

CARLETON HALL

Exploring the adaptive re-use of heritage

Researched and written by Katie Filek, Vancouver Heritage Foundation

project at a glance

location	5522 McKinnon St
size	2400 ft ² , 1580 ft ²
original use	School houses at Sir Guy Carleton School
new use	Rehearsal halls + offices
year built	1896, 1901
rehabilitation	2012 - 2013
cost	\$1.6 million
heritage status	registered, A

building team

owner	Vancouver School Board
tenant	Green Thumb Theatre
architect	Cornerstone Architecture
heritage consultant	Donald Luxton & Associates



“It is a win-win-win-win-win situation.”

- Donald Luxton, Heritage Consultant

It was the year 2009, and two events were occurring in Vancouver. In the Collingwood neighbourhood, community members were decrying the Vancouver School Board’s plans to demolish Vancouver’s oldest existing school buildings. The two wooden structures sat saturated with history yet redundant at Sir Guy Carleton Elementary – one building put out of use by an arson fire in 2008, the other being used as an extended storage closet for the school. At the same time,

Green Thumb Theatre – an educational theatre company that promotes theatre for young people – had been floating from space to space for several years, and was looking for a home.

It was a late summer afternoon of the same year that things came together for the two parties. Leslie Jones, the wife of Green Thumb’s artistic director Patrick MacDonald, was reading the Renfrew-Collingwood Times while waiting to pick up her daughter from summer school in the neighbourhood. It was there that she came upon a request for proposals (RFP) for the school houses, the result of local efforts to avoid the two

buildings’ demolition. She alerted her husband to the RFP, and the rest simply fell into place.

Today, following an extensive restoration and rehabilitation, the two school houses stand proudly on the school site as rehearsal halls and office space for Green Thumb. At a time when the future of many of Vancouver’s historic school buildings is being questioned, this conversion demonstrates the strong potential for the successful repurposing of buildings, and an alternative to demolition.

BACKGROUND



Renfrew-Collingwood



The two wooden school houses on the Sir Guy Carleton Elementary site tell the story of both the development of Collingwood and the evolution of the school system in British Columbia.

The first recorded European development in the Collingwood area took place in 1861, when Colonel Richard Moody cut a military trail through the forest from English Bay to New Westminster. This thoroughfare would eventually become modern-day Kingsway. Used by stagecoaches in the 1880's, the road brought settlers and the beginnings of development to the area. The interurban railway tram line connecting New Westminster and Gastown was subsequently established in 1892, and with it came the official naming of the Collingwood neighbourhood, a further increase in population growth, and the need for a dedicated school building.

