

SEE SHEET No 24

BROW

BRYAN

FERRIS

ROBERTS

145

VINEBERG & FULTON LTD.

Demonstration Project in Compatible Design, Affordable Housing, and Architectural Salvage in "Kolonia", Whitney Pier

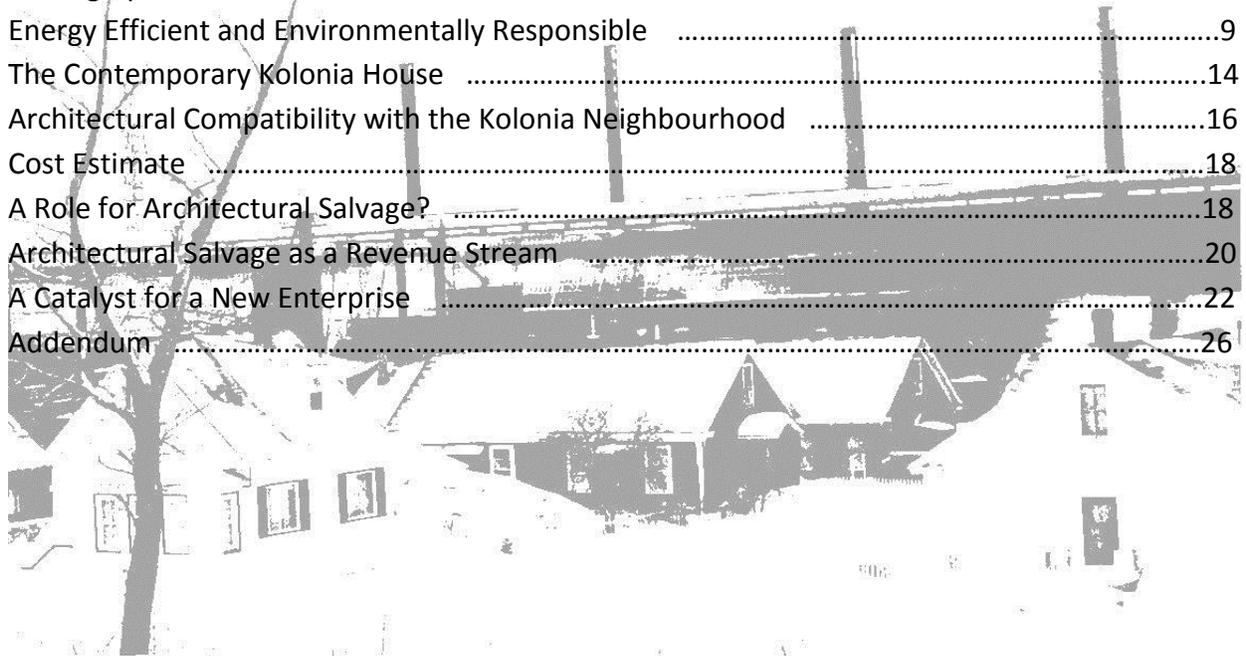
Cover Photo: *Kolonia Neighbourhood*, (Beaton Institute #91-642-22603)
Sydney Insurance Map, July 1947, (Beaton Institute)

This report was completed October 12, 2015.



TABLE OF CONTENTS

Acknowledgements	3
Executive Summary	4
Statement of Purpose	4
The Authors	4
Methodology	5
Scope and Organization	6
Demographics	7
Energy Efficient and Environmentally Responsible	9
The Contemporary Kolonia House	14
Architectural Compatibility with the Kolonia Neighbourhood	16
Cost Estimate	18
A Role for Architectural Salvage?	18
Architectural Salvage as a Revenue Stream	20
A Catalyst for a New Enterprise	22
Addendum	26





ACKNOWLEDGEMENTS

Prepared for: Sydney Architectural Conservation Society

c/o Old Sydney Society
225 George St.
Sydney, Nova Scotia, B1P 1J5

Prepared by: Vineberg & Fulton Ltd.

23 Inglis Place, Suite 101
Truro, Nova Scotia B2N 4B5
902.305.1878
www.vinebergfulton.ca

Joe Ballard Senior Interpreter
Melanie Ballard Researcher

Vineberg & Fulton Ltd. wishes to thank Tom Urbaniak, Adrian Wilson, Douglas Foster, Andrew Molloy, Alana Lawrence, Rita MacDonald, Peggy Vassallo, and Jan Hancock of the project steering committee. Thanks are also due to Rick McCready and Roger Rose at CBRM and Christie MacNeil of the Beaton Institute.

Previous reports or relevant documents:

A Sense of Place, Michelle Lahey (undated)

Heritage Housing Inventory, Ferris Street and Bryan Street, Whitney Pier (undated)

“Hunkey Town” The Immigrant Family and Its Company Home, Joe Black, 1990



EXECUTIVE SUMMARY

It was a privilege to be able to prepare this study for the Sydney Architectural Conservation Society (SACS). The subject property, a vacant lot in the historic Kolonia neighbourhood of Whitney Pier, has provided SACS with an opportunity to explore the merits and feasibility of a demonstration project in compatible house design and affordable housing within the framework of utilizing architectural salvage, where possible, and documenting how the integration of recycled building materials into the proposed structure might demonstrate the potential for establishing a social enterprise engaged in architectural salvage.

This project has designed a single floor two-bedroom house of just under 1000 sq. ft. Proportions, siting, massing, layout, and materials have all been studied to provide a design that is energy-efficient and “green”. The proposed architecture takes its cues from the architectural characteristics of the neighbourhood which have been identified in this report.

To help defray the cost of building materials for this new home, it is recommended that architectural salvage be “mined” from surplus and derelict building stock in CBRM – a practice reputed to have been the origin of homes in the Kolonia block.¹ With a high volume of buildings earmarked for demolition, there exists a strong incentive to look beyond this single house and establish an enterprise engaged in ongoing deconstruction and retail of reclaimed building supplies.

¹ “Hunkey Town” Joe Black, 1990 p8

STATEMENT OF PURPOSE

To provide a detailed advisory report that recommends a design for a new home on the double lot at the corner of Bryan and Railroad Streets in Whitney Pier. The house design must be sensitive to affordable housing constraints and local demographics. It must also be energy efficient, “green”, and compatible with the historic neighbourhood of Kolonia. The design should identify where the use of architectural salvage might be possible and practical in construction of the house. Finally, this study is to show how architectural salvage may be capitalized on more broadly to produce a revenue stream for the Sydney Architectural Conservation Society and/or Habitat for Humanity projects.

THE AUTHORS

Vineberg & Fulton Ltd. is a cultural resource consulting group offering a comprehensive range of preservation services to stewards of built heritage in Atlantic Canada.

Vineberg & Fulton offers planning and treatment studies for built heritage through the following services:

- Cultural Resource Management
- Historic Site Interpretation
- Architectural Investigation
- Architectural Heritage Research
- Sourcing Historically Appropriate Bldg. Materials
- Historic Color Palette Consulting
- Structural Engineering (sub-contracted)

Joe Ballard, B. Com., is a senior preservation consultant with the cultural resource firm, Vineberg & Fulton Ltd.



Joe is an architectural historian and owner of one of the oldest commercial properties in Truro, NS. He is a member of numerous heritage organizations including the Town of Truro Heritage Advisory Committee, Heritage Trust of Nova Scotia (president), Heritage Association of Antigonish, East-Hants Historical Society and the Colchester Historical Society (past-president). He sits on the steering committee of the Nova Scotia Provincial Heritage Conference.

