A CONSERVATION PLAN

CITY REGISTRY OFFICE 70 NICHOLAS STREET
OTTAWA, ONTARIO

SUBMITTED TO: THE CADILLAC FAIRVIEW CORPORATION LIMITED

PREPARED BY: COMMONWEALTH HISTORIC RESOURCE MANAGEMENT AND BARRY PADOLSKY ASSOCIATES INC.

APRIL 26, 2022 FINAL

Cover: A view along Nicholas Street with the relocated City Registry Office and the proposed development framing the background.

Commonwealth Historic Resource Management offers service related to conservation, planning, research, design, and interpretation for historical and cultural resources. A key focus of the practice is assessing the impact of development on heritage resources.

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Stewart is a founding member of the Canadian Association of Heritage Professionals. He has served as the Canadian representative of the Historic Landscapes and Gardens Committee of ICOMOS and the International Federation of Landscape Architects. Stewart is a panel member with the Ottawa Urban Design Review Panel and a board member of Algonquin College Heritage Carpentry Program.

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Barry Padolsky founded Barry Padolsky Associates Inc Architects (1969-2020) . He led his firm in the restoration, rehabilitation, or adaptive re-use of over 60 *historic places* (buildings "Classified" or "Recognized" by FHBRO or designated Part IV or Part V of the Ontario Heritage Act). He has been recognized with 43 national and civic architectural and urban design awards including 29 for heritage conservation. Barry is currently a member of the City of Ottawa Built Heritage sub-committee advising Ottawa City Council on heritage matters.

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CONTRIBUTORS

The Conservation Plan was prepared for the Cadillac Fairview Corporation Limited by John Stewart Commonwealth Historic Resource Management, and Barry Padolsky Associates Inc. in collaboration with a team of specialists including:
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Reliance Construction of Canada Ltd.;
Heritage Grade;
David Edgar Conservation Ltd.;
Marathon Underground Constructors Corp.;
Morrison Hershfield; and,
Paterson Group Consulting Engineers.

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1.0 INTRODUCTION

1.1 Background

This Conservation Plan is a requirement of the City of Ottawa. It is a part of a Heritage Permit Application to relocate the City Registry Office (CRO) herein referred to as "the Property). Applications for Zoning By-law Amendment and Site Plan Control Approval have been submitted to the City of Ottawa for a development proposal that includes relocating the CRO approximately 20 metres north of its existing position and integrating it into the proposed new building as illustrated in the architectural drawings prepared by Zeidler Architecture dated April 2022. A Cultural Heritage Impact Statement (CHIS) prepared by Commonwealth/Padolsky dated December 2021 was submitted as part of active applications for Zoning By-law Amendment and Site Plan Control Approval. The Conservation Plan and the CHIS are companion documents and should be read together. A second application for a Heritage Permit will be submitted for the redevelopment of the property including a 21-storey mixed use building.

The Cadillac Fairview Corporation Limited is planning to redevelop the property at 70 Nicholas Street to accommodate a 21-storey high rise rental apartment building above a 2-level underground parking garage as illustrated in the Zeidler Architectural drawings and CSW Landscape drawings submitted to the City of Ottawa in April 2021. The proposed development contemplates the relocation and integration of the CRO as part of the proposed new mixed-use development linked by an internal connection to the Rideau Centre. In order to facilitate the planned development and allow construction of a below grade parking garage the CRO will be moved from its original site to a location at the approximate mid-point of the Nicholas Street frontage.

Four approaches for moving the CRO were considered; ranging from an option calling for dismantling and reconstruction of the building, to three different options for moving the building as one unit either within or off of the site. The selected Option 4 is the focus of this Conservation Plan.

A detailed step by step plan for moving the CRO is outlined in Addenda A, B, C, D and E of this report. The Addenda reports were prepared by John Cooke Associates Ltd (JCAL), CDS Building Movers Ltd., Heritage Grade, Marathon, and Reliance Construction Ltd. Once restored/rehabilitated, Cadillac Fairview proposes to lease the CRO to a commercial tenant potentially as a café/bistro. The design and integration of the CRO was assessed in the CHIS dated December 2021 and serves as a companion document.

The following documents are referenced in the preparation of this report:

- The CHIS submitted in December 2021 evaluating the impact consistent with the City of Ottawa Official Plan Section 4.6.1. Policy 9;
- Standards and Guidelines for the Conservation of Historic Places in Canada, 2010;
- BHSC Designation Report, File Number,269-78 ;

- Registry Office Relocation Options Analysis prepared by Reliance (September 2021);
- Heritage and Planning Comments – Pre-Application Comments from City of Ottawa May 12, 2021;
- Heritage Pre-Consultation Presentation prepared by Zeidler Architecture/Neuf Architects (October 20, 2021);
- Memoranda 1-51 – Barry Padolsky Associates (2021-2022);
- Relocation Options analysis March 29, 2022, by Barry Padolsky Associates Inc;
- Ottawa Registry Office – Dismantling Plan by David Edgar Conservation Ltd. (March 2022);
- Structural Condition Assessment (July 20, 2021) by JCAL;
- Relocation Options – Structural Assessment DRAFT (January 17, 2022) by JCAL;
- Review of exploratory openings (Feb/March 2022), by JCAL;
- The City Registry Office Relocation Feasibility Study prepared by JCAL April 2022. Appendix A;
- Historical Building Scope of Work and Pricing quote CDS Building Movers revised April 2022, Appendix B;
- Designated Substance Survey 70 Nicholas Street Ottawa, Ontario, by Paterson Group Consulting Engineers, F# PE5267-Draft February 25, 2022, Appendix D;
- As-found Recording and Supporting Photo Record, by Barry Padolsky Associates October 21, 2021;
- Application of Ontario Building Code, C F Rideau Centre. Registry Office Relocation, Morrison Hershfield March 2, 2022;
- Detailed Heritage Move Schedule, April 17, 2022, by Reliance Construction of Canada Ltd.

This Conservation Plan follows the content outline recommended by the City of Ottawa and documents the extensive dialogue between the City and the client team over the course of two years.

1.2 Existing Condition

The City Registry Office (CRO) is in fair to good condition. Exterior restoration work was performed in 2017 by Barry Padolsky Associates Inc Architects. Inspection during the spring 2022 by JCAL concluded that the CRO is in good condition, a finding supported by the following documents, studies, and reports, which offer comment on both the history of the CRO and its condition.

Historically, Registry Offices were built as secure bank vaults in an appearance reminiscent of a miniature temple or town hall. These modest structures had a three-fold purpose: to register land instruments such as deeds, mortgages, certificates, and lot plans; to safely store such instruments; and, to provide search and copy services to the public. The architect of Ottawa's CRO recorded only as "Mr. Hudson," most likely followed printed specifications that were prepared in 1867 by Kivas Tully, Provincial Architect and Engineer for Ontario.

Erected in 1874, the Property is architecturally similar to other Registry Offices built across Ontario. Its massing and finishes include salmon-gold brick, round-headed windows, and door arches with rusticated quoins, which supported the character of the judicial precinct. In the interior, three-barrel vaults divide

the space for public, administrative and storage functions. Following construction of a new Registry Office on Elgin Street in 1909, the property went through a series of uses and tenants. Beginning in 1917, it was home to the Women's Canadian Historical Society of Ottawa followed by the Bytown and Ottawa Historical Museum from 1926 to 1954. The Tourist and Convention Bureau leased the Property until 1966; a series of tenants occupied it thereafter. It has been vacant since 1982.[1] The following documents provide evidence for the existing conditions:

Ontario Registry Offices Drawing, circa 1867 (Province of Ontario - attributed to Chief Architect Kivas Tully). This drawing provides information that amplifies the findings of field investigations of the CRO relating to the design and construction of the building.

Ontario Registry Offices Specification, circa 1867 (Province of Ontario -attributed to Chief Architect Kivas Tully). This set of specifications provides information that amplifies the findings of field investigations of the CRO relating to the design and construction of the building.

City Registry Office Exterior Restoration and Repair Drawings, August 2017 (Barry Padolsky Associates Inc. Architects). This set of drawings illustrates the exterior restoration and repairs that were undertaken in 2017 to stabilize and conserve the exterior masonry, metal, and window components of the building.

City Registry Office As-found Drawings, August 10, 2021 (Barry Padolsky Associates Inc.) is a set of as-found drawings of the CRO was based on field measurements by ASTELE, using laser scan technology with additional field recording by Reliance Construction and Heritage Grade.

John Cooke Associates Ltd. (JCAL) prepared a preliminary site inspection report entitled *Registry Office Relocation Structural Condition Assessment, May 3, 2021* (the "Cooke Report"). The report analyzes and records its existing structure and assesses the condition of its principal structural elements. The purpose of the analysis was to determine the structural feasibility of relocating the building. The Cooke report found that the relocation options being considered are structurally feasible, each with their advantages and disadvantages. The Cooke Report recommends that further investigations be undertaken to understand the structural conditions of the building prior to its relocation and that all work be performed by contractors with experience in heritage masonry buildings.

A second report by JCAL entitled *Relocation Options: Structural Assessment of Risk to Heritage Fabric, January 17, 2022, Draft* provides an assessment of the risks to the heritage fabric of the CRO for each of the four relocation options identified by Reliance Construction. The Cooke Report found that each of the options utilized proven relocation techniques that were all technically viable. For each option, specific mitigation measures were identified in the report.

[1] *City of Ottawa By-law 269-78, City of Ottawa Heritage Summary Sheet, 1977. FHBRO Building Report 84-40. Ottawa: A Guide to Heritage Structures, 2000*

1.3 Statement of Significance

Description of Historic Place

The CRO is a single-storey pale salmon-gold brick structure with classical temple massing. Together with the former Carleton County Courthouse and County Jail located across the street and built in the 19th century, the Property formed the judicial district of 19th century Ottawa. It is recognized by City of Ottawa By-law 269-78.

Heritage Value

This CRO structure compliments the existing Carleton County Registry Office built nearby in 1871 and the former Carleton County Courthouse and County Jail located across the street. The CRO shares common architectural features with these buildings and is an integral part of 19th century judicial district of Ottawa. Registry Offices had a three-fold purpose: to register land instruments such as deeds, mortgages, certificates, and lot plans; to safely store such instruments; and, to provide search and copy services to the public. The architect of the CRO recorded only as "Mr. Hudson," who likely followed printed specifications that were prepared in 1867 by Kivas Tully, Provincial Architect and Engineer for Ontario. Erected in 1874, the Property is architecturally similar to other Registry Offices built across Ontario. The classical temple massing, along with salmon-gold brick, round-headed windows, and door arches with rusticated quoins establishes a sense of official space in this modest structure, giving the building an endearing and pleasant quality. In the interior, three-barrel vaults divide the space for public, administrative and storage functions.

After the City of Ottawa built a new registry office on Elgin Street in 1909, 70 Nicholas Street went through a series of uses and tenants.

Character-Defining Elements

The Heritage Character Statement for the CRO lists the following Character-Defining Elements:
Character defining elements that reflect the heritage value include:

- the round-headed window and door arches,
- front door and window arches
- with rusticated quoins
- salmon-gold brick and the stone foundation
- semi-circular name stone resting on a wide entablature which features a
- repeating quatrefoil vents in the front pediment corbelled cornice on the façade pediment, the plain metal cornice trims on the side walls, and
- the returned eaves on the rear side, barrel-vaulted interior ceiling.

The following additional notes are taken from the Federal Heritage Building Review Office Building Report 84-40 prepared by Julie Harris and includes a list:

Rectangular plan, barrel vaults, pitched roofs, architrave or rounded windows, and decorative work in brick and stone. In their scale and façade arrangement, they resembled small town halls built in Ontario around the same time. Facades were decorated with brick or stonework, around the openings, and most have an arched name plate. The high level of standardization is a key attribute, but with embellishments added to otherwise simple building giving them the appearance of "little temples" dedicated to the sacredness of private property.

2.0 CONSERVATION APPROACH

2.1 Options Analysis

Four options for moving the building were explored by Reliance Construction. The Relocation Options Analysis found that although relocation Option #2 was technically feasible; it was not viable (a suitable temporary site could not be secured). It was also found that although relocation Option #3 was technically feasible; it was not viable (the completion of the project would be delayed by 28 weeks). The Relocation Options Analysis found that although Options #1 and #4 were both technically feasible and viable, the estimated construction cost and timeline of Relocation Option #4 significantly exceeded the estimated construction cost of Relocation Option #1.

Although far more onerous from a financial and construction standpoint, The Cadillac Fairview Corporation Limited is prepared to proceed with Option #4 - a "relocate in its entirety" option preferred by the City of Ottawa heritage planners.

2.2 Option 4 – 'Relocate in its Entirety' to its Final Location

Option 4 considers relocating the existing building to its final location onto a temporary foundation structure (piles). In this option, the structure will remain on-site during the entirety of the excavation activities. The excavation will be completed around and below the temporary foundation, and the new garage structure constructed to meet the existing building. With this Option, the exposure is reduced since there will be only one move activity. The risks outlined below were taken into consideration in arriving at a decision to proceed with Option 4.

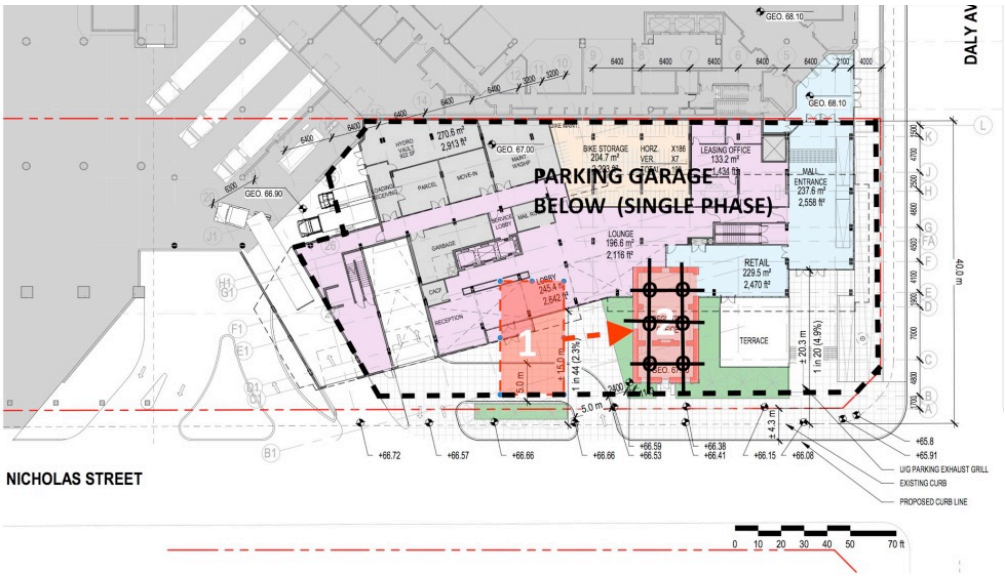


Figure 1: Option 4 'relocated in its entirety'.

Risk – Loss of Heritage Material – Localized Failure

The CRO underwent a major exterior restoration in 2017 and is considered to be in good condition. However, subjecting it to unconventional loading can lead to unexpected changes to the established load path. The CRO is supported continuously on stone masonry foundation walls. The temporary support for lifting and moving the structure will use beams needled through the walls and at periodic intervals. Any existing deterioration is vulnerable to localized failure should it be subjected to new loading either when transitioning from a continuous to a point loaded support and/or during transport. There is potential for some damage to occur during transportation. However, The pre-emptive conservation program described below will ensure the damage is limited and will likely result in cracked masonry joints.

Mitigation/Response

A scope of masonry conservation established and executed before providing new support for the structure will ensure that the masonry is in good condition and function as a homogeneous structure to resist changing loads. The chimney will not be reintroduced until the structure is in its final location. A survey of the structure is recommended once it arrives at its final location onto a temporary foundation structure (piles) to ensure that any damage to the masonry is addressed and cannot accelerate any deterioration. The potential damage at this stage is expected to be minimal and only minor masonry repointing work will be required if damage occurs.

Risk – Destabilization of Vaulted Ceiling

The three vaulted arch ceiling sections span east-west with two intermediate masonry walls. Masonry arches are resisted by a combination of both vertical and horizontal loads. The load-bearing brick masonry takes vertical loads, and the horizontal thrust from the arch appears to be resisted by the wall as well, with no ties having been observed. When the support system is changed, unintended eccentricities may be introduced, creating instabilities in the arch thrust resistance and causing tension to be introduced from the arches as the outer wall will want to separate.

Mitigation/Response

To ensure the outer walls are restrained, strapping will be introduced to brace the walls before the move and left in place until the building is returned to the site. The strapping will consist of steel and/or wood elements to ensure the outer walls are restricted from moving outwards. As well, compression force will be applied onto the arches to mimic the gravitational force that currently holds them together.

Risk – Impact from Adjacent Excavation - Vibration

The structure will remain on-site during the entirety of the excavation activities. Excavation of the rock will create vibrations that could transfer through to the existing masonry structure. There is a risk that any masonry deterioration could be further destabilized.

Mitigation/Response

Managing vibrations during excavation to protect adjacent buildings is common, with well-established procedures to ensure minimal damage. A pre-emptive conservation campaign will effectively mitigate any potential damage from vibrations due to excavation. The masonry is in good condition and will most effectively accommodate these stresses. Further, vibration monitors will be strategically located to review the vibrations from excavation and monitored against established criteria for buildings of established importance. Excavation procedures will be established to maintain vibrations within acceptable ranges. If there is an excess in vibration, a visual assessment will be triggered to review for any change in conditions.

Risk – Impact from Excavation Below

The temporary piles that will support the structure in the new location will traverse through the area of excavation. This will cause interference for both the excavation and construction activities to follow. There is a risk that potential damage occurs to the temporary piles during the excavation and general interference during construction.

