DECISION/DIRECTION NOTE

Title:	Metal Roofs and Solar Panels in the St. John's Heritage Areas
Date Prepared:	May 6, 2019
Report To:	Chair and Members, Built Heritage Experts Panel
Councillor & Role:	Councillor Maggie Burton, Planning and Development Lead
Ward:	All

Decision/Direction Required:
To discuss options for energy efficient retrofits on buildings in the St. John's Heritage Areas, specifically the use of metal roofs and solar panels.

Discussion – Background and Current Status:
The item was discussed at the April 18, 2019 Built Heritage Experts Panel (BHEP) meeting. The previous staff memo had recommended more research may be required prior to a recommendation to Council; however, the BHEP was satisfied with the information provided and made a recommendation which went to the May 1, 2019 Committee of the Whole meeting. Given differences in the recommendations between the staff report and the BHEP meeting, Council has referred the item back to the Panel for clarification.

Background
As older buildings are renovated, many residents and property owners are looking for ways to make their buildings more energy efficient. The City wishes to encourage adaptive re-use of buildings in the Heritage Areas, and therefore the City is seeking ways to strike a balance between preserving the heritage and character defining elements of a buildings and allowing renovations to make the building more energy efficient. In particular, the use of metal roofs and solar panels are brought to the Panel for discussion and recommendation. This discussion is limited to buildings in the Heritage Area and does not include designated Heritage Buildings because any renovation to a designated Heritage Building would be assessed on its own merit and require Council's approval.

Metal Roofs
The City is beginning to receive requests for metal roofs. As per Section 5.9.4 Heritage Area Standards (Table) of the St. John's Development Regulations, modern roofing materials may be used in all three Heritage Areas. In Heritage Area 1, modern materials may be used provided such materials, in the opinion of the Inspector, replicate the period style and materials of the structure.

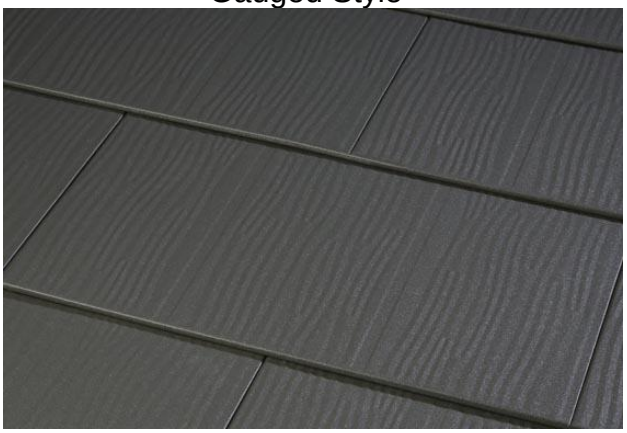
Metal roofs have about a 50-year lifespan and are a good option for areas with high winds. While metal roofs are about three times the cost of asphalt shingled roofs, some residents

prefer metal due to the long lifespan. Similar to other roofing materials, metal roofs come in a variety of shapes, styles and colours. One of the more popular styles are the gauged and standing seam roof style, but other options include slate style, shake style and Mediterranean tile, among others (see below). The gauge style typically does not replicate the period style of residential buildings in the St. John's Heritage Areas. In some cases, the other styles may be more appropriate but generally cost 50% more than the gauged style.

The City allows a variety of roofing materials in the Heritage Area, as long as it replicates the roofing styles along the streetscape; metal shingled styles could be permitted but the gauged metal roof style would not be recommended. While allowing shingled metal roof styles may be a balance between heritage preservation and energy efficiency, there will be an additional cost for residents if the City limits the style choice.

Gauged Style

Slate Style



Steel Shingle Style

Cedar Shake Style

<u>Solar Panels</u>

Solar technologies are important for both environmental and financial reasons. As technologies advance, so do the options for solar panels. Research on solar panel policies in heritage conservation areas in other municipalities shows that there are a variety of policies ranging from very restrictive to no restrictions at all. Below is a summary of such policies and the benefits and drawbacks of each:

- Solar panels not permitted – This type of policy ensures that heritage conservation areas are maintained in their purest form with other original materials permitted. While the historic features are maintained, it is argued that denying applications outright may make historic homes unsustainable in the future energy economy.
- Solar panels are only permitted on sides not facing a public road – This type of policy ensures that the view of the building from the street is preserved while allowing the potential for installation on another side of a sloped roof. This may work for some residents; however, the disadvantage is that depending on the orientation of the street and the building, there may be cases where one neighbour may be permitted solar panels while the other is not.
- Solar panels are permitted as long as they do not detract from the look of the building – This type of policy is fairly flexible and does not limit the location of the solar panel but is subjective. It is not a clear-cut policy that informs the property owner if they would be approved or not. This type of policy would benefit from an information pamphlet indicating what placement would be appropriate in a Heritage Area.
- Solar panels are permitted – This type of policy removes any subjectivity, but also removes the control of placement of solar panels. There is a risk that the solar panels may alter the look of the heritage conservation area.

The St. John's Heritage Area is at an advantage with respect to solar panels because a large portion of buildings in the Heritage Areas have flat roofs. Recognizing that solar panels generally need to be installed on an angle, it is not believed that solar panels on flat roofs would detract from the look of the building, especially on a black roof. It would not be recommended to install a solar panel on the sloping side of a mansard roof.

The topic is brought to the Panel for a discussion on appropriate solar panel policies for the St. John's Heritage Areas, and options for gabled and sloped roof styles.

