



The Vancouver  
Heritage  
FOUNDATION

# new life old buildings



your green guide to heritage conservation

## Welcome to the Vancouver Heritage Foundation's New Life, Old Buildings: Your Green Guide to Heritage Conservation.

“New Life” and “Old Buildings” appear as contradicting philosophies. Why would an organization concerned with historic buildings be interested in modern green-building techniques?

In the words of American architect, Carl Elefante, “Even if ... every new building from this day hence has a vegetative roof, is powered only with renewable energy sources, and is built entirely of environmentally appropriate materials, sustainability would still be far from fully realized. We cannot build our way to sustainability, but we can conserve our way to sustainability.”<sup>(9)</sup>

We must make wiser use of what we have already built.

The three pillars of sustainable development: social, economic and environmental are all integral to the rehabilitation of old buildings. Old buildings preserve our culture by paying tribute to the people and events that built our communities. They attract tourists, and their rehabilitation creates opportunities for highly skilled jobs and job training thereby contributing to our economy. In addition, their conservation saves tons of debris from the landfill making the reuse of an existing building the ultimate form of recycling.

Heritage Conservation ensures that our irreplaceable historic buildings will be enjoyed by future generations, and planning for future generations is what sustainability is all about.

We hope that you enjoy reading this guide, and that it causes you to pause and consider the cultural, economic and environmental contribution of old buildings in ensuring a sustainable future.

This guide is supplemented by web links to resources from all over the world that are regularly updated on our website. We invite you to view these links at:

[www.vancouverheritagefoundation.org/sustainability.html](http://www.vancouverheritagefoundation.org/sustainability.html)

Happy Reading.



Diane Switzer  
Executive Director



Elana Zysblat  
Programming Director

## The Nexus Between Heritage and Sustainability

Sit back for a moment and contemplate the nearest building. How long has it been there? How long will it last? Gone are the days when undeveloped landscapes beckoned to the early pioneers of our cities; today, we have an expanding matrix of 'streetscapes' and 'skylines' comprised of buildings that vary in age, shape, and style as much as people do.

Building new is one way to personalize the built environment; however existing buildings offer many creative opportunities for the incorporation of design trends, personal tastes, and green technology. When planning for change to an existing living or working space, many are surprised to find that conservation can be a flexible and sustainable approach that also provides ideas inspired by the building's past.

Heritage conservation and sustainable development are not synonymous movements, but they align where it matters most: in their mutual passion for enhancing the relationships people have with their built environments. Sustainability concerns people and change, and heritage does not dwell on the past but seeks to understand today and the future.<sup>(1)</sup>

The Standards and Guidelines for the Conservation of Historic Places in Canada define heritage conservation as all actions or processes "aimed at safeguarding the character defining elements of a cultural resource so as to retain its heritage value and extend its physical life."<sup>(2)</sup> A report released by the UN-sponsored Brundtland Commission in 1987 defined sustainable development as "development that meets present needs without compromising the ability of future generations to meet their own needs"<sup>(3)</sup>. These needs are shaped by social, economic and environmental factors, and can be simultaneously met through the conservation of our built environment.





**Community revitalization and historic preservation are uniquely compatible principles. When used together, they create sustainable, vibrant places to live, work and play. At its essence, preservation-based community development uses existing historic resources – the older and historic built environment – to improve the quality of life for residents of all income levels.** <sup>(8)</sup>

*National Trust for Historic Preservation*

## The Social Factor

For a moment, pretend you are a tourist in your own city.

Most Vancouverites know Gastown as the historical city centre, named after Captain John “Gassy Jack” Deighton. Gassy Jack opened the first pub at Burrard Inlet in 1867. This communal ‘watering-hole’ anchored the city that grew around it, giving sawmill workers and sailors a place to swap stories and make connections<sup>(4)</sup>. Historic buildings act as bridges between tangible places and intangible cultural traditions – so there is always more to a neighbourhood than its building grid.

By conserving historic streetscapes, we forge connections with past communities and, in the process, reinforce our sense of community today.

What makes a diverse cluster of neighbourhoods “tick” as a city? The urban infrastructure of transit lines, markets, parks, and schools, for example, are the best indicators of this pulse. The Canadian Urban Institute (CUI) brings the Smart Growth ethos to Canada, an American-based network that aims to reduce urban sprawl and make cities more people-friendly and environmentally sustainable. Historic neighbourhoods possess the intrinsic functionality that the Smart Growth initiatives want to create, having been built when communities were smaller, denser, and more self-sufficient.