His articles have been published in *Edifice* and *Saltscapes*. He has advised and lectured on architectural heritage topics throughout Nova

Scotia. He is the winner of the 2012 Town of Truro Heritage Award.

Melanie Ballard, B.A., B.Ed. is a former history teacher turned architectural salvage operator turned historic preservation researcher. Melanie serves on two committees of the Heritage Trust of Nova Scotia, is a board member of the Little White Schoolhouse Museum, and member of the Colchester Historical Society.

Melanie is responsible for piloting Nova Scotia's second municipal heritage property grant program.



METHODOLOGY

The project was to work within the constraints of a small lot on what was formerly known as Railroad Street. Upon identifying the lot was too small, the subject property was adjusted to include the adjacent lot at the intersection with Bryan Street.

The project demanded affordable house design that was “green” and energy efficient. Early on, the decision was made to have a south facing house with windows lighting and warming the home’s primary living space: kitchen, living room, and dining room. These were laid out in an open-concept design occupying the south

side of the house with the two bedrooms on the north side.

A square, or nearly square footprint, was desired for economy as a square form offers a better ratio of square footage to exterior wall surface area - thereby minimizing heat transfer.

Economy and demographics dictated a single-storey, no basement plan. The increasing probability that area homes will be occupied by seniors or those caring for ailing parents meant accessibility needed to be taken into account.



The necessity for simple, cost effective means of achieving affordability and efficiency governed decisions in design but did so within the constraints of respecting the architectural heritage of the neighbourhood.

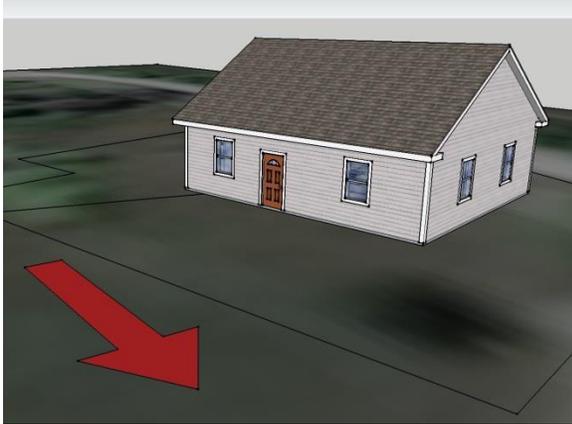


Figure 1. The proposed house design on double lot (arrow indicates North).

In estimating the cost of construction a simple approach was taken that will hopefully allow for easily calculated adjustments for the future if the actual construction phase of this project is put off for any reason and building costs continue to climb. It was decided to identify those materials that could reasonably be sourced through deconstruction and still meet the standards set out in the National Building Code. Whatever components could be supplied by salvage was simply subtracted from local building estimates for new, single-storey on-slab construction provided as a cost per square foot.

Helpful information pertaining to the operation of an architectural salvage enterprise has been identified in this report.

SCOPE and ORGANIZATION

This report required consultation with a professional engineer and home heating expert. Discussions with professionals in lumber grading, the insulation industry, and window manufacturing were also had. Municipal officials were visited for a planning and development perspective.

The National Building Code and National Energy Code were consulted to identify standards. The Standards and Guidelines for the Conservation of Historic Places governed the appropriateness of the exterior design and materials.

Affordable home ownership was identified as a provision of this project's terms of reference. CMHC identifies what qualifies as "affordable housing" and it is that body's definition that has been observed in this report.

The authors of this report have experience in the architectural salvage industry. They established such a business in 2004 and sold it as a going concern eight years later.

A number of considerations that should be studied before engaging in an architectural salvage enterprise are described and analyzed in this report.

A deconstruction site assessment (evaluation criteria) has been included in the addendum to demonstrate what architectural salvagers typically look for in properties slated for demolition.



DEMOGRAPHICS

Smaller households, an aging population, and economic stagnation are some of the considerations taken into account in designing the house for this report.

Income Levels

Income of households in 2010	households
Household total income in 2010 of private households ¹⁴⁹	41,125
Under \$5,000	700
\$5,000 to \$9,999	1,670
\$10,000 to \$14,999	1,825
\$15,000 to \$19,999	3,095
\$20,000 to \$29,999	5,615
\$30,000 to \$39,999	4,605
\$40,000 to \$49,999	4,035
\$50,000 to \$59,999	3,410
\$60,000 to \$79,999	5,160
\$80,000 to \$99,999	4,055
\$100,000 to \$124,999	3,315
\$125,000 to \$149,999	1,700
\$150,000 and over	1,940

Figure 2. Before-Tax Income of Cape Breton households in 2010²

This study aspires to design a house that is affordable for below average household incomes. Figure 2 illustrates the distribution of households across different income levels. Economies have been sought in all areas of construction to provide an affordable purchase price/mortgage of the finished build; and just as importantly, economy is also sought in the ongoing costs associated with running the household.

² Statistics Canada. 2013. Cape Breton, RGM, Nova Scotia (Code 1217030) (table). National Household Survey (NHS) Profile. 2011 National Household Survey. Statistics Canada Catalogue no. 99-004-XWE. Ottawa. Released September 11, 2013. <http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/prof/index.cfm?Lang=E> (accessed October 6, 2015).



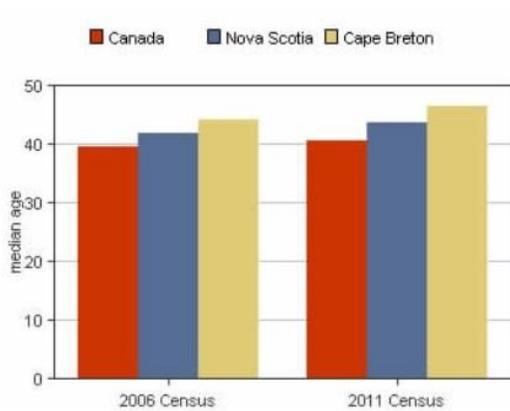
Affordable Housing

CMHC defines affordable housing as shelter costs that account for less than 30 per cent of before-tax household income. Although the housing agency includes both rental and owner-occupied housing in its broad definition of affordable housing, this project is concerned with occupant ownership only.

Under current economic conditions, which are characterized by exceptionally low interest rates, homes are quite affordable. A family earning \$30,000 per year can afford a \$142,189 mortgage at a fixed rate of 3.7%. A family earning \$35,000 per year can afford a \$165,887 mortgage at the same rate.³ Both of these scenarios maintain monthly payments below 30% of before-tax household income – the definition of affordable housing.

An Aging Population

Cape Breton – Median age of the population



The median age in Cape Breton was 46.6 years. In comparison, the median age of Nova Scotia was 43.7 years.

	Median age	
	2006	2011
Canada	39.5	40.6
Nova Scotia	41.8	43.7
Cape Breton	44.3	46.6

Table 6 Canada, Nova Scotia and Cape Breton – Median age, 2006 and 2011 censuses

Figure 3. Median age comparison of residents of Canada and Cape Breton⁴

The preceding statistics illustrate that Nova Scotia is facing more of an aging population trend than the rest of Canada and that in Cape Breton the trend is even more pronounced. This growing segment of society identified in Figure 3, that is older and therefore more at risk for loss of mobility, has been accommodated by the house design recommended in this study. Wide doorways, a pocket door where possible, sensitive bathroom layout, and single-storey construction all reflect a desire to provide accessibility.