Conclusions: Risk to Heritage Fabric

The JCAL structural risk assessment report found that Option # 4 did pose risks to the CRO's heritage fabric and character defining elements. However, it was concluded that the construction industry's record of executing relocation projects similar to Option #4 provides assurance that the industry has a proven capability to minimize and mitigate these risks.

2.3 Conservation Treatments

Both the CHIS and the Conservation Plan have been assessed against the Standards and Guidelines. The Standards and Guidelines identify three primary conservation treatments for intervening on a historic place. The treatments involve any action or process that results in a physical change to its character-defining elements. Interventions can include:

Preservation actions are part of the ongoing maintenance of a historic place. Preservation involves protecting, maintaining, and stabilizing the existing form, material and integrity of a historic place or individual component, while protecting its heritage value. Consider preservation as the primary treatment

when: (a) Material, Materials, features, and spaces of the historic place are intact and convey the historic significance, without extensive repair or replacement; (b) Continuation or new use does not require extensive alterations or additions.

Restoration activities are associated with the depiction of a historic place at a specific period in its history. Rebuilding the original chimney and replacement of the roof cladding with slate are examples of restoration work planned for the CRO.

Rehabilitation activities related to a new use or code upgrades. Rehabilitation involves the sensitive adaptation of a historic place or individual component for a continuing or compatible contemporary use, while protecting its heritage value. Consider rehabilitation as the primary treatment when: (a) Repair or replacement of deteriorated features is necessary; (b) Alterations or additions to the historic place are planned for a new or continued use.

The primary conservation treatment for the City Registry Office is REHABILITATION where alterations and modifications are planned for a new use. Conservation treatments for specific attributes will include preservation and restoration.

2.4 Standards and Guidelines for the Conservation of Historic Places

The following applicable guidelines appear in *italic* with a discussion of how the conservation approach will proceed:

General Standards for Preservation, Rehabilitation and Restoration

Standard 1. *Conserve the heritage value of a historic place. Do not remove, replace, or substantially alter its intact or repairable character defining elements. Do not move a part of a historic place if its current location is a character-defining element.*

Policies in the City of Ottawa Official Plan Section 4.6.1 Heritage Buildings and Areas, specifically 4.6.1.4 (a) reinforce Standard 1 in stating, "*Where relocation of a structure designated under the Ontario Heritage Act is proposed, the City will require that the cultural heritage impact statement demonstrates that relocation is the only way to conserve the resource. The City may consider the option provided that: [Amendment #76, August 04, 2010] [Amendment #96, February 22, 2012]*

(a) The building is retained on site, but moved to another part of the property for integration into the new development"

Conservation Approach: The location of the building at the south-east of the lot is a character-defining feature of its original use as a Registry Office and part of the Judicial District. In order to accommodate new development on the site and ensure its continued prominence, the building is being relocated mid-block, approximately 20 metres to the north. The building will be severed from its existing foundation, secured, hoisted, moved, and placed on temporary pilons where it will be repositioned on its permanent foundation.

Mitigation Measures:
The main negative impact to the heritage fabric will be the introduction of bracing, and the beams used to support the brick walls.

- To ensure the outer walls are restrained, cross bracing will be introduced to brace the walls before the move and left in place until the building is relocated to its new permanent location.

Potential risk: Details of the methods for bracing, preparing the masonry, severing the foundation are described and should minimize risk. Lifting and moving a structure of this scale and weight is a relatively complex process, however, CDS Building Movers are experienced contractors and recognized experts.

Standard 2. *Conserve changes to a historic place that, over time, have become character-defining elements in their own right.*
Conservation Approach: Preservation and Rehabilitation
The exterior of the building retains its original form, detailing, and materials from its construction date in 1874.

Standard 3. *Conserve heritage value by adopting an approach calling for minimal intervention.*
Conservation Approach: Preservation of the exterior and Rehabilitation of the interior.
The proposed relocation of the building within the property is a major intervention; however, given the limitations of the site, the most practical means by which to conserve the building is to relocate it to a prominent location mid-block fronting on to Nicholas Street and integrated as a feature of the proposed redevelopment plan. The City and Heritage Ottawa have acknowledged that the relocation of the CRO within the development site is appropriate and have provided a strong recommendation to move the structure in its entirety. The CRO will maintain its original alignment and will retain its original form, detailing, and materials from its construction date in 1874. Missing attributes will be restored, including the chimney and slate roof.

Standard 4. *Recognize each historic place as a physical record of its time, place, and use. Do not create a false sense of historical development by adding elements from other historic places or other properties, or by combining features of the same property that never coexisted.*
Conservation Approach: Rehabilitation
The proposed relocation of the building does create a false sense of the property's historical development but should be considered a part of the building's evolution. The CRO will stand proud of the new development, maintain its prominence, and be integrated as part of the site plan. The entrance on Nicholas Street will continue as an operative access. Universal accessibility to the building is incorporated sensitively, as part of the mall access. The retention of the front entrance steps and foundation identifies its original office function. The interior treatment and alignment with the Rideau Centre's retail activities introduces a new distinguishable use as does its positioning next to a proposed residential high-rise building.

Standard 5. *Find a use for a historic place that requires minimal or no change to its character-defining elements.*

Conservation Approach: Adaptive Reuse

The character-defining features, as identified by the Statement of Cultural Heritage Value will be conserved. The functional layout of the building and the scale of the building make it suited to function as a landmark feature that will be rehabilitated and adapted as a café bistro and/or retail space. The integration of the building facilitates a viable economic use and barrier-free accessibility. The integration of the structure into the larger development parcel will be more fully addressed as part of the development plan phase of the project.

Standard 7. *Evaluate the existing condition of character-defining elements to determine the appropriate intervention needed. Use the gentlest means possible for any intervention. Respect heritage value when undertaking an intervention.*

Conservation Approach: Preservation

The Conservation Plan addresses the condition of the character defining elements, and any elements that are too deteriorated to repair will be noted. The Plan addresses the management of the building throughout the move, its condition, and its conservation. The entire building has been recorded and a detailed condition report, along with stabilization and preparation for moving reports were prepared.

2.5 Additional Standards Relating to Rehabilitation

Standard 10*. Repair rather than replace character-defining elements. Where character-defining elements are too severely deteriorated to repair, and where sufficient physical evidence exists, replace them with new elements that match the forms, materials and detailing of sound versions of the same elements. Where there is insufficient physical evidence, make the form, material and detailing of the new elements compatible with the character of the historic place.*

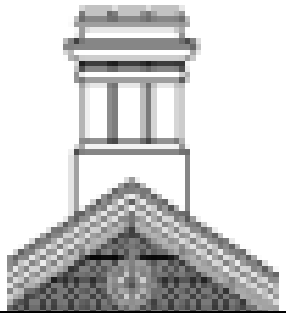
Conservation Approach: Preservation and Rehabilitation

The Conservation Plan addresses impacts to the CRO, including moving the building /restoration/rehabilitation of the building, and replacement of missing attributes. All the Heritage Attributes listed below will be addressed as part of the Conservation Plan. Appendix C describes in detail the work to be carried out. All exterior materials appear to be in good condition, remaining suitable candidates for preservation. The original building and its integral heritage features can be restored using a combined off-site and in-situ approach once moved to its new location.

2.6 Conservation Treatment by Attribute

Interventions required that are physically and visually compatible to preserve character-defining elements as part of the conservation plan are discussed as follows:

EXTERIOR ATTRIBUTES	DESCRIPTION OF INTERVENTION
Decorative Brick Chimney	**CONSERVATION APPROACH** - Restoration.

	 The chimney, located above the easterly interior transverse structural brick wall, of which a fragment survives above the existing CRO ridgeline, will be reconstructed to the original dimensions and details provided by documentary evidence, using new brick compatible to the existing building. *Figure 2: As-found detail of the missing chimney.*
Slate Roof	**CONSERVATION APPROACH** - Restoration. Re-roofed using slate roof tiles to the original dimensions and details as provided by documentary evidence. Selection of an appropriate slate is presently under investigation.
Roof Trusses replacement	**CONSERVATION APPROACH** - Rehabilitation. The wood roof trusses span north south and bear on the north and south exterior walls. The sawn lumber roof rafters, collar ties and decking will be replaced by a new non-combustible roof structure complying with current OBC Standards. *Figure 3: Interior truss system to be replaced with east façade of chimney in the background.*
Soffit	**CONSERVATION APPROACH** - Preservation. Removal and conservation of existing metal eaves and soffit. The soffit will be repaired as necessary (or alternatively new matching metal components) will terminate the roof eaves in their original detail and locations.
Interior Red Brick	**CONSERVATION APPROACH** – Rehabilitation of interior finishes. The interior and exterior brick masonry structural walls are approximately 6 wythes thick. An additional exterior facing wythe of brick is included at the exterior walls. The brick and the pointing are in good condition. Removal of plaster on the interior face of the ceiling and walls, and on the vaults to expose underlying masonry. At the points where primary cross beams are needled through the masonry walls (36 interventions) the masonry will be documented and the material removed and stored. Reintegration will require local repair and repointing of masonry. Required masonry repairs should be performed as directed by the masonry specialist including replacing damaged and cracked units as well as redoing previous repairs performed using improper mortar types and techniques and a different type of brick.
Salmon-Gold Exterior brick and Decorative Stone Trim	**CONSERVATION APPROACH** - Preservation The facing brick is complimented by ashlar stone at the window and door surrounds, cornice, and gable/pediment ornamentation. The ashlar stones bridge the cavity and provide bonding.

	Due to soft lime-based mortar, localized removals of bricks can be completed effectively with minimal damage and a high rate of salvageability. Reintegration will require local repair and repointing masonry. Required masonry repairs should be performed, as directed by the masonry specialist including replacing damaged and cracked units. Both interior and exterior face brick should receive a light cleaning.
Stone Foundation	**CONSERVATION APPROACH** - Rehabilitation The stone masonry foundation walls at the exterior perimeter are ±40" thick with rough cut rubble coursed face stone and limestone rubble back-up. Within the building footprint the reclaimed stone units from the exposed east-west and south foundation walls will be reconstructed in their original positions. Stonework showing evidence of failure or potentially damaged in the dismantling procedure will be repaired or replaced with matching stone units. The details will be adjusted to accommodate between the revised and original finished floor level. The finished floor level of the relocated CRO at EL 67.00will match the ground floor of the main building and a portion of the visible exterior stone foundation will be obscured.

Figure 4: The red markers indicate the relationship of the building to Nicholas Street with a reduced grade difference. The shading at the base of the drawing indicates the new ground level.

Entry Steps	**CONSERVATION APPROACH** - Rehabilitation. Cut stone entrance stairs will be removed, labeled, restored, and stored for future reinstallation with height adjusted. The details will be adjusted to accommodate the revised layout between the new finished floor level (67.00) and the final grade at the foot of the stairs (66.60) eliminating 5 risers to 2 risers to match the Nicholas Street sidewalk at the bottom of the steps. Re-setting the lowest three steps level with the Nicholas Street sidewalk as a stone "entrance apron."

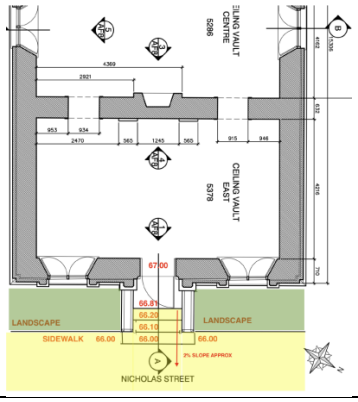
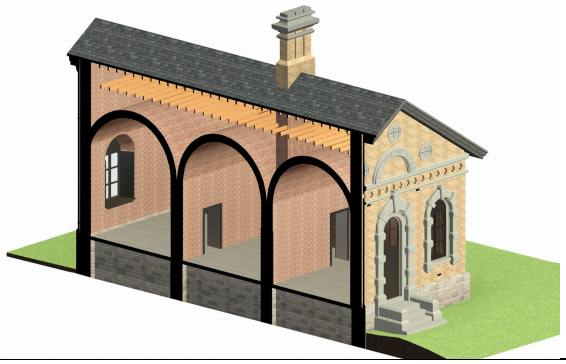


Figure 5 and 6: view and plan showing the existing steps with elevations noted and a plan view showing the planned rehabilitation of the steps being used as pavers.

Windows and Entry Door	**CONSERVATION APPROACH** - Preservation. The steel entrance door assembly, seven steel windows with interior steel shutters, iron bars and one steel interior door assembly will remain insitu during the move. The glass from windows will be removed and replaced with new insulated glass. Necessary protection will secure them during the move.
INTERIOR ATTRIBUTES	
Interior ceiling is a 3- wythe, 3-span brick vault	**CONSERVATION APPROACH** - Rehabilitation. The ceiling's 3-span brick vault spans east-west and bears on the east and west exterior walls and two interior brick walls. Two 1" diameter tie-rods tie the east and west exterior walls. The three sections of the office form are character defining features and will be retained. The dividing wall between the vaulted spaces, will be opened to accommodate new uses and to provide pass through and universal access. A metal beam painted black will support the roof structure.
	 Figure 7: Longitudinal cross sections of the CRO.
Stone Slab Flooring	**CONSERVATION APPROACH** - Preservation. Stone flag floor composed of units 6"x40" supported on rubble stone foundation walls east-west walls at ±34" c/c to support the limestone floor slabs. The stone floor slabs will be cataloged, removed, and stored. Following the move the slabs will be integrated into their original positions on the new concrete structural slab using self leveling mortar. Grinding of the stone surfaces may be required to prevent a tripping hazard.
INTERVENTIONS	
Interior Brick vaults with plaster finishes	**CONSERVATION APPROACH** – Rehabilitation . Removal of the plaster finishes on the walls and vault ceiling to expose the original masonry brick vault system will be undertaken prior to the move.
Modifications to accommodate accessibility	**CONSERVATION APPROACH** - Rehabilitation. Widen the doorway between the west vault and the central vault to provide better access. Introducing a new opening at the rear section of the building to allow universal access.

Figures 8 & 9

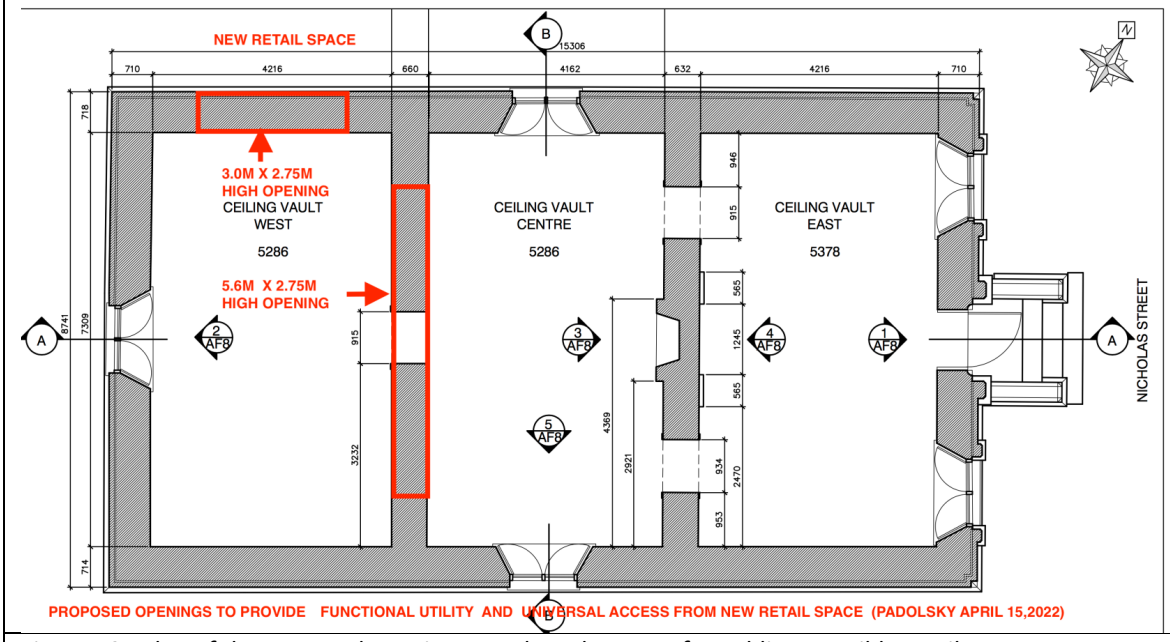
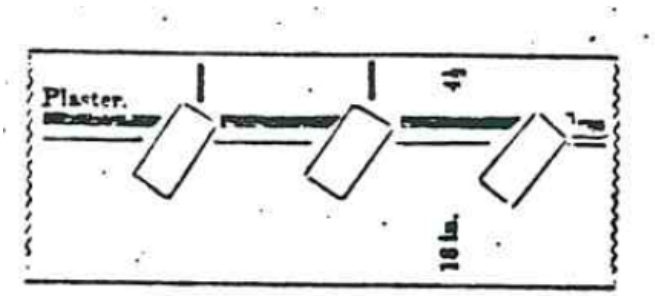


Figure 10: plan of the proposed openings to adapt the space for public accessible retail space.

INTERPRETIVE FEATURES	.	
Landscape Treatment		See the landscape plan
Lighting		To follow
Masonry cross section		Introduce a sectional view of the 6 wythes of brick on the exterior walls as part of the proposed openings into the retail space



Flooring Treatment		Highlight the removal of walls with a different colour stone slab to interpret where walls had been removed.
Salvage masonry		Reuse salvage masonry from the foundations to reface retaining walls along Nicholas and at the corner of Daly Avenue.

2.7 Compatible, Subordinate and Distinguishable

Standard 11*. Conserve the heritage value and character-defining elements when creating any new additions to a historic place or any related new construction. Make the new work physically and visually compatible with, subordinate to and distinguishable from the historic place.*

Conservation Approach: The development proposal contemplates the construction a 21-storey residential building. To achieve a degree of subordination, it is important that the CRO holds a defining location in relation to the proposed building and can be interpreted as a distinct feature separate from the new development. The plans prepared by Zeidler Architecture propose to position the CRO mid-block in front of the tower, to provide a degree of prominence. Approximately one-third of the CRO is set within an atrium space that will serve as a residential lobby and an entrance to the Rideau Centre. Reconstruction of the CRO's chimney will visually set the building as a distinct element framed by the three-storey atrium space. The introduction of landscape treatment with a raised terrace area will assist in establishing the CRO as a focus within the larger development context.