## The Environmental Factor

The green revolution has consumed the public imagination like a fever over the last decade, thanks to celebrity projects like Al Gore's *An Inconvenient Truth* and the success of eco-friendly retailers like Lululemon. However, too much hype buries the real issues beneath consumerist distractions, and leave many wondering what they can do to make a truly sustainable difference. It's common knowledge that pop cans and newspapers belong in the recycling bin, but what about our massive accumulated building stock, also known as "the elephant in the room"? Architect Carl Elefante says that if we ignore it, "we risk being trampled by it".<sup>(9)</sup>

According to the Building Materials Reuse Assoc., demolishing a 2,000 square-foot house, for example, sends 60 tons of material to the landfill, 85% of which could have been reused. While demolition arguably makes room for a brand-new green building, it "evicts" an old structure with just as much, if not more, potential to be recycled and greened. This is because existing buildings store embodied energy – the total energy expended over the building's lifecycle. This includes the initial energy required for the manufacturing and transport of materials, and the construction of the building, and the operating energy required to heat, cool, ventilate and light the building for life, just like that needed by the human body to ensure a steady temperature and metabolism.<sup>(8)</sup>

Almost always, demolition is not the natural "time of death" for a building. Many demolitions occur because a building's aesthetic weaknesses are seen as barriers to changing or updating its function. If embodied energy is ignored, it may seem more ecofriendly to build up from a clean slate, without the hassle of retrofitting. However, a study of the Angus Technopole Building, a Montreal factory built in the early 20th century, suggests that rehabilitation would require only 5,169 Gigajoules (Gj) of energy, while demolition and new construction would take 13,734 Gj10. And it takes no Gigajoules at all to exert our creative energies on fresh ideas for adaptive re-use.

**20% of all Canadian landfill is occupied by used construction material**<sup>(5)</sup>

**50% of construction waste is salvageable and reusable**<sup>(6)</sup>

**45% of construction waste is recyclable**<sup>(7)</sup>



**Building a new 15,240 m<sup>2</sup> commercial building requires the same amount of energy needed to drive a car 32,186 km a year for 730 years!**<sup>(8)</sup>

**... by 2030, [the United States] will have demolished and replaced 82 billion square feet of current building stock. ... It will take as much energy to demolish and reconstruct [the predicted amount of space] as it would to power the entire state of California - the 10th largest economy in the world with a population of about 36 million people - for 10 years.** <sup>(8)</sup>



## The Economic Factor

But do green retrofits really translate into cold, hard (and green) cash? Take it from business and real-estate tycoon Donald Trump: "I've always found that it's cheaper to use an existing structure. Now, doing so is more complicated, and you actually have to be a better builder to do that kind of work, but if you know what you're doing, it costs you less money."<sup>(11)</sup> Even without the social and environmental benefits, it just makes good business sense to renovate green. 63% of Canadians are willing to pay more for an ecofriendly home (and the most eco-friendly home is already built).<sup>(12)</sup> Green features increase property value, lower maintenance and operating costs, and provide a healthier work or living environment.<sup>(13)</sup> In 2007, the University of British Columbia saved \$8.5 million by choosing to revitalize, rather than demolish and replace, the Buchanan building block for the Arts Faculty.<sup>(32)</sup> Its state-of-the-art green features, including doubleglazed, energy-efficient windows, and new heating and ventilation systems, will enhance university life for students and staff, and protect the environment. The paybacks will continue to roll in as UBC's green reputation attracts eco-minded students and funders.

Cultural tourism around historic sites and centres is another 'money maker'. A Canadian Tourism Commission survey reveals that the total domestic spending by Canadian cultural tourists alone exceeds \$3 billion. Visitors to historic sites and cultural attractions make the best patrons because they stay longer and spend more, which boosts the local economy and fosters cultural exchange between residents and tourists. If money talks, it's saying that people prefer to visit, shop, work and live in and around historic buildings. Look again at the building nearest you and the space it occupies. How long has it been there? How long will it last? The answers to both of these questions are decided by our actions. Heritage conservation is an inherently sustainable practice, and by preserving existing buildings, we support the communities of the future with the knowledge and experiences of past communities.

## Tips & Tools

### Participate in a culture of repair, reuse and recycling

Recycling has become second nature to modern communities as we strive for environmental sustainability. Aiming to reduce, reuse and recycle waste, we find new life in everything from bottles and boxes to clothes and vehicles. But what about buildings? Reusing an old building is probably the largest form of recycling an individual can participate in. Heritage Conservation, at its most basic definition, is the continued use of the existing built environment.



*You don't have to set your traditional windows by the curb or add to our landfill problems!* ➤

## Window Reuse & Repair

One of the most common practices in renovation is to throw away the old wood windows. Removing historic windows should be a last resort, not a first resort.

**Life-cycle cost analysis has shown that replacing historic windows in order to reduce heating costs is largely a myth.** The most energy-efficient window is one which is responsible for less consumption of energy across its entire life cycle, including its manufacture, shipping, time in service and its eventual disposal or recycling—not just its performance rating on the day it was installed.

If you are facing operational problems with your old wood windows, it is comforting to know that your windows can be repaired. Before phoning your local *window replacement specialist*, remember that traditional windows are usually maintainable – nearly anything that goes wrong with them can be fixed.

The so-called “maintenance free” windows on the other hand, will not have the traditional problems associated with historic windows, but they will introduce a host of new ones. Vinyl welds may break, proprietary hardware and other components may not be available in five years time, the coating on the aluminium or colour of the vinyl will fade or scratch, the vinyl will emit toxic fumes if it is burned, and the seals in the insulated glass units will fail. Remember, glass and aluminium are two of the most energy-dense building materials requiring the highest use of energy in their manufacture and recycling. Vinyl is a non-renewable petroleum product and is not bio-degradable.