Example of solar panels installed on a flat roof


Solar panels that blend with the existing roof. Note, more expensive solar panels generally include pure black panels that do not have a metal frame or rims and only extends five inches from the roof's surface

Solar panels that detract from the look of the building.
Source: citylab.com

Key Considerations/Implications:

1. Budget/Financial Implications: Not applicable.

2. Partners or Other Stakeholders:
   Heritage Foundation of Newfoundland and Labrador; property owners.

3. Alignment with Strategic Directions/Adopted Plans:
   A Sustainable City – Plan for land use and preserve and enhance the natural and built environment where we live.

4. Legal or Policy Implications: Not applicable.

5. Engagement and Communications Considerations: Not applicable.

6. Human Resource Implications: Not applicable.

7. Procurement Implications: Not applicable.

8. Information Technology Implications: Not applicable.

9. Other Implications: Not applicable.

Recommendation:
That the following apply to the use of modern roof materials in heritage areas:

- Shingle-style metal roofs for residential dwellings will be permitted subject to the material replicating heritage style. Non-residential buildings may be permitted other styles of metal roofs if the style replicates the existing roof style.
- Solar Panels will be permitted as long as they are not visible from the street.

Prepared by/Signature:
Ann-Marie Cashin, MCIP – Planner III, Urban Design and Heritage

Signature: _____

Approved by/Date/Signature:
Ken O'Brien, MCIP – Chief Municipal Planner

Signature: _____

AMC/dlm

Attachments: Not applicable.

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Memo Re: **Batten-Seam Metal Mansard Roof Repair, 28 LeMarchant Rd.**
Date: August 7, 2020
From: [redacted]
To: Ken O'Brien, Chief Municipal Planner
Cc: Ann-Marie Cashin, Heritage Planner

Thank you for your kind comments about our selection of shingles back then. All the resources, blood, sweat, toil and tears that we have poured into this historic property can be considered our gift to the City of St. John's, its present and future residents, and visitors.

The heritage-style asphalt shingle product used previously has unfortunately been a major source of trouble and grief, and became completely unavailable at least a dozen years ago, with no similar substitute in terms of pattern and colour.

There are **numerous issues with asphalt shingles**, most of which also apply to metal imitations thereof:

- They are a **cheap modern imitation** of traditional materials such as cedar shakes and ceramic clay roofing tiles. They are **aesthetically ugly**, a poor imitation of what they're not.

- They are **historically inappropriate** for 19th century buildings.

- There are **no products** available with a **suitable colour and pattern**.

- They are **inherently problematic** in the typically cool, damp and windy local climate – they don't seal normally, and they absorb moisture, becoming susceptible to premature deterioration due to freeze-thaw action, wind damage, deformation and decomposition.

- They are **organic and combustible**.

- They used to be promoted with 25 to 40 year **warranties**, leading to widespread **dissatisfaction with actual performance**; successful class action **lawsuits**; and, endless **trouble** for users, including warranty **pro-rating**, and **extensive exclusions** for numerous fine-print issues, and of the massive labour component. Current warranties have been reduced to a **small fraction** of those offered earlier.

- They have been a constant source of **trouble** and **repair nuisance**.

Due to major escalation of labour and material costs, and much more onerous safety requirements, shingle **replacement costs are exorbitant and untenable**, especially in the context of their poor performance and short service life, and the fact that we have 7 faces requiring replacement, not just a simple front face.

It is **not appropriate to lump all available metal roof types together**. They need to be categorized as follows, in **descending order of quality and heritage suitability**:

1. **Batten-Seam** – The roofing system of choice since medieval times, offering durability, fire resistance, and real longevity of service if detailed and installed properly. Failures typically only occurred due to wartime bombardment, or accidental fire collapsing substructure. The 2x2 battens contribute rigidity and help enable leak-proof fastening.

2. **Standing Seam** – A modern substitute for batten seam, enabled by the invention of machine crimping – leaves a thin upstanding seam, but is visually different from batten seam.

3. **Flat Seam** – Based on flat sheet metal panels with interlocking multi-bend edges, not seen very often. Due to thin gauge limitations, can be prone to visible warpage and unevenness.

4. **Corrugated** – Based on large panels with factory cold-rolled crinkles to add rigidity and control warpage. This type is used on industrial and lower-grade commercial, and is visually unsuitable for residential or heritage applications

5. **Batten-Seam Imitations** – Contemporary pre-formed systems attempting to simulate batten seam, which they fail to achieve under scrutiny, typically due to the oversized battens and reduced batten spacing.

You have indicated that our proposed batten-seam metal solution would be **approved** if we could show a **similar local precedent on a house**. This one is approximately a kilometre away:

Another batten-seam installation on a house several minutes drive away:

Other nearby batten-seam examples of a similar original building vintage:

Nuns' residence

Mixed use building

Museum

Church

Courts and Museum (Note premature deterioration of asphalt shingled portion in background)

Here are some other illustrative examples on various residences:

In conclusion, extensive analysis has shown that **batten-seam metal is the only heritage-appropriate, visually attractive, long-lasting, and achievable solution for our mansard repair**.

The proposed solution is a properly-designed and detailed, custom fabricated system, not a poor imitation or pre-fab industrialized system.

It is sustainable, durable, inorganic, non-combustible, not frost susceptible, and, designed and built to serve without maintenance or deterioration for a generation or more.

It will honour and enhance the important, over-130-year history of the property, with a heritage-appropriate mansard roof of lasting high quality.

It will be a beautiful enhancement of the streetscape, and a lasting asset benefiting our City, its residents and visitors, for decades to come.

Respectfully Submitted,

[redacted]

PS This information would also be useful for Council and the Built Heritage Experts Panel, please forward.