Due to the difference in scale between the proposed building and the CRO, it is important that the residential tower be designed in a manner that is compatible with the heritage structure. The materiality and colour of the proposed residential building has been selected to ensure that it functions as a backdrop to the CRO without overwhelming the distinct heritage features of the structure.

Over the course of the design process, the client considered several options that addressed visual compatibility and connecting the heritage building to the new building through clear and related datum lines, which were reviewed by the city. These various iterations demonstrate the analysis that has gone into finding a compatible approach to meet Guideline 11 of Standards and Guidelines. A compatible approach has been achieved and includes:

- the creation of a three-storey atrium to frame the CRO;
- the elimination of the dark frame encasing the tower; the introduction of a podium using yellow brick with the masonry trim that references the CRO; an,
- establishing the residential lobby, the CRO, and the Rideau Centre as three distinct expressions along Nicholas Street.

Figure 11: Relationship to Heritage - Given the differences in scale, it is considered key to its visual compatibility that the materiality, and colour of the base of the high-rise act as a backdrop to the CRO without overwhelming it. Introducing the salmon yellow brick with the limestone trim and the black metal into the new development's podium successfully references defining features of the CRO. Source: Zeidler/Neuf 2022.

Figure 12: Bird's eye view of the Registry Office set between the podium to the residential high-rise and the entrance to the Rideau Centre. Zeidler/Neuf 2022.

2.8 Guidelines for Buildings

4.3.1 Exterior Form

General Guidelines for Rehabilitation

Additions or Alterations to the Exterior Form

Standard 12. *Selecting a new use that suits the existing building form.*

Conservation Approach: The proposed retail use suits the form of the CRO. The change in grade between the existing building and its relationship with the Rideau Centre requires that the height of the foundation be lowered, and the floor level modified to address accessibility requirements and conform with the existing floor level of the Rideau Centre.

Standard 13. *Selecting the location for a new addition that ensures that the heritage value of the place is maintained.*

Conservation Approach: Rehabilitation

The most effective way to conserve the heritage value of the CRO is to relocate the structure to a prominent location at the front of the proposed development. Such a move assures that its visibility is maintained and placing it forward on the site suggests that the new build is subservient. The relocation of the CRO will also establish a pedestrian scale and rhythm to the street between Daly and the bridge.

Figure 13: Night view along Nicholas Street. Source: Zeidler/Neuf 2022

Figure 14: A view from the intersection of Nicholas Street and Daly Avenue. Source; Zeidler/Neuf 2022

3.0 RELOCATION PHASE - WORK PLAN

3.1 Sequence of Work

The following provides an outline sequence of the work plan:

Abatement of Regulated Materials.

1. No asbestos or other significant designated substance is present in the CRO that would require special mitigating measures.

Removal of Interior Fit-up and Finishes

2. Removal of non-heritage interior interventions consisting of drywall partition fit ups and finishes, including the wood sleepers, plywood substrate and laminate flooring, interior drywall partitions, raised wood flooring, interior hollow core doors, with their associated hardware and fixtures.

Part 1 Enabling Work

3. Localized repointing and maintenance of the masonry.
4. Removal of plaster finishes on the interior vault ceiling and walls.
5. Removals of masonry units in 36 locations to permit the installation of the temporary lifting steel supports for the move.
6. Document number, remove, and store flooring flagstone units.
7. Recording and removal of existing stone entrance steps.
8. Secure front door and all windows to remain in situ.

Part 2 Preparation for Lifting

Procedures for Preparation for lifting have been developed by JCAL with support from CDS Building Movers.

9. The introduction of temporary structural bracing to stabilize the CRO before its move.

10. Construction of temporary roadbed.
11. Construction of temporary piles or caissons.

Part 3 Lifting and Moving

Moving operation, including a description of equipment has been developed CDS Building Movers and include four stages: - Stage 1: Install Cross Beams, Stage 2: Install Main Beams, Stage 3: Install Needle Beams, Stage 4: Lifting and Travel. These are described in detail as Appendix D.

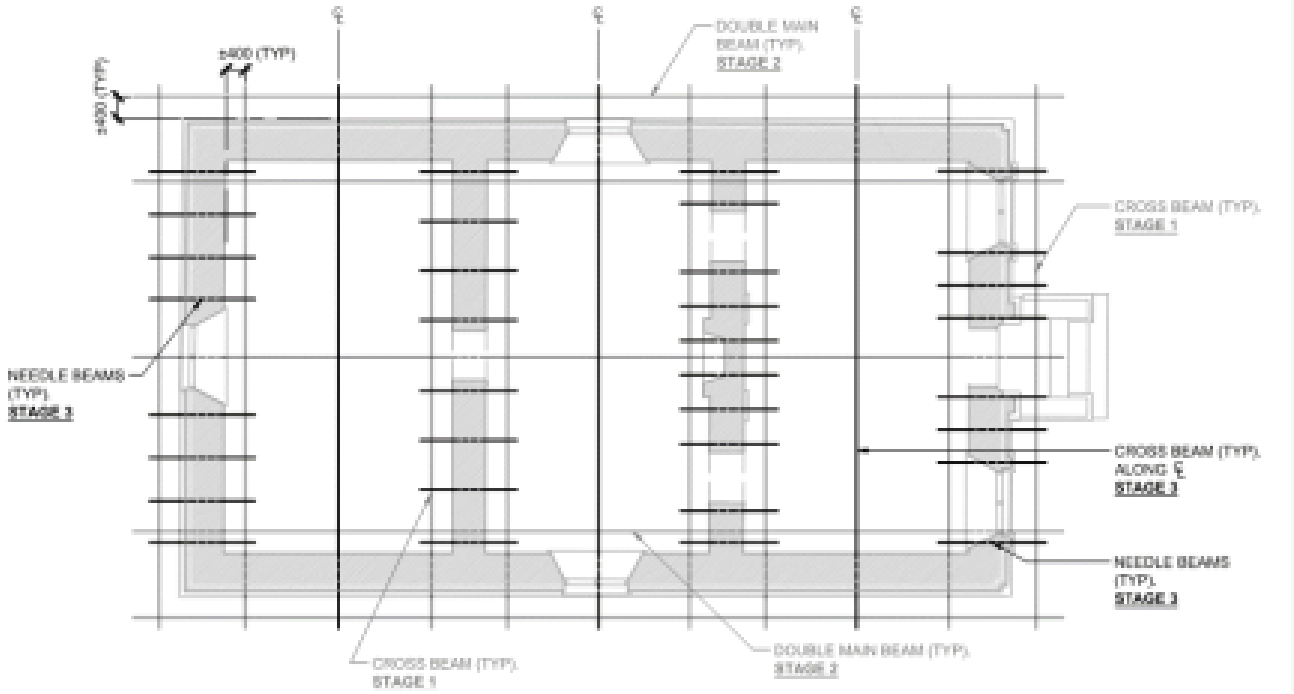


Figure 15: A plan view of the CRO with the Stage 1, 2, & Stage 3 Beam system

Part 4 New Structural Support

12. The final design of structural transfer slab or series of transfer beams and slabs to be established.
13. Setting the CRO on temporary piles or caissons.
14. Protection of relocated CRO.
15. Excavation and construction of permanent parking garage structure.
16. Setting the CRO on the permanent concrete slab.
17. Removal of temporary lifting steel supports.
18. Removal of the temporary piles or caissons.

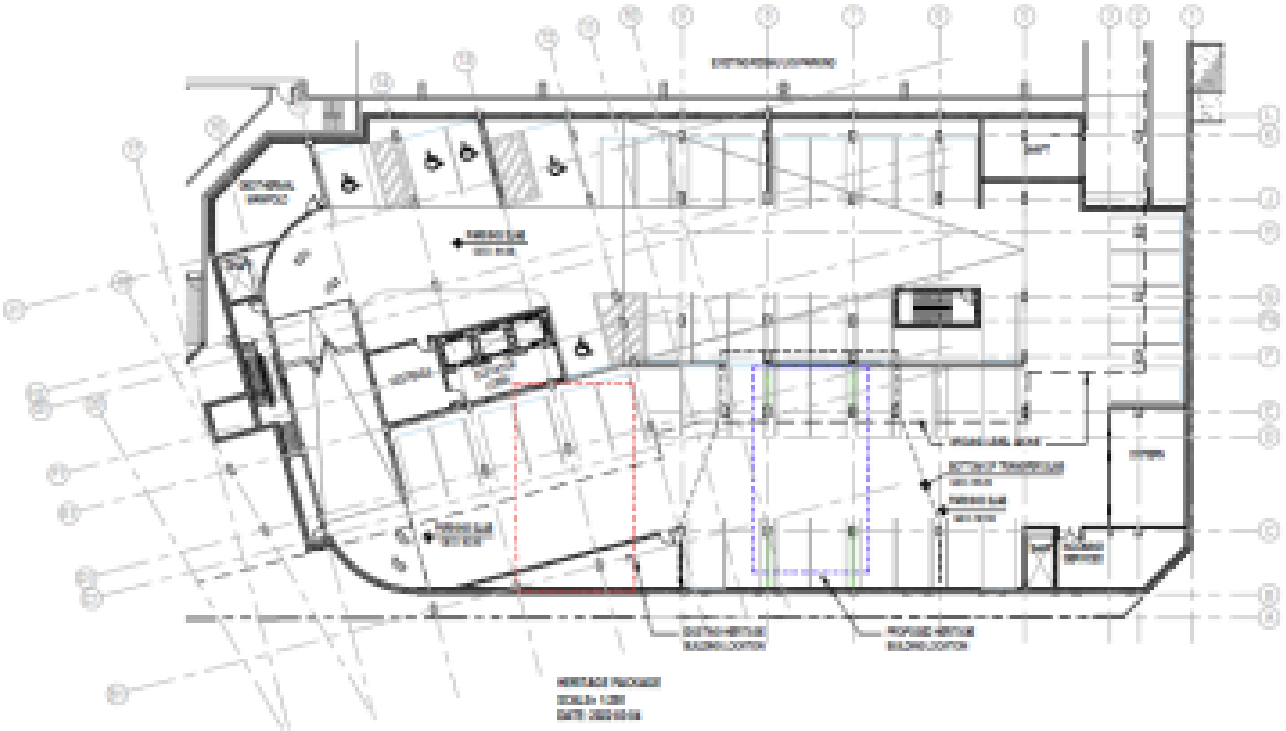


Figure 16: P1 plan with an outline of the proposed transfer slab. This is based on information provided by Entuitive during concept/schematic design as a proof of concept. The outline will be refined during design development. Source: Zeidler/Neuf 2022

Part 5 Restoration and Rehabilitation Work

Procedures for Pre-move inspection, documenting the as-found condition and preparing a plan for conservation of character defining attributes have been developed by Heritage Grade in consultation with JCAL. An assessment will be completed once the building is in its new location, including annotated, side-by-side images from pre-move survey, to identify any pre-existing and/or new conditions requiring intervention.

19. Removal of remaining existing foundation wall stonework.
20. Removal and opening of support wall between vaults.
21. Reinstallation of the stone floor slabs.
22. Assessment to inform masonry conservation scope.
23. Restoration of masonry walls that had temporary openings.
24. Removal of existing wood roof structure and asphalt shingles.
25. Removal and conservation (if possible) of existing metal eaves and soffit.
26. Construction of new steel roof structure and metal decking.
27. Restoration and installation of new slate roofing.
28. Installation of restored (or new) metal eaves and soffit.
29. Installation of (modified) stone entrance steps.
30. Restoration of the masonry chimney to its original dimensions and form.

31. Preservation and Repairs, cleaning of metal elements, interior shutters, and window/door hardware.
32. Restoration of all masonry and repointing, as necessary.

Part 6 Interventions and Adaptive Reuse

33. Construction of new opening in north/south masonry wall between west and central vaults.
34. Construction of new opening in the east masonry wall (to provide barrier free access)
35. Installation of new flooring slabs at east wall opening and at the opening between the centre and east vaults.
36. Installation of new M&E systems.
37. Refacing of retaining walls and streetscape edging.
38. Fit-up for commercial operation
39. Installation of interpretive Lighting.

3.2 Conclusions

The Cadillac Fairview Corporation Limited has submitted Zoning By-law Amendment and Site Plan Control applications to permit the redevelopment of 70 Nicholas Street to accommodate a 21-storey apartment building above a 2-level underground parking garage. The proposal contemplates the relocation of the City Registry Office (CRO) and will integrate the structure as part of the new mixed-use development linked by an internal connection to the Rideau Centre. This Conservation Plan has been prepared to describe a strategy for moving the building and outline the work required to conserve the CRO as a key component of the development.

Four approaches for moving the CRO were explored. The options included the dismantling and reconstructing the building and three different options for relocation, either as one unit within the site or off site. The Cadillac Fairview Corporation Limited, in consultation with City Staff, selected to proceed with Option 4 “relocate in its entirety” as recommended by City of Ottawa heritage planners. Although this option is the most expensive from a financial standpoint, the structural analysis, impacts, and recommendations concluded that Option 4 was the most sensitive and least intrusive from a conservation approach. .

With respect to the individual character-defining elements of the heritage resource, as well as in the overall reading of the building, it is the consultants’ opinion that the development proposal represents a well-executed response for integrating with/renovating a heritage structure. Given that the overall density and height of the development proposal is markedly different from the existing building, the conservation challenge has been to make the new residential development physically and visually compatible with the 1-storey CRO. Due to the difference in scale, it is considered key to its visual compatibility that the materiality, and palette of finishes of the base and the high-rise form functions as a backdrop to the CRO without overwhelming it. The plan for repositioning the building, maintaining its integrity, and providing a setting as part of the streetscape is well thought out and will ensure that the CRO remains a focal point and prominent feature within the public realm.

The CHIS and the Conservation Plan illustrate that the CRO will be a prominent component of the proposed redevelopment of the site. The adaptive reuse and the integration of the CRO as a part of the overall Rideau Centre is a positive outcome and will be an integral part of Ottawa's urban fabric.

It is the Consultants' opinion that this development proposal employs a creative response to moving the building and represents best conservation practices. The proposed development at 70 Nicholas Street conforms with the requirements of the *Standards & Guidelines for the Conservation of Historic Places in Canada,* and also addresses policy objectives of protecting heritage resources while implementing development as outlined by the City of Ottawa and the protection of attributes defined by FHBRO and the City.

It is recommended that all items outlined in this Conservation Plan and the Cultural Heritage Impact *Statement* should be closely followed to ensure the ongoing integrity of the CRO building and its heritage value.

APPENDIX A: Building Relocation Structural Feasibility (JCAL)

https://www.dropbox.com/s/ft2gbqglfb3emkd/2022-04-11%20Old%20Registry%20Building%20Feasibility%20Review.pdf?dl=0

City Registry Office

70 Nicholas Street, Ottawa

Building Relocation Feasibility

April 2022

Prepared By:

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JCAL Project No. 21143

1 INTRODUCTION

This report is based on a request from Cadillac Fairview to review the structural feasibility of relocating, in its entirety, the City Registry Office located at 70 Nicholas Street.

The investigation was completed by a team of specialists from John G. Cooke & Associates Ltd. (JCAL) (structural) with collaboration from Cadillac Fairview, Zeidler Architecture, Entuitive, Barry Padolsky Associates Inc., Commonwealth Historic Resource Management Reliance Construction of Canada Ltd., CDS Building Movers, Heritage Grade, David Edgar Conservation Ltd., Marathon Underground Constructors Corp, Morrison Hershfield.

This report outlines the feasibility of relocating the building in its entirety, including concepts for temporary support and bracing based on observations of the project team.

1.1 Project Team

The study and report was completed by the following team of professionals:

Chris Vopni, P.Eng, CAHP (JCAL) Heritage Structural Consultant
Nneka Murray, P.Eng. (JCAL) Heritage Structural Consultant
Natalie Smith, M.A.Sc., EIT (JCAL) Heritage Structural Consultant

1.2 Terms of Reference

The terms of reference are as follows:

▪ Review existing drawings, specifications, and reports.
▪ Visit the site to conduct a visual non-destructive review of existing interior and exterior conditions where exposed. Structural systems will be reviewed.
▪ The structural elements (roofs, masonry walls) were visually inspected from grade level. Interior foundation walls and exposed basement structure, as well as interior rooms were also visually inspected.
▪ Identify areas of minimally destructive exploratory openings to confirm as-built conditions. Review the conditions as they are exposed and instruct further work as applicable.
▪ Discuss feasibility options and concepts with the Consultant, Contractor, and Ownership groups at regular meetings.
▪ Prepare concept-level sketches for discussion and consideration by the Consultant, Contractor, and Ownership teams.
▪ Prepare a draft report outlining the structural feasibility of moving the building in its entirety, noting any temporary or conservation works that would be required. Submit Draft to client for review and comments.
▪ Prepare a final report for inclusion as an appendix in the Heritage Permit Application. This will

include any comments received, including client comments.

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1.3 Existing Documents

The following documents were available to JCAL for review:

- Particulars Respecting Registry Offices for the Province of Ontario (ca. 1874)
- Registry Office Relocation Options Analysis prepared by Reliance (September 2021)
- Heritage and Planning Comments – Pre-Application Comments from City of Ottawa (November 4, 2021)
- Heritage Pre-Consultation Presentation, by Zeidler (October 20, 2021)
- Memorandum 1-45 – Barry Padolsky Associates (2021-2022)
- Ottawa Registry Office – Dismantling Plan by David Edgar Conservation Ltd. (March 2022)

The following previous work was completed by JCAL:

- Structural Condition Assessment (July 20, 2021)
- Relocation Options – Structural Assessment DRAFT (January 17, 2022)
- Review of exploratory openings (Feb/March 2022)

The following work was completed concurrently with this report and referenced herein:

- Relocation of Heritage City Registry Office – Overview – CDS Building Movers (April 2022)
- Heritage Moving and Conservation at 70 Nicholas St – Heritage Grade (April 2022)
- Registry Building Relocation Pile Shoring Plan – WSP (April 2022)

2 DESCRIPTION OF THE BUILDING AND ITS CONDITION

The City of Ottawa Registry Office (CRO) is located at 70 Nicholas Street. It was constructed circa 1873 and is designated by the City of Ottawa under Part IV of the Ontario Heritage Act. The building is primarily load bearing masonry with load bearing brick walls set on a limestone masonry foundation.

