

LARCH HILLS NORDIC SOCIETY

Executive Meeting Tuesday, March 2, 2021 at 7:30pm ZOOM

In attendance - Suzy Beckner, Don Miller, Karen Tanchak, Abbi May, Clint Smith, Craig McBride, Brad Calkins, Rob van Varseveld, Laura Hepburn

1. **Adopt Agenda** – Additions Abbi motion to adopt. Rob 2nd.
2. **Minutes of last executive meeting** – Feb 2 Clint motion to approve, Brad 2nd.
3. **Business arising/outstanding issues:** none
4. **Treasurer Report** – Don- see attached report

Final accounting statements won't be ready in time for the AGM next week but Don will present internal statements. Suzy suggested that we consider having AGM and the budget at the same time, either in the spring or fall.

- BC Ski Team Members – to be paid \$500 each.
- Transfer money to track setter fund and lighting account.
Suzy motioned to move \$15,000 into the Tracksetting fund and \$15,000 into the lighting fund. There is about \$130 in the tracksetter fund now. We may vote to put more in the fall depending on the financial situation. Craig 2nd. All in favour.
- Honorarium for Tracksetters– Increased to \$600 last year. To be paid out to tracksetters and Pauline.
- The tracksetters would like another type of Ginzu. They would like some money to make one. We will get some more information about this. Rob may be interested.
- Suzy motioned to approve \$2000 upgrade for the bunker. Abbi 2nd. All approved.
- Dave Brubaker Recognition for 25 years of maintenance and repairs. Suzy motioned to will budget of \$1000 for a thank you gift for him. Rob 2nd. All approved. We will put a recognition photo of him in the Chalet and organize a news article.

5. Manager Report – Karen

-see report

There has been more problem with vandals in the parking lot. Pauline would like to put the barrier up earlier in the season. Rec sites and trails won't allow us to put a gate up. Suzy will continue to work on this.

6. Chalet Roof Ice Repairs – Rob

See report- the engineer report is complete. There is a lack of air seal and inadequate insulation. This is not what was on the original drawing.

The options for repair are:

1. Removing drywall and spraying with spray foam for complete air seal.

2. Produce a vented system which would also require removing the drywall. This is more involved and costly but would keep the shingles cooler.

Cost is estimated at \$21,000-\$23,000 for option 1 with a lot of volunteer contributions. Rob motioned to present at the AGM and request approval to spend the estimated \$23,000 to fix this. Suzy 2nd. All in favour.

7. Land Use and Trail Planning Committee Report - Craig

- The Land Use and Trail Planning Committee hasn't met since our last meeting.
- At our next meeting we will discuss the proposed route from the Far East
- I have contacted Dave Wallenstein who will contact the private landowner to set up a meeting to discuss the proposed dog trail on his land.
- We will have a recce sometime this month to snowshoe the proposed Link trail from Sky Trail to Larch Hills Rd if anyone is interested in joining us.
- Suzane Fordyce has completed the updates to the All Members Map and Core Area Maps. Upon final review by the LUTP we will send it off to Rec Sites and Trails so they can prepare the map signs.

Suzy would like to have the the Lollipop loop (bottom of the South Loop) approved for dogs for next year, possibly on certain days until the planned dog trail is complete.

8. Lighting Committee Report – Rob

- Fundraising Update. Nordiq Canada's campaign raised almost \$20. Gorman donated \$10,000 towards the project as well. That puts us at about \$180,000, which is enough for phase 1. The goal is to have phase 1 done for next season. Randi continues to apply for some large grants to pay for the next phases.
- The government grant we applied for would require us to pay for the project and submit receipts. SASCU would provide \$100,000 line of credit with the tracksetter as collateral. Rob motioned to present to the AGM the concept of Bridge financing of \$100,000 subject to an approved grant so that we can complete any future phases of the lighting project. Suzy 2nd. All in favour.

9. Carbon Neutral Committee Report – Brad

- Car counter: expensive, can use existing counter used for vehicle alert. Ranges from \$700, plus \$35/mo. Highways doesn't put in counter in winter typically. Issues with plows for physical counters. This will be deferred due to cost for now.
- Local government: CSRD has landfill offset project, but only sell offsets to one source. Followed up with offsetters.ca for local project – expensive to do our own, recommend purchasing offsets from BC project.
- Alan Harrison: supportive, but no City projects (they tend to get funding to reduce carbon expenditures).
- Greg Kylo: visited LH. Seems interested in bussing or road improvements, but not clear what he can do to help do to reduce carbon emissions.

