded mesh to the brick for Brick Prism Location No. 1, and a total of six (6) steel concrete nails were seen holding the expanded mesh to the brick for Brick Prism Location No. 2.
7. Wall thickness as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit was ~435mm for Opening No. 1, and ~450mm for Opening No. 2, and would translate to four (4) wythes of brick being used to construct the wall.

Anchor Pull-Out Test Openings

1. The size of the openings for the three (3) openings varied ~600 to 750mm wide by ~300 to 310mm in height.
2. Hammer sounding of the stone veneer, indicated a solid sound, indicating the stone facing was bonded to the underlying brick for Opening No. 1 and 2.
3. Upon removal of the stone facing, the brick-and-mortar joints were seen to be in an intact condition for Anchor Pull-Out Opening No.'s 1 and 2. Hammer sounding of the brick indicated a hollow condition, indicating possible internal damage to the brick, or lack of bedding mortar in behind the brick facing for Anchor Pull-Out Opening No. 1.
4. Hammer sounding of the brick indicated a solid condition, indicating no internal damage to the brick for Anchor Pull-Out Opening No. 2.
5. Hammer sounding of the stone veneer, indicated a hollow sound for a portion of the opening, indicating the stone facing in some areas was not bonded to the underlying brick for Opening No. 3.
6. For Anchor Pull-Out Opening No. 3, upon removal of the stone facing, the brick-and-mortar joints for the upper three (3) brick courses were seen to be in an intact condition, while for the lower one to two courses of brick exhibited spalling of the brick to a depth of ~5 to 7mm. Hammer sounding of the brick indicated a solid condition (~50% of the opening size), and hollow sounding condition, indicating there was damage to the brick as evidenced by the spalling of the brick that occurred.
7. The stone facing (~6 to 12mm thick) was applied to a base mortar coating layer (~8 to 12mm in thickness), that contained expanded steel mesh, which was attached to the brick using one-inch-long steel concrete nails.
8. The expanded steel mesh and steel concrete nails, where exposed were found to be in a rusted condition. The total number of nails seen holding the expanded steel mesh to the brick varied from four (4) to seven (7).
9. Wall thicknesses for the three Achor Pull-Out Test Openings as determined by an electric rotary hammer drill, with an ~13mm diameter drill bit varied for ~445 to 450mm. Using this wall thickness and a typical depth ~104mm of the clay brick units, this would translate to four (4) wythes of brick being used to construct the wall.

DAVROC

Core Sampling & Examination

From the core samples taken, the following provides you with a summary of our Core Logs:

-Retrieved core length for Core Sample No. 1 was ~210mm, and for Core Samples No. 2 was ~420mm (full depth of the wall).
-Cores were retrieved in numerous pieces, meaning the brick to mortar bond appeared to be poor in some joints, while in other joints the mortar appeared to be well bonded.
-From the retrieved brick pieces, the brick units were seen to be in good condition.
-The retrieved mortar pieces indicated the mortar had adequate strength for its intended use.

Recommendations

We would recommend that the structural design engineer for this project, review the test data presented in this report, and provide comments and/or recommendations for remedial measures or additional investigative inspection and testing that may be required.

We trust this provides you with the information you require at this time. Should you require any further information, do not hesitate to contact the undersigned.

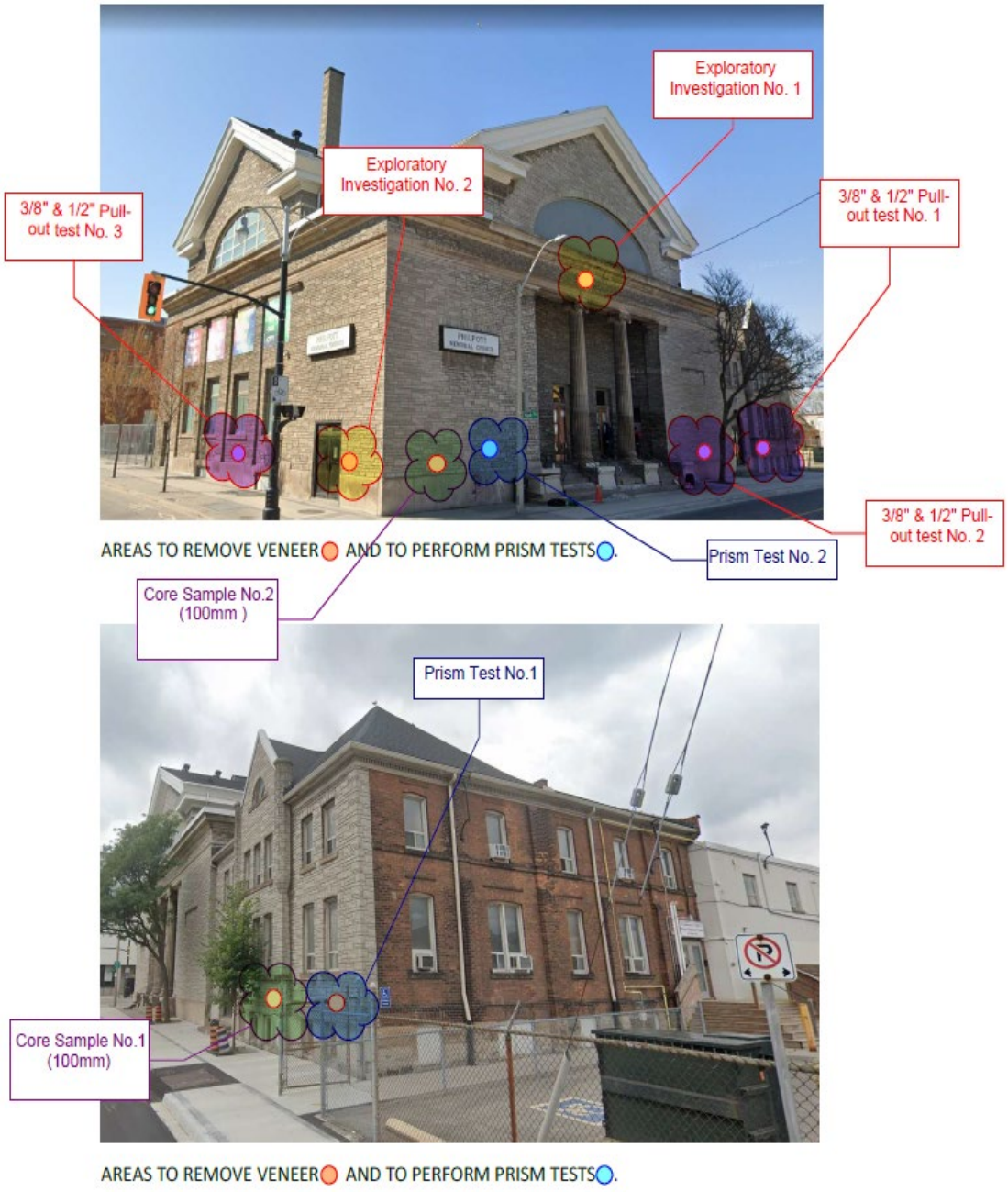
Yours very truly,
Davroc Testing Laboratories Inc.

Izhar Chughtai
Technical Specialist

Sal Fasullo, C.E.T.
President

SF/sf
23-0493-2-Report-Philpott Memorial Church

Appendix A
Photographs Showing
Selected Exterior Test Locations



Photographs No. 1 and 2, showing test locations.

Appendix “B”
Table No. 3 Prisms Results & Photographs

Table No. 1
Summary of Brick Prism
Compressive Strength Results

Prism No.	Length (mm	Width (mm)	Height (mm)	Height to Thickness Ratio	Corrected Compressive Strength (MPa)	Mode pf Failure
1	213	105	295	2.81	3.5	Failure mostly in cracking of brick, and some crushing of mortar. Interior side of brick prism missing mortar in vertical joints.
2	213	105	287	2.73	2.9	Failure mostly in cracking of brick, and some crushing of mortar. Interior side of brick prism missing mortar in vertical joints.
-	-	-	-	**Mean**	**3.2**	-

**Photograph No. 3, showing test location for Brick Prism No. 1.
Note the horizontal and vertical cracking seen in the stone work.**