³ canadamortgage.com

⁴ Statistics Canada. 2012. *Focus on Geography Series, 2011 Census*. Statistics Canada Catalogue no. 98-310-XWE2011004. Ottawa, Ontario. Analytical products, 2011 Census.



ENERGY EFFICIENT and ENVIRONMENTALLY RESPONSIBLE

The terms of reference for this report call for a house design that features green, energy-efficient construction, and where possible, utilizes architectural salvage. This re-use of building materials is a factor of the desire to build green, but it is assumed, to also be part of a broader interest in environmental stewardship and the exploration of a social enterprise in architectural salvage. In addition, this report is to identify where architectural salvage can and can't be successfully used in new construction. This section of the report identifies house components or systems that feature one or more of the following aspects:

- Use of salvaged materials or components had potential but has been rejected
- Use of salvaged material or components has been confirmed as achievable
- Building material has been identified as environmentally responsible
- Building material has been identified as energy-efficient

Framing. Exterior wall studs will need to be a nominal 2x6 (with strapping) or an actual 6" deep (without strapping) to accommodate R24 insulation. Interior walls will be comprised of standard 2x4 studs. Both the exterior and interior studs could be acquired through deconstruction of houses within CBRM. A mix of lumber dimensions will undoubtedly be salvaged and a portion of the salvage will require milling to the desired dimensions. The larger (exterior wall) studs will likely have to be milled from salvaged floor joists. For the roofing system, prefabricated trusses are recommended. Such a recommendation is made

largely on the assumption that this project may utilize volunteer labour for certain aspects of the work and that the skills of that labour will be better matched to the installation of prefabricated trusses than the actual construction of them.

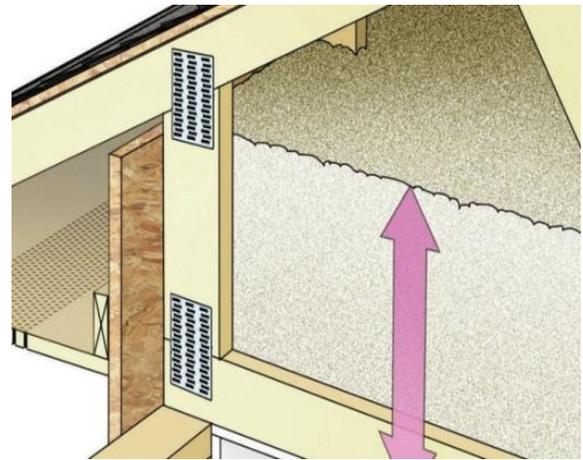


Figure 4. Raised heel truss system provides for consistent attic insulation thickness

Raised-Heel Trusses. This project recommends a house design with raised-heel (energy) trusses. This slight modification from traditional building practices eliminates conventional deficiencies in attic insulation where insulation is often either compressed or simply under-applied (at eaves). Raised-heel trusses permit space for the application of sufficient insulation and help ensure that ventilation baffles are not obstructed. The result is an attic with consistent R-value throughout as well as better ventilation under the eaves which reduces the risk of moisture vapour condensation. OSB sheathing is available in lengths that account for the additional wall height associated with the raised-heel system.



Sheathing. Although sheathing could utilize salvaged lumber, this report recommends using standard OSB. Large sheets can quickly be installed from ground to eaves. The sheets provide stability to the structure and in the case of raised-heel trusses they provide crucial security against the risk of uplift if their installation extends (as it should) past the top plate to the underside of the top chord. The large coverage afforded by OSB also means fewer joints which helps keep air leakage to a minimum.

Insulation. This project recommends the use of cellulose insulation in both the wall and attic.

Called the “greenest of the green,” cellulose is produced from the paper products that we dispose of through our municipal recycling programs. The recommended application for exterior walls is blown-in behind polyethylene vapour barrier; and for the attic, loose fill. The exterior walls will need to be constructed of nominal 2x6s in order to achieve R24 as required by code. This R-value will also require 5/8 strapping on the face of the 2x6s (see Figure 6). The attic should be loose-filled to R50. This product is also green from a transportation perspective as it is manufactured in Nova Scotia.

Table of Environmental Facts for major types of insulation materials

Type	Installation Methods	R-value per inch (RSI/m)	Raw Materials	Pollution From Manufacture	Indoor Air Quality Impacts	Comments
Cellulose	Loose-fill, wall-spray (damp), dense pack, stabilized	3.6-4.0 (21-26)	Old Newspapers, telephone directories, borates, ammonium sulfate	Negligible	Fibers and chemicals can be irritants	High recycled content and very low embodied energy
Fiberglass	Batts, Loose-fill, semi-rigid board	3.0-4.0 (15-28)	Silica sand, limestone, boron, recycled glass, PF resin or acrylic resin	Formaldehyde emissions and high energy use during manufacture	Fibers can be irritants	High embodied energy
Mineral Wool	Loose-fill, batts, semi-rigid or rigid board	2.8-3.7 (19-26)	Iron ore blast furnace slag, natural rock, PF binder	Formaldehyde emissions and high energy use during manufacture	Fibers can be irritants	High embodied energy; Rigid board can be an excellent foundation drainage and insulator
Cotton	Batts	3.0-3.7 (21-26)	Cotton and polyester mill scraps (especially denim)	Negligible	Considered safe	Two producers, so transportation pollution is higher than other insulation
Closed-cell spray polyurethane foams	Spray-in cavity-fill or spray-on roofing	5.8-6.8 (40-47)	Fossil fuels; HFC-24.5fa blowing agent; non-brominated flame retardant	High energy use during manufacture; global warming potential from HFC blowing agent	Quite toxic during installation (respirators or supplied air required); allow several days of airing out prior to occupancy	Very High embodied Energy
Open-celled, low-density polyurethane foam (Soy)	Spray-in cavity-fill	3.6-3.8 (25-27)	Fossil fuels and soybeans; water as blowing agent; non-brominated flame retardant	High energy use during manufacture	Quite toxic during installation (respirators or supplied air required); allow several days of airing out prior to occupancy	Very High embodied energy

(Source CIMA – www.cellulose.org)

Figure 5. A comparison of competing insulation options.

Spray foam is not recommended due to its off-gasing and shrinkage properties. This petroleum product requires an energy-intensive manufacturing process. For all these reasons the product does not meet the green and energy-efficient objectives/parameters of this project. Fiberglass is not recommended due to its poor performance in cold weather – where it loses R-value due to air convection.



R value	
wall - outside air film	0.17
Siding - wood shingle	0.87
Tyvek	0.00
7/16" OSB	0.55
6.1" blown-in Cellulose	22.33
6 mil poly	0.00
1/2" drywall	0.45
inside air film	0.68
TOTAL	25.04
2x6 wall with 5/8 strapping	

Figure 6. R-value of proposed exterior wall.

Windows and Doors. Preliminary consideration of this project identified the potential for the reuse of salvaged wooden window systems in the new construction. The potential to install complete, framed window components that could likely be obtained at no cost was attractive; however, further investigation revealed that the National Building Code would require a minimal energy rating that salvaged windows and doors would not be able to meet. As the subject property will be located in Climate Zone 6, the code requires a minimum energy rating of 25 and maximum U value of 1.60. This means that windows should be at least double-glazed, low-emissivity coated and argon gas filled. Nova Scotia window manufacturer, Peter Kohler Windows and Entrance Systems, is recommended as the best choice for these components. Furthermore, the company's charitable record may present an opportunity for this project to obtain materials at a favourable rate or perhaps even free of charge.