The first school house built in Collingwood was a two-room



Looking east on Joyce Road, 1911
VPL Special Collections, Ref. 83952

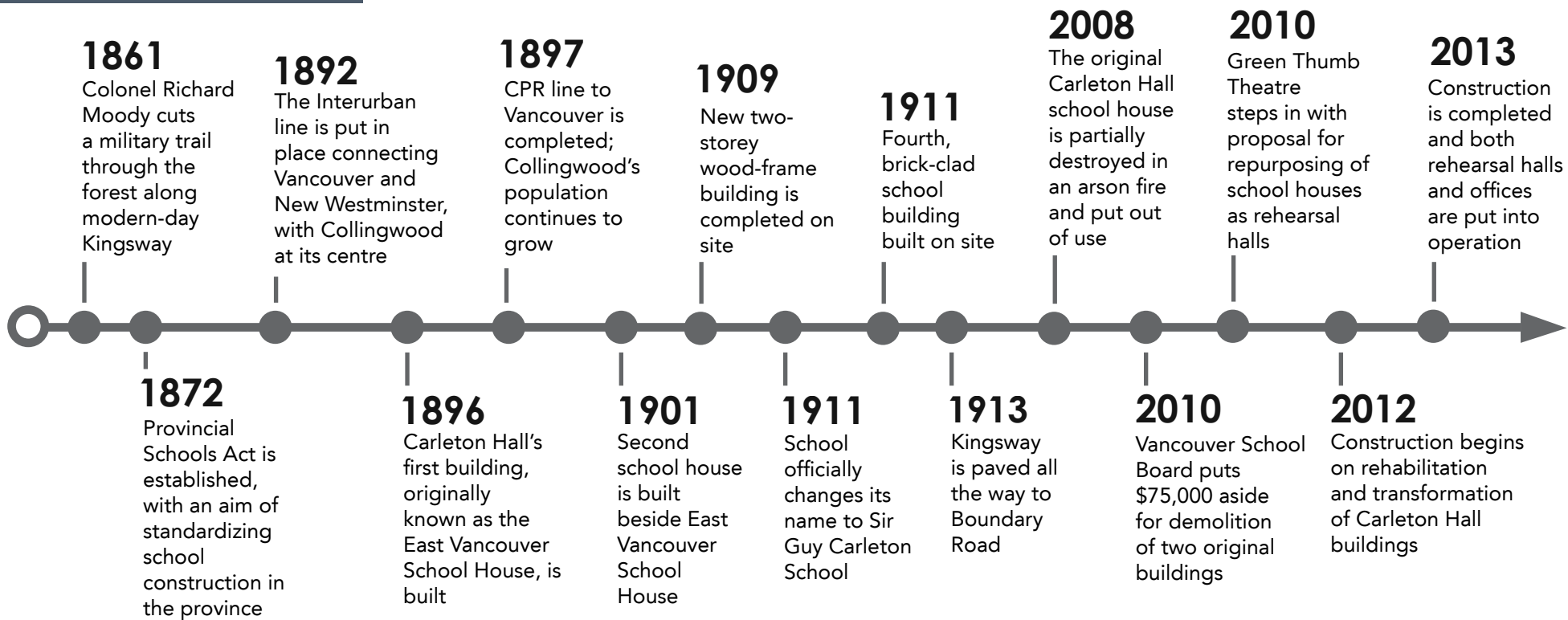


Looking north from Kingsway, 1913
City of Vancouver Archives 371-2264



Looking northwest on Kingsway, 1939
VPL Special Collections, Ref. 25018

timeline



school house, built in 1896 at the intersection of Kingsway and Joyce Street. This building, originally known as East Vancouver School House, would come to be known as Carleton Hall. The school house was built according to standardized floor plans issued by the Provincial Department of Land and Works, and was able to easily accommodate the 30 students enrolled in the school at the time. With its simple rectangular plan, cross-gabled roof, and projecting entries, the school house is one

of the oldest surviving examples of this standardized architecture, typical of B.C.'s educational institutions at the time. Additionally, the school building's standardized plan was one used for rural schoolhouses throughout the province – a fact indicative of Collingwood's highly rural nature even at the end of the nineteenth century.

A burgeoning population soon created the need for a second school building to

serve Collingwood, and around 1901 a one-room school house was constructed on the same site. This late addition adhered similarly to provincial standards for educational buildings in having a practical, functional design that was efficient and inexpensive to put in place. Its side-gabled structure, rectangular plan and horizontal wooden drop siding relate it architecturally to its 1896 predecessor, and the two buildings became known collectively as Carleton Hall in 1912. The school

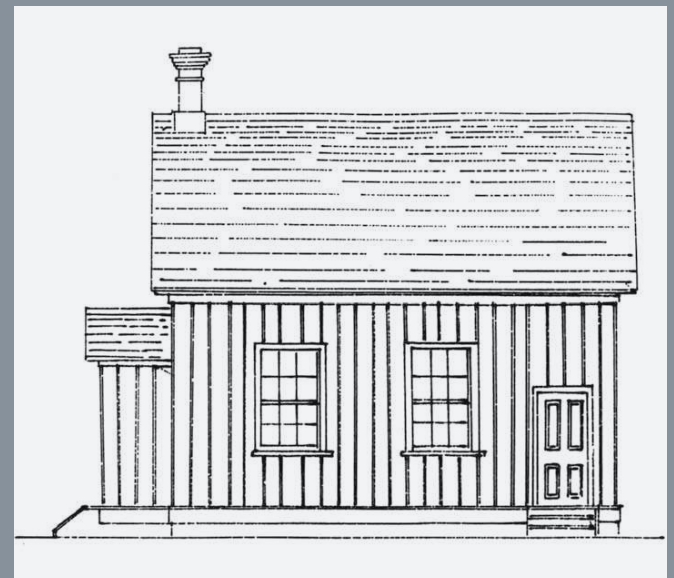
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- Commonwealth Historic Resource Management. Vancouver Schools: Establishing Their Heritage Value. For City of Vancouver and Vancouver School Board. 2007. Web. 4 Nov. 2014.
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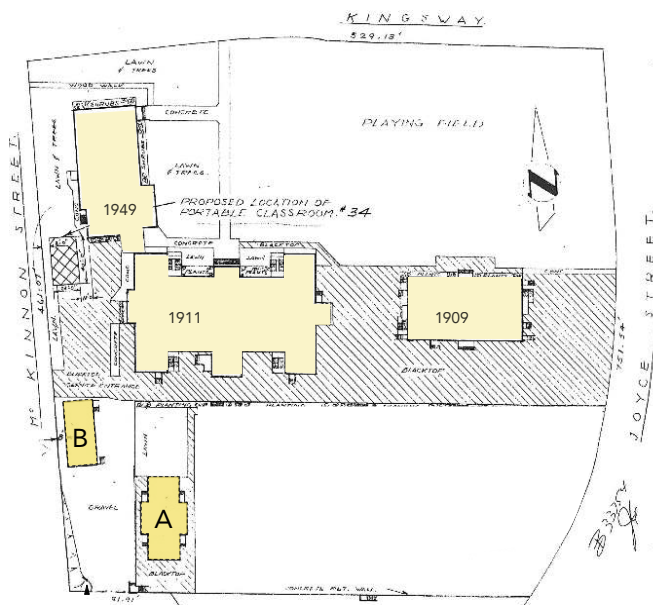
Carleton School in 1925

