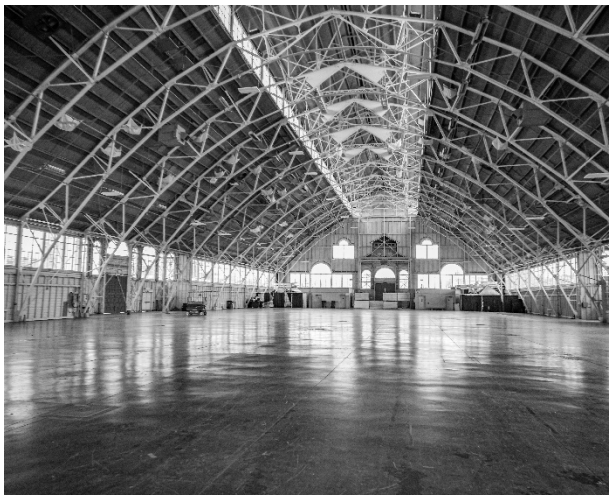
RMA+SH architects

Description of Proposed Work – Heritage Permit Application

May 28th, 2024



Aberdeen Pavilion Rehabilitation

City of Ottawa 35523-92500-P01 | RMA+SH 23078

1.0 Building Description

The Aberdeen Pavilion, fondly nicknamed 'The Cattle Castle,' was constructed in 1898 and is a *National Historic Site* and one of the most iconic structures in Ottawa. In the tradition of the 1851 Crystal Palace's economical prefabricated structure, it was originally constructed in two months as a grand exhibition building for agricultural events. The building was restored in the early 1990s and now serves as the focal point for Lansdowne Park. It is a central community hub for City of Ottawa events including farmer's markets, craft shows, festivals, and sporting events.

The Aberdeen Pavilion was designed in 1898 by Moses Chamberlain Edey and constructed by the Dominion Bridge Company in a late-Victorian style. The building was in keeping with other grand exhibition halls of that era and is a rare surviving example in Canada of a specialized Victorian exhibition hall. The building was constructed using pre-fabricated light-weight steel trusses and other structural elements to serve as the main hall for the Central Canada Exhibition. The Pavilion is approximately 43,000 square feet in size and was the largest column-free space in Ottawa. It is the only large-scale exhibition building in Canada surviving from the 19th century.

Numerous classically inspired pressed metal details are present on all four elevations of the building as well as the projecting ornate entrances, which sport large Palladian windows and corner turrets. The exterior walls are clad with galvanized steel rock-faced pressed metal panels and corrugated siding. The main barrel roof is covered with interlocking galvanized steel Spanish style metal tiles and abuts a clerestory at the top with a full-length corrugated metal gable roof above. The clerestory is topped with a large eight-sided corrugated metal dome and decorative cupola at the building center. The numerous windows on all sides of the building and light-weight, column free internal structure create a bright, expansive space recognized for its voluminous and fanciful atmosphere.

2.0 Proposed Development

RMA+SH architects has been engaged by the City of Ottawa to provide consulting services for rehabilitation of the Aberdeen Pavilion. The project aim is to address long term deterioration and issues of *Inherent Vice* observed on many aspects of the building since the building was last rehabilitated in the early 1990s. Of particular concern is the *poor* condition of the roof, with significant water entry through the metal roofing panels, lack of any waterproofing membranes, and subsequently, accelerated deterioration of the wood board decking visible on the building interior.

The conservation approach for the project is primarily *Rehabilitation*, with some elements of *Restoration* and replacement.

2.1 Exterior

2.1.1 Roofing

2.1.1.1 Lower Sloped and North & South Entry Spanish Tile Roof

The existing galvanized steel Spanish Tile roofing with exposed fasteners on the lower roof was installed in 1929 and is well past its service life, allowing significant water entry into the building. The existing roofing complete with all crickets and flashings will be removed, a waterproofing membrane will be added to the assembly, and new replica Lead Coated Copper (LCC) Spanish Tiles will be installed complete with new LCC crickets and flashings. The primary reason for switching to Lead Coated Copper is to offset the weight increase resulting from the addition of the waterproofing membrane, which is a seismic consideration. Other benefits of switching to LCC include: it has a natural silver finish, which does not require painting as the previous roofing did; the custom LCC Spanish Tile profile allows the ability to add a concealed fastener system in the design; and LCC is more malleable/workable than galvanized steel,

making it easier to customize and install. The new waterproofing membrane and roofing system will provide improved durability and resistance to water entry as a means of correcting issues of *Inherent Vice* observed in the previous roofing system.