Flooring. This project could utilize premium flooring throughout (except the bathroom) at little to no cost. Salvaged lumber can be re-milled into attractive tongue-and-groove flooring by any local or provincial lumber operation that possesses the required machinery. It is recommended that a mill be sought to "plane and match" the lumber as a donation or in exchange for a quantity of salvaged lumber. A number of Nova Scotian companies are capable of this work and a few will also produce a market-ready product in a variety of finishes and colours. The bathroom floor should be some style of ceramic tile. This might be obtained at no cost from a hardware or flooring retailer as remnants of discontinued stock.

Kitchen Cabinets. Kitchen cabinets found in houses slated for demolition are typically not of a quality sufficient for re-use. For this project, custom cabinets or pre-fabricated cabinet components will be required. The latter is the more economical choice and is available in a range of standard cabinet sizes that any sales representative can mock-up drawings for in such a way as to provide the most efficient coverage of space.

Exterior Cladding. There is no potential for the use of salvaged material with respect to cladding. It is recommended that new cedar shingles be used for the house exterior as this is the historic practice in Kolonia. Shingles should be installed with a 4 ½" exposure. As this is a wood product it is manufactured from a renewable resource. It will contribute (albeit minor) to the R-value of the exterior walls.



Roof Covering. Asphalt shingles are recommended for this project's roofing needs. Some form of underlayment/ice and water shield at the eaves and around the dormer may be appropriate.

Eavestrough and Downspouts. Although these do not appear in historic photographs of the neighbourhood, their installation is recommended. Because these should be seamless, there is very limited potential for re-use of previously used eavestrough.

Foundation. A slab-on-grade foundation is recommended for this project as it is a low-cost foundation option that appears to work with the site (in terms of drainage).

Mechanical Systems. A great heating option for slab-on-grade construction is in-floor heat – especially when combined with a ductless split heat pump for the “shoulder seasons”. While this may be a great option it may not be the right one for this project. Financial considerations may dictate a cheaper alternative – electric baseboard heat, again, supplemented by a ductless split heat pump for the “shoulder seasons.” The electric baseboard heat use would be limited to the coldest of winter days when ductless split heat pump efficiency drops (colder than -15C).

Lighting. Salvaged light fixtures/shades are fairly common. Glass shades from the 1940s to 1970s are quite attractive and well-suited to furnishing bedrooms. Lighting for other areas of the house will likely require new fixtures.

Baseboards. Plain 1”x4” or 1”x5” boards obtained from architectural salvage can be utilized for baseboards throughout the house. The salvaged boards would require ripping to the desired width and likely a pass through a thickness planer to prepare the surface. If a little 1” to 1 ½” strip of new moulding is added to the top it will produce a robust and decorative looking baseboard at little cost.

Moulding. Salvaged moulding could be utilized on this project if an efficient means of paint removal was employed prior to installation, otherwise new moulding would be required. Another option, that should prove economical, may be to have a moulding manufacturer mill the project's own salvaged lumber to a desired profile. The moulding and baseboards should be scaled to complement one another. In other words, baseboards would need to be scaled down in size if the moulding is slender.

False Chimney. This is an aesthetic option that serves no functional purpose. Construction of a chimney would begin in the attic and break through the roof to meet this project's criteria for a house design that conforms to the architectural heritage of Kolonia. Salvaged brick would suffice but care would need to be taken not to select a mortar that is stronger than the brick – this would cause spalling and result in a short lifespan for the chimney. This architectural detail should be considered an “extra”.



Fence. Fences are important to the heritage landscape of Kolonia – evidenced both by historic photographs and present day inspection. A particular style has been identified as having a traditional existence in the neighbourhood.

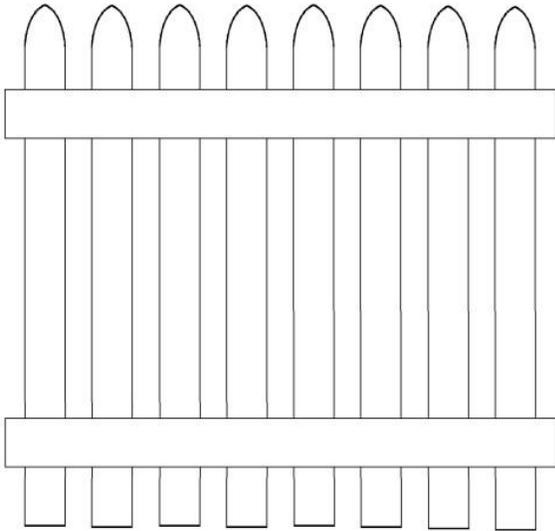


Figure 7. This fence with gothic-like tips, is discernable in five historic images of Kolonia.



Figure 8. Kolonia fence (Beaton Institute).

Based on examination of historic images, it is estimated that the pickets were approximately 3/4"x3" (true dimension) with a length of approximately 4', installed 2-3" off the ground. Horizontal rails appear to be a nominal 1"x4". The horizontal rails were installed on the inside of the fence.



Figure 9. Fences made from salvaged or found material in "Kolonia" (photographed July, 2015).

Extras & Options: Other Decorative Features Potentially Utilizing Architectural Salvage:

- Kitchen Island
- Kitchen backsplash featuring reclaimed tin ceiling tile
- Reclaimed brick foot path to house entrance
- Reclaimed brick patio in lieu of pressure-treated wood construction
- Sliding (barn door style) door in lieu of bi-fold doors for entrance coat closet



THE CONTEMPORARY KOLONIA HOUSE

The proposed house design has gone through several iterations and even in this “final” version it comes with a number of options for siting, layout, positioning of the shed dormer, and location of the driveway. A false (non-functioning) chimney may also be another consideration.

The house plan calls for 896 sq. ft. of interior space with dimensions of 32'x28'.



Figure 10. An affordable and accessible house design.

Figure 11 depicts the double house that formerly occupied the two subject lots. It was oriented with Railroad Street and was bisected by the property line. As Railroad Street is now a trail rather than an actual street, this report recommends orienting the new house with Bryan Street so that it follows the same grid as other houses in the block. Apart from aesthetics, this arrangement will also better accommodate a driveway off of Bryan Street than can run parallel to the house.

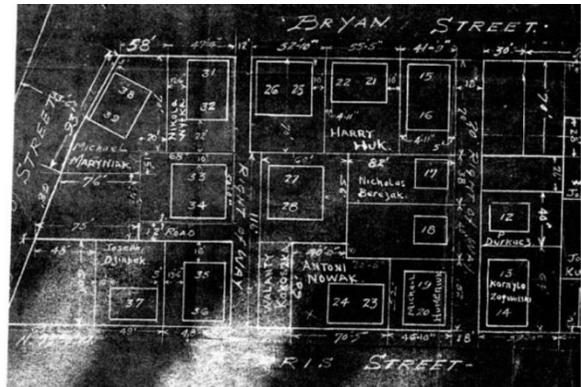


Figure 11. Location of property lines and houses by F. Dawe, 1938. DASCO, Sydney, NS.