**The thermal performance of old windows can be greatly improved through simple non-invasive strategies such as weather stripping, installing storm windows, shutters and lined drapery.** <sup>(24 & 25)</sup>



## Help reduce urban sprawl

**through maintaining or increasing density and use of existing urban infrastructure**

**Smart Growth** is a collection of land use and development principles that aim to enhance our quality of life, preserve the natural environment, and save money over time. Smart Growth principles ensure that growth is fiscally, environmentally and socially responsible and recognizes the connections between development and quality of life. Smart Growth enhances and completes communities by placing priority on infill, redevelopment, and densification strategies. [www.smartgrowth.bc.ca](http://www.smartgrowth.bc.ca)

**Heritage conservation is fundamental to Smart Growth.**

*If a community did nothing but protect its historic neighbourhoods it will have advanced every Smart Growth principle. Historic Preservation is Smart Growth. A Smart Growth approach that does not include historic preservation high on the agenda is stupid growth, period.* <sup>(18)</sup>

*Donovan D. Rypkema, PlaceEconomics*

**Stay close to home for a sane sustainable life!**

- Walk, bike, carpool or take transit to get to one of your regular destinations each week.
- If you are moving, choose an existing home within a 30-minute bike, walk or transit ride from your daily destinations. A convenient place to live reduces the amount you drive, which means you'll lower your greenhouse gas emissions and other pollutants.
- Support your local shops, cultural venues, community centres and schools.

## Retain your building's embodied energy

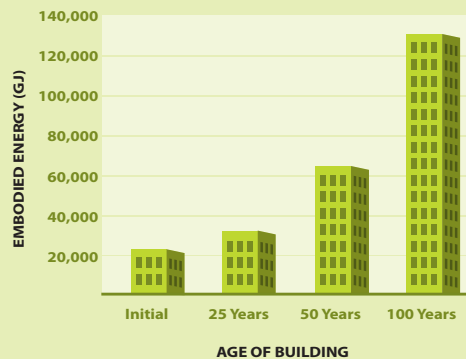
**When an older building is demolished, the stored embodied energy goes to waste.**

The energy used in the lifecycle of a building, called the embodied energy, includes all the non-renewable energy consumed:

- Initial energy - to acquire, process, manufacture, and transport building materials, and construct the building
- Recurring energy - to maintain and repair the building
- Operating energy - to heat, cool, ventilate, and light the building
- Energy to demolish and dispose of the building

A Canadian study examined the total life-cycle energy-use in a 4,620m<sup>2</sup> (50,000 ft<sup>2</sup>) three-storey, generic office building. On average, the total embodied energy of such a building increases by 56.5% by the time it is 25 years old, 144% by the time it is 50, and 325% by the time it is 100 (see graph). If the building is demolished, this embodied energy will be wasted. <sup>(23)</sup>

### Total Initial and Recurring Embodied Energy of an Office Building





*Many traditional building practices in old buildings and houses are green. Before electric lighting and air conditioning, office buildings were designed with light courts and skylights. Windows could be opened to catch a cooling breeze in summer. In traditional houses, covered porches reduce heat gain during the summer, and thick (stone or brick) walls, attics and cellars help maintain constant interior temperatures year round. <sup>(28)</sup>*

*Todd Mitchell, vice president - Preservation Coalition of Erie County*

## Contribute to a healthy and livable environment

### ...through use of passive measures

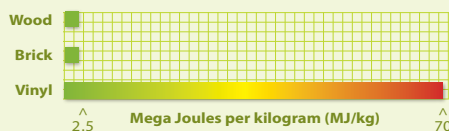
- lowering the thermostat in winter, raising it in summer
- controlling the temperature in those rooms actually used
- reducing the level of illumination and number of lights (maximize natural light)
- using operable windows, shutters, awnings and vents as originally intended to control interior environment (maximize fresh air)
- having mechanical equipment serviced and cleaned regularly to ensure maximum efficiency



## Keep (or replace with) low energy-intensive building materials

Low energy-intensive building materials exist primarily in older buildings. Use of materials like vinyl that are high energy-intensive (and have a high level of greenhouse gas emission) has increased in new construction. Use of less energy-intensive materials such as wood or brick is declining. <sup>(26)</sup>

### Energy Required to produce and process materials



*What are most historic houses built from? Brick, plaster, concrete, and timber- among the least energy consumptive of materials. What are major components of new buildings? Plastic, steel, vinyl, and aluminum- among the most energy consumptive of materials... You're a fool or a fraud if you claim to be an environmentalist and yet you throw away historic buildings and their components. <sup>(18)</sup>*

*Donovan D. Rypkema*

Repairing is usually more cost effective and environmentally friendly than replacing. If you must purchase new materials, do the research and choose materials that preserve - not pollute - the planet. Choose recycled materials if available, and try to buy new wood from local, sustainable forests.

**Or, go one step further - the greenest material is low energy-intensive and used!** For neat pieces to add character or décor touches to your home, go on-line to used buy & sell sites and sift through endless items to find a piece that complements your vision. Old sinks, doors, light-fixtures and even fireplace mantles are often better quality used than new. Check out used building material sites, thrift shops and garage sales for great green salvage.