- AGM motion to pay \$600 for offsetting this year. Want to have done something concrete before we can start promoting our efforts. This will be included in the donations next year. **Brad motioned to pay \$600 for carbon offsets for the current season.** Suzy 2nd. Nine in favour, one against.

10. **Annual Membership and Day Use Fee Review** – Suzy and Karen

- Review amounts and discuss increase. Larch Hills costs slightly less than average compared to other clubs. There are increasing ongoing costs.
- **Suzy motioned to increase the season pass fees for early birds to \$135 for adults, and \$70 for youth, and regular passes to \$150 for adult and \$70 for youth.** This is an increase equal to the cost of one day ski pass/ year. Abbi 2nd. All in favour.
- Child rate was added last year at \$45/season and will not change. Day rates and Snow shoe fees will not change this year.

11. **Website Homepage**– Suzy and Jonathan

We previously agreed not to post news items on the home page. News can be seen in the twitter feed and enotes. There is now a link to the lighting project on the home page.

12. **Elections** – Suzy and Pauline

Brad and Clint are stepping down as directors this year.

Additions

1. **Tracksetting Sunday**- George set 3 classic tracks on some of the lower trails on Sunday. Feedback showed that most would prefer to keep the skate track open with only 2 classic tracks.
2. **Karen's contract** -Suzy motioned that we extend Karen's contract to April 15th. Craig 2nd. All in favour. It was previously to March 31st but this will give more time to get things wrapped up. We will maintain the start date of November 1st for now.
4. **Lantern Ski** -Kari Wilkinson and Kari Miller have volunteered to do the **lantern ski**.
5. We will buy an annual **Zoom membership** for the club

Next executive meeting April 6, 2021, 7:30pm on Zoom

AGM March 9, 2021 7:30pm Zoom.

Motion to Adjourn Laura Hepburn at 10:06 pm

Memo from Don Miller

Date: March 2, 2021

To: Executive Board - LHNS

Cc: Meeting file

RE: Treasurer's Report

- *Cash Position*
 - *Restricted funds –Lighting (not included - \$ 10,000 rec'd today)* 151,985.
 - *Restricted funds – Gaming* 80.
 - *Unrestricted funds* 178,929

- *February transactions:*
 - *Memberships – very few* 1,505
 - *Total for YTD* 128,661
 - *Total for last year* 100,116
 - *Cash trail fees* 11,636
 - *Total YTD* 40,634
 - *Total for last year* 35,232
 - *Expenditures:*
 - *Equipment repairs* 1,395
 - *Fuel (note rec'd billing for Feb deliveries \$ 3,548)* 2,715
 - *Radios (approved estimate \$ 2,600; additional to come)* 1,750
 - *Transfer funds collect for Race Team* 14,450
 - *Signs* 1,779

- *Financial statements*

- *Things to Ponder*
 - *Fiscal year end*
 - *Transfer of funds to Track Setter replacement fund*