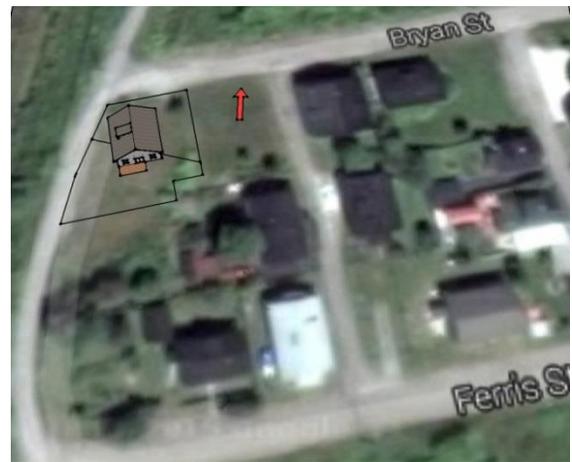


Figure 12. Angled view of proposed design.



Figure 13. Top-down view of proposed design.



Figure 14. Main entrance is located on the east elevation. It is proposed that the driveway enter the property from Bryan Street on the east side of the house. The arrow identifies North.

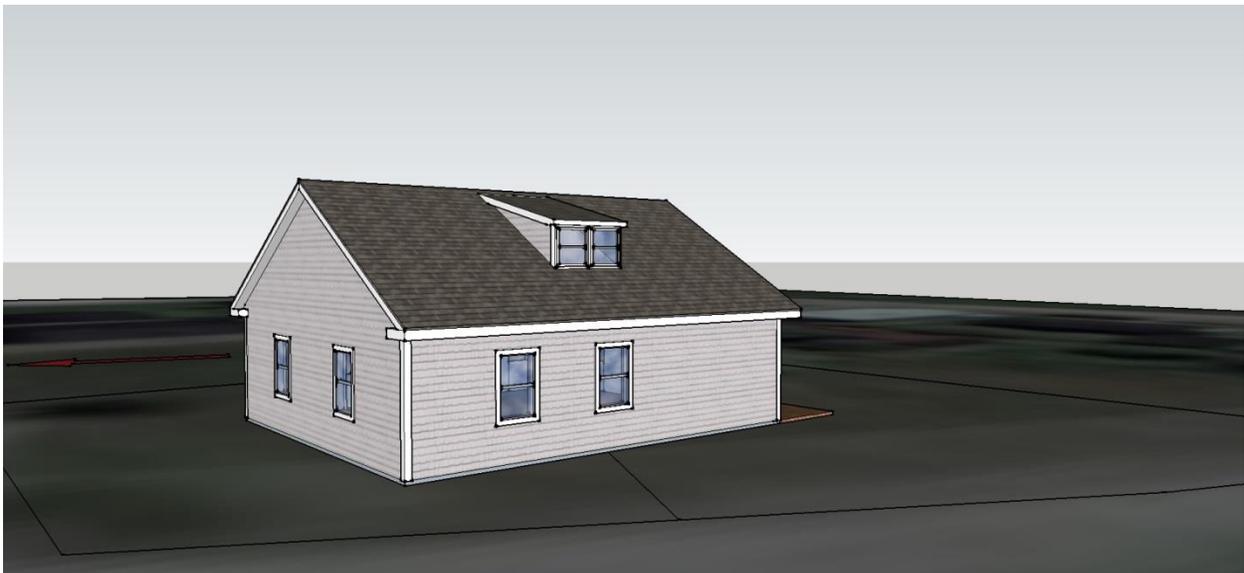


Figure 15. Looking east from the Whitney Pier Heritage Trail (Railroad Street) showing "dummy" shed dormer that could be placed on either the eastern or western roof slopes.



Figure 16. Proposed room layout. This plan can be “flipped” so that the entrance (and driveway) is on the west side while still maintaining the southern exposure for the living area. The interior space is 28’x32’.

ARCHITECTURAL COMPATIBILITY with the KOLONIA NEIGHBOURHOOD

The proposed house design exhibits an easily recognizable working-class architectural style. It is modest in scale and frugal in adornments.

The compatibility with other houses in the Kolonia neighbourhood is intentional. The house seamlessly blends with the character of the neighbourhood yet does not seek to deceive with respect to age.

In keeping with the house-building tradition of other dwellings in the neighbourhood, no



basement has been built under this house. The few basements that are visible in the area are typically later additions, not characteristic of the original design, or they are houses of a more recent vintage.

Clean lines and simple details define the exterior. These are expressed in the narrow corner boards and returned eaves on the gable ends. Corner boards and eaves are painted to contrast with the house body to add visual appeal by successfully defining the contours of the structure. The house body is clad in wooden shingles laid 4½" to the weather. This type of cladding is typical of modest houses in Kolonia and Whitney Pier and indeed to the broader Maritime tradition.

Windows in the area are traditionally vertically oriented with the height typically twice that of the width. Single or double hung sash windows are recommended for this house. Window trim should contrast with the colour of the house body and match the corner boards and fascia.

A single dormer is centred in the roof in the shed style that is typical of Whitney Pier. The windows in the shed dormer are double-ganged in the local tradition that is generally suggestive of the property line in working-class town houses of the area though this house is designed as a single family dwelling. The roof pitch is 7/12. The area commonly displays 7/12 or 8/12 pitches although there are exceptions that fall as low as 5/12 or as steep as 12/12.

Covered porches with shed dormers are common to the area. This type of entrance could not be integrated into this design based on constraints of orienting the house on the lot and the desire for a southern exposure which dictated the interior layout and the placement of the gable ends – which are the only reasonable ends on which to locate a covered porch for aesthetic and traditional purposes.

A chimney is a characteristic of Kolonia rooflines and though not required by contemporary heating and cooking devices it could be considered for this project. It could be constructed so as to begin in the attic and need not serve any real purpose beyond aesthetics. As an "extra" it has been omitted from the drawings.

The tradition of fences in Kolonia is strong even today with the prevalence of domesticated animals far below historic levels. Although fowl can be seen in one photo supplied by the Beaton institute, it is unclear how common domesticated animals may have been in Kolonia. Perhaps another attribute of fence construction - pride of land ownership - inspired their existence. Whatever the motivation for fences, old images of Kolonia reveal a common style that features not a pointed picket but a picket with an acute arch, much like a gothic arch. This style of picket, along with two inside horizontal rails, comprises the type of fence recommended for this property and it is recommended that its placement be made along adjacent properties.



COST ESTIMATE

The average cost of single-storey slab-on-grade construction is currently about \$125 per square foot. At 896 sq. ft., this house design is estimated at approximately \$112,520 before calculating possible material and labour credits/donations. The materials savings from utilizing architectural salvage in the areas outlined on pages 9-13 has been calculated at approximately \$6000 and is broken down in the

following chart. Note that the prices quoted in the chart represent before-tax contractor pricing for materials that may in some cases be rather modest or budget-conscious building material options (e.g. economy flooring, narrow to moderately-sized moulding). Where salvaged material replaces such budget-conscious options the result is generally of a superior quality and higher-value (e.g. more generously proportioned baseboards and trim).

Applications Where Architectural Salvage Might be Used						Est. Savings
Framing (walls only)						\$ 2,550.11
Lumber for exterior: fascia, corner boards, trim...						\$ 475.00
Lighting						\$ 200.00
Baseboards (without finish moulding)						\$ 172.92
Flooring						\$ 2,341.25
Moulding						\$ 254.40
					Total	\$ 5,993.68

Figure 17. Identified before-tax savings where architectural salvage replaces like materials valued at contractor rates.