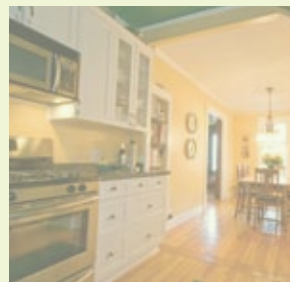
## 1636 Charles Street

Construction date: 1910

Architectural Style: Edwardian

This grand, 4 storey home had housed dozens of families by the time the current owners bought it in 2002. Like many homes on this street, it started out as an upper-class residence, but after two world wars, an economic depression, and shifts in demography, it became difficult for just one family to sustain. In 1951 this home was converted into a duplex, a common trend in many single-family dwellings of the time; often a necessary adaptation to the increased demand for housing and higher cost of living in Vancouver post World War II.

For the current owners, the existing rental unit on the upper two floors made the purchase of the home and the mortgage payments feasible in an inflated real estate market. They settled in the lower level suite, which comprised 1000 sqft of habitable space, and accepted the reality that they had just bought a typical drafty old house, in which the winter months are barely liveable. When their family expanded with the birth of their son, they looked to the unfinished basement, the last unconquered frontier of the building, for additional living space. In 2005, they made the unconventional and creative decision to relocate their bedrooms and home office to the basement, practically



*... Studies indicate that radiant systems are much more effective than convective ones in terms of how the human body reacts to temperature change. Why blow all this air around when I can more effectively change the temperature with water, which is also more efficient and takes up less space?*

*Carl Elefante,  
Quinn Evans Architects*

doubling their living space and allowing the main floor to function as public space (kitchen, living room, family room, dining room, guest bedroom, and bathroom) as it was historically intended.

During the basement's renovation, they installed radiant in-floor heating beneath the original fir flooring planks of the main floor and under a newly poured polished concrete floor in the basement. The owners replaced two inefficient hot water tanks and two old furnaces with one high grade boiler system. They either removed or sealed all forced air ducting in both units. Radiators now heat the rental unit. This cutting-edge boiler system discreetly provides for all the hot water and heating needs of the entire house. The introduction of this efficient energy system has halved their heating bill making the mostly un-insulated home cosy even in the coldest months of the winter. It has also retrospectively solved another conflict which is so common in old homes. The forced air system was blowing hot air which was immediately driven towards the cold surfaces of the home's single-paned, historic windows and lost. The new type of heating system warms the floor and radiates from it, as opposed to raising the temperature of the air, making for a cleaner, more even heat that allows the original windows to function at their best. The elimination of the inefficient furnace system not only allowed for gained ceiling height in the basement through the removal of its cumbersome ducts but also "took the pressure off" the home's beautiful, double-hung, wood windows, which when maintained properly, can easily have a lifespan of 200 years.



In the spirit of minimal intervention, the plaster and lath walls were left untouched. “ ...If you take the plaster off in your house... you’re wasting the plaster and the drywall that’s going on in its place. You’re also wasting the fuel it takes to cart the stuff to the dump and then you’re wasting the landfill.” says Ralph Belisle of TQ Construction. He recommends keeping your plaster if it is in decent shape. There are many other ways to access insulation cavities and electrical systems without throwing them out. Another decision the owners made as part of an environmentally friendly renovation, was to proudly leave the 1960s stucco finish on the building’s exterior, a choice which diverts material from the landfill, provides extra insulation, and retains a physical record of Vancouver’s mid-century aesthetics and need for practicality.

Like previous occupants, the owners find it a convenient pleasure to live in a historic neighbourhood near Commercial Drive, which offers public transportation links and a plethora of local grocery markets, shops and cafés. Their situation embodies the modern-day Smart Growth ethos, which aims to reduce urban sprawl by encouraging the development of sustainable communities.

*The average house in BC is made up of about 40-45 tons of wood and other products – much of which can end up in the landfill during renovations or demolition <sup>(21)</sup>*

*- Jim Connelly, Nickel Bothers House Moving*

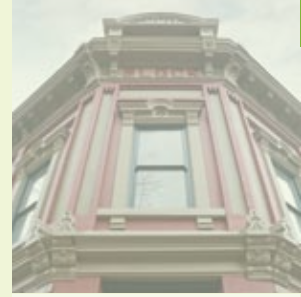
## 5 good reasons to keep your plaster & lath

One of the most common practices in renovation is to throw away all the plaster & lath walls and ceilings from an entire house. Most homes prior to the Second World War were built with lath and plaster walls, as opposed to the drywall used in today’s construction. Thin pieces of cedar (called lath) were nailed onto 2”x4” framing, then wet plaster was applied onto the lath in one to three applications.

- 1 Three-coat plaster is unmatched in strength and durability. With maintenance, lime plaster will not only last forever but will actually get better with age.**
- 2 Plaster walls and ceilings contribute to the historic character of the interior**
- 3 Plaster walls and ceilings resist fire and reduce sound transmission.**
- 4 Replacing plaster is expensive and involves demolition and removal costs.**
- 5 Sending thousands of square feet of repairable walls to the landfill is wasteful!**

Look into the long-term upgrading of your mechanical systems before repairing your plaster walls, as some plaster damage is to be expected in the process. Insist on working with a skilled electrician who can install new electrical wiring without demanding the removal of your plaster walls.