The wood roof trusses span north-south and bear on the north and south exterior walls. The ceiling is a 3-wythe, 3-span brick vault that spans east-west and bears on the east and west exterior walls and two interior brick walls. Two 1" diameter tie-rods connect the east and west exterior walls and are terminated by a 12"x5"x1/2" steel plate within the wall composition. The interior and exterior brick masonry structural walls are approximately 6 wythes thick. An additional exterior facing wythe of brick is included at the exterior walls. This facing wythe is separated from the loadbearing structure by a 1" cavity and is laterally connected to the structural wall with diagonal bonding bricks that span the cavity, spaced every ±16" horizontally and approximately every 4 courses vertically. The facing brick is complemented by ashlar stone at the window and door surrounds, cornice, and gable/pediment ornamentation. Exploratory work has revealed that the ashlar stones bridge the cavity and provide bonding into the depth of the structural wall.

The stone masonry foundation walls at the exterior perimeter are ±40" thick with rough-cut rubble coursed face stone and limestone rubble back-up. Within the building footprint are rubble stone foundation walls supporting the intermediate loadbearing north-south brick walls with additional east-west walls at ±34" c/c to support the 6"x40" limestone floor slabs. The interior foundation walls are approximately 19" thick and ±13' high, presumed to be founded on bedrock. Exploratory work has confirmed that the stone slabs abut the interior face of the structural walls and do not pass under the brick.

Historically, a brick masonry chimney rose above the roof of the building, however it was dismantled in the past. The chimney will be reintroduced with the forthcoming project following the relocation. The reconstructed chimney will be connected to the building with appropriate reinforcing to meet the requirements of the seismic requirements of the current Building Code.

In general, the structure is in fair to good condition. Restoration work was performed circa 2017 and appears to be performing well. No signs of distress at or surrounding the repairs were observed. Exploratory work was carried out to assess the ease of removal of the existing bricks at the areas of original construction and at areas of known restoration. In both cases, bricks were removed intact, and the mortar could be removed without too much effort. This is indicative of soft, lime-based mortars which are most compatible with the brick from this era. The mortar in the restoration work is performing comparatively well with the original mortar which was originally specified to be mixed at a ratio of 1:3 lime to sand. Higher-strength Portland cement-rich mortars are typically well adhered to bricks making the mortar challenging to remove without damaging the brick. Any localized removals of bricks can be completed effectively with minimal damage and a high rate of salvageability.

The limestone has been found to be weathered in most instances, and a program of repair and replacement is required. This work should be considered general maintenance and not a by-product of the proposed relocation. We recommend that this work precedes the relocation to provide a structure in its most stable form.

Photo 1a: North Elevation [JCAL (2021)]

Photo 1b: Partial East Elevation [JCAL (2021)]

Photo 1c: South Elevation [JCAL (2021)]

Photo 1d: Facing Brick and Cavity [JCAL (2021)]

Photo 1e: Foundation and Stone Slabs [JCAL (2021)]

Photo 1f: Cavity and Diagonal Tying Brick [JCAL (2021)]

Photo 1g: Cavity and Diagonal Tying Brick [JCAL (2021)]

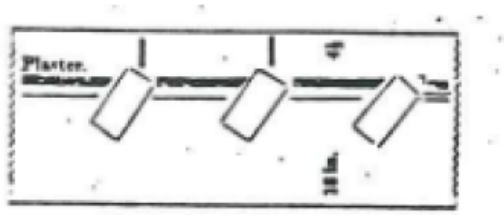


Photo 1h: Diagonal Tying Brick [Specifications 1874]

Photo 1i: Tie Rod End Plate [JCAL (2022)]

Photo 1j: Tie Rod [JCAL (2022)]

Photo 1k: Tie Rod End Plate [JCAL (2021)]

3 SEQUENCE OF RELOCATION

3.1 Enabling Work

Prior the setting out on the lifting and moving of the building, general maintenance of the masonry would be advantageous in ensuring the best overall condition of the City Registry Office. Generally speaking, masonry construction performs best as a homogeneous sum of all its parts. We recommend that any masonry maintenance work be completed ahead of the move. The building move is expected to be carefully monitored and executed in a way that dynamic loads are not applied to the building, but restored masonry can better accommodate any unexpected eccentric loading. Based on our review to date, we expect this work to include:

- Localized repointing of the exterior brick facing wythe where existing step cracking has been observed, including removal and resetting of loose bricks;
- Pinning of fractured stones throughout the elevations, primarily around window and door surrounds;
- Supplementary tying of the exterior facing brick to the backup structural wall. Observations and past experience suggest that the diagonal bonding bricks are fractured in many locations. This bonding technique between wythes of brick is very susceptible to failure as it offers a very small area of interaction between the tying and wall bricks.
- Removal of plaster at the interior face of the exterior walls, the soffit of the vaults, and the interior walls to expose the condition of the masonry and assess any supplementary maintenance work. A localized area of plaster flaking, suggesting moisture ingress, has been observed and may indicate weathered masonry.

Site works will be required to enable the move as well, in discussions with CDS Building Movers (CDS), a temporary roadway for the travel path of the building will be required. The construction work associated with the temporary roadway can be done concurrently with the masonry work mentioned above or with the preparation work listed below.

3.2 Preparation for Lifting

Temporary bracing will be required to protect the heritage building asset. The element that presents the most considerable risk is the ceiling vaults. Masonry arches are dependent on compression from self-weight. This compression presents an outward thrust to the gravity supporting elements that must be resisted. At the two interior walls, the thrust is resisted by the matching thrust of the neighbouring arch. The thrust at the exterior walls is presently resisted by the mass of the 6-wythe brick wall and two 1" diameter rods that span from the western to eastern exterior walls. In its present state, the forces are resolved and there are no signs of any distress in the system. Despite being unlikely, we are concerned with the potential of accidental eccentric loading that could change the loading at the arch. We have explored options of providing tie-down of the vaults to an internal scaffolding system connected to the lifting beams. This has been discarded because of potential movement of the lifting beams being translated through the scaffold and into the vaults. The currently proposed concept is to provide restraint at the springing point elevation of the vaults using a tension ring (shown on SK-S2, SK-S5, and SK-S6). A steel beam will be supported periodically for its dead load on east and west elevations. We have determined the total thrust of the arch under its dead load and the resistance provided by the two tie rods. The beams will be designed for the net force presently resisted by the masonry wall. The beam will be designed with strict deflection limitations (<2mm) and connected to tie beams along the north and south walls.

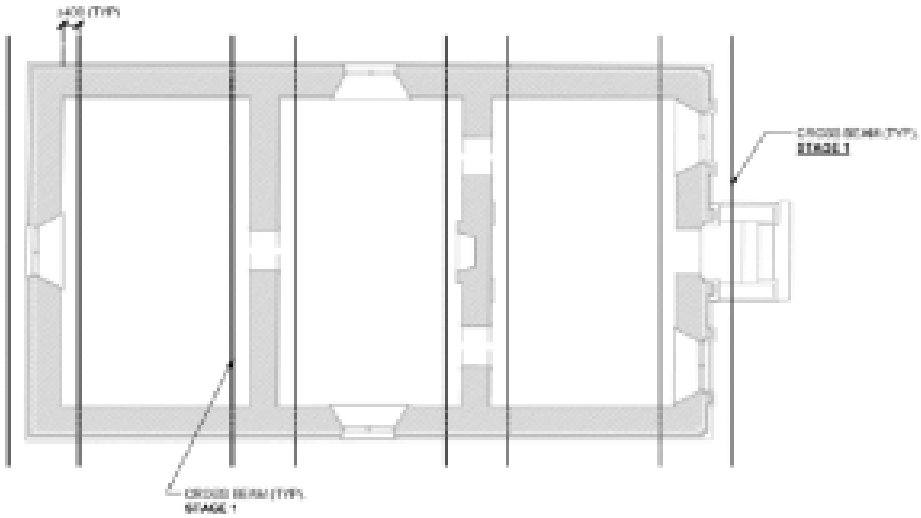
3.3 Lifting and Moving

Procedures for lifting and moving have been developed with support from CDS Building Movers. A copy of their sequencing has been provided separately and is summarized here.

The stone floor slabs will be cataloged, removed, and stored for future integration into the final space.

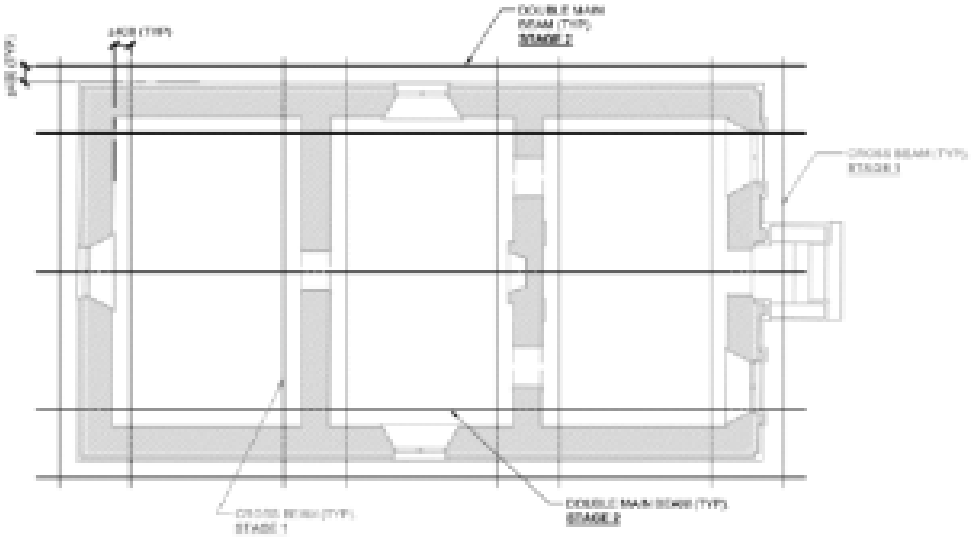
Stage 1: Install Cross Beams – The primary cross beams will be needled through the masonry walls. The cross beams will be the primary supporting elements for the north-south walls that support the vault. The

elevation of the cross beams has been selected to engage the top plinth course of stone. This takes advantage of the existing building attributes since this course of stone can act as lintels to support the facing brick above. At the locations of the beam penetrations, the masonry will be cataloged, dismantled, and stored for future re-integration. Once the opening is made, the beams will be slid into place, likely two sections will be spliced to span the entire length of the building.



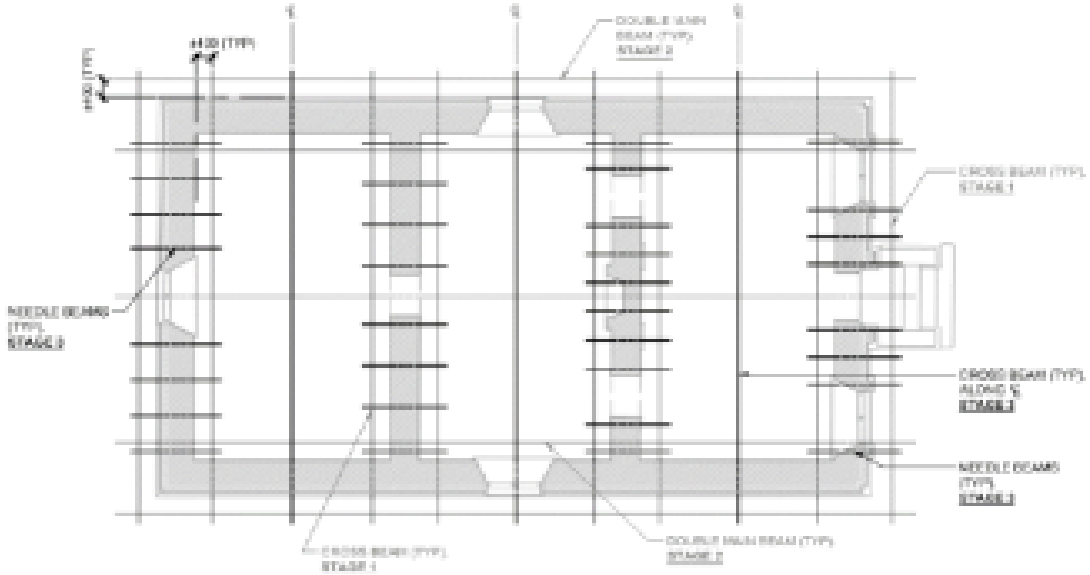
Stage 1: Cross Beam Installation

Stage 2: Install Main Beams – The main beams will serve as the primary lifting point and provide support to the cross beams. As with the cross beams, masonry will be cataloged, dismantled and stored for future re-integration. Select needle beams will be installed strategically to provide support over the main beam locations during dismantling.



Stage 2: Main Beam Installation

Stage 3: Install Needle Beams – At this stage the needle beams under the north-south walls will be installed in the same manner as the previous beams. These are the beams that interact directly with the north-south masonry wall and transfer load to the cross beams.



Stage 3: Needle Beam Installation

Stage 4: Lifting and Travel – A series of hydraulic jacks will be installed upside down in the cavity between the double main beams. This orientation will reduce the overall space required, which is a key constraint of the final location. The jacks will be simultaneously engaged to provide even lifting of the beams. The jacks will be set on cribbing on suitable backfill within and around the perimeter of the building. Once lifted, the main beams will be set on rails placed between the existing and new locations. The building will be transported along the rails to the final location.

3.4 Temporary Support During Excavation

Temporary steel pipe piles will be installed in advance of the move. At this preliminary stage, it has been discussed at a conceptual level with Marathon Underground and their engineer, WSP. The proposed strategy utilizes temporary concrete-filled HSS piles to support the main moving beams. Another methodology under consideration would utilize the existing structural layout and incorporate permanent piles and a series of transfer beams and slabs to support the building. In either proposed method, the piles and associated beams or slabs will be installed prior to relocation. This could occur concurrently with the enabling and preparation described above.

For this discussion and the included sketches, the temporary pile option is presented. The temporary piles would be strategically placed to align with the loadbearing walls of the existing building and will support the east-west main beams used for the move. The temporary piles are proposed to extend into the rock to an embedment below the proposed parking level P2. Excavation for the garage of the new building will occur around the temporary piles below the relocated existing building. Temporary bracing of the piles will be installed as excavation reaches the proposed parking level P1. Excavation of the rock for the remainder of the building not underneath the relocated existing building is proposed to be done by blasting. An attenuation trench will separate the blasting area from the area below the City Registry Office to reduce its exposure to vibrations. We recommend that vibration monitors be located on the existing structure to monitor the resulting vibrations to ensure they are kept within ranges suitable for existing buildings. We have experience in providing appropriate guidelines suitable for heritage buildings of this type and we will provide guidance for this stage of the work.

3.5 New Structural Support

The support provided by the new structure is presently considered as a structural transfer slab or series of transfer beams and slabs. The final design is being coordinated at this stage, considering the most efficient solutions that will maximize the use of the garage levels below. The type of structure selected will offer the same constraints, so the discussion here can be equally applied to both options. The most challenging constraint to accommodate is the future top of finished floor elevation, the available space below to accommodate adequate parking capacity, the proposed grading at the exterior to encourage drainage, and the most economical lifting point at the underside of the ashlar plinth course of the existing building. Based on preliminary sizing of lifting beams, we have developed schematic section SK-54 to illustrate the most likely strategy for integration into the new structure. To achieve the desired elevation, the main beams will be set onto the transfer structure and shimmed as needed. Once in position, the space between the top of new structure and the current underside of existing building will be bridged by materials sympathetic to the existing building, or as an extension of the structure below. The exact detailing of this will be established through discussions with Reliance and whether bridging this gap with poured concrete or building it with masonry is most efficient. The opportunities we see as most likely are as follows:

- Pour the new structural concrete with slots to receive the moving beams. The space between the top of the new structure and the moved walls would be filled with brick masonry to suit the existing walls, leaving keying for future masonry. Once the building is supported on the new structure through the new masonry, the beams can be slid out one at a time and the slots filled with masonry keyed into the previously completed work.
- Pour the new structure to a consistent level to receive the moving beams. Between the moving beams, fill with brick masonry to suit the existing walls to meet the elevation of the moved building. Once the building is supported on the new structure through the new masonry, the beams can be slid out, one at a time, and the slots filled with masonry, keyed into the previously completed work.

The new structure will be detailed to accommodate areas where the existing foundation levels will be exposed. The existing stone from the foundations will be salvaged and used as a veneer at these areas.

4 DISCLAIMER AND LIMITATIONS

This report is based on and limited to information supplied to John G. Cooke & Associates Ltd. by representatives of Cadillac Fairview and by observations made during walk-through inspections. Only those items that are capable of being observed and are reasonably obvious to John G. Cooke & Associates Ltd. or have been otherwise identified by other parties and detailed during this investigation can be reported.

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

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

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We trust this report covers the scope of work as outlined in our Terms of Reference.