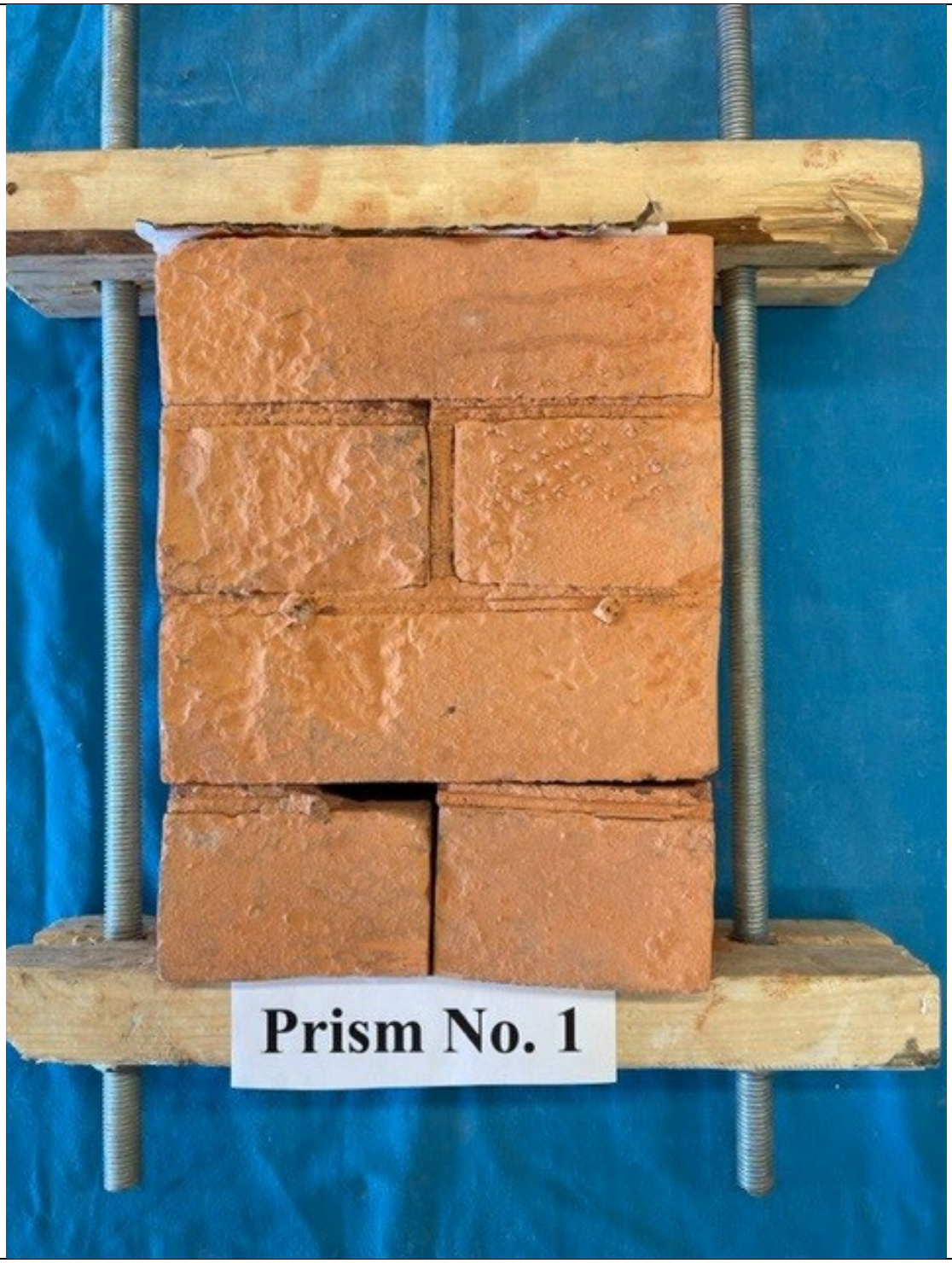
Photograph No. 4, showing test location for Brick Prism No. 1, upon removal of the stone work. Note the visible rusted steel mesh and rusted steel concrete nail heads holding the nesh to the brick. Stonework base mortar was still bonded to the brickwork for most of the area.

Photograph No. 5, showing test location after removal of Brick Prism No. 1. Note some vertical interior mortar joints were not completely filled with mortar.

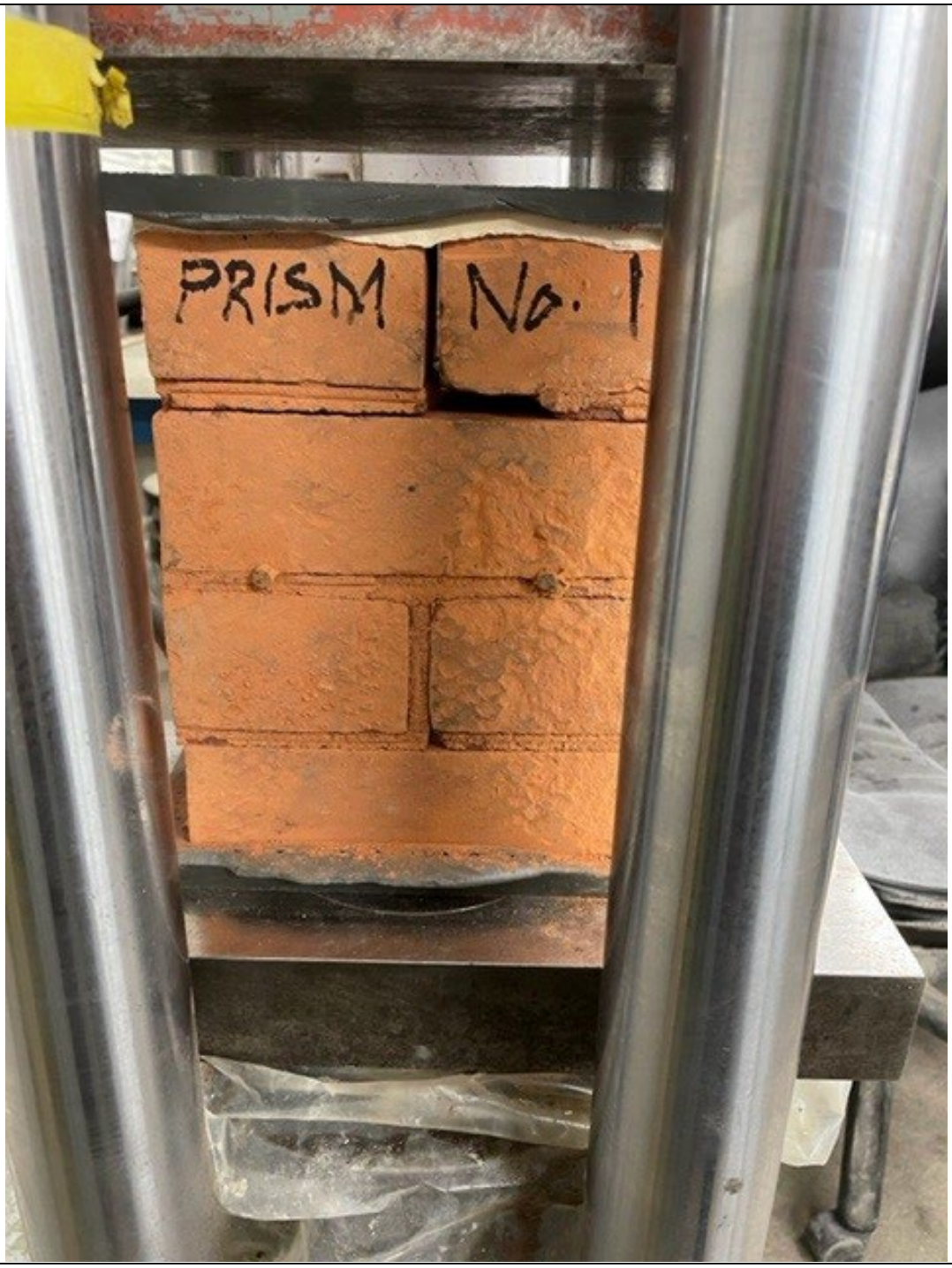
Photograph No. 6, showing the front face of the stonework upon removal from the wall, for Brick Prism No. 2. Note the cracking seen in the stone work.

Photograph No. 7, showing the interior face of the stonework upon removal from the wall, for Brick Prism No. 2. Note the rusted expanded steel mesh, and adhering brick facing.

Photograph No. 8, showing test location after removal of Brick Prism No. 2. Note some vertical interior mortar joints were not completely filled with mortar.



Photograph No. 9
Showing a view of Brick Prism No. 1 in the wood clamps to keep the sample in an intact condition