## ALHAMBRA HOTEL 2 Water Street

Construction date: 1886-87

Architectural Style: Victorian Italianate

The Alhambra Hotel, also known as the Byrnes Block, is one of Vancouver's oldest intact buildings still located on its original site. Built in 1886-87, shortly after Vancouver's Great Fire that destroyed the former shantytown of Granville, the Alhambra is a two-storey, Victorian Italianate brick building designed by prominent architect, Elmer H. Fisher. The hotel, housed on the second storey, was considered one of the finest and most luxurious in Vancouver, while the building's first floor businesses served Gastown's bustling street life. The success of the hotel inspired an addition to the south in 1888, at which time the entire complex was renamed Byrnes Block, after George Byrnes – a real estate speculator, former sheriff, and one of the Alhambra's owners and developers. One of the first rehabilitation projects amidst the initial revitalization of Gastown in 1969, the structures of Byrnes Block have largely retained their original forms, and to this day stand as cornerstones of Maple Tree Square, the city's birthplace and first public urban space.

*We've all often heard the expression, 'It's cheaper to build new than it is to reconstruct.' That's not true. I've always found that it's cheaper to use an existing structure. Now, doing so is more complicated, and you actually have to be a better builder to do that kind of work, but if you know what you're doing, it costs you less money... For example, I saved a substantial amount of money when I built Trump Park Avenue in New York City by reusing the Delmonico Hotel's foundation, frame, and exterior. <sup>(11)</sup>*

*Donald Trump*

## Preserve and develop your local community's culture and identity

Old buildings create intimate neighbourhoods that reinforce a sense of history and security by preserving what is unique yet familiar in a community. Through the redevelopment of historic buildings & neighbourhoods, community members gain a stronger sense of the history of the community and the importance of the places and events that helped shape the area. Conserving these buildings creates spaces and opportunities for cultural activities that encourage active neighbourhoods with rich personalities. In turn, cultural activities can attract potential residents to a neighbourhood, which can lead to an increase in home ownership numbers and liveability standards through the development of schools and parks.

**Support culture by sponsoring and/or becoming a member of a cultural heritage organization such as a community hall, place of worship, neighbourhood museum etc...**

**Promote festivals and events that support local culture, or better yet, volunteer to organize them! Contact your local residents association or business improvement association to find out how.**

**Help to revitalize and renew historic urban districts when choosing where to live, work, shop and study.**



The Salient Group, a local development company which prides itself on “focusing on the creation and restoration of compact, walkable and vibrant communities in urban environments” took on the challenge of restoring the Alhambra, with the goal of revitalizing a tired landmark building in Gastown. Heritage Consultant on the project Donald Luxton says, “Like with many heritage buildings, people assume that you have to throw away the building to create usable space for today’s standards. This isn’t the case; it’s the mechanical systems that have to be replaced to upgrade most buildings.” Salient president Robert Fung says “They’re all the same notion [Salient’s downtown heritage projects] – taking buildings that have good, really good bones, great meat & potatoes, and turning them into highly competitive, super character office space...” The company believes that, “Retaining the charm while replacing the infrastructure makes for a 19<sup>th</sup> or 20<sup>th</sup> century shell, housing 21<sup>st</sup> century technology. Truly, the best of both worlds.”<sup>(16)</sup>

Working on Vancouver’s oldest brick building meant that some structural and seismic up-

*...taking buildings that have good, really good bones, great meat & potatoes, and turning them into highly competitive, super character office space... Retaining the charm while replacing the infrastructure*

*Robert Fung, The Salient Group*

grades had to be made on the foundation, brick walls & chimneys. During the structural work, materials such as bricks and timber were salvaged from areas they were no longer needed and reused elsewhere on site. A new efficient mechanical system and ceiling & roof insulation were introduced, not only making the Alhambra comfortable to use and feasible to maintain but also allowing the beautiful (but un-insulated) brick walls to remain exposed and continue to be a dominant character-defining feature of the complex. The mechanical system utilizes centralized rooftop heat pumps, distributing heating and cooling to commercial tenants via individually zoned fan coil units. The design benefits from an efficient heat recovery system able to re-use energy.

These upgrades also made it possible to repair & retain most of the 120 year old single-pane windows, ornamental metalwork & cornices. As part of the restoration, care was taken to maintain the scale of the existing street wall, and preserve the existing passageway and centrally located open space (Gaoler's Mews). The street-level storefronts were also restored, ensuring that the building can resume its role as social and cultural facilitator, pulling people into the street and neighbourhood, and supporting local businesses.

## Contribute to your local economy

**through cultural tourism, and the retention and creation of high skilled local jobs**

*Dollar for dollar, rehabilitation creates more jobs than new construction. For example, one study found that \$1 million invested in the rehabilitation of an existing building creates 9-13 more jobs than the same \$1 million invested in new construction. Why? Quite simply, rehabilitation activities are more labor-intensive than new construction: That is, they require more man-hours and fewer materials. This has other implications for sustainable development as well: An economy that is more labor-intensive and less materials-intensive is a greener economy.*

*Here's another point to consider: Much of the work involved in building rehab requires skilled craftsmanship which means that historic rehab, combined with job training programs, can build a corps of workers with bankable skills that will serve them well for a lifetime. <sup>(27)</sup>*

*Richard Moe, President  
National Trust for Historic Preservation*

And speaking about economy, tourism is the world's leading industry, and what we call heritage and cultural tourism is its fastest-growing segment. Today's national and international travelers look for fulfilling travel destinations that provide authentic historical, cultural, and natural experiences. Conserving and developing our built heritage can help us achieve our economic and cultural goals using our historic assets!