Carleton Hall Conservation Plan, Donald Luxton & Associates



Drawing for an earlier version of a rural schoolhouse, issued in 1885 by the provincial government

British Columbia Archives GR0083 Box 3 File 60



Plan of school site showing location of Carleton Hall (A) and the Barn (B) at the time of their rehabilitation

Map courtesy of Cornerstone Architecture

site would continue to evolve as the neighbourhood expanded, with a two-storey wood frame structure built on the site in 1909 and a large, brick-clad school building completed in 1911. These buildings (including some later additions) are what make up Sir Guy Carleton Elementary today.

The Collingwood neighbourhood also continued to develop and grow throughout the twentieth century, with successive waves of development remaining closely tied to the area's transportation thoroughfares. Kingsway was paved in 1913 (development blossomed); the interurban line

closed in 1954 (development waned). The Expo Line of the Skytrain was then opened along the interurban line's old right-of-way in 1985, spurring development around Joyce Station in the form of mid- and high-rises.

Today, the borders of once-rural Collingwood are indistinguishable from the Vancouver that surrounds it. However, it is a neighbourhood that maintains its traditionally strong sense of community – and a strong sense of pride in its historic school buildings.

THE REHABILITATION

PRESERVED DETAILS



original wood drop siding



lathe-turned drop finials at ends of barge-board



double-hung wood sash windows, hidden behind boards



Prior to rehabilitation



Rehabilitated entryway with new rain shelters

Upon beginning the rehabilitation of the school houses, there were several key considerations. The 1896 school house (to be referred to as Carleton Hall) had had its roof structure partially destroyed by a fire four years previous. This meant not only that the roof would have to be rebuilt, but also that there was major water damage to interior floors and walls, and a pervasive smell of smoke throughout the building. Careful consideration had to be given to

what could be salvaged and what was beyond repair. The floors, for example, were found to be irreparably damaged and destined for replacement, while much of the exterior (including siding, windows and doors) was able to be saved. The one-room school house built in 1901 – to be referred to as The Barn – had been spared by the fire and was generally in better condition, but still required much work to bring back its heritage character and transform it into functional office space. Following a

thorough analysis of the buildings' respective states, the goal was set to pursue overall rehabilitation of both buildings, including the preservation and restoration of all exteriors, and rehabilitation of interiors.

The overall massing and form of each building was maintained in the rehabilitation process. For Carleton Hall, a vestibule that had been added at a later date was removed, and its door inserted back in the original opening. The



roof was reconstructed with a new truss system, more modern than the simple wood frame structure that had existed before the fire. This led to certain challenges in matching the new roof to existing walls and maintaining a rainwater drainage system similar to the original. However, with patience and a touch of inventiveness this was achieved. Inside the building, the extent of the fire damage and subsequent efforts to clean up the damage meant that little remained. There were no surviving character-defining elements to conserve, and the focus was instead put on

creating functional spaces that would meet the programmatic requirements of Green Thumb Theatre. The interiors were therefore completely redone, with walls moved to create two separate rehearsal halls, an entryway, hallway, kitchen and bathroom. Dry wall and new laminate flooring was installed. Laminate flooring was deemed a suitable replacement due to the new intended use and acoustics required of a rehearsal hall.



■ Left: Carleton Hall's interior prior to rehabilitation, with part of the roof missing and fire and water damage

■ Right: Interior of new rehearsal hall, with curved drywall to imitate curve of previous ceiling

DEFINING TERMS

preservation

the action or process of protecting, maintaining, and/or stabilizing the existing materials, form and integrity of a historic place or of an individual component, while protecting its heritage value