The existing white pine wood decking and purlins (installed pre-1990s) are in *poor* condition and will be replaced with douglas fir of same size and profile as the existing. The high quality of the original white pine is no longer commercially available for this application, therefore douglas fir will be used as a preferred alternative. The new wood will be painted to match the colour of the existing.

The existing snow guards on the north and south entries are damaged and corroded and will be replaced in kind.

2.1.1.2 Dome, Clerestory, and East & West Entry Roofs

The existing corrugated, galvanized steel roofing with exposed fasteners on the dome, clerestory, and east and west entry pavilions was installed in the 1990s and is at the end of its service life. The existing roofing and flashings will be replaced with new LCC flat seam roofing and flashings, pressed to replicate the pattern/lines of the previous corrugated roofing. Beneath the new roofing, overtop of the existing decking, a waterproofing membrane will be added to protect the assembly from water entry. The existing spruce wood decking (installed in the 1990s) and purlins will be retained, with localized replacement of deteriorated members with spruce or pine decking of same size and profile as the existing. Any replacement wood will be painted to match the colour of the existing.

At the top of the dome, there is a ring of 'pearl' shaped metal ornaments around the base of the cupola. These are rusting through and will be replaced in kind with replicas as part of the dome roofing replacement.

All existing light fixtures and fan exhaust units on the clerestory and east and west entries will be retained and reinstated, complete with new base plates, isolation gaskets, and fasteners. The existing snow guards on the east and west entries are damaged and corroded and will be replaced in kind.

2.1.1.3 Turrets & Cupola

The existing galvanized steel sheet roofing, cornices, and columns on the turrets and cupola will be retained, repaired, and repainted. The existing wood board ceilings are deteriorated and will be replaced with new wood boards of same size and profile as the existing, painted to match the existing colour. The existing galvanized steel sheet 'flooring' of the turrets and cupola is significantly corroded and will be replaced in kind with new galvanized steel sheet, complete with new waterproofing membrane and wood board decking beneath.

All existing flagpoles will be retained, with new replica flashing at the flagpole bases. All existing light fixtures in the turrets and cupolas will be retained and reinstated, complete with new base plates, isolation gaskets, and fasteners.

2.1.1.4 Heat Tracing & Snow Mitigation

To mitigate issues with snow and ice build-up resulting in damage to the roofing system and life safety issues with falling snow and ice at grade below, the existing non-functional heat trace system on the Spanish Tile lower roof is being removed and replaced. The new system will comprise an 'apron-style' lead coated copper heat trace system integrated into the bottom edge of the lower sloped roof, as well as surface mounted heat trace cable at the turret crickets and north and south entry roof valleys, secured with custom LCC tabs.

In tandem with the heat trace system, new LCC pad-style snow guards will be distributed throughout both the lower Spanish Tile roof and the upper clerestory roof. These will sit in the dips of the roofing panels and be fastened to the wood decking.

2.1.2 Windows

The wood, single pane window sashes were replaced and the wood window frames repaired in the 1990s rehabilitation project; both the windows and frames are currently in *fair* to *poor* condition. The window sashes and frames will be restored, comprising of stripping existing paint, implementing repairs, replacing putty, broken glass, and glazing points, and repainting with linseed oil paint on the exterior and latex paint on the interior. The new paint will match existing colours. The existing decorative metal flashing surrounding the windows will be either restored or replaced in kind depending on condition, while the sill flashing and weatherstripping will be replaced throughout.