LARCH HILLS NORDIC SOCIETY
Executive Meeting Tuesday Mar 2, 2021
7:30 PM,

Operations Manager Report

- Trails continue to be busy – parking lot was full for most of February. A little bit of a dip during the cold spell.
- I have not yet totalled the number of non-members signing in for February but was very busy as e-transfers alone were above \$1,400. Stats for the Trails fees paid by e-transfer is proving that this is a popular way to pay. A few requests still for credit/debit card payment.
- The pick-up of prizes and t-shirts went well. A few items remain to be picked up. I have emailed the persons involved to remind them to come in.
- The Lighting Fundraising has been constant. I have printed the email notifications and written the email address of the donors on the forms. I contacted Nordic Canada and their Philanthropy Coordinator will send us a listing of donors with physical addresses. I will pass that information onto the Lighting Committee for Thank You cards. 25 donors raising \$19,735 to date.
- Survey organized by CCBC has been popular. 321 responses that are available for me to download into excel so that they can be reviewed. I am open to suggestions for ways to sort information,
- School program has been extended into March. (Bookings to March 11 so far) Expect there will be last minute decisions to visit the trails up until spring break. Quite a few classes in January were cancelled due to COVID concerns and then a few days of classes due to the cold temperatures.
- Port-a-potties have been emptied 4 times to date. Original agreement was to end of March. Will need them to be pumped once more before removal.
- Some new users of Avenza have notified me that the instructions on the website do not seem to work. I did a testing of what was written and they do seem to be outdated. I have written up an instruction sheet for both IOS and Android users available in the office. I have asked a few people to use them to see how user friendly the instructions are. Once, I have any kinks ironed out, I will ask Jonathan to update the webpage.
- Radio testing is on going and the no-cell range areas are mostly covered now by radio. This of course is good for calling Safety Hosts that might be skiing in a no-cell reception area and Safety Hosts to be able to communicate to the chalet for co-ordinating EMT's, etc from the location of an incident in those dead zones. Bill has now installed the second Base radio in the PB.
- Dead End Sign is up at Far East and a Trail Etiquette sign has been posted at the South Hub. The second Dead End Sign will be taken out to Temptation this week. Thanks goes to David Millard for being the go to person to have these installed. The last 3 etiquette signs Pauline and I put up: 1 at top of stairs under the snowshoe fee sign, one on the entrance beside the chalet at the ski rack and the last one at the start of the canine trail where some folks were walking on the dog trail.
- Completed another on-line report for incidents in the parking lot. 3 incidents between Feb 24 and 27. First one involving 3 vehicles – donuts and drinking but Pauline convinced them to leave by taking flash pictures in their direction – nothing useable on her camera. Second incident happened at 4pm in the afternoon while she and George J were unloading wood into the woodshed, right beside them. And the

third was a lone white truck that drove up at 1 am parked for a bit, left and came back 30 minutes later and drove circles and donuts for about 30 minutes.

- o One car came up Tuesday morning around 5:30 and did donuts and revving his engine
- o Pauline has asked if she could put up the barrier with an opening at the top and the bottom of the lot. Skiers would need to drive in at either opening and park in the normal fashion. She would close it off at night and open in the morning.
- It was brought to my attention by Keith that the door is off the outhouse up at Treebirds and the structure is on quite a lean. Mitch Mildrew (sp?) was skiing with him and volunteered to work on the fixes needed once the snow is gone.
- Liaison with the Safety Host Committee.
 - o I hosted a zoom meeting for the Safety Committee and Safety Hosts last week.
 - o There are 4 new fully trained Safety hosts and now 3 previous hosts are retiring at the end of this season. The recruitment of new hosts will begin now for next season.
 - o The Emergency Action Plan posters have been printed and are displayed on both floors of the chalet.
 - o An Emergency Response Checklist is almost complete to display on the First Aid Cabinet (on the lower floor). The objective is for members who might not be familiar with the process and equipment available to follow step by step instructions if they are in need of assistance or trying to offer assistance.

LARCH HILLS NORDIC CHALET ROOF INSULATION REPAIRS

MARCH 2021



Problems:

- Heat Loss.
- Severe ice damming and heavy icicle formation.
- Melt water backing up and leaking into overhangs and soffits.

Diagnosis, Analysis and Findings:

- Randy Smith, P.Eng a building envelope engineer from Williams Engineering was hired to analyze the situation and produced a report and some recommendations (see attached).
- Original drawings called for SIP panels. We were not supplied with a true SIP panel.
- Inadequate air seal and vapor barrier causing heat loss resulting in a lot of snow melt leading to ice formation at the overhangs.

Recommendations:

1. **Unvented System** – Remove drywall and white EPS foam block and spray foam 5”-6” of 2lb foam tight to underside of roof sheathing forming an air-tight and vapor-tight seal and increased R value (minimum R30).
2. **Vented System** - Remove drywall and white EPS foam block. Create 2 ½” vent cavity directly under roof sheathing and spray foam 5”-6” of 2lb foam forming air-tight and vapor-tight seal and increased R value (minimum R30). Requires ridge vent with raise cupolas to clear snow depth. Requires adequate soffit venting. Airtight seal very critical in this case. Benefit – any heat loss escapes through vents rather than through shingles.