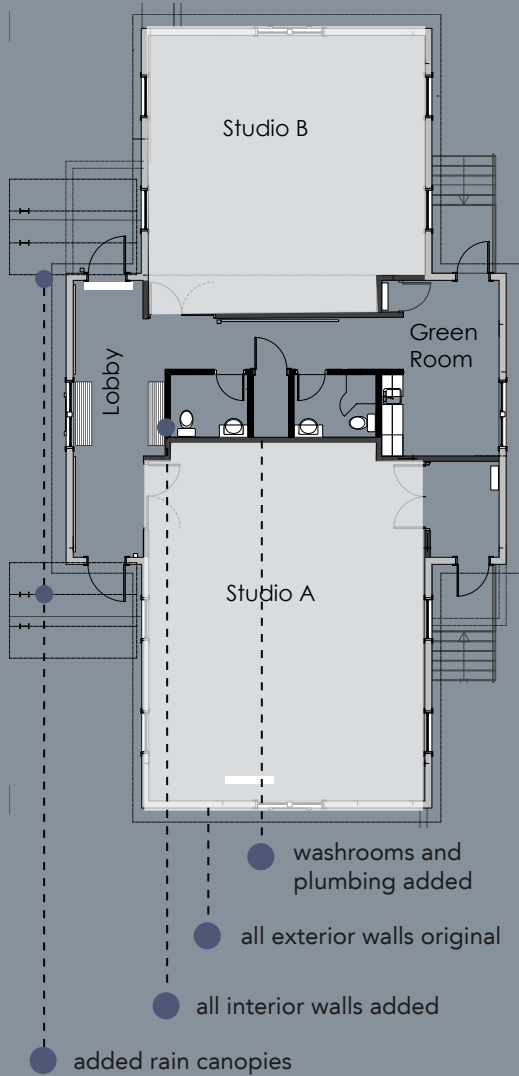
restoration

the action or process of accurately revealing, recovering or representing the state of a historic place or of an individual component, as it appeared at a particular period in its history, while protecting its heritage value

rehabilitation

the action or process of making possible a continuing or compatible contemporary use of a historic place or an individual component, through repair, alterations, and/or additions, while protecting its heritage value

Parks Canada Standards and Guidelines for the Conservation of Historic Places in Canada



Carleton Hall: floor plan following rehabilitation for use as rehearsal halls

Floor plan courtesy of Cornerstone Architecture

Although little character remained on the interior, the exterior components of Carleton Hall were found to be in good condition and able to be preserved (and restored where necessary). The traditional wooden drop siding is almost entirely original, with few replacement pieces. The windows – a mix of single and double-assembly, double-hung sash units – were not the originals from 1896, but had been replaced sometime after 1925. They were however similar to the originals, although shorter and lacking in a 6-paned transom, and the decision was made to retain these windows and their historic panes. The window frames were remediated to remove layers of lead paint (movement of the windows could lead to new paint rubbing off and exposing the lead paint beneath). The existing doors, replaced around the same time as the windows, were retained, with the door that had been in the vestibule returned to its original position. The only decorative elements of the building were a set of lathe-turned drop finials that embellished the ends of the bargeboards: the majority of these were in place and were preserved and stabilized, and the three finials that were missing were restored with matching lathe-turned profiles.



■ Carleton Hall's historic windows were retained and repaired



■ Rehabilitated entrance of Carleton Hall with added rain shelters



■ The form and cross-gable roofline of Carleton hall was maintained, staying true to its original heritage character

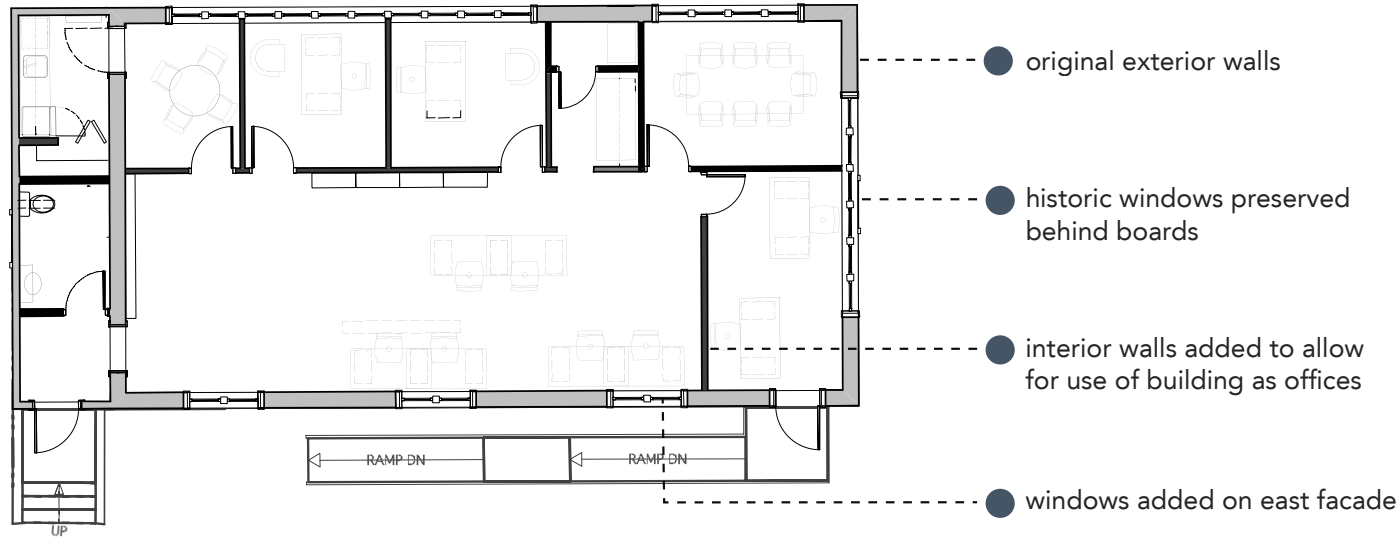
"Before" photos courtesy of Green Thumb Theatre