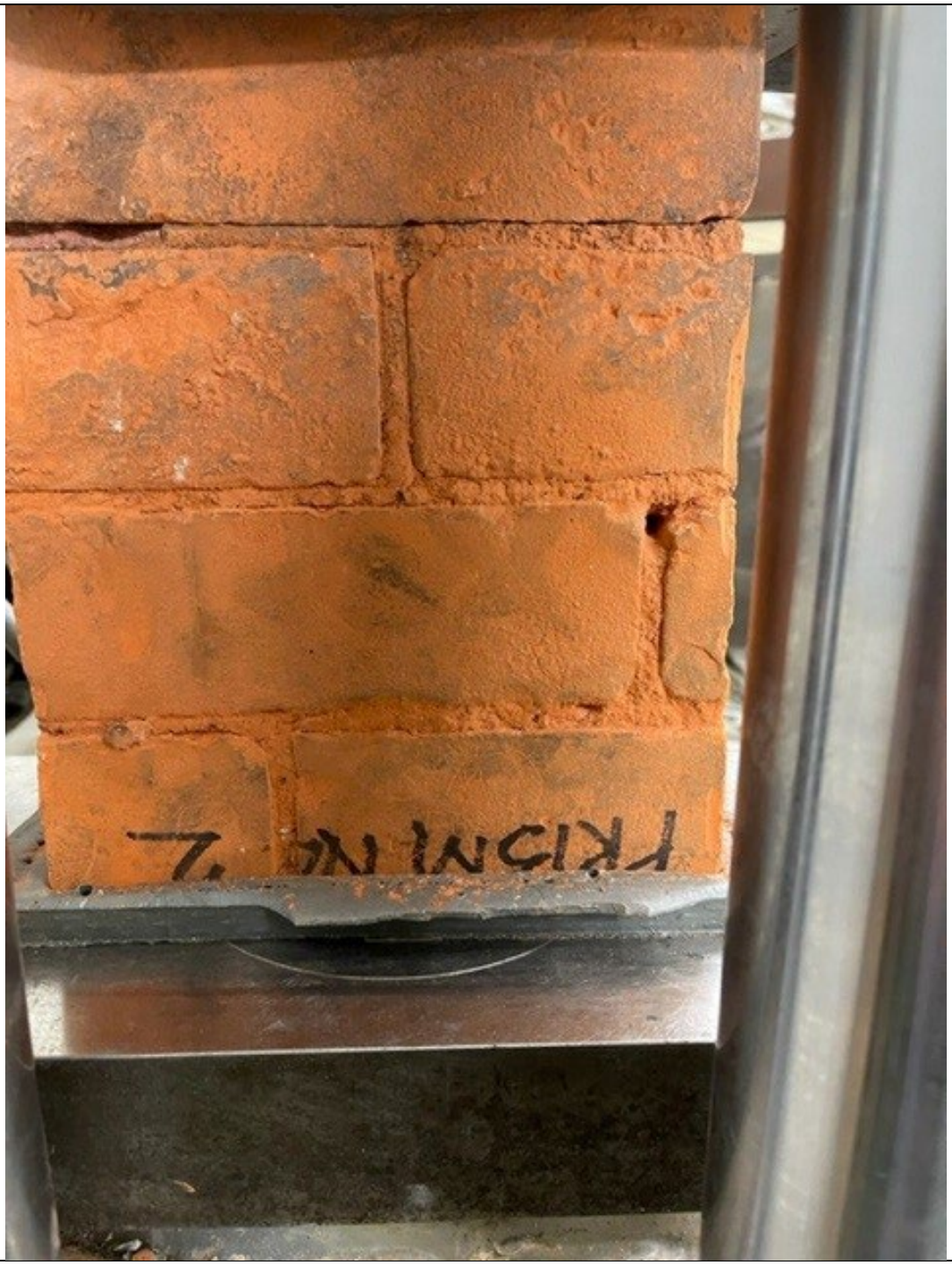


Photograph No. 10
Showing a view of Brick Prism No. 1 in the testing machine, ready for testing.

Photograph No. 11
Showing a view of Brick Prism No. 1 in the testing machine, after testing.

Photograph No. 12
Showing a view of Brick Prism No. 1 after testing.

Photograph No. 13
Showing a view of Brick Prism No. 2 in the wood clamps to keep the sample in an intact condition



Photograph No. 14
Showing a view of Brick Prism No. 1 in the testing machine, ready for testing.

Photograph No. 15
Showing a view of Brick Prism No. 1 after testing.

Appendix “C”
Photographs of Exploratory Openings

Photograph No. 16, showing a view of the stonework for Exploratory Opening No. 1 prior to removal of the stone. Note the cracking seen in the stonework.

Photograph No. 17, showing a view of the stonework for Exploratory Opening No. 1 after removal of the stone. Note the spalling and cracking seen in the brickwork.

Photograph No. 18,
showing the interior view of the removed stonework for Exploratory Opening No. 1. Note the spalled brick, and rusted expanded steel mesh.

Photograph No. 19, showing an overall view of the stonework for Exploratory Opening No. 1 after removal of the stone. Note the open joints above and below the opening, which likely allows water to penetrate the masonry work and cause freeze-thaw damage to the brick work.

Photograph No. 20, immediately above the eve's trough, separation of the stonework was noted. Note the shingles covering this area.

Photograph No. 21, showing the approximate location of the eve's trough down spout shown in Photographs No. 19, where the separation in the stonework was noted.

Photograph No. 22, showing a view of the stonework for Exploratory Opening No. 2, adjacent to the door, prior to removal of the stone.

Photograph No. 23, showing a side view of the stonework for Exploratory Opening No. 2, adjacent to the door, prior to removal of the stone. Note the separation of the stonework to the brickwork, and visible freeze-thaw damage to the brick.

Photograph No. 24, showing a view of Exploratory Opening No. 2 after removal of the stonework. Note the spalled and missing (disintegrated) brick, likely due to freeze-thaw damage.

Photograph No. 25, showing a close-up view of Exploratory Opening No. 2 after removal of the stonework. Note the spalled and missing (disintegrated) brick, likely due to freeze-thaw damage.

Photograph No. 26, showing a close-up view of Exploratory Opening No. 2 after removal of the stonework. Note the spalled and missing (disintegrated) brick, likely due to freeze-thaw damage.

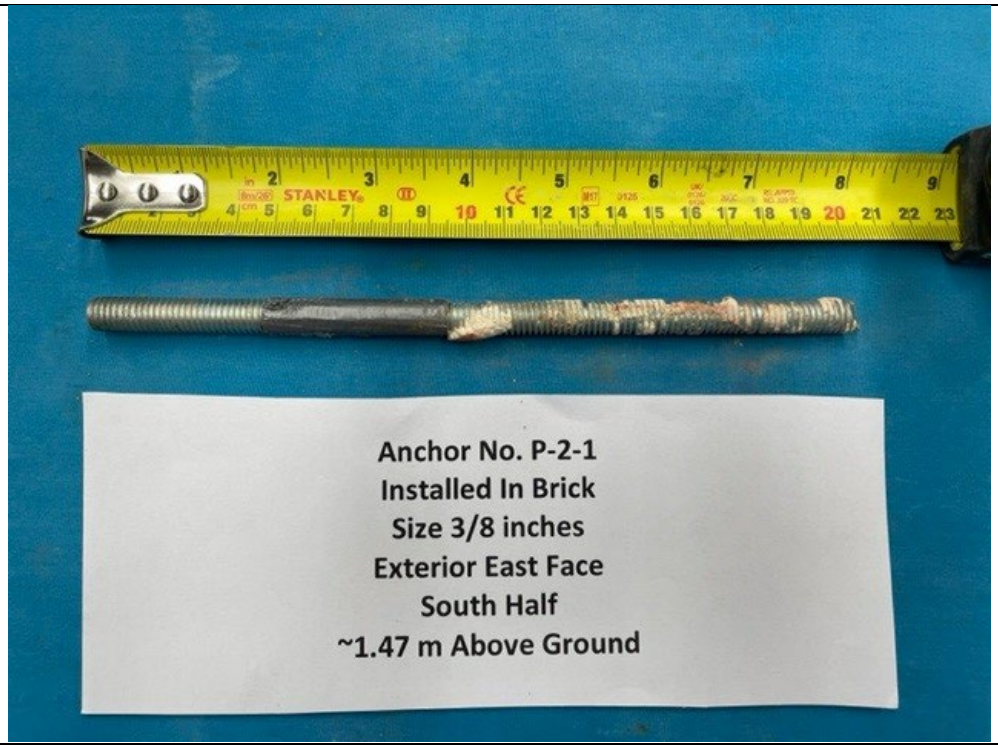
Appendix “D”
Anchor Pull Out Test Results
Table No.’s. 2 and 3

Table No. 2
Anchor Pull Out Testing

Test No.	Test Locations	Hilti Threaded Rod Anchor Diameter x Length & Embedment Depth	Anchor Location in Structure	Maximum Applied Failure Load (kNs)	Observations
P-1-1	Exterior East Face (North half) ~2.0m above from ground level under window No. 5 from East to West. (Test opening area size: ~750 x 200mm).	3/8" x 8" ~115mm depth	In mortar joint	15.1	Threaded rod completely pulled out, with partial (~40% of rod length) failure in the brick to epoxy bond likely due to drilling dust on inside face of drilled hole. Shear failure of the epoxy at rod threads was noted for an ~25% length of the rod at the at the bottom of the rod. For the remaining portion of rod, the threads showed no adhering epoxy, indicating insufficient epoxy may have been applied in the hole.
P-2-1	Exterior East Face (South Half) ~1.47m above from ground level (Test opening Size: ~620 x 310).	3/8" x 8" ~110mm depth	In Brick	8.5	Threaded rod completely pulled out. Shear failure of the epoxy at rod threads was noted for an ~15% length of the rod. For the remaining portion of rod, the threads showed no adhering epoxy, indicating insufficient epoxy may have been applied in the hole.
P-3-1	Exterior South face (middle area) ~1.35m above ground level (Test area opening Size: ~600 x 300mm)	3/8" x 8" ~110mm depth	In Brick	10.9	Threaded rod completely pulled out. Shear failure of the epoxy at rod threads was noted for an ~30% length of the rod. For the remaining portion of rod, the threads showed no adhering epoxy, indicating insufficient epoxy may have been applied in the hole.

Table No. 2 (continued) Anchor Pull Out Testing					
Test No.	**Test Locations**	**Hilti Threaded Rod Anchor Diameter x Length & Embedment Depth**	**Anchor Location in Structure**	**Maximum Applied Failure Load (kNs)**	**Observations**
P-4-1	Inside Janitor room at ground floor under stair case ~ 1.1m above ground level. Opening Size: (~610 x 620mm)	3/8" x 8" ~110mm depth	In Brick	8.5	Threaded rod completely pulled out, with failure (~97% of rod length in the brick to epoxy bond likely due to drilling dust on inside face of drilled hole. Also, a piece of brick facing ~90x90x10mm depth spalled off while still attached to the rod, with brick failure along the length of the rod.
P-5-1	Ground Floor inside church room (Pray Hall) South Wall, North face Opening Size: (~610 x 610) ~1.75m above ground level.	3/8" x 8" ~110mm depth	In Brick	10.5	Anchor pulled out brick face. We were not able to retrieve the rod, and therefore cannot comment the mode failure.
P-6-1	Second floor (inside kitchen) East wall (West Face), ~1.0m above floor level. (Opening Size: ~610 x 610mm)	3/8" x 8" ~110mm depth	In mortar joint	11.5	Threaded rod completely pulled out, with ~50% shear failure of the epoxy to thread bond. For the remaining portion of rod, the rod threads were clean (no adhering epoxy).
Mean Maximum Applied Failure Load (kNs)				**10.8**	**-**
Range in Applied Maximum Pull-Out Force (kNs)				**8.5 to 15.1**	**-**

Photograph No. 27, showing 3/8" Anchor Test No. P-1-1.