### 820 E 38<sup>th</sup> Avenue

Construction date: 1974

Architectural Style: Vancouver Special

### 718 E Georgia Street

Construction date: 1973



#### 820 E 38<sup>th</sup> Avenue

“... We came to the conclusion that to stay in Vancouver, we would have to share a house with another family. As soon as we started viewing options for sale, we quickly realized that a Vancouver Special was the way to go...” says one of the homeowners at 820 E 38<sup>th</sup> Avenue.

They knew they would have to renovate but had learned that adapting this type of straightforward building to their needs could be done on a relatively limited budget, requires minimal structural work and involves very few mysteries. In 2006, when the two families were on a mission to purchase a Vancouver Special, “Specials” were still 10-20% cheaper than older character houses due to their negative image as cheaply built, badly-designed homes. On the flip side, there were already various “Special” renovation projects completed in Vancouver they could take inspiration from.

What is a Vancouver Special anyway? It’s a simple two-storey stucco box with a very shallow pitch gable-roof, ground level entrance and a narrow balcony. If it has those characteristics and you notice it repeating itself around town, you are probably looking at a Vancouver Special.

*Recent calculations indicate that it takes about 65 years for an energy efficient new building to save the amount of energy lost in demolishing an existing building <sup>(14)</sup>*

*National Trust  
for Historic Preservation*



Some say it derives from the rancher turned sideways to adapt to the narrow lots that were available in Vancouver in the 1960s and 70s. The “Special” was designed as a low-cost building which maximized the square-foot ratio in the city’s zoning of those decades and was thus very appealing to new immigrants. The “Special’s” practical, box-like layout is quite open and easily adaptable to various situations; from homes for large or extended families, homes with a rental suite, or an office, a studio or even a workshop. Popular and quick to build, thousands of Vancouver Specials were constructed in blue-collar neighbourhoods all over the lower mainland, and they remain today the dominant house type in Vancouver.<sup>(15)</sup>

A property was found on E 38<sup>th</sup> Avenue that was already divided into two living units, top and bottom. With the plan to create a long-term, affordable and sustainable duplex situation, the new homeowners decided to invest in good sound proofing between the units and the most efficient heating system and appliances they could afford at the time. A gas operated, tankless on-demand hot water system supplies hot water to the house, while hot water base-board radiators supply heat to the house via a gas fuelled, high efficiency boiler. They managed to get a discount by buying all six Energy-Star gas operated washers, dryers and stoves at the same time. They took out the asphalt paving in the yards to make green outdoor space and food gardens. Today, home to two families and one office, more is shared than just the bills. Trips to the grocery store, errands, babysitting and housework are often coordinated to make for a more sustainable, affordable and liveable co-existence.

### 718 E Georgia Street

In Strathcona, Vancouver’s oldest neighbourhood, Vancouver Specials are not as common as in other East Vancouver areas but can still be found. At 718 East Georgia St., the current homeowner purchased a Special

1970s Vancouver Special



Figure 81. A Vancouver Special dating around 1970 shows the use of brick and stucco on the facade which was typical until the late 1960s. (Courtesy Seattle Housing Division, October 20, 2014, 2014)



*We need to have neighborhoods that are diverse, economically and racially, so that affordable housing is not concentrated in isolated locations. In many communities the only place where there is racial, educational, economic, and occupational diversity is the historic districts.*<sup>(19)</sup>

*Donovan D. Rypkema*

as a means to get onto the best block in the neighbourhood. Surrounded by 100 year-old heritage homes, her “Special” was overlooked by many potential buyers because of its lack of character. Little did they know the potential it had! During a self-managed, low-budget renovation project, the homeowner created a beautiful rental suite on the main floor and a workshop for herself under the carport. During the renovation she was positively surprised to discover solid 2’ x 8’ “bomb-shelter construction” throughout and an original metal roof that is still in great shape after 40 odd years. Removing the old furnace system with all its ducting (taking up a 3 foot cavity between the floors) made for excellent ceiling height in the suite. Small, electric in-wall fan heaters in select rooms replaced the entire heating system and keep heating costs extremely low. With newly insulated walls some of the fans are rarely turned on, even in the winter. Part of the original design in Vancouver Specials is a direct flow of air from front to back openings, providing natural and free ventilation all year round.

In a neighbourhood like Strathcona where old houses are constantly getting maintained and upgraded, construction materials are often swapped and recycled. Parquet flooring that the homeowner chose to replace with reclaimed maple flooring found a home across the lane. Excess insulation ordered for a warehouse conversion at the corner was used in the carport ceiling when it was closed in to make a workshop. “One of the best, but overlooked features in Specials is the back balcony over the carport,” claims the owner. How many new condos can boast a 400 sq ft. outdoor sitting area that is both covered and private, has enough clothes-hanging lines for two families (dryers are rarely used in this house in spring and summer) and room for herb & tomato planters? Most Vancouver Specials can!