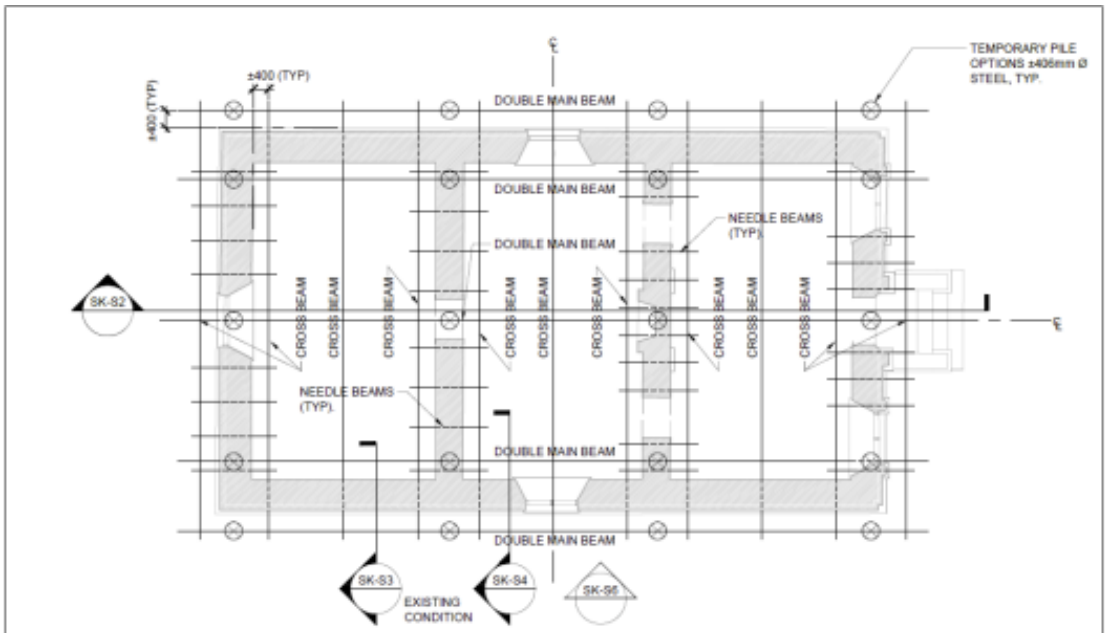
If you have any further questions, please do not hesitate to contact our office.

Yours sincerely,

JOHN G. COOKE & ASSOCIATES LTD.

Chris Vopni, P.Eng., CAHP
Associate

5 APPENDIX A - SKETCHES



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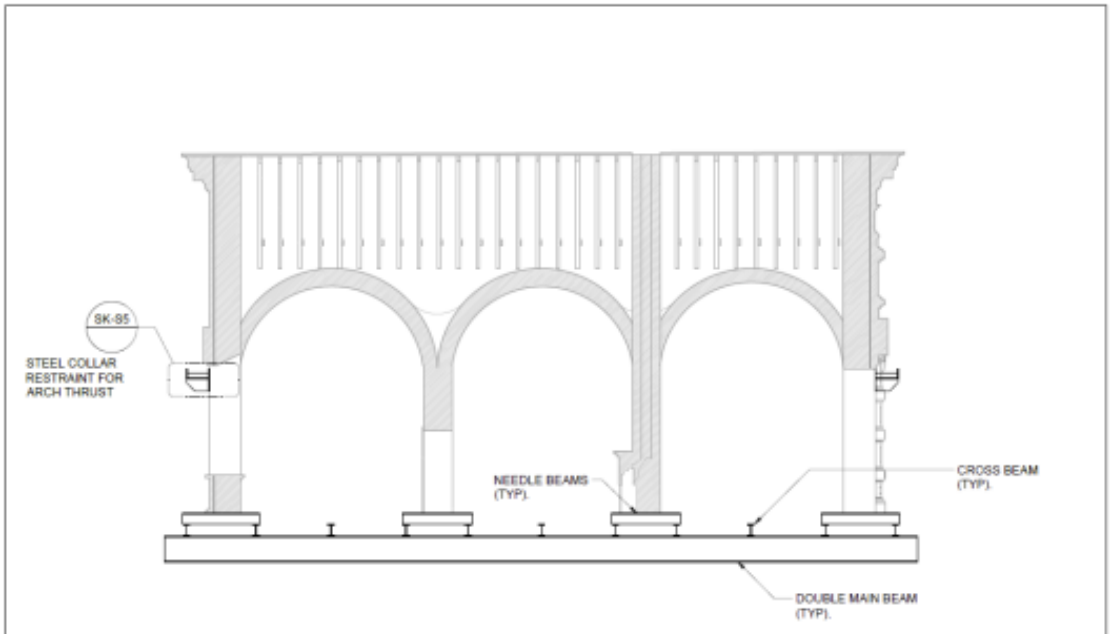
OTTAWA, ON — HAMILTON, ON

DRAWING:	PLAN		
PROJECT:	REGISTRY BUILDING RELOCATION 70 NICHOLAS	DESIGNED BY: CV	SCALE: 1:100
CLIENT:	CADILLAC FAIRVIEW	DRAWN BY: MB	DATE: 2022-04-22
		PROJECT No.: 21143	DRAWING No.: **SK-S1**



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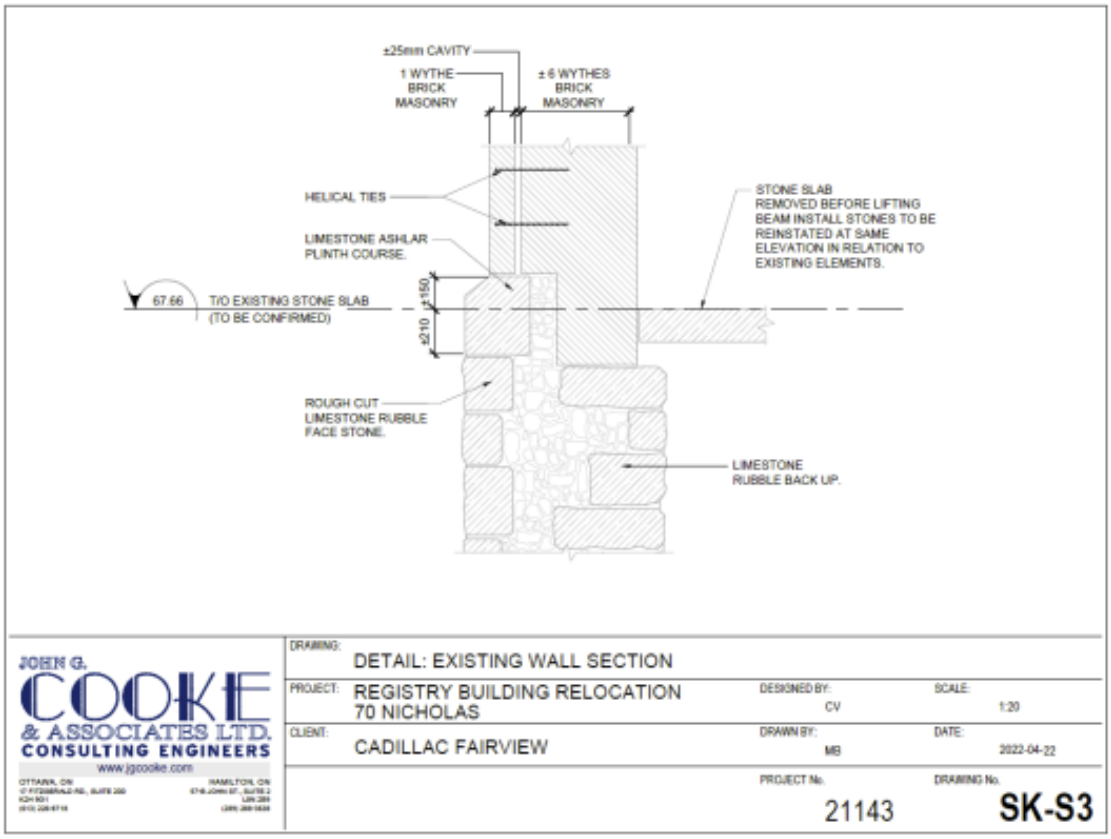
DRAWING:	PLAN		
PROJECT:	REGISTRY BUILDING RELOCATION 70 NICHOLAS	DESIGNED BY: CV	SCALE: 1:100
CLIENT:	CADILLAC FAIRVIEW	DRAWN BY: MB	DATE: 2022-04-22
		PROJECT No.: 21143	DRAWING No.: **SK-S2**



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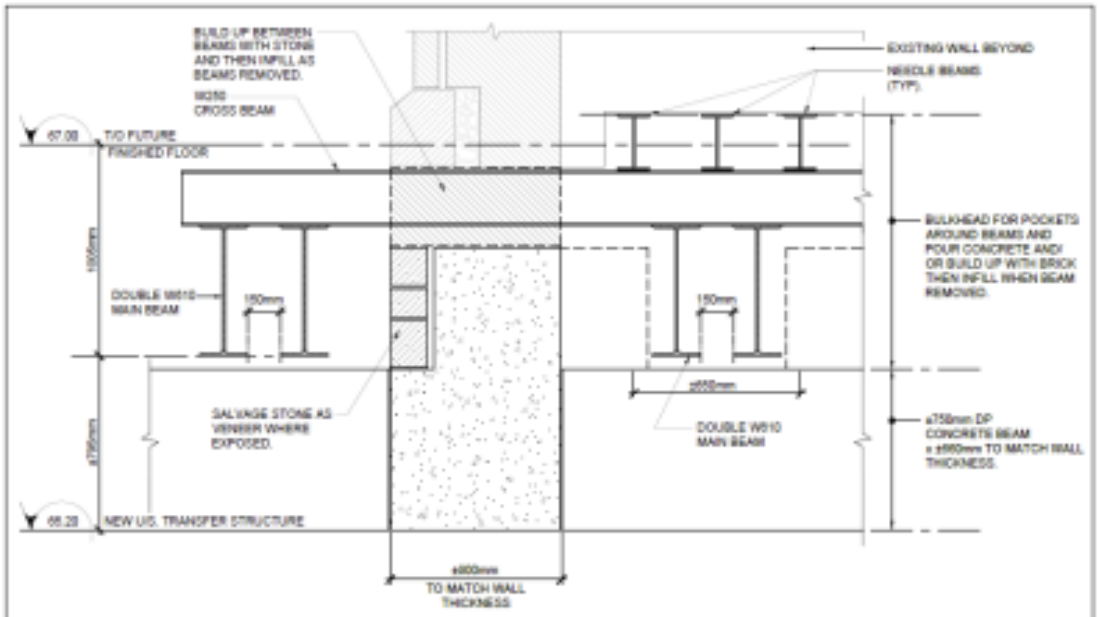
DRAWING: DETAIL: EXISTING WALL SECTION
PROJECT: REGISTRY BUILDING RELOCATION 70 NICHOLAS
CLIENT: CADILLAC FAIRVIEW
DESIGNED BY: CV
DRAWN BY: MB
SCALE: 1:20
DATE: 2022-04-22
PROJECT No. 21143
DRAWING No. SK-S3



JOHN G. COOKE & ASSOCIATES LTD. CONSULTING ENGINEERS
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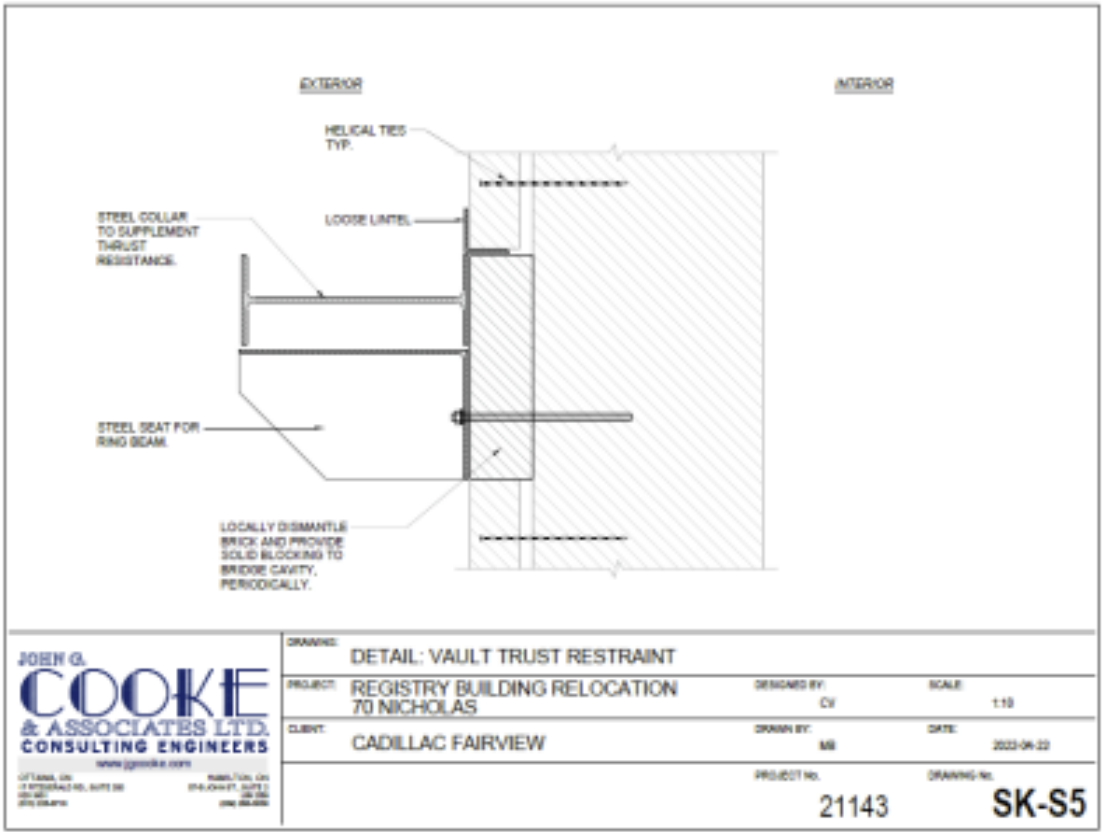
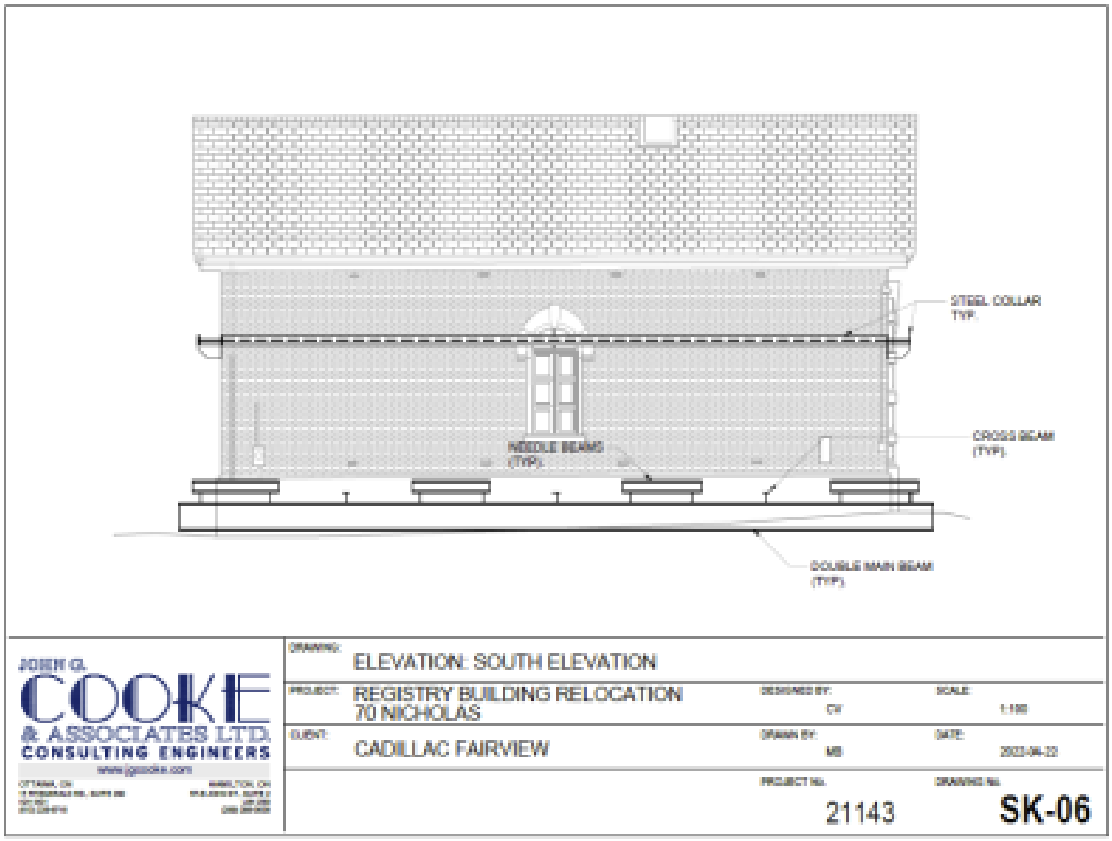
DRAWING: DETAIL: NEW LOCATION - SECTION
PROJECT: REGISTRY BUILDING RELOCATION 70 NICHOLAS
CLIENT: CADILLAC FAIRVIEW
DESIGNED BY: CV
DRAWN BY: MB
SCALE: 1:20
DATE: 2022-04-22
PROJECT No. 21143
DRAWING No. SK-S4


EXTERIOR
INTERIOR
HELICAL TIES TYP.
LOOSE LINTEL
STEEL COLLAR TO SUPPLEMENT THRUST RESISTANCE.
STEEL SEAT FOR RING BEAM.
LOCALLY DISMANTLE BRICK AND PROVIDE SOLID BLOCKING TO BRIDGE CAVITY, PERIODICALLY.
JOHN G. COOKE & ASSOCIATES LTD. CONSULTING ENGINEERS
DRAWING: DETAIL: VAULT TRUST RESTRAINT
PROJECT: REGISTRY BUILDING RELOCATION 70 NICHOLAS
CLIENT: CADILLAC FAIRVIEW
DESIGNED BY: CV
DRAWN BY: MB
SCALE: 1:10
DATE: 2022-04-22
PROJECT No. 21143
DRAWING No. SK-S5


STEEL COLLAR TYP.
NEEDLE BEAMS (TYP.)
CROSS BEAM (TYP.)
DOUBLE MAIN BEAM (TYP.)
JOHN G. COOKE & ASSOCIATES LTD. CONSULTING ENGINEERS
DRAWING: ELEVATION: SOUTH ELEVATION
PROJECT: REGISTRY BUILDING RELOCATION 70 NICHOLAS
CLIENT: CADILLAC FAIRVIEW
DESIGNED BY: CV
DRAWN BY: MB
SCALE: 1:100
DATE: 2022-04-22
PROJECT No. 21143
DRAWING No. SK-06

APPENDIX B: Relocation Procedures (CDS Building Movers)

CDS BUILDING MOVERS

Relocation of Heritage City Registry Office - Overview

*This document is intended to provide a general overview of the Ottawa Registry Office relocation only. Some approaches may change based on new information or due to engineer specifications that have yet to be finalized.