Photograph No. 28, showing 3/8" Anchor Test No. P-2-1.

Photograph No. 29, showing 3/8" Anchor Test No. P-3-1.

Photograph No. 30, showing 3/8" Anchor Test No. P-4-1.

Photograph No. 31, showing 3/8" Anchor Test No. P-6-1.

Table No. 3
Anchor Pull Out Testing

Test No.	Test Locations	Hilti Threaded Rod Anchor Diameter x Length & Embedment Depth	Anchor Location in Structure	Maximum Applied Failure Load (kNs)	Observations
P-1-2	Exterior East Face (North half) ~2.0m above from ground level under window No. 5 from East to West. (Test opening area size: ~750 x 200mm).	1/2" x 8" ~97mm depth	In Brick	11.2	Threaded rod completely pulled out, with failure in the brick to epoxy bond likely due to drilling dust on inside face of drilled hole.
P-2-2	Exterior East Face (South Half) ~1.47m above from ground level (Test opening Size: ~620 x 310).	1/2" x 8" ~106mm depth	In Brick	13.3	Threaded rod completely pulled out, with ~15% shear failure of the epoxy to thread bond. For the remaining portion of rid, the rod threads were clean (no adhering epoxy).
P-3-2	Exterior South face (middle area) ~1.35m above ground level (Test area opening Size: ~600 x 300mm)	1/2" x 8" ~115mm depth	In Brick	10.3	Threaded rod completely pulled out, with ~30% shear failure of the epoxy to thread bond. For the remaining portion of rod, failure of the brick to epoxy bond was noted likely due to drilling dust on inside face of drilled hole.
P-4-2	Inside Janitor room at ground floor under stair case ~ 1.1m above ground level. Opening Size: (~610 x 620mm)	1/2" x 8" ~120mm depth	In Brick	12.7	Threaded rod completely pulled out, with ~40% shear failure of the epoxy to thread bond. For the remaining portion of rod, failure of the brick to epoxy bond was noted likely due to drilling dust on inside face of drilled hole, with some thread clean (no visible adhering epoxy).

Table No. 3 (continued) Anchor Pull Out Testing					
Test No.	**Test Locations**	**Hilti Threaded Rod Anchor Diameter x Length & Embedment Depth**	**Anchor Location in Structure**	**Maximum Applied Failure Load (kNs)**	**Observations**
P-5-2	Ground Floor inside church room (Pray Hall) South Wall, North face Opening Size: (~610 x 610) ~1.75m above ground level.	1/2" x 8" ~115mm depth	In Brick	9.2	Threaded rod completely pulled out, with mostly failure of the brick to epoxy bond was noted likely due to drilling dust on inside face of drilled hole.
P-6-2	Second floor (inside kitchen) East wall (West Face), ~1.0m above floor level. (Opening Size: ~610 x 610mm)	1/2" x 8" ~115mm depth	In Brick	13.3	Anchor pulled out brick face. We were not able to retrieve the rod, and therefore cannot comment the mode failure.
Mean Maximum Applied Failure Load (kNs)				**11.7**	-
Range in Applied Maximum Pull-Out Force (kNs)				**9.2 to 13.3**	-

Photograph No. 32, showing 1/2" Anchor Test No. P-1-2.

Photograph No. 33, showing 1/2" Anchor Test No. P-2-2.

Photograph No. 34, showing 1/2" Anchor Test No. P-3-2.

Photograph No. 35, showing 1/2" Anchor Test No. P-4-2.

Photograph No. 36, showing 1/2" Anchor Test No. P-5-2.

Photograph No. 37, showing a typical load test setup for Anchor Pull-Out Location No. 1.

Photograph No. 38, showing the back side of the 1st. piece stonework for Anchor Pull-Out Location No. 1. Note the rusted expanded steel mesh and rusted concrete steel nails, and spalled brick pieces.

Photograph No. 39, showing the back side of the 2nd. piece stonework for Anchor Pull-Out Location No. 1. Note the rusted expanded steel mesh and rusted concrete steel nails, and spalled brick pieces.

Photograph No. 40, showing the brick work in behind stone facing for Anchor Pull-out Location No. 2. Note the spalled portions of brick.

Photograph No. 41,
showing anchor bolt installation for Anchor Pull-Out Location No. 4.

Photograph No. 42,
showing conical failure of the brick for Anchor Pull-Out Location No. 4.

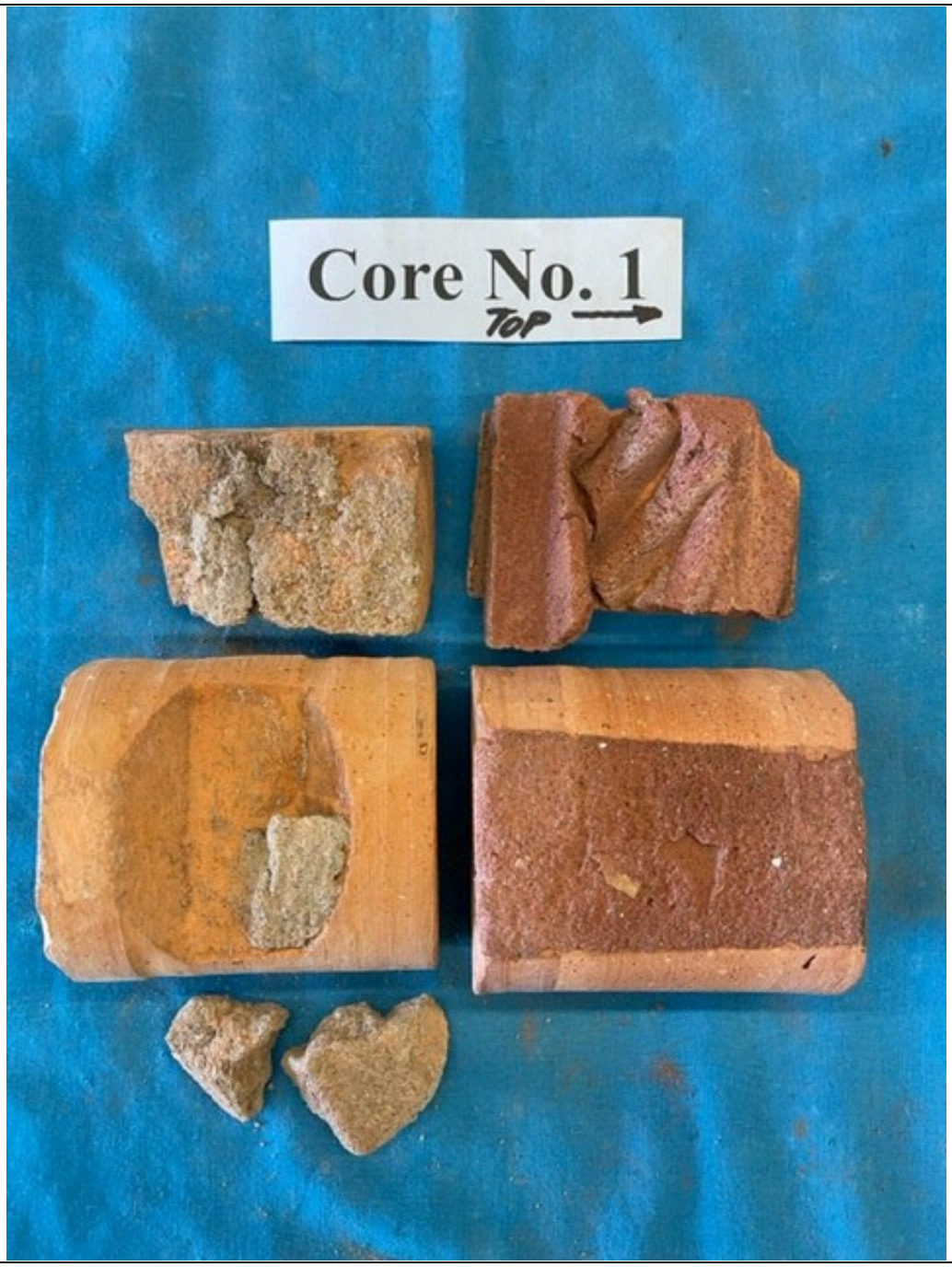
Photograph No. 43,
showing pull-out failure of the brick for Anchor Pull-Out Location No. 5.

Photograph No. 44,
showing pull-out failure of the brick for Anchor Pull-Out Location No. 6.

Appendix “E”
Core Sample Photographs

Photograph No. 45,
showing a view of a typical drilling machine setup (Core No. 2).

Photograph No. 46, showing a view of Core No. 1.



Photograph No. 47, showing an interior view of Core No. 1.

Photograph No. 48, showing the opposite interior view of Core No. 1.

Photograph No. 49, showing an interior view of Core No. 2.
Note the wall thickness is made up of four (4) wythes of brick.

Photograph No. 50, showing an interior view of Core No. 2.