## Contribute to affordable housing

**through retention of existing affordable units and creation of new small units through suites and infill**

*When they’re done correctly [historic rehabilitation projects] make the finest affordable housing projects you can come across. The biggest advantage is that it’s much more suited for mixed-income housing, if your basic premise is that mixed-income housing is a good objective. The kind of apartments created is so superior that they’re attractive to people of a variety of income levels. <sup>(20)</sup>*

*Developer Richard Arnesen, Stone House Development, Inc.*

**Consider introducing a mortgage helping suite in your building or a coach house on your property. Have the kids moved out and the old house is too big? Consider customizing the secondary unit for yourself, and rent out the house!**

In Vancouver, check out the City of Vancouver’s Secondary Suites Program and Laneway Housing in Single Family Areas initiative for ideas and guidelines.

[www.vancouver.ca](http://www.vancouver.ca)



## 1220 Homer Street

Architectural Style: Industrial warehouse

Construction date: 1947

Busby Perkins + Will is an architectural firm well known for its commitment to the design virtues of environmental sustainability. When looking for the perfect building to customize as its head-office, an existing structure was chosen for the purpose of demonstrating how buildings can be recycled and adapted for new uses. The building is a late 1940s industrial warehouse located in Yaletown, a neighbourhood which historically was a heavy industrial area dominated by warehouses and rail yards. The firm had been renting in a building up the street for a few years and had concluded that this was an ideal location both for its proximity to their clients' downtown offices, and for the opportunity to partake in the ongoing transformation of Yaletown into one of the most significant urban regeneration projects in North America.

The original solid concrete structure, with large open floor plans, was designed to house and support substantial loads and machinery. Taking advantage of the high ceilings and open plan, the architects decided to employ a signature green design strategy that provides fresh air and daylight. Holes were cut right through the centre of the concrete floor slabs on two of the levels, to create a central atrium



*Cities need old buildings so badly it is probably impossible for vigorous streets and districts to grow without them. By old buildings I mean not museum-piece old buildings, not old buildings in an excellent state of rehabilitation -- although these make fine ingredients -- but also a good lot of plain, ordinary, low-value old buildings, including some rundown old buildings...*

*Jane Jacobs*



open to the sky through the height of the building's three floors. When opened through a skylight at the top, the central atrium facilitates natural ventilation through what's called "the stack effect", which is the mechanism by which air moves through a chimney. Hot air always rises, and in moving out of the skylight, cooler fresh air naturally flows in to replace it. In addition, they created a wide, triple-height chamber in the front windowed facade, to let in even more air and light.

Two heat recovery units were then installed, which recover heat generated by computers, lights and occupants, and return it to the building. There is no central heating or cooling system in the building. The occupants rely on natural ventilation and their own activity generated heat to influence the room temperature. Using minimal-energy strategies is also made possible because of the building's exposed concrete ceiling and walls. Concrete, being a porous material, tends to absorb both heat and cold and then re-radiates the temperature of its surroundings for hours. Utilizing the concrete to regulate the temperature also meant minimizing the use of finishing materials which are typically dominant in an office surrounding with the sole purpose of hiding potentially unsightly service spaces or inferior surfaces. To work with

## Adaptive re-use, mixed or diverse use

**Adaptive reuse is a process that changes a disused or ineffective item into a new item that can be used for a different purpose. Sometimes, nothing changes but the item's use. Remodeling a building after it has outlived its original purpose and adapting it to a current need can be an essential component of sustainable development.**



the heat recovery system, workspaces and service spaces are separated: this allows clustering of heat-generating elements (bodies, computers) further reducing energy use. The roof was also retrofitted with insulation to help with heat retention throughout Vancouver's mild winter.

In addition to fresh air, the atriums also provide daylight; this reduces the need for overhead electric light. For larger meeting and workshop spaces, occupancy sensors smoothly turn the lights on and off according to need and without intervention.

While using the atrium strategy does reduce the amount of floorspace available for the expanding office, the trade-offs are considered to be of even more important benefits, and the firm remains committed to an open office plan. The creation of natural ventilation and daylighting allows for an aesthetic and pleasant interior environment that staff and visitors alike enjoy.

*Old buildings already are hooked up to water lines, electric lines and sewers. Old buildings usually are near public transit, reducing automobile dependency. Traditional neighborhoods mix stores, schools and places of worship with housing, allowing a short walk to the store or to school. Reusing existing buildings also means we do not have to consume more farm fields or forests for new developments.* <sup>(17)</sup>

*Todd Mitchell, vice president of the Preservation Coalition of Erie County*

## Help reduce greenhouse gas emissions

**The New Tricks with Old Bricks study<sup>(22)</sup> shows that although new homes are more energy efficient once built, 50 tons of carbon emissions are generated in their construction, compared to 15 tons for the refurbishment of an existing property. In most of the houses studied, it took more than 50 years for this difference to be compensated for by the lower carbon emissions generated from the day-to-day energy use. It is estimated that 40% of raw materials taken from the earth are consumed in constructing new buildings. Rehabilitating old buildings requires minimal new materials.**

**Just by keeping an old building you are helping to reduce greenhouse gas emissions but you can also:**

### **Replace incandescent with fluorescent bulbs**

The average home has approximately 35 incandescent light bulbs. If each homeowner replaces these bulbs with efficient fluorescent bulbs, lighting costs can be reduced by more than half. Compact fluorescent light bulbs use about 75% less energy than incandescent bulbs and last 10 times longer.