Date:	April 12, 2022	**File No.**	22060
Building Description:	Heritage Building – City Registry Office (CRO)		
Building Location:	70 Nicholas St, Ottawa, ON K1N 7B9		

The following quote including scope of work and pricing are contingent upon the following requirements:

- The new foundation design is to be constructed in such a way to accept the supporting steel beams during lowering.
- The new foundation should be constructed at an elevation that compensates for the thickness of the supporting steel plus shimming. The base / caisson design is to be approved by the engineer to validate that building will be appropriately supported.
- The new location of the building should feature sufficient space to host the supporting steel and piers, as well a sufficient space to allow their removal.
- The client is to excavate area between the building's original location and its future location down to bedrock and filled with gravel pad to match new foundation elevation. (Gravel pad specs. TBD in accordance with engineer requirements)
- Insurance coverage provided by Reliance.
- Client (Reliance) to purchase/rent/supply all necessary supporting steel beams and other auxiliary materials. (Final material list TBD based on final engineered lifting plan).

Terms and Conditions:

- All designated substances to be removed prior to work commencement
- Client will allow CDS Building Movers feature branded signage on the building.

CDS Building Movers 8 Sweetnam Drive, Stittsville, ON K2S 1G2 613-836-1215

- All masonry work, including the removal of bricks for the creation of temporary holes (used for the installation of bracing or otherwise) must be completed by a third-party contractor assigned and paid by the client.
- All costs derived from third party invoices (see *Third-Party Costs* under *Compensation* section) are to be paid by client as they occur.
- CDS can assist in the acquisition of insurance coverage, however the insurance cost is to be passed on to the client. Official cost will require a special assessment by insurance provider, as available at the time of the work.

Stage 1: **Site Preparation**

1.1. Removal of all interior finishing (all non-structural elements) including interior plaster layer currently covering brick, to be completed by Reliance.

1.2. Exterior perimeter excavation (approximately 16ft wide trench at 4ft depth). Area between original location and final location (including area underneath the future location of the building) to be excavated and replaced by a granular pad of sufficient density to endure the weight of the building and its supporting steel structure. Excavation and construction of granular pads are the responsibility of Reliance.

1.3. Installation of vault-ceiling upper bracing. (Refer to associated drawing, final engineering TBD)

1.4. Installation of corner braces/cables. (Refer to associated drawing, final engineering TBD)

1.5. Removal of interior floor slabs by heritage grade. Slabs to be marked and stored by Heritage-Grade for future re-installation.

1.6. Creation of initial crosser beam holes by joint effort from CDS and Heritage Grade. The initial holes will be created on either side of the center "barrel-vault supporting walls", where the initial crosser beams are to be installed. The overhead bricks of the holes will be held up by a temporary support structure while the following steps are performed. (Refer to associated drawing, final engineering TBD)

1.7. The initial crosser beam holes will be used to partially remove the interior rubble foundation walls currently supporting the stone floor slabs. The top portion (± 5ft) of said foundation walls will be removed to allow for free-unobstructed insertion of crosser beams. The rubble will be removed largely by hand with the assistance of conveyer belts. The rubble will be stockpiled outside of the building, to be handled by Heritage Grade for conservation/re-use as desired.

1.8. Interior of the original foundation (areas between the remaining portion of interior rubble walls) is to be backfilled with granular material (likely ¾" gravel, TBD by engineer) to allow to construct a base of sufficient density to support the weight of the building and its supporting structure during movement.

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1.9. Filling of window openings by external contractor. Removal of window glass (recommended)

Stage 2: **Installation of Supporting Structure**

2.1. Sequential installation of the supporting steel structure (Refer to associated drawing, final engineering TBD):

a. Installation of initial crosser beams, shored onto CDS's supporting pier system.

b. Installation of needle beams over initial crosser beams to allow for the creation of main-beam openings in the center vault supporting walls.

c. Installation of main beams, shored onto CDS's supporting pier system.

d. Creation of secondary foundation holes to allow for the installation of secondary crosser beams. Installation of final secondary crosser beams.

e. Raising of main beams to meet and join with crosser beams. The beams are to be secured together using heavy duty c-clamps.

f. Installation of final needles beams between crosser beams to complete support of remaining bricks.

Stage 3: **Initial Raise**

3.1. Installation of the unified hydraulic jacking system

3.2. Shimming/pre-load

3.3. Initial pressurization/raise to allow for even and uniform raising of the structure

3.4. Each jacking point will be analyzed in advance to determine the expected weight at each jacking point. The positioning of each jack will be adjusted to spread the load evenly throughout the system to ensure that the deflection of the supporting steel beam structure is minimal.Raising of building to rolling elevation

Stage 4: **On-site Rolling of The Building (First Roll)**

4.1. Removal of external foundation walls for installation of rolling beams, to be completed by Heritage Grade.

4.2. Installation of rolling beams, rollers, and hydraulic push jacks

4.3. Rolling of the building

Stage 5: **Lowering & Removal of Bracing**

5.1. Setting of building on temporary pilling structure supplied by Reliance. Key specifics yet to be determined.

5.2. Removal of bracing once new construction is completed (digging of underground parking, etc.)

5.3. Transfer of building onto permanent structure

APPENDIX C: Relocation Procedures (Heritage Grade)

HERITAGE GRADE
ARCHITECTURAL RESTORATION SERVICES

April 20, 2022

Reliance Construction

90 George St., Ottawa, ON K1N 0A8

Phone: (613) 421-3127

Attention: Barry Padolsky, on behalf of Reliance & Cadillac-Fairview

Re: 70 Nicholas St., CRO Relocation

Note: the following is intended to be read in conjunction with D.E.C.L. March 2022 report, "Ottawa Registry Office - Dismantling Plan," attached as a separate document. Qualified heritage conservation personnel to be present at all stages and actively involved in documentation for the project duration.

Proposed Phases:

1) Testing/ analysis, including material identification and test removals (if additional required, locations to be confirmed by others)
2) Design of selective removals, accounting for structural and material information obtained during the test removals. To be identified on record drawings and approved prior to on-site works
3) In-situ documentation
4) Removals (including plaster, selective masonry dismantling, glazing, and entrance door), identification, and packaging
5) Interior repointing as required to ensure stability throughout the move process
6) Transportation of removed elements for storage
7) Post-move assessment of structure to determine if additional restoration works are required
8) Retrieval and delivery of removed assets
9) In-situ reinstatements per approved drawings and photographic documentation

Background

The Land Registry office at 70 Nicholas St is one of four remaining land registry offices based on the designs of Kivas Tully, Ontario's first Provincial Architect and Engineer. Completed in 1874, the main structure consists of 3 to 4 wythes of brick, structural and decorative Gloucester limestone, local sandstone features, steel windows, and a wooden door.

All exterior materials appear to be in good condition, remaining suitable candidates for preservation. The original building and its integral heritage features can be restored using a combined off-site and in-situ approach once moved to its new location, thus preserving the character of the street as well as the building.

All unique elements are to have their condition, size, shape, location, fastenings, etc recorded in situ before being carefully removed and packed for transportation to Heritage Grade's shop. All elements identified for removals – to allow for building move and for future restoration scope – are to be removed intact and complete with a view to either restore each piece or use the remnants as a pattern / model for new, recreated pieces.

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Phase 1.1 - Selective Heritage Masonry Removal Procedures

- Survey and record the existing conditions and document on drawings supported with digital photography, in accordance with an established Heritage Materials Management Protocol (H.M.M.P., as outlined in the final section of this document).
- Remove existing, lead-containing interior plaster coating to allow for inspection of brickwork and repair as required to ensure structural integrity during the move
- Repoint interior brickwork as required
- Remove and label all glazing units in coordination with selective masonry dismantle.
- Remove and label the wooden entrance door to facilitate removal of floor slabs. Measure and template opening for record. Note that the frame is to remain in-situ.
- Temporarily infill all openings per mason's recommendations to ensure stability during the building move and to provide environmental protection until site is ready for works to be reinstated
- Selective removal locations to be labeled per grid system as outlined in D.E.C.L. dismantling plan from Option 1 (separate document, enclosed), including floor slabs, front steps, and brickwork for cross beams, needle beams, to ensure future reinstallation at original locations. Catalogue per Heritage Material Management Protocol (H.M.M.P.), as outlined at the end of this document.
- All stone and metal elements remaining in-situ, such as windows, shutters, medallions and cornice work, to be thoroughly documented, with location identified on photographs and the established grid system, and labeled for record. Unique labels to be noted on elevation drawings of facades and interior sections where applicable, in accordance with the H.M.M.P. (refer to the H.M.M.P. guidelines at the end of this document).
- Salvage loose stone left from original construction in the basement, and foundation walls. Retain for replacement materials and/or adaptive reuse as required
- Pack each removed piece on sound wooden pallets for transport. Label and tag individual assets and pallets using the crating inventory/database system in accordance with the H.M.M.P.
- Pick up all crated and palletized heritage components from jobsite, 70 Nicholas St.
- Transport to Heritage Grade's shop, 2880 Stevenage Dr., Ottawa. Store for future reinstatement at original locations
- All removed assets to be stored in a covered, dry location with sufficient airflow so as to prevent biological growth
- Full site assessment to be completed once building is at its new location, including annotated, side-by-side images from pre-move survey, to identify any pre-existing and/or new conditions requiring intervention in order to ensure long-term preservation of the building. Assessment to inform masonry conservation scope.
- All ironwork, ornamental stone, and brick components to be evaluated by qualified personnel once the structure is in its permanent position, with restoration works to be completed, and replicas to be produced of elements showing significant damage, on an as-required basis

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http://heritagegrade.com
info@heritagegrade.com

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Phase 1.2 - Heritage Glazing Removal Procedures

- Survey and record the existing conditions and document on drawings supported with digital photography, in accordance with an established H.M.M.P. Identify and template any openings requiring new glazing units
- Number pieces that will be removed on the designated set of as-built drawings
- Gently remove all glazing units. Number all pane and note locations on drawings to ensure future reinstatement at original locations
- Package all glazing units in accordance with an established H.M.M.P.
- Label and tag crates using the crating inventory/database system in accordance with established H.M.M.P.
- Transport glazing units to Heritage Grade's shop for storage
- Work in conjunction with the masonry and building move teams to ensure stabilization of the openings and install temporary bracing/infill as required.

Phase 2.1 - Re-Installation of Masonry Units

- Transport palletized masonry units from storage location (Heritage Grade's shop at 2280 Stevenage Drive) to site
- All brick units to be reinstalled at original locations, per grid segments established on elevation drawings, using approved mortar mix
- Interior floor slabs to be reinstalled at original locations per labeled pre-removal survey
- Front steps to be reinstalled at adapted original locations per labeled pre-removal survey and confirmation of new location grade/conditions

Phase 2.2 - Re-Installation of Glazing Units

- Prepare replacement glazing units, where required, per templates produced during removals
- Transport palletized glazing units from storage location (Heritage Grade's shop at 2280 Stevenage Drive) to site
- Remove all temporary infill and prepare openings for glazing
- Reinstall glazing units at original locations, per labeled elevation drawings
- Supply and install interior caulking at perimeter of glazing units only
- Supply and install exterior caulking at perimeter of glazing units only
- Demob site

Note:

1. Current procedure is not inclusive of restoration works that may be required to ensure the long-term preservation of the building envelope, such as localized brick replacements, repointing, ironwork repairs, maintenance and/or replacement of ironwork paint coatings, repairs to interior doors, replication of original brick chimney.
    a. Restoration procedures will need to be approved per detailed post-move building assessment. Pricing and schedules to be submitted for approval per agreed upon scope of work
2. All necessary permits by others
3. Access and hoarding by others
4. Preparation of foundation by others
5. Approved mortar mix to be specified by others
6. New roofing by others
7. Structural and interior modifications by and/or as directed by others, per approved, stamped drawings to be issued by others

If you have any questions or comments email them to shauna@heritagegrade.com

Yours truly,

Shauna O'Rourke
Jr. Project Manager
Shauna@heritagegrade.com
(613) 316-8458

HERITAGE GRADE
ARCHITECTURAL RESTORATION SERVICES

Heritage Material Management Protocol
The following Heritage Material Management Protocol ("H.M.M.P.") has been adapted from standardized Public Services and Procurement Canada Specifications.

1. INITIAL MATERIAL ACTIONS
Prior to undertaking any of the Work contained below the Contractor shall:

A. Identify the item or material that is to be removed from its current location for the purpose of completing the action assigned in the Contract Documents.
B. Provide a schedule outlining the dates for the removal of each item
C. Instruct all workers on procedures concerning working around heritage finishes and components, accidental damage as a major risk (such as falling tools or materials) moving of lifting equipment, etc.

2. CATALOGUING
All completed cataloguing deliverables are to be submitted in digital format to allow for integration into the Heritage Material Database ("HMD").

Each tag is to be completed and placed as follows:

A. As per instructions listed on the sample crating tag/heritage material removal tag included as part of this document (Appendix 1).
B. On the back or rear side of the material or in a location that is not on the visible side(s) of the material.
C. In a non-invasive location and using a non-invasive attachment method.
D. In a location which will remain visible for the duration of the project, but can be removed after completion of the project, leaving no residue or damage.
E. All writing must be done using a laser printer or in exceptional cases felt markers using waterproof permanent ink.
F. Numbered as per the HMD.

Refer to Appendix 1 for samples of cataloguing and recording procedure forms.

3. MATERIAL HANDLING DURING REMOVAL
Removal types R02 and R03 to be followed for this project, identified as follows:
REMOVAL TYPE R02 – Salvage (Remove and Retain) for Reinstallation in Existing Location:

A. All heritage components are required to be removed by qualified personnel with skill and experience in removing and handling the affected type of material.
B. Heritage components identified under this category shall be removed by the Contractor as soon as practical, in a manner that minimizes the potential risk to the heritage component and the building as a whole.
C. Cataloguing of the heritage component is to be completed prior to its removal, including all protocols associated with the assigned cataloguing type for that item.
D. All removal procedures for heritage components under this category are provided in the applicable specification trade section. No damage should be incurred to the heritage building and its historic finishes and elements when these items are being removed.

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E. Protection, in this case, is meant for the affected heritage component to minimize risk of harm during post-removal operations and storage.

4.4. REMOVAL TYPE R03 – Salvage (Remove and Retain) for General Reinstallation:

A. All heritage components are required to be removed by qualified personnel with skill and experience in removing and handling the affected type of material.
B. Heritage components identified under this category shall be removed by the Contractor as soon as practical, in a manner that minimizes the potential risk to the heritage component and the building as a whole.
C. Cataloguing of the heritage component is to be completed prior to its removal, including all protocols associated with the assigned cataloguing type for that item.
D. All removal procedures for heritage components under this category are outlined in the above procedure, as well as D.E.C.L. "Dismantling Procedure." No damage should be incurred to the heritage building and its historic finishes and elements when these items are being removed.
E. Protection, in this case, is meant for the affected heritage component to minimize risk of harm during post-removal operations and while in storage.

5. PROTECTION

5.3. OFF-SITE PROTECTION: CRATING TYPES

Refer to D.E.C.L. report, enclosed, for detailed procedures for palletizing masonry assets.

General Crating Notes:

A. Ensure the material identification tag is affixed to each assembly component.
B. Affix crating tag to outside of crate or pallet as per procedure outlined in the Cataloguing section of this document.
C. Ensure all associated fasteners and accessories are crated with related heritage item to allow for future re-installation.
D. Assemblies placed in a single crate are to have separation spacers between the individual components. Spacers are to be wood strapping wrapped with foam sheeting, unless otherwise specified.
E. Crating for heritage materials and artifacts shall be designed and fabricated in such a way as to prevent movement of items within the crate and to protect items from damage in any way during handling (transportation, storage, etc.).

6. TRANSPORTATION

6.1. GENERAL NOTES

Final transportation procedures are the Contractor's responsibility and must conform to overall project protection requirements.

7. DISPOSAL

NOT USED

8. TEMPORARY STORAGE

Note: For the scope of this section, temporary storage refers to storage locations and

characteristics to house items for the duration of the construction project or less. All assets to be stored in a secured, covered, dry location with sufficient airflow so as to prevent biological growth.