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Consulting Engineers

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October 25, 2023

HCEC 89 Park LC
7077 Keele Street, Suite 400
Vaughan, ON L4K 0B6

Re: 89 Park Street North, Hamilton
Condition Assessment of Existing Structure
Addendum to Structural Report
Our Project No. 23195

We are writing to provide additional context and clarification to our report, prepared by this office and dated September 29, 2023, regarding our recommendations for the potential re-use of masonry elements at the above-mentioned address. The report gives a summary of investigations to date and attempts to clarify the existing state of the brick. Our clarifications are as follows:

1. A preliminary review of the building and façade was performed on May 1, 2023 by Paul Jeffs of PJ Materials Consultants Ltd., in the presence of Scott Borden of Armstrong Planning & Project Management.

2. Based on the above review, our office prepared a testing programme on the façade with both visual and destructive elements.

3. The results of the testing programme by Davroc Testing Laboratories Inc. on August 16, 2023 revealed key issues with the façade.

4. The primary issue with façade is the application of a cement-based mortar coating, added to the building circa 1952. Mr. Jeffs suggested that this was originally applied due to the poor quality of the original building bricks.

5. The cement-based mortar is delaminating from the face of the building and must be removed to ensure that portions of it do not spall away from the building and fall onto the sidewalk.

6. The cement-based mortar has severely degraded the exterior face of the entire exterior wythe of masonry (see SK-1, yellow portions). Further degradation has resulted in approximately 15-20% of the bricks likely needing replacement/repair (see SK-1, green portions).

7. After removal of the cement-based mortar and repair of the 15-20% of the façade as identified in 5) and 6) above, the building would have a façade that, while structurally stable, will be incapable of acting as a building envelope and will continue to degrade over

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time. Additionally, 10-15% of the surface of all bricks have spalled. Based on the foregoing, the building would have to be covered with a new envelope.

8. Covering the repaired envelope would result in further degradation of the masonry, similar to the effect of the original cement-based mortar covering. Therefore, covering the building again is not recommended.

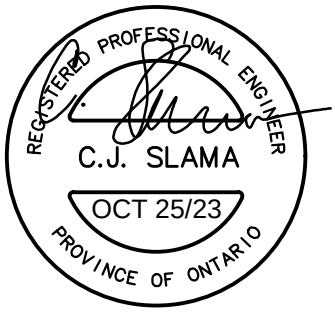
9. According to Mr. Jeffs, the bricks on the east façade (facing Park Street North) are of too poor quality to use to replace/re-face the remaining facades; regardless there are physically not enough original bricks on the east façade to provide this replacement/re-facing.

10. For these reasons, the best approach is to remove the façade and find an alternate means of preserving the heritage value and other attributes of the original building.

Should you have any questions or require any additional information, please contact this office at your convenience.

Yours very truly,

JABLONSKY, AST AND PARTNERS
CONSULTING ENGINEERS



Craig Slama, P. Eng., P.E.

Enclosure: SK-1

cc: Scott Borden, Armstrong
Amanda Kosloski, Armstrong

Photo No. 1: Southeast Corner

Photo No. 2: East Elevation (Sanctuary)

100 % REMOVAL OF MORTAR AND 100% REPLACEMENT OF EXTERIOR WYTHE

REBUILDING/REPOINTING (APPROXIMATELY 15-20% ANTICIPATED)

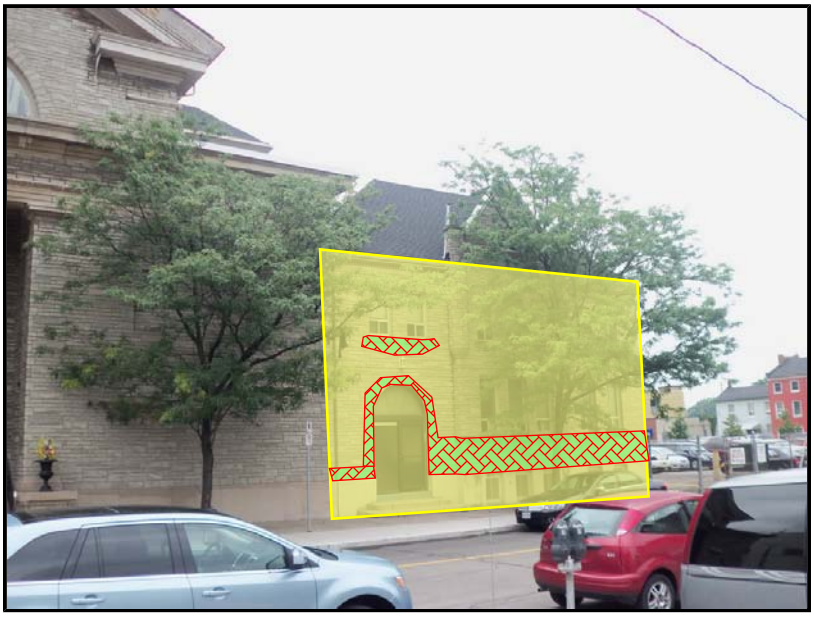


Photo No. 3: East Elevation (Original Building)

Photo No. 4: North Elevation

100 % REMOVAL OF MORTAR AND 100% REPLACEMENT OF EXTERIOR WYTHE

REBUILDING/REPOINTING (APPROXIMATELY 15-20% ANTICIPATED)

Appendix C – Site Plan and Renderings

VINE STREET

2 STOREY TOWNS
2 STOREY TOWNS
2 STOREY TOWNS
2 STOREY TOWNS
2 STOREY TOWNS
2 STOREY TOWNS
2 STOREY TOWNS
EXIT CORRIDOR
EXIT CORRIDOR
NORTH TOWER ELEVATORS
BUILDING SERVICES
COMMERCIAL LOADING
RAMP TO GARAGE
DRIVING COURT
ONE WAY IN
LAY-BY DROP OFF
LOBBY & RESIDENTIAL FACILITIES
GARBAGE LOADING
EXIT CORRIDOR
EXIT CORRIDOR
BUILDING SERVICES
SOUTH TOWER ELEVATORS
SERVICE CORRIDOR
CAFE SPACE
RETAIL SPACE
PATTERNED CONC
CANOPY
OUTDOOR PATIO
PARK STREET NORTH