### **Invest in a programmable thermostat**

Programmable thermostats are inexpensive, easy to install and an excellent way to reduce your energy bill. The most energy efficient temperature settings are a difference between 4°C home and away settings. For every degree the automatic thermostat lowers your heating level, you'll save 3% on your heating bill. It's a "set and forget" solution that adds up to big savings.

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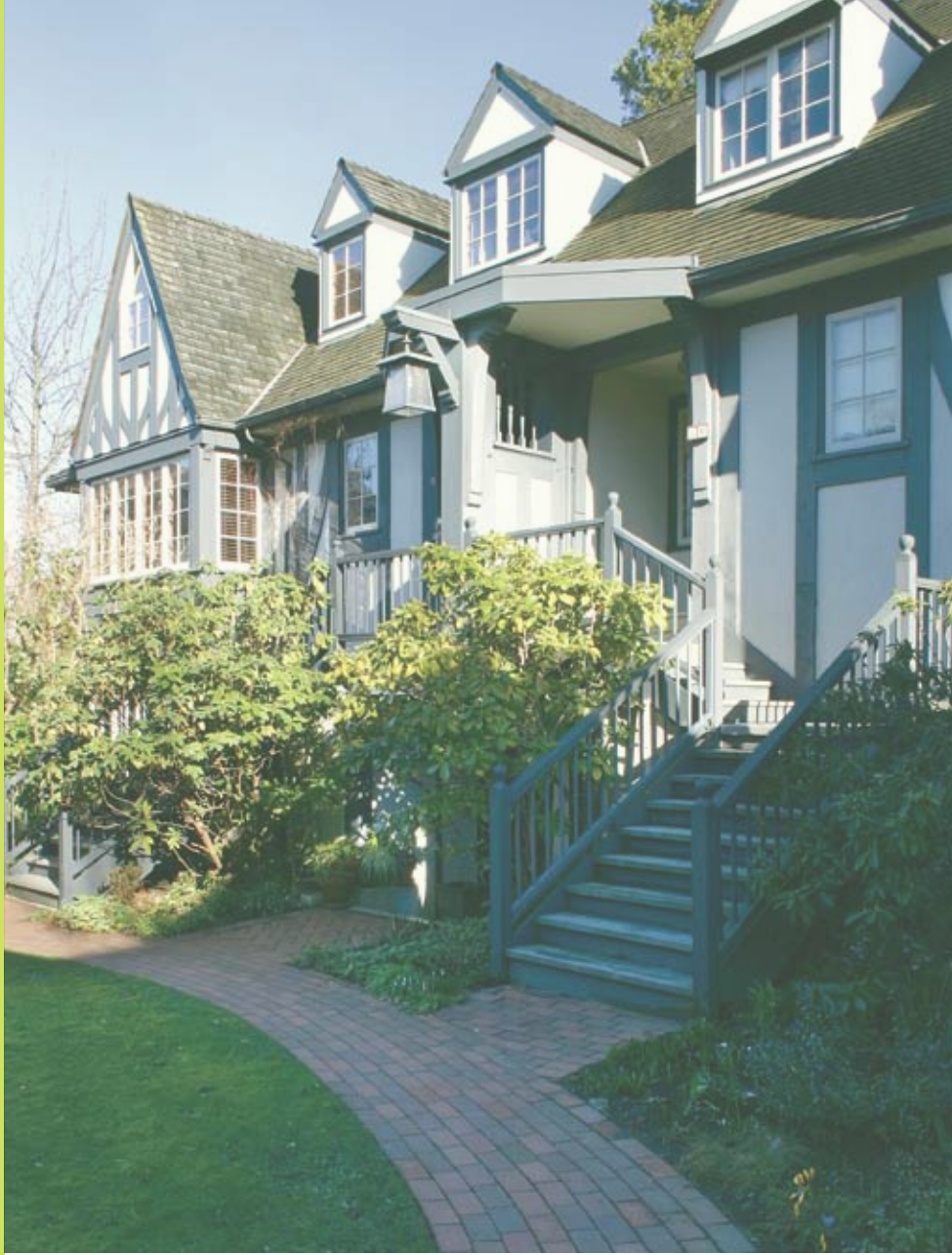
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**Cover:** The award-winning Mole Hill Community Housing Project in Vancouver's West End neighbourhood incorporates the conservation of 26 heritage buildings, the creation of 170 affordable housing units and significant sustainable design features. **Back:** The 1926 Tatlow Park residences in Vancouver's Kitsilano neighbourhood were slated for demolition in 1974. Concerned locals created the Friends of Tatlow, which managed to purchase and save the historic complex. Tatlow Court became one of the earliest residential heritage rehabilitation projects in Vancouver.



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