At the clerestory level, the channel supporting the clerestory windows along the entire length of the north and south elevations has warped, pulling the windows, cornice, and sill flashings out of alignment. The window sashes and frames will be removed, restored, and reinstalled after the channel beneath the windows has been pulled straight and strengthened. Removal of these windows also allows for replacement of the sill flashing which ties into the Spanish tile roofing which is poorly detailed and thus will be improved to correct issues of *Inherent Vice.*

2.1.3 Entrances

2.1.3.1 Wood Doors & Transoms

The wood double doors located on each entry pavilion were replaced in the 1990s with replicas. The door leafs and frames are in *very poor* condition with inadequate joinery techniques and significant deterioration and as such will be replaced. The new wood doors and frames will be visual replicas; however, they will be constructed with proper joinery techniques and strengthening more appropriate to the scale and size of the doors. The original wrought iron door hardware will be restored and reinstated on the new doors. Modern galvanized steel hardware will be replaced with new hardware. The new doors will be painted with linseed oil paint, matching existing colours.

The wood transoms above the doors were repaired and repainted in the 1990s and are in *fair* condition. The transoms will be retained and restored, comprising of stripping the existing paint, implementing repairs, resetting joinery, and repainting with linseed oil paint on the exterior and latex paint on the interior. The new paint will match existing colours.

All existing light fixtures attached to the transom will be retained and reinstated, complete with new base plates, isolation gaskets, and fasteners.

2.1.3.2 Metal Doors

The existing metal doors flanking the wood doors on each entrance were introduced in the 1990s and are in *fair* condition with corrosion and damage. The metal doors, door hardware, and frames will be replaced in kind; the door appearance will match the current yellow rockface tile finish on the exterior and yellow paint colour on the interior.

2.1.4 Exterior Walls and Entrance Pavilions

The exterior walls and entrance pavilions are clad with galvanized steel rockface tiles, corrugated panels, pressed cornices and profiles, and various ornaments. The primary conservation approach is one of *Restoration*, repairing and repainting components only as required where deterioration is observed. Components which are too deteriorated to economically repair will be replaced in kind with replicas, painted to match existing colours. See detailed elevations for more information.

2.1.4.1 Removable Wall Panels

On the south façade, two sections of wall will be turned into removable panels to facilitate set up of temporary AC units used periodically throughout the year for events. See drawing H701 for detail. The

removable panels will be constructed using the same material as the existing walls, namely wood framing, wood board sheathing, and exterior metal rockface tiles (which will match the existing pattern and configuration). On the interior, the panel will be equipped with removable bolt hardware and handles to allow for ease of operation, while also distinguishing the panel from the surrounding wall. Structural framing will be added to strengthen the wall around the removable panel; the framing will be of a different wood species than the existing to distinguish the new material upon close inspection.

2.1.5 Site

No changes to the site features or landscaping are proposed as part of the project. Any site features impacted by construction activities will be 'made good' at construction completion.

2.2 Interior

2.2.1 Lead Paint Abatement

There is lead in the existing yellow paint on the interior of the Pavilion, including the interior face of the exterior walls and wall structure and coating the structural steel throughout. The lead paint throughout the Pavilion will be removed using a combination of chemical stripping, dry ice blasting, and laser ablation techniques. All areas where lead paint is removed will be repainted, matching the existing colour.

2.2.2 Steel Structure

The existing steel trusses and secondary steel components will be retained and repaired and repainted following lead paint removal. Minor localized strengthening and repair will be introduced as required and distinguished by date-stamping the metal to denote year of installation.

Along the bottom bay of the lower sloped roof on the north and south elevations, new steel angles in a 'W' formation will be added in the lowest roof bay to strengthen the roof system. The new steel angles will be visually distinguishable from the original structure using modern fastening techniques and will also be date-stamped. See detail 1/S510 within the construction documents for more information.

2.2.3 Concrete Floor Slab

The existing, red-pigmented floor slab is not original and in *fair* to *poor* condition. *Poor* subgrade conditions were discovered during investigations; as such, the concrete slab will be replaced, with the exception of the slab beneath the washroom blocks and mechanical/electrical rooms (which are outside the scope of the project). The replacement will include a new layer of granular material beneath the slab as well as a vapour barrier for improved moisture management. The new concrete slab will be a vehicle-rated, polished concrete slab with a clear sealer finish. Areas of existing concrete slab that are remaining will be ground down and refinished.