Note: Figure 17 assumes a zero cost for acquiring architectural salvage although this may not be the actual project experience.

A ROLE FOR ARCHITECTURAL SALVAGE?

The project will recommend how this one project could be a catalyst for a small, local social enterprise in architectural salvage that generates a revenue stream for both the Heritage Revolving Fund of the Sydney Architectural Conservation Society and Habitat for Humanity projects. (Project terms of reference).

Building Material Resource for Habitat for Humanity (HFH)

Habitat for Humanity's ReStore concept has spread across the country. With 24 stores throughout Ontario and one in Nova Scotia (Dartmouth opened in 2006), a Sydney store may be possible. Whether or not a Sydney store will be part of Habitat for Humanity's future remains to be seen. Store or no



store, reclaimed building material could benefit local HFH projects; and contributions to such projects could raise the profile of a social enterprise engaged in architectural salvage.

The kinds of building materials HFH is looking for would have some overlap with the material that an architectural salvager is looking for. While there would be some level of “competition” for the same material there would also be another area where specific material would be attractive to HFH only. An example of this might be modular kitchen cabinetry of a vintage that is somewhat recent. A broad awareness of HFH needs would allow a salvager to identify and extract items of use particular to that group, while at the same time carrying on deconstruction activity for the benefit of the salvage enterprise or the Sydney Architectural Conservation Society.

Building Material Resource for Sydney Architectural Conservation Society (SACS)

Today’s lumber is “dressed” to dimensions smaller than the rough, nominal dimensions traditionally used in building construction. For example, 2x4 and 4x4 rough lumber once utilized in construction has given way to “dressed” or smooth lumber that now features corresponding dimensions of 1.5x3.5 and 3.5x3.5 instead of their nominal namesakes of two-by-four and four-by-four. This discrepancy of scale of course extends through all the various standard dimensions.

Lumber salvaged from historic buildings provides a cost-effective means of obtaining material that is dimensionally compatible with

maintenance treatments that may be required from time to time in earlier buildings. Matching the dimensions of historic lumber would otherwise require custom milled lumber, gluing (time-consuming) or “sistering” lesser dimensioned lumber together. The latter may be an option in structural work but is not recommended for finish work.



Figure 18. Liscombe House in Sydney.

Panelled doors and associated hardware (mortise locks, cast iron hinges, escutcheons, and metal, glass, and porcelain knobs) are readily obtainable through historic house deconstruction.

Windows and associated hardware (pulleys, weights, locks, and stops) are readily obtainable through historic house deconstruction; however, unlike doors, the variations in window dimensions are quite diverse and finding exact matches is difficult. Repair of deteriorated windows (using epoxy) or ordering new custom wooden windows are better options for challenges with historic windows.



Moulding was historically produced in many different patterns; fortunately, for replacement purposes, there are just a handful of styles that were milled and sold with ubiquity. Moreover, the “boom” characteristic associated with much of Sydney and area’s built heritage would suggest a commonality of milled decoration; which again favours the likelihood of finding matching patterns for today’s renovators.

Flooring, whether the hardwood type found in formal rooms, or softwood found in secondary rooms is all easily extracted in reusable condition from houses slated for deconstruction. Narrow hardwood flooring products were produced by a variety of manufacturers in different sizes during different periods. These hardwood products all look about the same but vary slightly in thickness and width. Having an inventory of several of these various sizes would provide SACS and homeowners with the ability to match existing floors or engage in larger projects that require extensive flooring replacement. Softwood flooring may be of the tongue and groove variety or just basic planks. In both cases the wood is generally dressed on one side.

ARCHITECTURAL SALVAGE as a REVENUE STREAM

Having a standing inventory of historic building materials would be a great asset for conservation of historic sites under the stewardship of SACS; but sharing access to that inventory with other parties, for a fair price, provides a conservation service to the wider community and makes storing it, because of associated revenue generation, more economical. Beyond contributing to storage

costs, revenues can also cover salvage costs, and facility management costs, with any residual profits flowing to the cash balance of the SACS revolving fund.

Supply / Availability of Material

Is there sufficient quantity of potential salvage material available in the region to satisfy the needs of an architectural salvage venture? The question is central to any consideration of establishing a business on the concept of retailing architectural salvage. The answer is a resounding, *yes*. A CBC news story from September 29, 2015 claims the Cape Breton Regional Municipality spends \$120,000 per year demolishing derelict buildings. The story goes on to quote Paul Burt, an official with the municipality, who claims 40 to 50 buildings per year are destroyed and that an estimated 1800 or more properties in the region are derelict.⁵

Lumber Grading

Today, lumber used in construction is grade-stamped to identify important characteristics including moisture content, strength, and size and location of knots. Salvaged lumber is far from green (green being higher than 19% moisture content) yet regulations require that it be graded for new construction. A certified lumber grader will have to be contacted to assess salvaged lumber before it is used in construction.

⁵ <http://www.cbc.ca/news/canada/nova-scotia/derelict-buildings-a-growing-problem-in-rural-nova-scotia-1.3247964> [CBC News reporter Jack Julian, Sep 29, 2015]



Labour Considerations

Keeping labour costs low is critical to obtaining material for re-use or re-sale. It is economic advantage that provides the single greatest incentive for salvage and re-use. The salvage material itself is often free as diverting it from a landfill or C&D site saves the property owner money. Labour, along with storage costs are the two greatest expenses associated with an architectural salvage enterprise. Exploring opportunities for obtaining labour at a low rate is always wise but for a not-for-profit enterprise it may be essential. The following are a couple of suggestions for low-cost labour that will manage to maintain a positive image for the proposed social enterprise by serving local needs for student labour or meaningful work for those with disabilities.



Figure 19. Careful removal of moulding and wainscoting by trainee.

The establishment of an architectural salvage enterprise could offer vocational skills development for young people in the greater Sydney area. Even young people who are still in school may be good employment candidates. Salvage operations are typically seasonal due to the outdoor nature of the work – this coincides well with school or university students seeking employment during summer break.

Skills development for adults with intellectual disabilities is also possible. Many of the tasks required in salvaging lumber: extracting, de-nailing, sorting, and stockpiling are relatively unskilled duties that may easily be mastered and provide workers with the dignity and personal growth generally associated with meaningful employment. A single site foreman skilled in construction/deconstruction and workplace safety would be sufficient to provide direction and oversight to a small team of salvagers deconstructing a storey or a storey and a half dwelling.

The greater Sydney area already boasts an impressive network of three agencies that operate under the umbrella of the DIRECTIONS Council for Vocational Services – a twenty-nine member provincial organization that promotes the abilities and inclusion of persons with disabilities into everyday community life. The local agencies are:

- CAPE – Centre for Adults in Progressive Employment (Gloucester Bay)
- Horizon Achievement Centre (Sydney)
- Haley Street Adult Services Center Society (North Sydney)



Exploring a relationship with one or more of these agencies may produce a program that places suitable candidates under the supervision of a foreman giving direction in one or more of the salvage tasks already identified above. These agencies typically already have clients with experience in various woodworking programs and are eager to meet with outside parties to foster relationships that will provide new opportunities for their clients. This sort of relationship could provide cost-effective labour and potentially reduce clerical or payroll management costs as well, if such costs are borne by the DIRECTIONS agency.