The rehabilitation of the Barn was not as extensive, as it had not been touched by the arson fire and the interiors were mostly intact. Work was done to remove the results of a 1970's renovation, including removing the drop ceiling to reveal the original vaulted ceiling above and removing an accordion wall that had acted as a partition (the beam from this wall was retained). Laminate flooring was removed with the intent to install new wood flooring; however, the original floors were discovered to still be in place beneath layers of later-installed flooring. These original floors were maintained and now lend a warmth

to the new offices. A new interior configuration was given to the one-room schoolhouse, with walls added to meet requirements for its proposed new use.

As with the 1896 school house, many exterior elements of the Barn were found to be both original and in good condition. Three sets of banked windows spread across the west and north facades, all fixed 2-paned wood sash windows with vertically divided operable transoms above. Although some of these windows were boarded up and some hidden behind drywall, all were eventually revealed to be

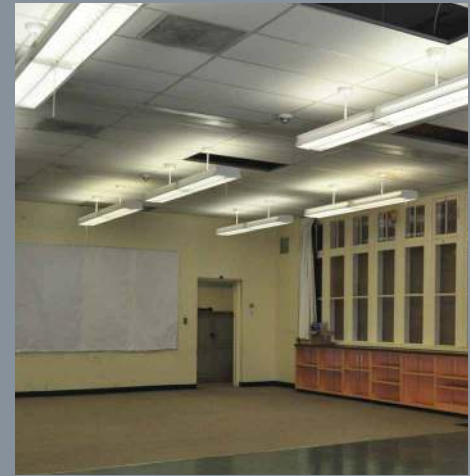
useable. The east wall, which had been built free of windows to allow for use of chalkboards, received three new windows, sympathetic yet distinguishable from the earlier windows. Siding was maintained and repainted with colours appropriate to the building's era; character-appropriate doors replaced the existing modern ones; and drop finials were again preserved where extant and replaced with matching ones where they had been removed.



The Barn: floor plan following its rehabilitation and reconfiguration as office space. The open plan of the original one-room school house allowed for its division.

Drawing courtesy of Cornerstone Architecture

— added wall
— existing wall



■ Interiors of the Barn prior to rehabilitation

Photo courtesy Green Thumb Theatre

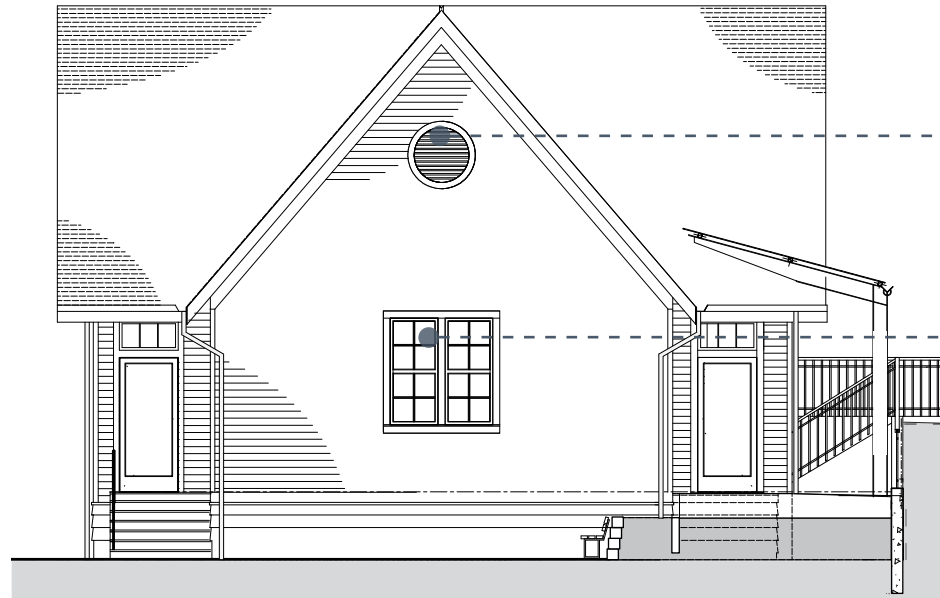


■ Finished and reconfigured interiors of the Barn, with drop ceiling removed and original wooden flooring in place

Carleton Hall and the Environment

“The retention of older buildings, either in their entirety, or simply by re-using components in-situ and allowing for their thermal upgrading in benign and sympathetic ways, can provide excellent finished results which are fully in accordance with the principles of building conservation and sustainability.”