YORK BOULEVARD

Preliminary Concept

RAFAEL BIGAUSKAS

SITE GROUND FLOOR PLAN

SCALE 1:300

SK 3.0

SEPT 12, 2023

RAFAEL BIGAUSKAS

STREET VIEW PERSPECTIVE

SK 5.0

Sept 12, 2023

FIGUR3 Arrival / Perspective

Appendix D - Shadow Study

89 Park Street North, Hamilton

LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

SHADOW STUDY
MARCH 21 - 0850am

SCALE: 1:2500

SS-01

RAF BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

2023-09-29 9:22:14 AM

LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

SHADOW STUDY
MARCH 21 - 0950am

SCALE: 1:2500

SS-02

RAF BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

2023-09-29 9:22:15 AM

89 Park Street North, Hamilton

LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

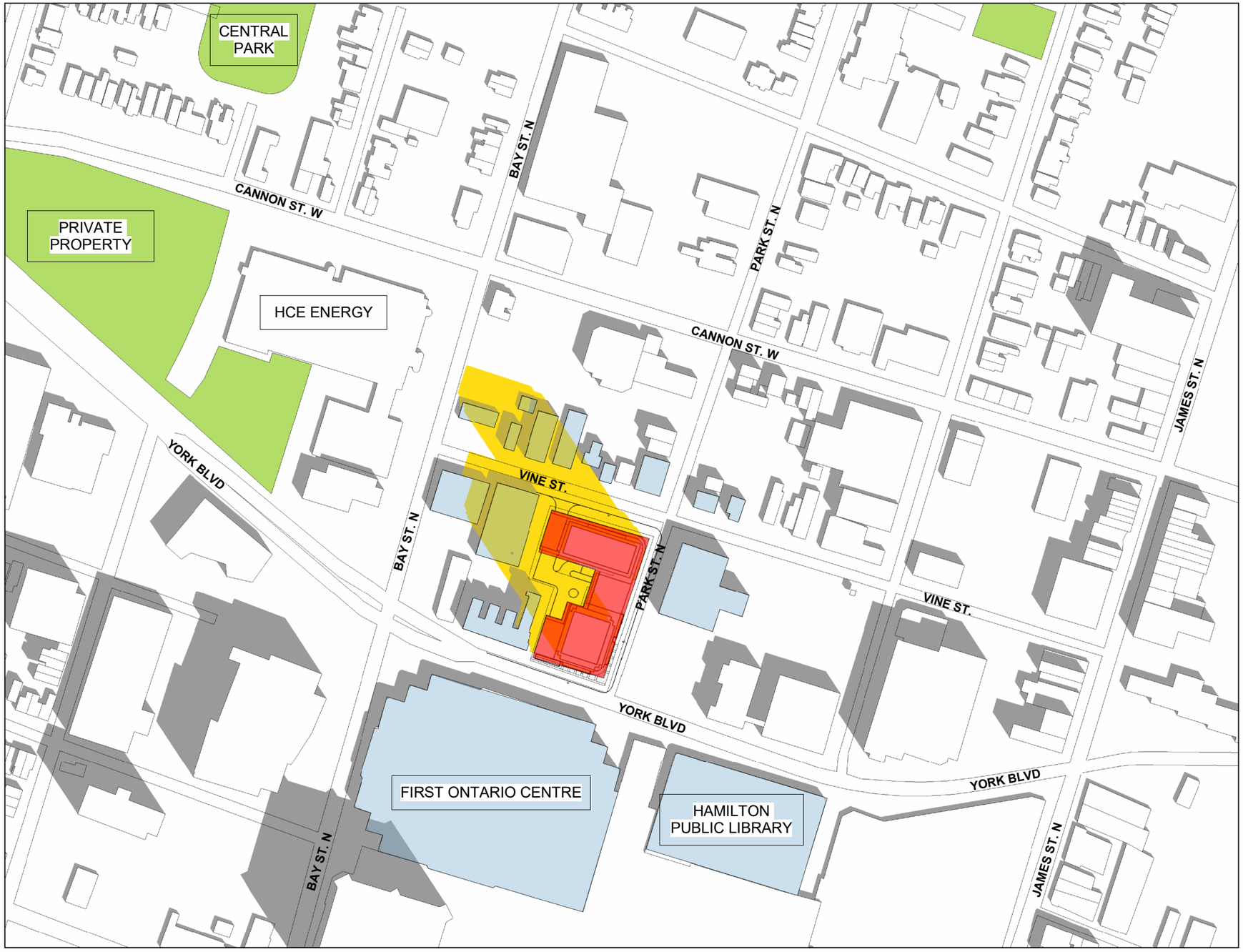
SHADOW STUDY
MARCH 21 - 1050am

SCALE: 1:2500

SS-03

RAF BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

2023-09-29 9:22:16 AM



LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

SHADOW STUDY
MARCH 21 - 1150am

SCALE: 1:2500

SS-04

RAF BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

2023-09-29 9:22:17 AM

LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

SHADOW STUDY
MARCH 21 - 1250pm

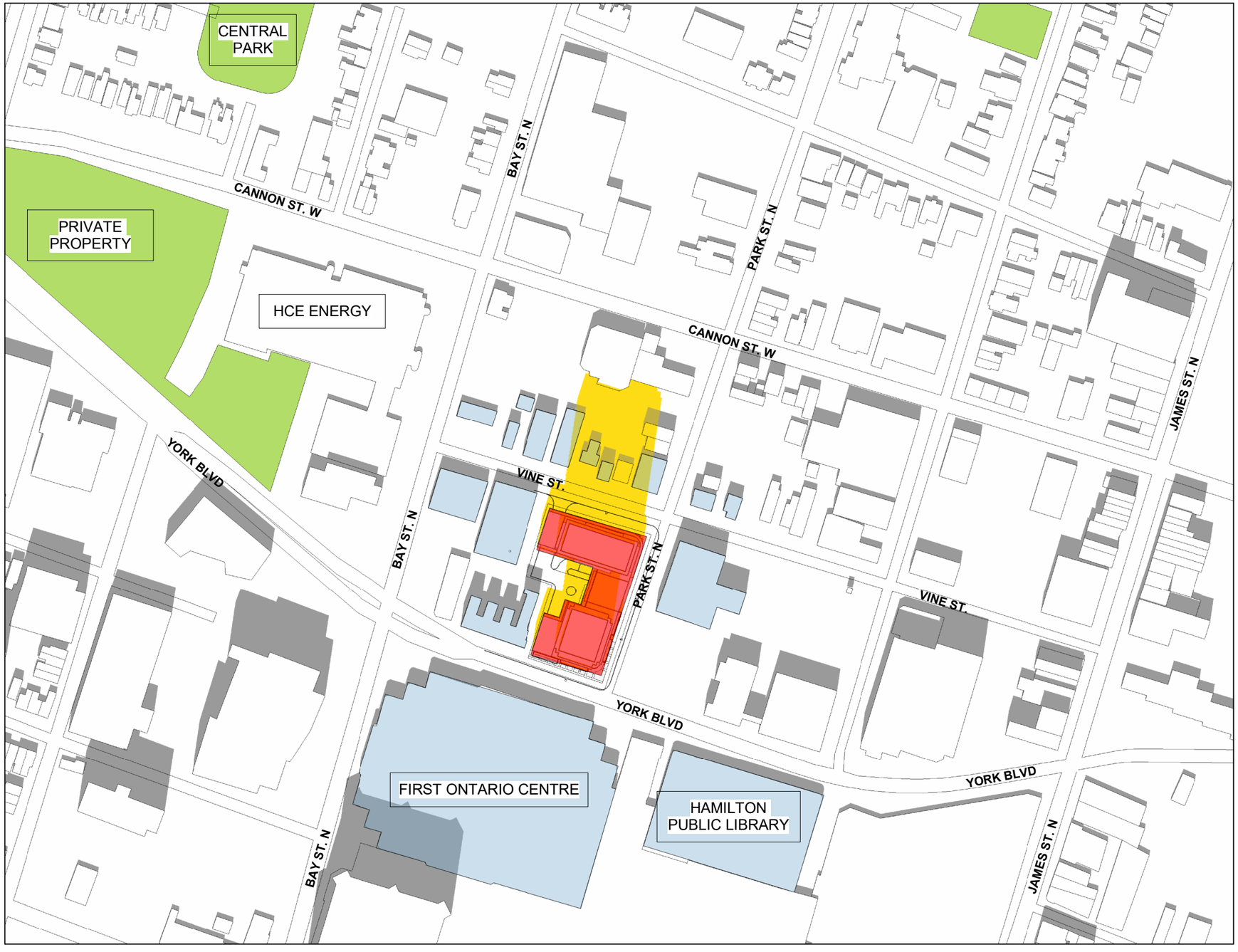
SCALE: 1:2500

SS-05

RAF BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

2023-09-29 9:22:17 AM

89 Park Street North, Hamilton



LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

SHADOW STUDY
MARCH 21 - 0150pm

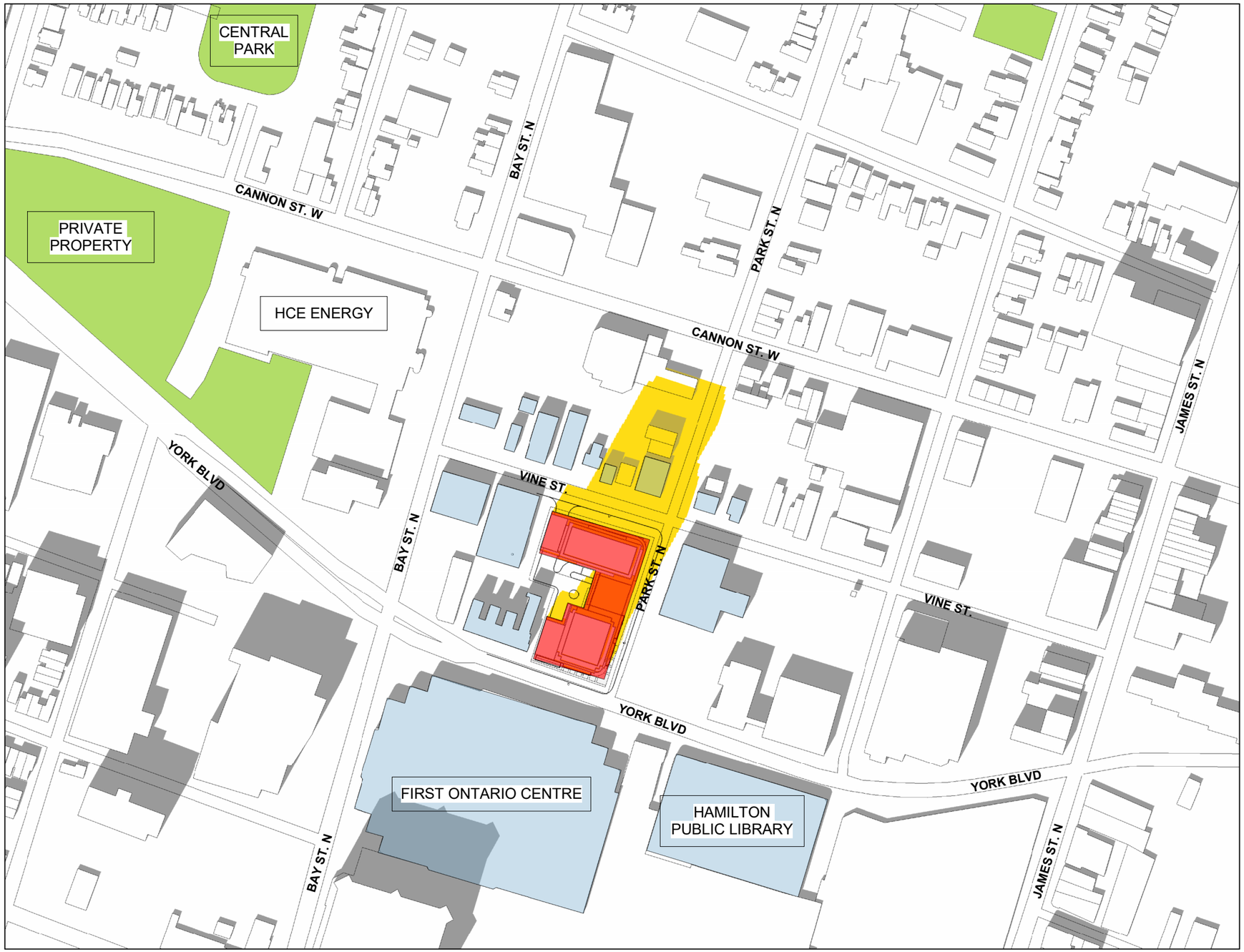
SCALE: 1:2500

SS-06

RAF BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

2023-09-29 9:22:18 AM

89 Park Street North, Hamilton



LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

SHADOW STUDY
MARCH 21 - 0250pm

SCALE: 1:2500

SS-07

RAF + BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

2023-09-29 9:22:19 AM

LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

RAF BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

SHADOW STUDY
MARCH 21 - 0350pm

SCALE: 1:2500

SS-08

LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

RAF BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

SHADOW STUDY
MARCH 21 - 0450pm

SCALE: 1:2500

SS-09

2023-09-29 9:22:20 AM

LEGEND	
COLOUR	BUILDING
	SITE
	BUILDINGS LISTED ON THE MUNICIPAL HERITAGE REGISTER OR DEISGNATED UNDER THE ONTARIO HERITAGE ACT
	PARKS