Assessing Potential Salvage Sites

The remunerative advantages of each potential deconstruction site will need to be assessed by an individual with knowledge of:

- Building construction
- Hazardous materials (particularly those related to historic building materials)
- Saleability of general lumber
- Value of historic architectural materials (e.g. wide plank boards, mill work)



Figure 20. Wood boring beetle larvae.

If the site is deemed not to possess a sufficient quantity of good, saleable resources or if the site poses a health or safety risk due to hazardous materials or unstable structural members, it should be identified as not meeting the minimum requirements for a suitable deconstruction project and avoided. Some factors that may produce an unsatisfactory assessment of a structure's lumber are evidence of wood boring insects such as the *Lyctinae* subfamily (powder post beetle), significant rot, or water damage.

A checklist to aid in site assessment has been created and can be found in the Addendum.

A CATALYST for a NEW ENTERPRISE

The terms of reference for this project ask that the Kolonia House initiative illustrate how the project might be a catalyst for establishing an architectural salvage enterprise to serve as a revenue stream for both the Heritage Revolving Fund of the Sydney Architectural Conservation Society and Habitat for Humanity projects.

Careful reflection of how one initiative might spur the other almost warrants comparison to the often pondered question, "What came first, the chicken or the egg?" Although initial consideration operated under the view that building the house first and thereby demonstrating the extent of recycling potential would be the most logical means of showcasing how salvaged material might be sourced, inventoried, and discharged to an end user, further analysis highlighted the advantages of establishing the enterprise prior to construction.



Project Efficiencies

The difference between merely stockpiling salvaged building material based on estimated needs for the Kolonia House project and having your own building supply store at your disposal during construction is significant. Every construction project experiences unforeseen challenges and having the benefit of a salvage retail store already stocked and operational will unquestionably mitigate many problems – and do so essentially at no cost. Some needs that might necessitate trips to the hardware chain store could be substituted with trips to the salvage store and thereby keep project costs down. An additional benefit will be the revenue stream anticipated from the salvage retail store which can be converted into building materials and household amenities that the project cannot otherwise obtain by salvage or donation.



Figure 21. 4160 sq. ft. building situated between Prince and Disco Streets, Sydney.

Warehouse space will be required to store materials for the Kolonia House project. It may therefore be worthwhile to consider sourcing

space suitable for sorting and storing material for both the Kolonia project and retail salvage store and to begin selling material when inventory has reached a sufficient level.

Company House Exports

Company House Exports is the suggested working title or retail store name for a conceptual business initiative which will be outlined in this section. The name is not really important. What *is* important is to begin thinking about a business plan and what the organizational structure, products/services, marketing, operations, and management might look like in an architectural salvage enterprise.

How Much Space Is Needed?

It is estimated that somewhere between 4,000 and 9,000 sq. ft. would be required for a warehouse/retail architectural salvage operation. The Sydney building pictured in Figure 21 is at the lower end of the spectrum at 4160 sq. ft. Higher ceilings than what this example offers would be desired. A minimum of 12 ft. from floor to ceiling would suffice but higher would be better. In addition, a loading bay would be required.



Transporting Salvage

One small flatbed or stake bed truck would be sufficient for transporting materials for an architectural salvage enterprise. Even a half-ton pickup truck could do if a “cage” were built into the bed allowing long pieces of lumber to extend over the top of the cab.



Figure 22. A flatbed variation of an extended cab pickup like the one pictured would be adequate.

Business Model

Preliminary discussions (and the very terms of reference for this report) seem to gravitate toward a “social enterprise” business model. Such a model would harmonize well with the goals of the Sydney Architectural Conservation Society and stakeholder or associate organizations like Habitat for Humanity and other local groups that may become involved.

Purpose of the Enterprise

- To divert demolition material from the landfill and to foster a culture of reuse, restoration, and sustainability
- To provide reclaimed, quality building materials to property owners, heritage

groups, and affordable housing organizations at affordable price points

- To raise funds through retail of salvage for the SACS Heritage Revolving Fund and Habitat for Humanity

Other benefits may be realized including, but not limited to, responsible reduction of derelict housing stock in CBRM and skills development for those engaged in deconstruction and other aspects of the enterprise.

Know Your Customer

A business plan would identify who the customers of an architectural salvage enterprise would be and their associated demographics. Five distinct types of customers stand out in the experience of Onslow Historic Lumber Co. based in Truro, NS:

- The Price-Conscious Renovator
- The Old Home Restorer
- The Home Décor Enthusiast
- Crafters & Woodworkers
- The Interior Decorator

Retail Image

There are essentially three readily identifiable directions to take this sort of enterprise in with respect to retail mix. All three options represent varying degrees of marketplace positioning: thrift, mid-range, or upscale. Each of these options will impact pricing strategy, merchandising, customer demographic, and store image in different ways.



Figure 23. Habitat for Humanity's *ReStore* in Dartmouth.

Thrift – This model is characterized by a no-frills product and service offering with low prices. A wide range of material will be accepted for resale with the diverse mix potentially including second-hand furniture. Some items may be damaged or dirty. Items are accepted for resale with little or no regard to quality. Customers will perceive the merchandising to be disorganized or haphazard and will contribute to that reality by picking up items and setting them down wherever it suits them. The store can be expected to attract do-it-yourselfers and local bargain hunters – some of whom may be purchasing for re-sale purposes.

Mid-Range – This model is characterized by higher than thrift pricing, though still priced below similar articles found in hardware stores or lumber yards. Second-hand furniture will not be sold. Items offered for sale will be of good, saleable quality. Items for sale are not damaged or broken unless that damage does not materially affect the item's intended use or may be perceived as adding character to the piece. Staff have more knowledge of the goods for sale and possess at least a rudimentary

understanding of the applications a customer may be able to reuse an item in. Store fixtures effectively merchandise and contain salvaged items. The store can be expected to attract local do-it-yourselfers and crafts people as well as semi-regular clientele from across Cape Breton and the eastern mainland of the province.

Upscale – This model is characterized by higher than mid-range pricing with prices on items such as historic wooden moulding approaching the price points of new moulding of similar widths. The cachet associated with vintage or historic materials is played up to add to the perceived value of the architectural salvage. The business may also produce home décor items made from the store's salvaged material and price these items in a value-added context to help highlight the perceived value of the materials if purchased independently. Staff is knowledgeable in areas of either home renovation or crafty re-purposing projects that utilize salvaged material. The store is clean and attractively merchandized. Customers who tend to spend more per transaction than mid-range clientele will be drawn from much of Nova Scotia. Those with a passion for unique home décor accents and those who like to re-purpose rustic material will be attracted to the place.

Store Image Recommendation

The Thrift model is disagreeable in its low threshold for merchandise. This role is already being played by yard sales, flea markets, and to some degree by the Salvation Army thrift stores. The *ReStore* in Dartmouth can also be



placed in this category. Re-selling goods that were inferior when they were new contributes nothing to the local community and deceives those customers who may not know any better. Furthermore, the atmosphere and price structure is unsuited for unique architectural details that should command a premium in an appropriate retail setting.

The Upscale model is disagreeable in its exclusivity. Although there is undoubtedly a segment of the population that would welcome such a store, the local demographics may not be sufficient to sustain it, even with the ability to attract some customers from further afield.