9. UNANTICIPATED HERITAGE ELEMENTS DISCOVERED IN-SITU
NOT USED

10. HERITAGE MATERIAL DATABASE
The Heritage Material Database ("HMD", "the database") will be developed by the contractor and used for cataloguing and tracking Heritage Materials during the construction process.The database will be updated throughout the duration of the project

11. UNANTICIPATED DAMAGE TO HERITAGE ELEMENTS DURING CONSTRUCTION
In the event of damage occurring to heritage elements during the course of work:

A. The finder shall immediately stop all work in the area of the damage and contact the Consultant to inform them of the damage verbally, followed by a written communication.
B. The Contractor is to immediately inform the Project Design and Heritage Consultants, together with any other appropriate project team members. This notification shall include a "Heritage Material Condition Report" including the following minimum information: date, reason for report, location (key plan and elevation as applicable), a brief description of damaged element, a brief outline about the damage (written and sketch), a description of work on damaged element as defined by construction documents, a digital image of the item post-damage and if possible, a digital image of the item pre-damage.
C. If work around the damaged heritage element is risking life safety or risking/causing damage to additional heritage element(s), this work shall stop immediately except for any work necessary to stabilize the work area for health and life safety reasons and to safeguard the damaged heritage element. All adjacent heritage elements shall be checked for damage and for characteristics that would make them susceptible to similar damage. The damaged heritage component shall be maintained in closest proximity to the damage site until input is provided by the Consultant regarding next steps.
D. The damaged heritage element shall be provided with temporary protection as required until it can be viewed by appropriate built heritage conservation personnel. Temporary protection measures shall be put in place to ensure that further damage to the heritage element is minimized.
E. In instances where adjacent heritage elements may be susceptible to similar damage, appropriate on-site personnel are to provide a written methodology outlining potential mitigation measures as part of the "Heritage Material Condition Report" for review and approval by the Departmental Representative prior to carrying out any further work, including mitigation work. Where potential further damage is considered to be an imminent risk, temporary protective measures shall be instituted immediately, in keeping with typical project protective measure protocols and in a manner that minimizes damage to heritage elements.
F. The "Heritage Material Condition Report" and, if necessary, the damaged heritage component(s) may be reviewed by the Consultant and further direction may be provided in writing to instruct the Contractor prior to actions being undertaken.

HERITAGE GRADE
ARCHITECTURAL RESTORATION SERVICES

APPENDIX 1
Old Ottawa Registry Office
HMMP Operations Sample Forms (3 forms)

Old Ottawa Registry Office - 70 Nicholas St.
Heritage Asset Tag:
Old Ottawa Registry Office
70 Nicholas St.
Type
Elevation & Grid ID
Specific Item #, if Relevant

EXAMPLE:
Old Ottawa Registry Office
70 Nicholas St.
Limestone - Foundation
North, H5

Old Ottawa Registry Office - 70 Nicholas St.
Heritage Crating Tag

Pallet # *May also be listed as crate #, e.g. for ironworks*	
Pre-Removal Images:	
Date Removed:	**Removed by:**
Item #s *May also be listed by grid location, per D.E.C.L. example. Refer to D.E.C.L. report, enclosed.*	
Item Names *May be a brief description, e.g. stone and element type*	
Elevation:	**Storage Location:**
Action *I.e. retain for reinstallation, salvage for reuse at alternate location, salvage for adaptive re-use*	

Note: Heritage Crating Tags are to be affixed to heritage material pallet or crating in a transparent resealable plastic pouch or laminated sheet which is easily accessible on the face of the pallet or crate. A digital copy is to be included in the Heritage Material Database for tracking purposes.

HERITAGE GRADE
ARCHITECTURAL RESTORATION SERVICES

Old Ottawa Registry Office, 70 Nicholas Street, Ottawa
Sample Heritage Material Condition Report

HERITAGE MATERIAL CONDITION REPORT

Unique Item #(s): _____

Prepared by: _____ Report #: HG-

Reason for Report: _____

Location: _____

Description of Item(s): _____

Anticipated work on affected element(s) as defined by Contract Documents *(If applicable)*

Scope to be determined by repair survey

Graphic representation of location

(Provide graphic representation of approximate location – graphics to suit removal)

Description of affected element(s)

Description of concerns/damage associated with affected element(s)
Graphic illustration of concerns/damage associated with affected element(s)

Description	Image
Add rows as needed	

Secondary survey notes (post removal)

Post-removal photographs

Description	Image
Add rows as needed	

Heritage Grade
101-2710 Lancaster Rd, Ottawa, Ontario, Canada K1B 4W8
tel (613) 228-1080 fax (613) 228-1019

http://heritagegrade.com
info@heritagegrade.com

HERITAGE GRADE
ARCHITECTURAL RESTORATION SERVICES

Pre-removal Completed by:

Heritage Grade		
Name	*Organization*	*Date*

Post-removal Completed by:

Heritage Grade		
Name	*Organization*	*Date*

Secondary Survey Completed by:

Heritage Grade		
Name	*Organization*	*Date*

Final Survey Completed by:

Heritage Grade		
Name	*Organization*	*Date*

Heritage Grade
101-2710 Lancaster Rd, Ottawa, Ontario, Canada K1B 4W8
tel (613) 228-1080 fax (613) 228-1019

http://heritagegrade.com
info@heritagegrade.com

APPENDIX D: Temporary Piling Methodology (Marathon)

MARATHON
6847 HERAM DRIVE, GREELY, ON, K4P 1A2. OFFICE (613)-821-4800. FAX (613)-821-3182 TOLL FREE: 1(800)569-2086
WWW.MARATHONUNDERGROUND.COM

April 13th, 2022

Reliance Construction of Canada Limited
90 George Street
Ottawa, Ontario

ATTENTION: Mike Lelacheur

Re: Temporary Support Pile Installation
City Registry Office (CRO)
Ottawa, Ontario

This document provides our piling methodology submission as part of the City Registry Office Relocation and Support Program in Ottawa, Ontario.

Overview

The work consists of the following:

- As part of the CRO relocation, 20 temporary piles are required to support the building during excavation beneath the structure.
- The piles will be installed through a mixture of overburden and bedrock.
- It is understood that the maximum unsupported pile length will be about 7.5m.
- Preliminary plans indicate that the piles will be about 10.67m (35ft) long. The pile toe elevations will be confirmed/verified prior to the installation of the piles.
- The piles will consist of 406mm diameter steel pipe piles, with a minimum wall thickness of 9.5mm. The piles will consist of one continuous length (no splices).
- The piles will be filled with 30 MPa concrete.
- The piles will be advanced with rotary concentric percussive drilling methods, with a GeoRocFor Inc XS-F down-the-hole-hammer (DTHH) casing-advance system. With this system, the pile advances with the drill bit. The drill rig is powered by high pressure air which is pumped down the drill rods. The air flow also carries away the cuttings, which travels back up the annulus between the drill rod and the pile. Once the pile is seated into the bedrock, the drill rods and DTHH will be withdrawn, leaving an open-ended pile. The bearing zone and inside of the pile will then be filled with concrete.
- Cross bracing consisting of L127x127 angles welded to the steel piles will be installed to provide the required additional lateral support to excavate to the bottom of excavation.

Bedrock Removal and Vibration Limiting

The following steps will be taken to reduce vibration of the CRO building during excavation onsite:

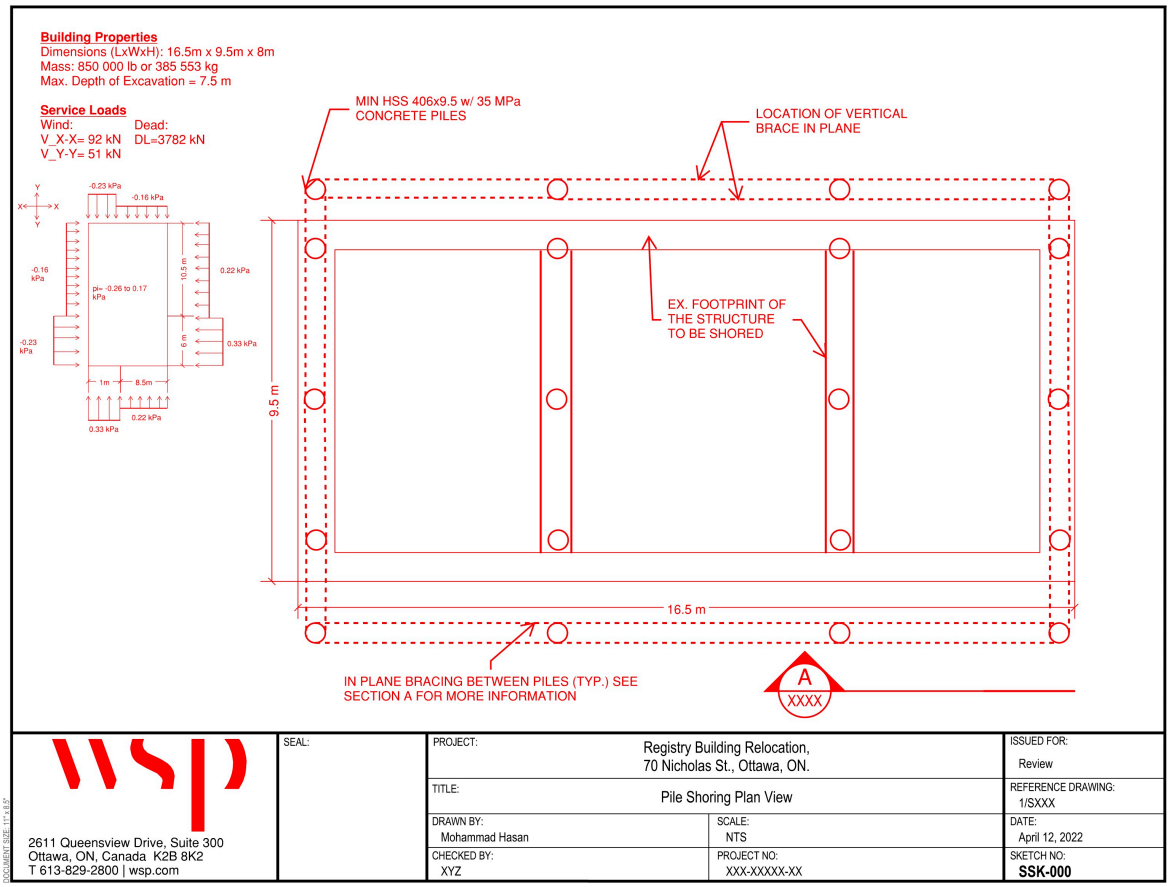
- The bedrock will be pre-drilled down to the bottom of excavation elevation in the area where the piles will be installed.
- An attenuation trench will be excavated in the bedrock around the perimeter of the support system. The attenuation trench depth will always be 0.5 metres deeper than the depth of blast occurring on other portions of the site.
- Bedrock between the piles will be removed by hydraulic breaking methods.

If you require any additional information, please don't hesitate to contact the undersigned.

Regards,

Adam van Nood

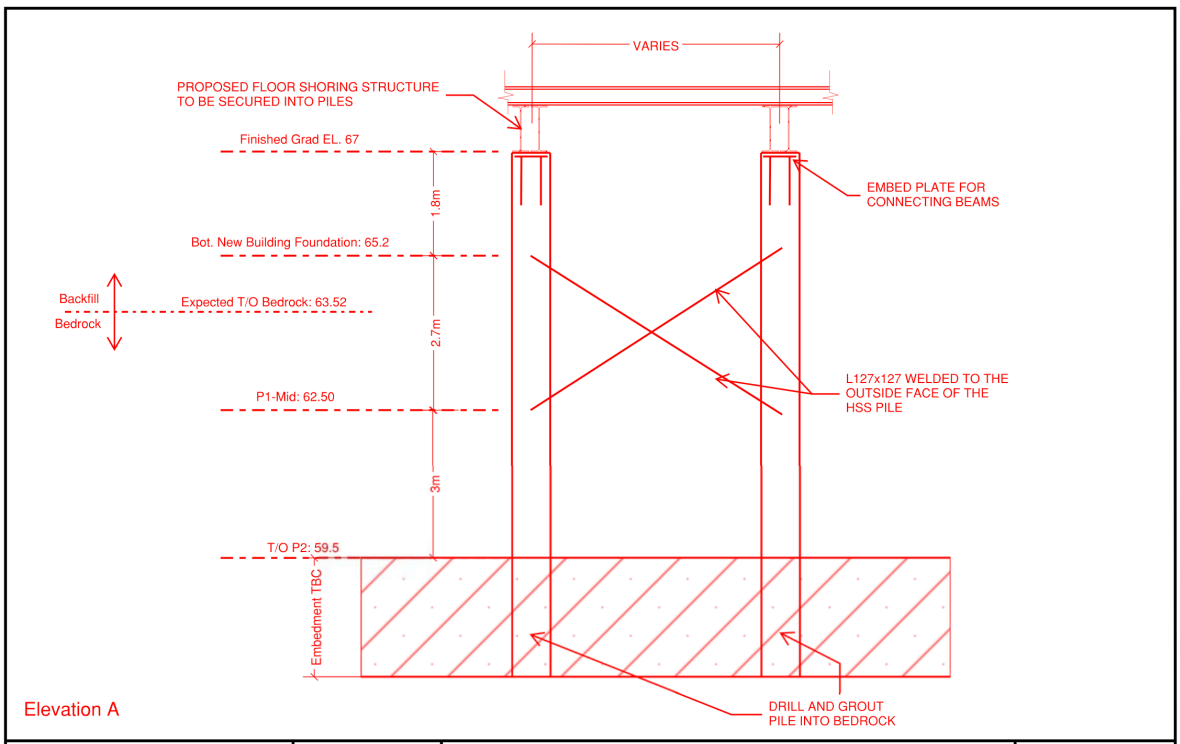
Adam van Nood
Marathon Underground Constructors Corporation



wsp
2611 Queensview Drive, Suite 300
Ottawa, ON, Canada K2B 8K2
T 613-829-2800 | wsp.com

SEAL:

PROJECT: Registry Building Relocation, 70 Nicholas St., Ottawa, ON.		ISSUED FOR: Review
TITLE: Pile Shoring Plan View		REFERENCE DRAWING: 1/SXXX
DRAWN BY: Mohammad Hasan	SCALE: NTS	DATE: April 12, 2022
CHECKED BY: XYZ	PROJECT NO: XXX-XXXXX-XX	SKETCH NO: **SSK-000**



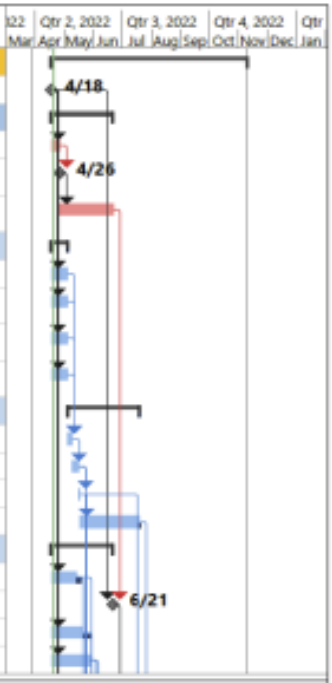
wsp

2611 Queensview Drive, Suite 300
Ottawa, ON, Canada K2B 8K2
T 613-829-2800 | wsp.com

SEAL:	PROJECT: Registry Building Relocation, 70 Nicholas St., Ottawa, ON.	ISSUED FOR: Review
	TITLE: Pile Shoring Plan View	REFERENCE DRAWING: 1/SXXX
	DRAWN BY: Mohammad Hasan / SCALE: NTS	DATE: April 12, 2022
	CHECKED BY: XYZ / PROJECT NO: XXX-XXXXX-XX	SKETCH NO: SSK-000

APPENDIX E: Heritage Move Schedule (Reliance Construction)