English Heritage. Energy Efficiency and Historic Buildings: Application of Part L of the Building Regulation to historic and traditionally constructed buildings. 2012.



Drawing courtesy of Cornerstone Architecture

inherently sustainable elements



the louvered gable vents on either end of both buildings allow for natural ventilation



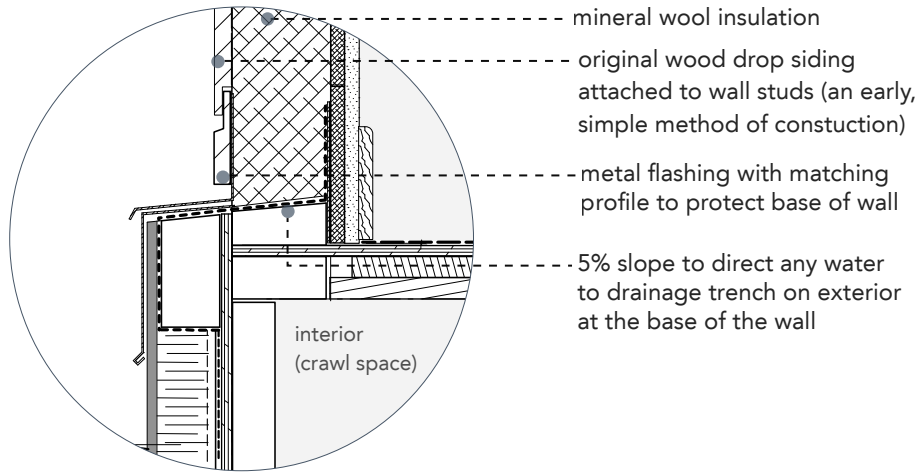
maintaining the operable windows and transoms allows for user-controlled environments and cooling, and reduces the need for mechanical systems

The act of preserving a building is inherently sustainable. Waste is reduced as material is diverted from landfills; embodied energy is saved; less energy is expended on the manufacture and transportation of new materials; and historic materials that are much less consumptive of energy than many new replacement materials are conserved. In the case of the Carleton Hall buildings, for example, local old-growth

wood would have been used in its construction, whereas a contemporary replacement would likely use timber of lesser quality and generate greenhouse gas emissions in both manufacture and transportation of these materials. The preservation of the school houses can therefore be viewed as a responsible use of resources and an act of sustainable stewardship.

In addition to the elements of sustainability that go hand in

hand with conservation, effort was made in the project to improve the energy efficiency of the building and to conserve existing sustainable elements. For example, both the Barn's operable transoms and the louvered gable vents on each building were maintained, allowing for user-controlled natural ventilation and taking advantage of the buildings' inherently sustainable characteristics. This meant a reduced need for mechanical heating and cooling



■ Wall detail showing drainage system where wall meets foundation
Drawing courtesy of Cornerstone Architecture

systems (the heating system installed was a high efficiency gas furnace).

Increasing the insulation of the buildings presented a greater challenge. The buildings' exterior cladding did not have a rainscreen in the way that the exteriors of today's buildings do, but instead was built to shed water and to allow both moisture and air to pass through the walls. This meant that historically the buildings were able to dry out in the case that moisture did enter into the wall cavity, but also that certain types

of insulation were not suitable for use in retrofitting. Spray foam insulation, which has a high R-value, would typically have been the first and simple choice for insulating the walls. In this case, however, spray foam insulation would have trapped moisture in the wall cavity and could have eventually led to mould, rot and decay. A mineral wool insulation was chosen instead that could wick moisture away, down to an inventive drainage detail at the bottom of the wall. It was a solution that took consideration and collaboration between the

architect, heritage consultant and an envelope expert, but it is a solution that allows the building to retain its character-defining elements (its siding) while still performing up to today's standards in terms of energy efficiency.

Another point that required due consideration arose in the windows, as historic single-paned windows allow more heat to escape than modern thermal units but were also a vital character-defining element of the two buildings. The decision was made to use double-glazed units where new windows

Mineral wool insulation

Mineral wool, also known as stone wool or rock wool, is made up of mineral fibres from either natural or synthetic minerals. When used as insulation, it is pressed into sheets that offer both thermal insulation and passive fire protection. It has a relatively high R-value of 2.8 - 3.7 per inch¹ and is therefore efficient in insulating a home. It is also hydrophobic, meaning that water will bead up and roll off of its surface. This allows any moisture in the wall cavity to eventually

dry out, as opposed to being absorbed into the insulation where it can lead to rot.

For Carleton Hall, mineral wool insulation was able to be installed in rigid blocks between the studs as wall cavities were exposed from the interior. Where interior walls are kept in place and the studs aren't exposed, mineral wool can also be blown in as loose fill.²

¹ Mack, C.M. What's the Best Insulation? Scotiabank Ecoliving, 2014. Web. 25 Aug. 2014.