N

RAF + BIG
1444 Dupont St., Unit 37
Toronto, ON M6P4H3
T: 416-398-7500

SHADOW STUDY
MARCH 21 - 0550pm

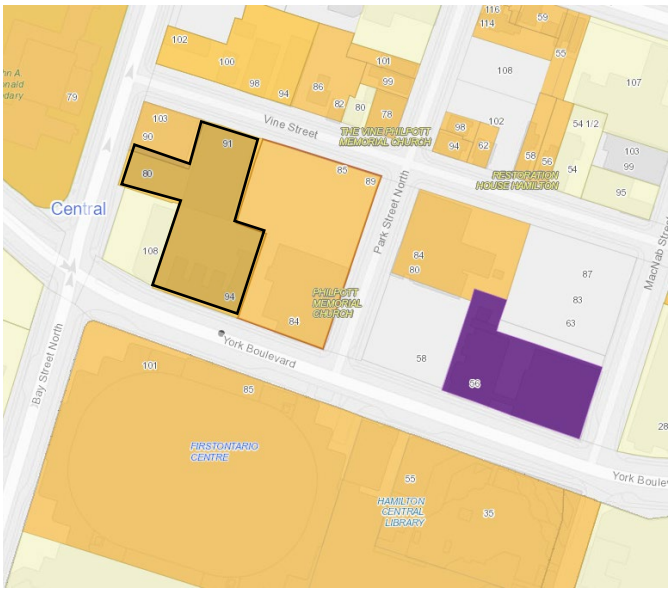
SCALE: 1:2500

SS-10

2023-09-29 9:22:21 AM

Appendix E – Impact Assessments for Adjacent Properties

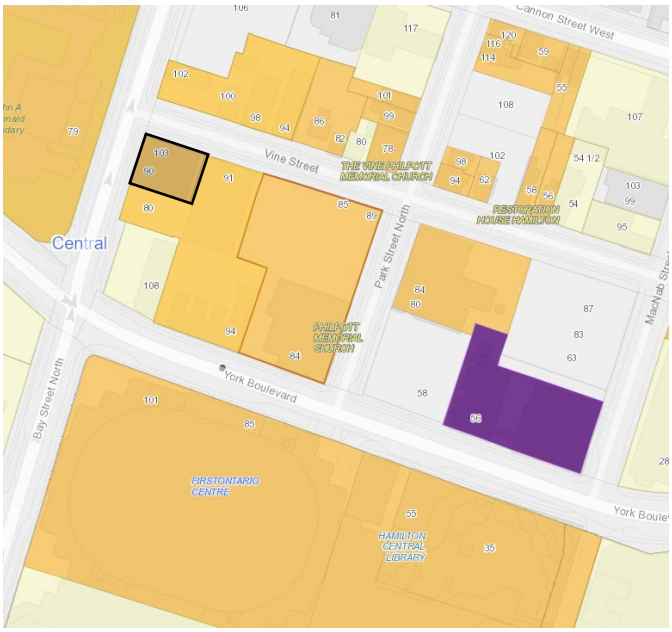
1. **Address:** 94 Park Street
   Known as: Salvation Army Hamilton Booth Centre
   Constructed: 1950
   Status: Listed



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None.	The proposed development does not include this property. The development will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property in the morning from 8:50am to 11:50am. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None.	The area surrounding the Salvation Army has undergone and continues to undergo revitalization. There is a variety of land uses within this area and the removal of the church and development of a mixed-use tower would not be unique, or otherwise isolate the Salvation Army.
Direct or Indirect Obstruction of Views	None.	The significant view of the Salvation Army is of the front façade viewed from the York Blvd right of way. No development is proposed such that this view would be impacted.
A Change in Land Use	None.	The use of the Salvation Army will not change as a result of the proposed development.
Land Disturbance	Potential.	The Salvation Army is adjacent to the development site, which proposes a 4 level underground parking garage. The activities associated with the excavation and other construction activities may impact the heritage resource.

2. **Address:** 90 Bay St/103 Vine Street
   Known as: Hamilton Dairy Stables
   Constructed: 1915
   Status: Listed



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The property is not part of the proposed development. The proposal will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property from 8:50am to 11:50am. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	All existing views of the north, south and east façades will remain. The proposed development will not impact viewing opportunities.
A Change in Land Use	None	The use of the building (vacant/commercial at present) will not change as a result of the proposed development.
Land Disturbance	None	The proposed development will be a sufficient distance as to not result in land disturbances to the listed property.

3. **Address:** 100 Vine Street
   Known as: Dwelling
   Constructed: 1900
   Status: Listed

Ontario Heritage Toolkit Evaluation Chart

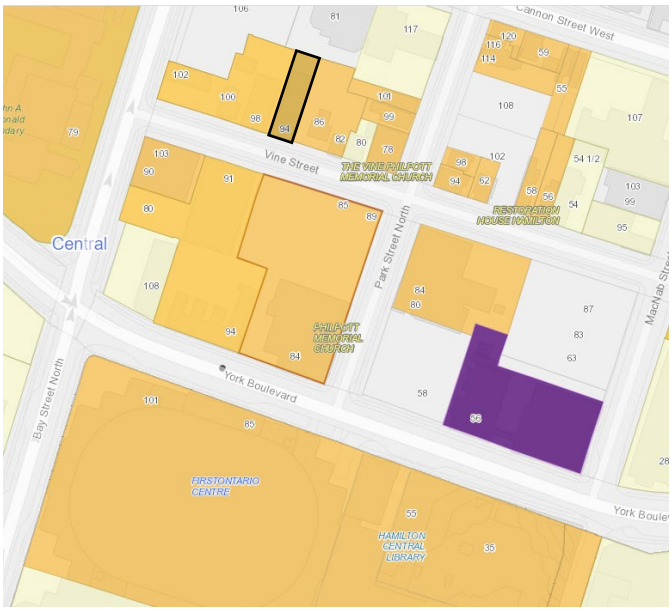
Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property. The development will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property from 10:50am to 12:50pm. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from Vine Street will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building (residential) will not change as a result of the proposed development.
Land Disturbance	None	The listed property is not adjacent to the development site. The proposed development will be a sufficient distance as to not result in land disturbances to the listed property.

4. **Address:** 98 Vine Street
   Known as: Hamilton Dairy Building
   Constructed: 1912
   Status: Listed

Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property from 11:50pm to 1:50pm. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from Vine Street will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	No. the use of the building (commercial) will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.

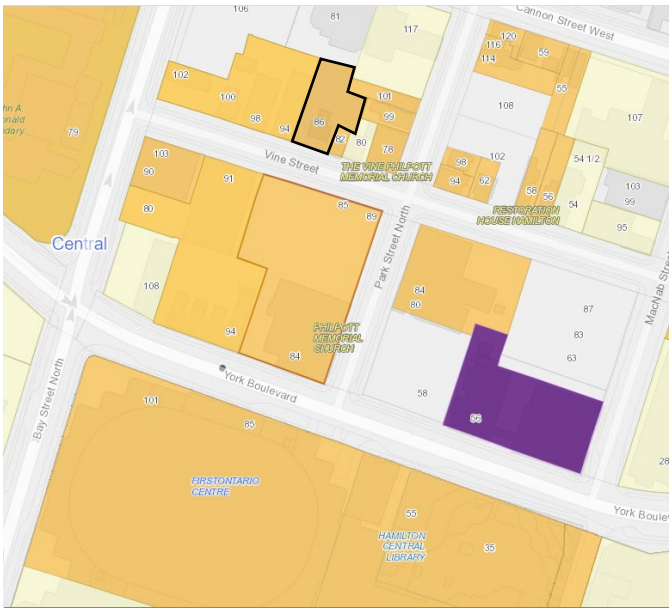
5. **Address:** 94 Vine Street
   Known as: Commercial
   Constructed: 1948
   Status: Listed



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property from 11:50pm to 1:50pm. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from Vine Street will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	No. the use of the building (commercial) will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.

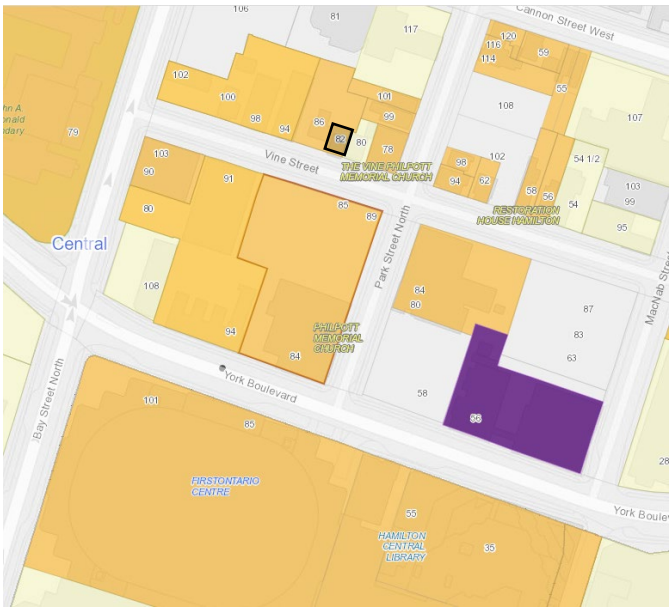
6. **Address**: 86 Vine Street
   Known as: dwelling
   Constructed: 1876
   Status: Listed



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property from 12:50pm to 2:50pm. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from Vine Street will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building (residential) will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.