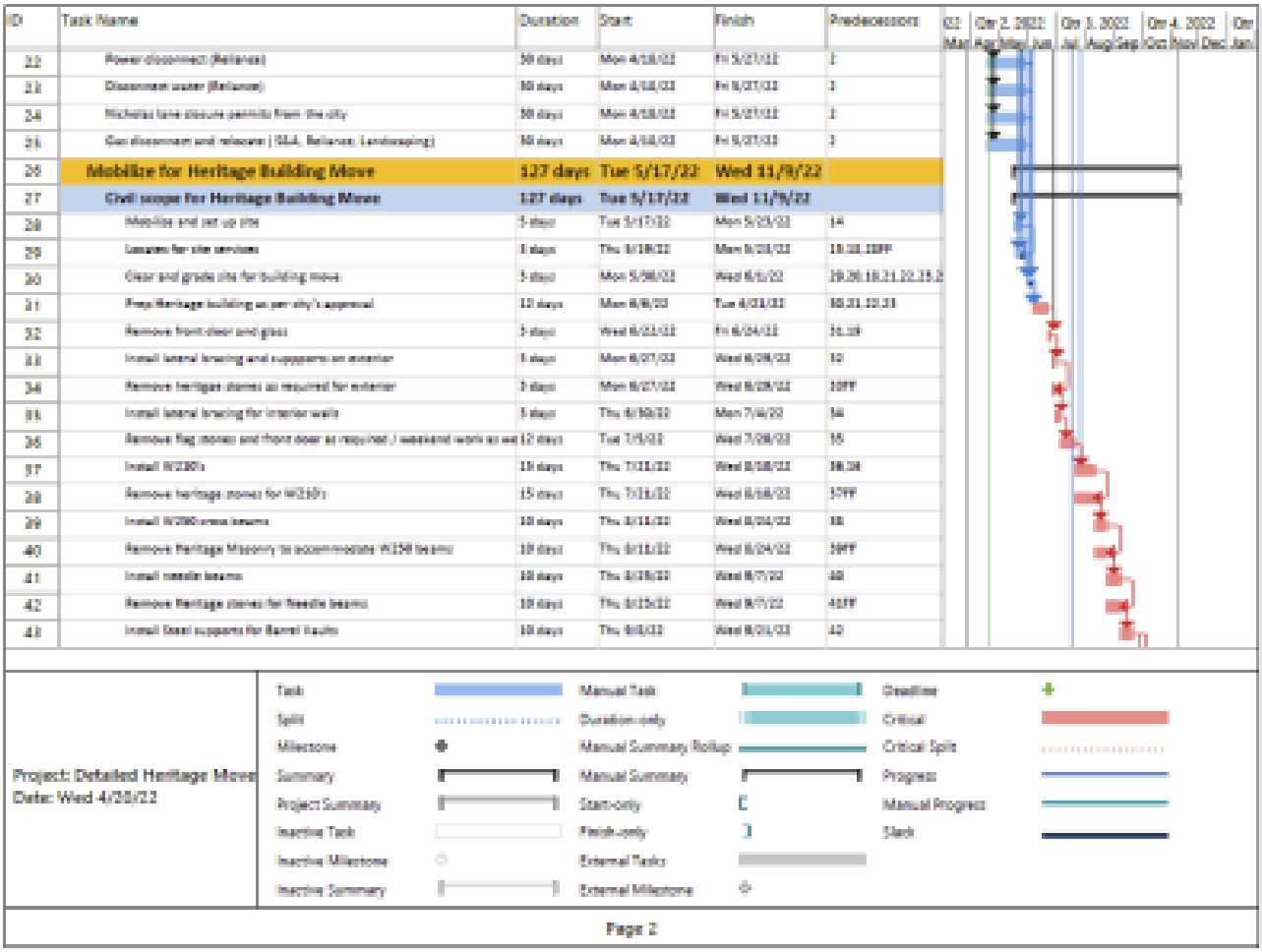
ID	Task Name	Duration	Start	Finish	Predecessors
1	**Heritage Move Micro Schedule**	**148 days**	**Mon 4/18/22**	**Wed 11/9/22**	
2	Schedule update	0 days	Mon 4/18/22	Mon 4/18/22	
3	**Completion of documents to be sent for Heritage Perm**	**47 days**	**Mon 4/18/22**	**Tue 6/21/22**	
4	Completion of a Heritage Conservation Plan for the "preferred option"	7 days	Mon 4/18/22	Tue 4/26/22	2
5	Submission of a formal application for a heritage permit with ~~the CHIS Addendum Options Analysis and~~ Heritage Conservation Plan	0 days	Tue 4/26/22	Tue 4/26/22	4
6	Staff review of "deemed complete" application and City Council decision (90 days)	40 days	Wed 4/27/22	Tue 6/21/22	5
7	**Design requirements for Heritage Building move**	**13 days**	**Mon 4/18/22**	**Wed 5/4/22**	
8	Engineering and pricing for Temp shoring system for Building move (Mar	13 days	Mon 4/18/22	Wed 5/4/22	2
9	Engineering and pricing for temporary structural steel for the Heritage building (J.Cook)	13 days	Mon 4/18/22	Wed 5/4/22	2
10	Engineering and pricing for structural steel to raise the Heritage Building (J.Cook)	13 days	Mon 4/18/22	Wed 5/4/22	2
11	Civil Engineering and princing for the temporary road for Heritage Building move. (Pattersen)	13 days	Mon 4/18/22	Wed 5/4/22	2
12	**Finalize pricing and approvals**	**54 days**	**Thu 5/5/22**	**Tue 7/19/22**	
13	Compile pricing for complete scope for heritage works	3 days	Thu 5/5/22	Mon 5/9/22	8,9,10,11
14	Submit and approve for building move	5 days	Tue 5/10/22	Mon 5/16/22	13
15	Award Scopes	1 day	Tue 5/17/22	Tue 5/17/22	14
16	Procure Steel	45 days	Wed 5/18/22	Tue 7/19/22	15
17	**Permits / City approvals**	**47 days**	**Mon 4/18/22**	**Tue 6/21/22**	
18	Tree Permit required (CF)	20 days	Mon 4/18/22	Fri 5/13/22	2
19	Heritage Permit to move heritage components (CF)	0 days	Tue 6/21/22	Tue 6/21/22	2,6
20	Storm line Cut and Cap (Reliance)	25 days	Mon 4/18/22	Fri 5/20/22	2
21	Sanitary line cut and cap (Reliance)	30 days	Mon 4/18/22	Fri 5/27/22	2



Project: Detailed Heritage Move
Date: Wed 4/20/22

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Critical
Critical Split
Progress
Manual Progress
Slack

Page 1



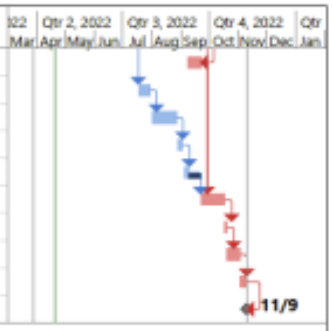
ID	Task Name	Duration	Start	Finish	Predecessors
22	Power disconnect (Reliance)	30 days	Mon 4/18/22	Fri 5/27/22	1
23	Disconnect water (Reliance)	30 days	Mon 4/18/22	Fri 5/27/22	1
24	Nicholas lane closure permits from the city	30 days	Mon 4/18/22	Fri 5/27/22	1
25	Gas disconnect and relocate (Bell, Reliance, Landscaping)	30 days	Mon 4/18/22	Fri 5/27/22	1
26	**Mobilize for Heritage Building Move**	**127 days**	**Tue 5/17/22**	**Wed 11/9/22**	
27	**Civil scope for Heritage Building Move**	**127 days**	**Tue 5/17/22**	**Wed 11/9/22**	
28	Mobilize and set up site	5 days	Tue 5/17/22	Mon 5/23/22	14
29	Locates for site services	3 days	Thu 5/19/22	Mon 5/23/22	18,28,28FF
30	Clear and grade site for building move	5 days	Mon 5/30/22	Wed 6/1/22	19,20,18,21,22,23,2
31	Prep Heritage building as per city's approval	10 days	Mon 8/8/22	Tue 8/23/22	30,31,32,33
32	Remove front door and glass	3 days	Wed 8/31/22	Fri 9/2/22	31,39
33	Install lateral bracing and supports on exterior	3 days	Mon 8/27/22	Wed 8/29/22	32
34	Remove heritage stones as required for exterior	3 days	Mon 8/27/22	Wed 8/29/22	39FF
35	Install lateral bracing for interior walls	5 days	Thu 8/30/22	Mon 7/4/22	34
36	Remove flag stones and front door as required / weekend work as we	12 days	Tue 7/5/22	Wed 7/20/22	35
37	Install W18Cs	18 days	Thu 7/21/22	Wed 8/10/22	36,38
38	Remove heritage stones for W21Cs	15 days	Thu 7/21/22	Wed 8/10/22	37FF
39	Install W24Cs new beams	18 days	Thu 8/11/22	Wed 8/24/22	38
40	Remove heritage Masonry to accommodate W35B beams	10 days	Thu 8/11/22	Wed 8/24/22	39FF
41	Install needle beams	10 days	Thu 8/25/22	Wed 9/7/22	40
42	Remove heritage stones for Needle beams	10 days	Thu 8/25/22	Wed 9/7/22	41FF
43	Install Steel supports for Barrel Vaults	10 days	Thu 9/8/22	Wed 9/21/22	42

Project: Detailed Heritage Move
Date: Wed 4/20/22

Task		Manual Task		Deadline	
Split		Duration-only		Critical	
Milestone		Manual Summary Rollup		Critical Split	
Summary		Manual Summary		Progress	
Project Summary		Start-only		Manual Progress	
Inactive Task		Finish-only		Slack	
Inactive Milestone		External Tasks			
Inactive Summary		External Milestone			

Page 2

ID	Task Name	Duration	Start	Finish	Predecessors
44	Remove Heritage masonry for barrell Vaults	10 days	Thu 9/8/22	Wed 9/21/22	43FF
45	Complete civil components to accommodate building move	10 days	Mon 7/18/22	Fri 7/29/22	15
46	Install 20 piles	20 days	Mon 8/1/22	Fri 8/26/22	45
47	Excavate to sound substrate for temp road	5 days	Mon 8/29/22	Fri 9/2/22	46
48	Backfill engineered fill for temp raod	5 days	Mon 9/5/22	Fri 9/9/22	47
49	Prep for building move and move building	18 days	Thu 9/22/22	Mon 10/17/22	48,43,44
50	Weld building in final location	2 days	Tue 10/18/22	Wed 10/19/22	49
51	Demobilize for building movers	10 days	Thu 10/20/22	Wed 11/2/22	50
52	Prepare Heritage building for remainder of site works	5 days	Thu 11/3/22	Wed 11/9/22	51
53	Complete	0 days	Wed 11/9/22	Wed 11/9/22	52FF

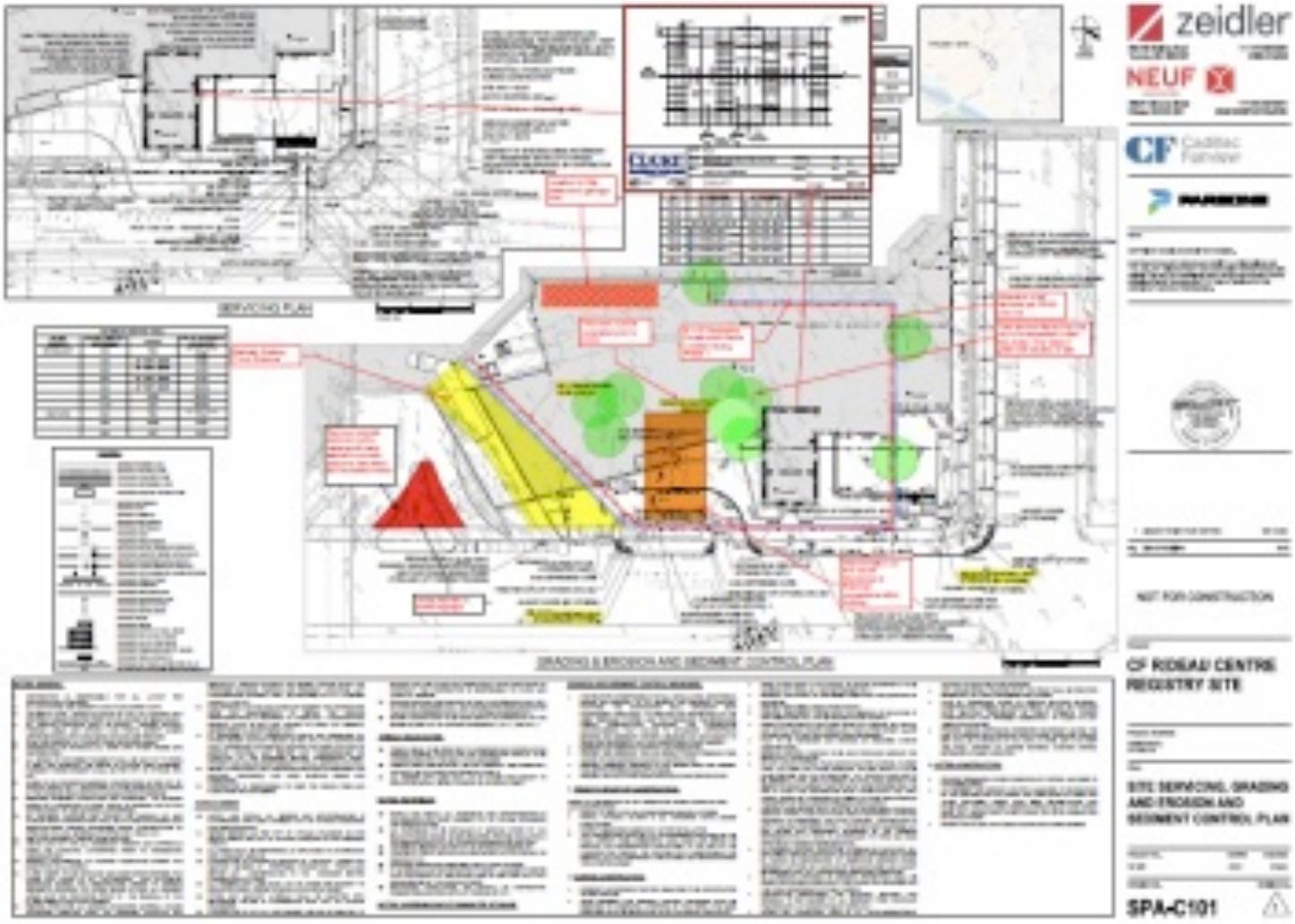


Project: Detailed Heritage Move
Date: Wed 4/20/22

Task	Manual Task	Deadline	
Split	Duration-only	Critical	
Milestone	Manual Summary Rollup	Critical Split	
Summary	Manual Summary	Progress	
Project Summary	Start-only	Manual Progress	
Inactive Task	Finish-only	Slack	
Inactive Milestone	External Tasks		
Inactive Summary	External Milestone		

Page 3

Site Logistic Plan (Reliance Construction)

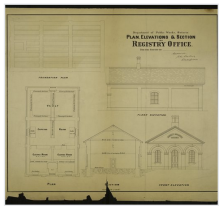


APPENDIX F: Relocation Options Analysis (Padolsky)

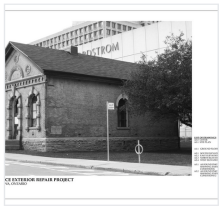
https://www.dropbox.com/sh/jzlm7bt313h8kqh/AABBM2w_14JS7uo5yQWrvgoXa?dl=0

Relocation Options Analysis (Padolsky) *This Appendix has 12 sub-appendices*

Sorted by name



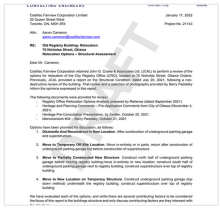
KIVAS TULLEY PLAN.jpg



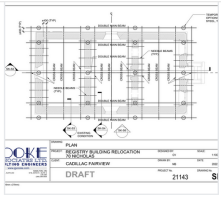
2017 REPAIR PROJECT

DECL REPORT.pdf

DSS - 70 Nicholas Stree



ICAL DRAFT Old Registr



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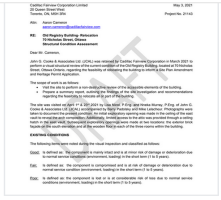

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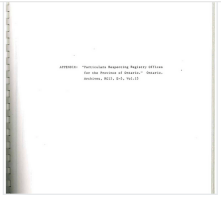

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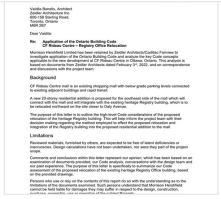

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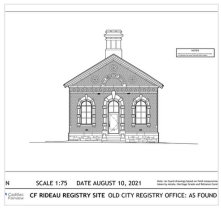
Option 1 -Registry Build...py.pdf



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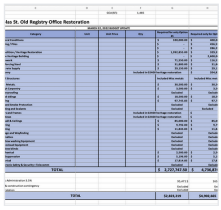

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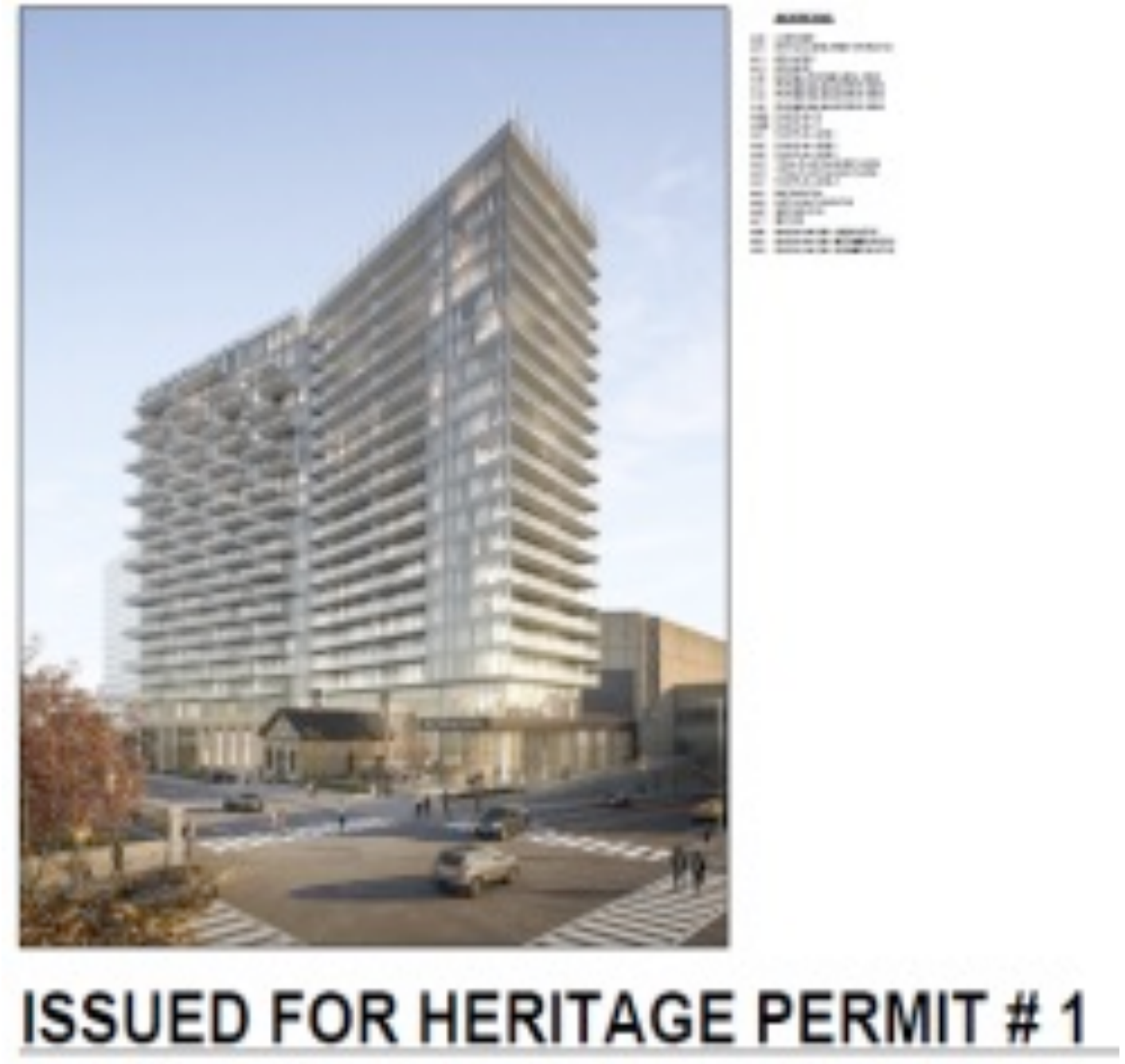
APPENDIX G: Architectural Drawings (Zeidler /Neuf Architecture)

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