The Upscale model also does not dovetail well with the affordable housing dynamic that has inspired this project.

The Mid-Range model promises the best of both extremes. A minimum level of quality can be maintained in terms of inventory; fair prices – high enough to reflect the quality of the goods and low enough to attract all demographics can be offered; and unique or elaborate architectural details can be priced at a premium without looking out of place. Merchandise that is targeted at each of the diverse customer profiles identified earlier fits well under this model.



Figure 24. “Kolonia” house and fence in September 1966 (Beaton Institute).

ADDENDUM

This section consists of a four page site assessment for determining the suitability of a property for deconstruction.

Deconstruction Site Assessment - Draft

The following checklist will serve as a helpful primer or guide for anyone interested in how to assess a property for deconstruction potential. It outlines what to look for in terms of both salvage and pitfalls.

Is there any evidence of insect infestation or damage?

Are there oblong holes (3-5 mm in diameter) in any wooden members?

Are there "pin prick" holes in any wooden members or woodwork?

Is there any evidence of fine sawdust?

All of the above would generally only be found in unpainted wood. Any wood displaying evidence of wood-boring insects should be burned and in no circumstances should it be added to inventory as it could threaten contamination of sound wood or other buildings.

What type of cladding does the subject building possess?

Wooden Clapboard?

Wooden Shingles?

Asbestos, Aluminum, Masonite?

Vinyl siding may need to be peeled back to identify what type of cladding is behind. Many structures may have both shingles and clapboard in which case the shingles are generally found on the subordinate side or sides of the building. Clapboard is the most desirable as it is easily removed and leaves the fewest nail holes in the underlying sheathing boards.

Does the subject building have decorative hardware?

Cast iron door hinges? Plain or embossed?

Door Knobs? Glass, porcelain, steel, plain brass, or ornate brass?

Antique doorbell? Servant bell pulls or buttons? Kitchen drawer pulls or cupboard knobs?

Register grates? Plain or fancy?

Note that ornate brass knobs can hold considerable value. Servant summoning devices are highly desirable. Demand for register grates is high.

Does the subject building contain significant amounts of scrap metal?

Copper pipes? Aluminum doors or aluminum storm windows?

Damaged cast iron radiators?

Scrap metal salvage is increasingly a strong revenue stream associated with salvage operations. Cellars often provide the best indication of the quantity of copper. Note that pressure tests can be conducted to determine the soundness of cast iron radiators. Bad rads still have value as scrap metal.

Is the building structurally sound?

Has prolonged water penetration rotted floors or walls?

Are there visible signs of movement in the structure?

Many old structures are built so that joists are simply set into mortised or notched seats. Movement in a building can pull structural members apart compromising their structural integrity and making for an unsafe workplace.

Are hazardous materials present?

What type of insulation, if any, does the building have?

Is the region known to have used asbestos in plaster? When?

Is there an outdated furnace in the building?

Is the building clad in asbestos siding?

Know how to recognize different types of insulation and in what applications each was used. Attic and wall insulation may vary within the same structure. Furnace and pipe insulation may also contain asbestos. Asbestos siding can often be removed without creating airborne pollutants. Know how to differentiate between asbestos fibres and animal fibres in plaster.

Is there evidence of wildlife/animal occupation?

Are there open doors or windows allowing access?

Are there any feces deposits visible?

Raccoon, rat, mouse and many other wildlife droppings may contain agents that can cause debilitating, even fatal outcomes if inhaled. Abandoned buildings are favorite abodes for wildlife; raccoons and porcupines are notoriously stubborn guests.

Is there any cut stone in the structure?

Cut sandstone or granite blocks may be found in the foundations of both prominent and common buildings.

This material is generally very desirable and highly marketable. Due to its weight it is best to arrange a sale for it directly from the salvage site to limit handling costs. In some cases a cellar wall may contain a few pieces of cut stone surprisingly mixed into a wall predominantly composed of fieldstone.

Does the structure contain any brick?

With most of our building stock constructed of wood, extensive brick use is generally limited to industrial or commercial sites. On a smaller scale, chimneys, fire places, foundation walls, and brick furnaces are sources of brick commonly associated with housing stock.

Most salvaged brick is of a softer composition than the brick manufactured today. It is therefore generally unsuited to reuse as an exterior cladding. It is however, extremely popular in covering interior walls, building fireplaces, and laying garden paths.

Is there decorative moulding, trim, or baseboard present?

Moulding is perhaps the most cost effective house salvage. It is readily accessible and saleable. It may be a chief consideration of properties where a complete deconstruction is, for whatever reason, not possible, and a quick extraction of materials is the only real option.

Very wide moulding or high baseboards will often be found to consist of two pieces made to look like a single piece. The right tools and a practiced technique are required to remove particularly delicate moulding.

What sort of flooring is in the building?

Hardwood? Softwood? Linoleum? Tile?

Hardwood flooring is saleable but requires more labour per square foot in salvaging than many other components. The wider nature of softwood floor boards makes their extraction quicker than hardwood. Some floors were "double boarded" for sound proofing. There is a limited market for antique linoleum – largely in the hobby or art markets. It is most often found below bedroom carpets. See below for information on tile.

Is there tile in the building?

Look for it in vestibules.

It is often incorporated into fireplaces.

Decorative tile is often found around hearths in the most gaudy of colors. No matter how ugly these may appear they still have a market. If tile is found on a vestibule floor it is generally more attractive than the fireplace variety and may even be encaustic tile which is quite valuable. Historic tile of any kind was usually imported from Europe with England being the primary source.

Attics and cellars are repositories.

Are there any discarded, surplus, or removed architectural pieces in the cellar or attic?

Are there antiques in the cellar or attic?

These areas of a building are notorious for collecting odds and ends that may have been removed during an earlier renovation and retained for some forgotten reason.

What type of lumber might the building contain?

Are there large hand-hewn beams? Or are they sawn?

Are the floor joists in good shape?

Is the structure platform or balloon frame construction?

A hand hewn beam will typically command a higher price than its machine sawn counterpart. Balloon frame construction should yield longer pieces of lumber from walls. Early interior (partition) walls may contain wide, vertical boards, possibly tongue and groove, that once served as a means to divide a room. In some cases these still do service in the same manner, in other instances they may have had studs and lathe and plaster added to one side.

Is there a plain box staircase or a grander stairway with post and balustrade?

Identify newel posts and balusters.

Should the entire staircase system be salvaged or just individual pieces?

Newel posts are often cleverly and substantially connected to both floor and staircase. Extraction can take some time to do properly.

Are the windows worth salvaging?

Stained glass, frosted glass, colored glass, textured glass...

Unique windows: odd shaped or multi-paned have good resale potential.

Are the doors worth salvaging?

Four panel? Christian? Ladder? French? Other?

Paneled doors of the "four paneled" variety are quite common but sell reasonably well. Paneled doors of the "ladder" variety (horizontal stiles and panels) are scarcer and can command a higher price than the more common "four paneled".

Exterior Details

Are there cornices on the building?

Any brackets? Moulding?

Verandah posts and balustrades?

The bulky scale of many exterior details make them popular candidates for repurposing as interior décor or garden accents. Bold projections in the form of door or window cornices can become used inside in a variety of ways.

Outbuildings

Is there an outhouse? A shed? A barn?

Again, it is helpful to be aware of where antiques tend to be found and outbuildings should not be ignored during an assessment.