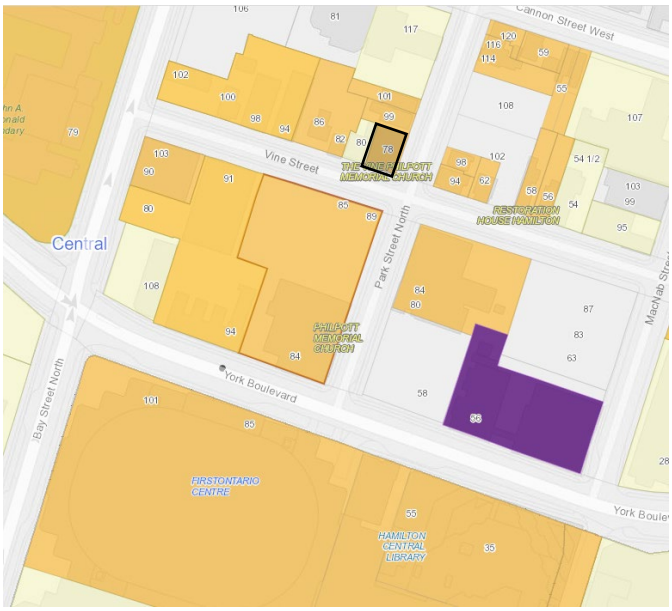
7. **Address**: 82 Vine Street
   Known as: dwelling
   Constructed: 1876
   Status: Listed



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property from 12:50pm to 3:50pm. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from Vine Street will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building (residential) will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.

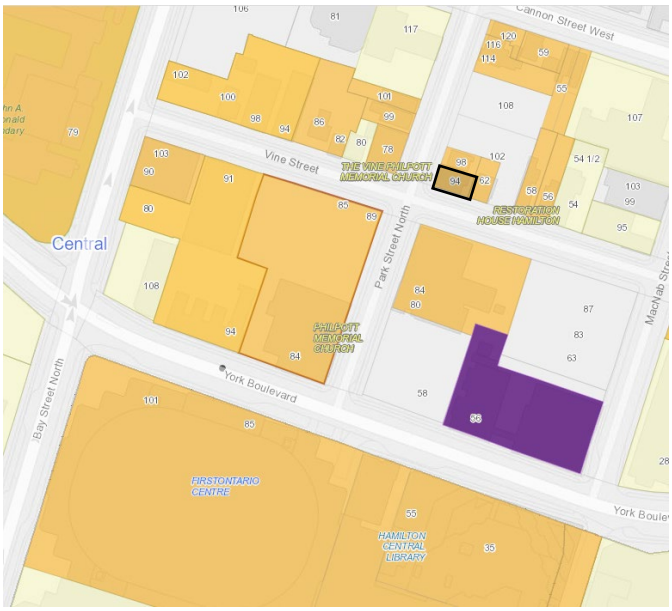
8. **Address:**78 Vine Street
   Known as: commercial building
   Constructed: 1919
   Status: Listed



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property from 2:50pm to 4:50pm. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from Vine Street will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building (residential) will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.

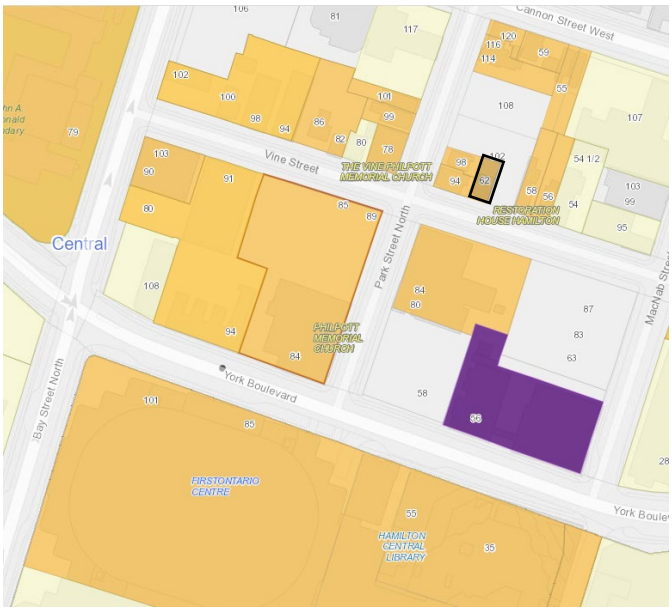
9. **Address:** 94 Park Street N
Known as: dwelling
Constructed: 1903
Status: listed



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property from 3:50pm to 5:50pm. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from Vine Street will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building (residential) will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.

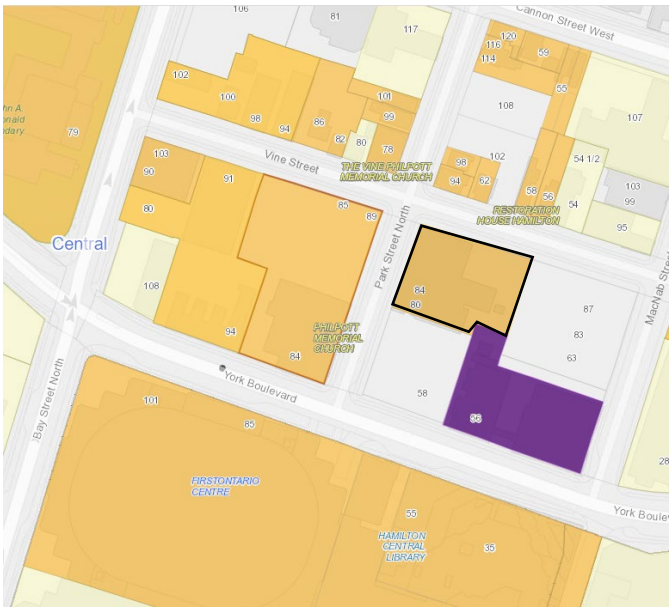
10. **Address:** 62 Vine Street
Known as: dwelling
Constructed: 1899
Status: Listed



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property from 3:50pm to 5:50pm. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from Vine Street will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building (residential) will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.

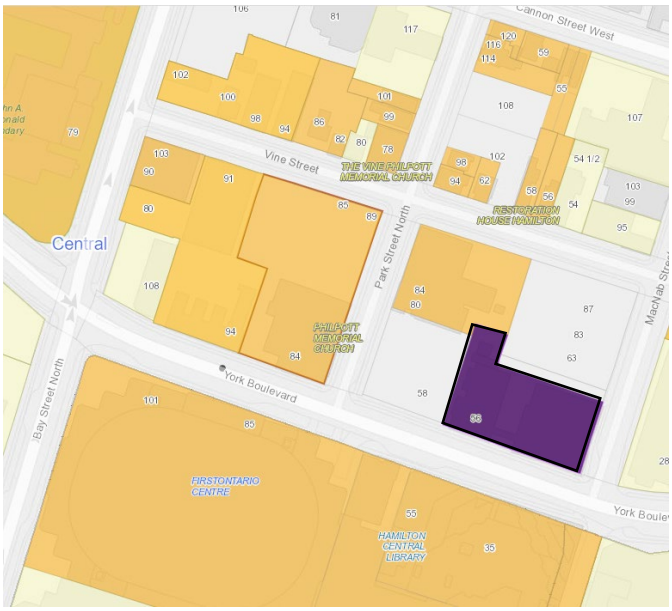
11. **Address:** 80 Park Street N
Known as: G.S. Dunn & Co.
Constructed: 1899
Status: Listed



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property in the late afternoon/evening. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from Park Street will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building (commercial) will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.

12. **Address:** 56 York Boulevard
Known as: Coppley/Commercial Block
Constructed: 1856
Status: Designated



Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the designated heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that shadows will be cast on the property in the late afternoon/evening. This is a limited timeframe and shadows cast are not expected to alter the appearance or viability of the heritage property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from York Boulevard will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building will not change as a result of the proposed development.
Land Disturbance	None	The designated property is located across the street and is a sufficient distance as to not cause adverse impacts.

13. **Address:** 101 York Blvd
Known as: First Ontario Centre
Constructed: 1985
Status: Listed

Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that no shadows will be cast on the listed property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from York Boulevard will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.

14. **Address:** 55 York Blvd
Known as: Hamilton Central Public Library
Constructed: 1980
Status: Listed

Ontario Heritage Toolkit Evaluation Chart

Criteria	Impact	Property Analysis
Destruction / alteration of heritage attributes	None	The proposed development does not include this property and will not result in the destruction or alteration of the listed heritage property.
Shadows	None	The shadow Study (included in Appendix D) identifies that no shadows will be cast on the listed property.
Isolation	None	There are a variety of land uses within this area and the removal of the church and development of a condominium would not be unique, or otherwise isolate the building.
Direct or Indirect Obstruction of Views	None	The existing significant view of the front façade from York Boulevard will be maintained. The proposed development will not impact significant views.
A Change in Land Use	None	The use of the building will not change as a result of the proposed development.
Land Disturbance	None	The listed property is located across the street and is a sufficient distance as to not cause adverse impacts.