² Johnston, David and Kim Master. Green Remodeling: Changing the World One Room at a Time. Gabriola Island, BC: New Society Publishers, 2004.

A SHIFT BACK TO NATURAL SYSTEMS

Carleton Hall and the Barn were built at a time when natural systems were consistently taken advantage of for ventilation, lighting and even heating of buildings. Operable windows in the school buildings allowed for natural ventilation and cooling, while their small scale and window placement allowed natural light to help illuminate all interior spaces.

Halfway through the twentieth century, this way of thinking changed. Following a surge in technology post-World War II, and with a belief in seemingly limitless supplies of cheap energy, buildings were constructed to rely entirely on mechanical systems for heating and cooling. As a result, site-specific measures were often ignored. Buildings from the period between 1940 - 1975 are considered to be the biggest consumers of energy in the built environment¹.

Today, as the necessity for more sustainable operations of buildings becomes apparent, professionals are shifting back to the use of natural systems in design. Use of daylighting, and natural ventilation are beginning once again to be recognized as standard practice. Historic building practices may now stand as examples for seemingly contemporary ideas.

¹ National Parks Service US. Preservation Brief 3: Conserving Energy in Historic Buildings. NPSUS Department of the Interior. 2008.



were being installed, and retrofit existing single-paned units with interior storm windows. This is an example of the balance that can be struck between conservation principles and sustainability objectives, and how that may be successfully achieved.

ADDRESSING WINDOWS

historic photographs revealed that the existing windows were not original but added sometime after 1925; however, they were preserved as part of the building's history

historic glass panes were retained where possible and single pane replacements were installed if necessary; wood frames were repaired



new, double-glazed window units were added to the east façade of the Barn, which had previously been free of windows to allow for blackboards

The Adaptive Re-Use of Carleton Hall



Above: Students involved in Green Thumb's Edge Academy (a project in which 12 teen actors develop a play from start to finish) work in the transformed space of one rehearsal hall.

Right: The open plan at the one-room schoolhouse allowed for its transformation into office space.

Photos courtesy of Green Thumb Theatre.



"We could not have asked for a more ideal situation."

- Nadine Carew, General Manager of Green Thumb Theatre

A problem that affects many historic buildings is the basic issue of disuse. As a building falls out of use, maintenance is neglected and the building falls into disrepair

– often coming to be viewed as an "expensive problem" as opposed to a repository of heritage and local history. This is particularly relevant in the case of special-purpose buildings that may have become obsolete over time (such as churches, railway stations, or single-room school houses). The most effective method of preserving such buildings can be providing them with a new, beneficial and economically viable

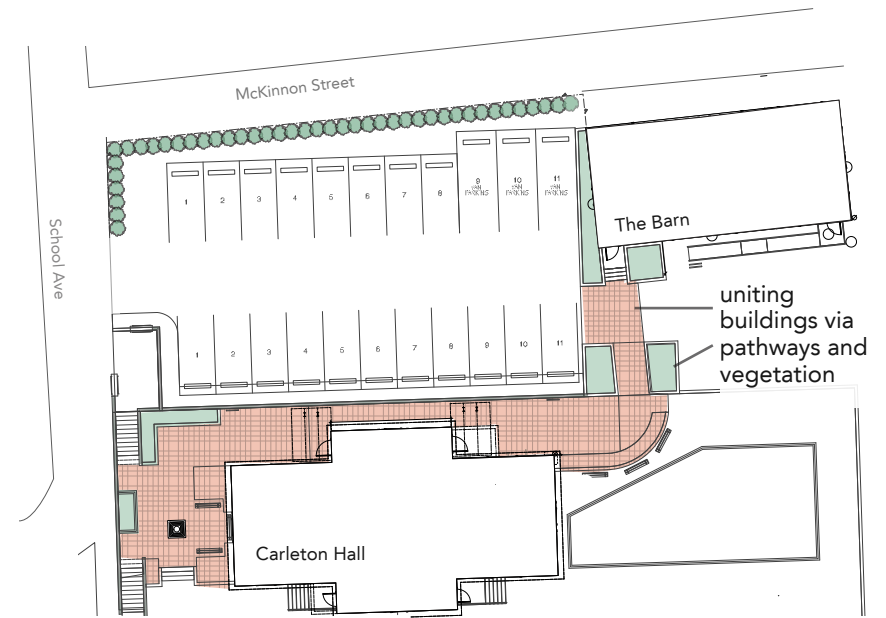
use, in a way that will not impact their heritage value – in a few words, adaptive re-use.

A successful adaptation to a suitable new use is what was accomplished in the case of Carleton Hall. The two school houses had become obsolete in their initial intended use, as the student population at Sir Guy Carleton Elementary had evidently increased far beyond its size at

the beginning of the twentieth century and was better housed in two larger buildings. Carleton Hall, the building that is now home to rehearsal halls, had in fact been in use as a kindergarten classroom up until 2008; however, the building was abandoned entirely after the arson fire. It is the fact that these two buildings were lacking a viable use (and any users) that led to their neglect and rendered them targets for demolition. Adaptation for use by Green Thumb Theatre meant that the buildings were both rejuvenated with new use and new life, and given new caretakers to guarantee their future.

Green Thumb itself had been previously renting space from the East Van Cultural Centre, before a renovation saw their temporary home taken and sent them floating from space to space for the next several years. Their main programmatic requirement was rehearsal space, as their offices could fit more flexibly into available rental spaces, often far from the location of their rehearsal hall.

The two school house buildings offered a perfect solution for their needs – Carleton Hall, originally divided into two separate rooms, could be converted to house two rehearsal halls, and the Barn could have interior partition walls added to accommodate office space. The fact that Green Thumb could acquire and transform both buildings meant that their offices could finally be next to their rehearsal halls, making their operations more efficient. Additionally, that the educational theatre company can be located on the same site as an elementary school allows for the development of a mutually beneficial relationship between the two. Classes are invited to come view plays, and Green Thumb gains an audience for their dress rehearsals.



ADAPTING LANDSCAPES

Although the buildings remained in their existing locations, the site itself did undergo some changes to adapt to its new use. Landscaping was implemented to create a “campus feel” between the buildings, using plantings and pathways. As well, grading of the site was carried out to allow for wheelchair access to Carleton Hall – a modern-day consideration that wasn’t taken into account in 1896.

Vancouver's Heritage Schools

Vancouver is home to many historic school buildings, numerous of which were built in or before the first half of the twentieth century. Close to 60 are included on the City's heritage register. School buildings can provide a rich heritage resource for the city, acting as microcosms of a surrounding neighbourhood's cultural and architectural history. School buildings also often stand as prominent orienting landmarks and meeting places for communities.

In 2001, the Seismic Mitigation Program was put in place by the Provincial Government, with the goal of seismically upgrading schools that are at risk from earthquake damage. As close to 90 of Vancouver's schools were built prior to 1967, when seismic requirements were first introduced into the building code, many would require extensive upgrading to meet current code¹. Replacement is therefore often favoured over retrofitting, meaning many heritage schools have been put at risk. This is an ongoing example of the struggle to balance heritage value, financial feasibility and functionality that is inherent in many heritage projects.

¹ Commonwealth Historic Resource Management. Vancouver Schools: Establishing Their Heritage Value. City of Vancouver and Vancouver School Board. 2007. Web. 4 Nov. 2014.

The project is, overall, one that provides many benefits and minimal losses for all involved. There are advantages from a heritage standpoint, as the heritage fabric and character of the building were maintained; from a cultural standpoint, as the community retains a significant historic landmark; and from an educational standpoint, as both the elementary school and the theatre company benefit from having Green Thumb on the school site. The project was also economically feasible: the agreement was made that Green Thumb would lease the land from the Vancouver School Board for a nominal rent, so long as the theatre company raised the money for the rehabilitation.

The money was indeed raised, with money from various government funds and one grant from Heritage BC, and Green Thumb is now in possession of affordable, spacious rehearsal halls and office space.

Additionally, they are able to rent out the rehearsal space to various groups when they are not using it. As Green Thumb's general manager Nadine Carew states, they "could not have asked for a more ideal situation".



Maintaining an historic colour palette

A paint chip analysis was carried out to identify what colours the two school buildings would have been originally painted. This analysis revealed that siding would have been a deep red, doors would have been green, and trim, ivory. Green Thumb chose to remain within this historic palette but adapt it to their personal branding and preferences.



CONCLUDING POINTS

The adaptive re-use of two of Vancouver's oldest existing school buildings came at a critical time in the buildings' life cycles. The school houses were provided with a new use and demolition was avoided, while their heritage character was largely maintained. As such, the community of Collingwood was able to keep two historic markers – some of the last remaining in a neighbourhood that has seen nearly all of its original building stock disappear. In a broader context, British Columbia as a whole is able to

retain a physical reminder of a point in its history, a point when the provincial government still issued standardized plans for the construction of rural school houses.

Green Thumb Theatre's transformation of these buildings and its partnership with the Vancouver School Board is viewed as a success by all involved in the project. It is an example that can be followed, learned from, and celebrated.



rehabilitating for sustainability:

environmental sustainability

- improving buildings' energy efficiency
- keeping high quality materials from the landfill

cultural/social sustainability

- preserving an important historic marker for the Collingwood community
- creating a mutually beneficial relationship between an educational theatre group and young students
- providing a facility for a local cultural institution

economic sustainability

- creating jobs in the heritage sector
- providing affordable rent and revenue for the buildings' occupants

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Katie Filek

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VHF Intern

Writer/Researcher

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