Proposed Solution:

The research shows there is an ongoing debate between vented and unvented systems for cathedral ceilings. If only I had a nickel for every opinion I found... Although Williams engineering has had success with both systems, they recommended the **unvented system** for it's simplicity and felt it had less overall risk. The spray foam suppliers that were contacted were also adamant that the unvented system is the preferred method and have sprayed many successful unvented roofs from Revelstoke to Silverstar.

Estimated Costs:

- Demo - \$0 volunteers
- 2lb Spray Foam - \$7 /Ft2 @ 2000 Ft2 = \$14,000
- Hang Drywall - \$2 / Ft2 @ 2000 Ft2 = \$4,000
- Mud & Tape - \$0 Reg Walters has volunteered.
- Paint - \$/Ft2 @ 2000 Ft2 = \$2000
- 15% Contingency - \$3000
- Total Estimate - \$23,000

WEC File No. 044829.00

February 22, 2021

Via Email: robvanv@telus.net

Larch Hills Nordic Centre
c/o Rob Van Varseveld, P.Eng.
3181 28th Street N.E.
Salmon Arm, BC V1E 3K8

Attention: Rob Van Varseveld, P.Eng.

Subject: Ice Damming Investigation
Larch Hills Nordic Centre,
Salmon Arm, B.C.

As per your request, Williams Engineering Canada Inc. (WEC) conducted an investigation excessive ice damming occurring at the Larch Hills Nordic Centre near Salmon Arm B.C. The following lists our findings and recommendations.

Background

The Larch Hills Nordic Centre is comprised of an original log chalet (constructed circa 1980s) with gabled roof and mezzanine. An addition was added to the building in 2016. Included in the addition was the installation of a shed dormer on the original building (see Sketch #1). The design of the addition was completed by New Town Services of Kelowna, B.C. Construction drawings were provided for our review.

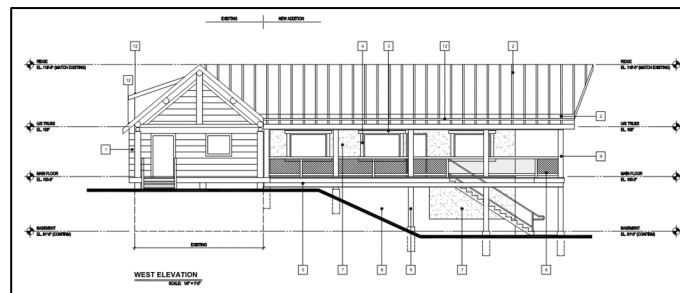
Since completion of the addition, excessive ice damming has been reported on all elevations of the building, including the new shed dormer area.



Photo #1: East Elevation



Photo #2: Ice Damming

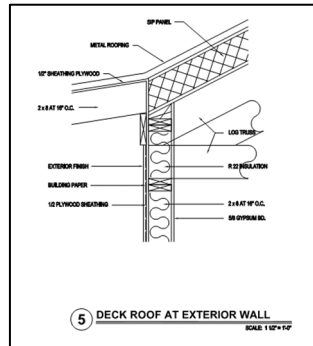


Sketch #1: West elevation (construction drawings)

Observations

A site visit was conducted on February 16, 2021, by Mr. Randy Smith P.Eng., Practice Leader, Building Science, from Williams Engineering Canada Inc. The site visit was also attended briefly by Mr. Rob van Varseveld, representative for the Nordic Centre. The weather at the time of the site visit was -3°C and cloudy. The interior of the building was 13°C with an interior relative humidity of 30%.

Examination of the construction drawings found the roofing system was not constructed as designed. The proposed structural insulated panel system (SIPS) slated for the new roof portion had not been installed.



Sketch #2: Proposed roof design



Photo #3: Common SIPS panel design

Instead the roof structure appears to be common 305 mm (12") roof I-joists (TJIs) with expanded polystyrene block insulation (EPS) inserted between the joists. The insulation is held in place with wood blocking.



Photo #4: Open ceiling drywall



Photo #5: Insulation recessed between joists

On the west portion of the new roof, where the roof angle changes and extends over the exterior walkway, it appears 2x8 dimensional lumber joists were used instead of TJIs. The space between the dimensional lumber joists were completely filled with expanded polystyrene.



Photo #6: Framing and insulation at roof slope transition

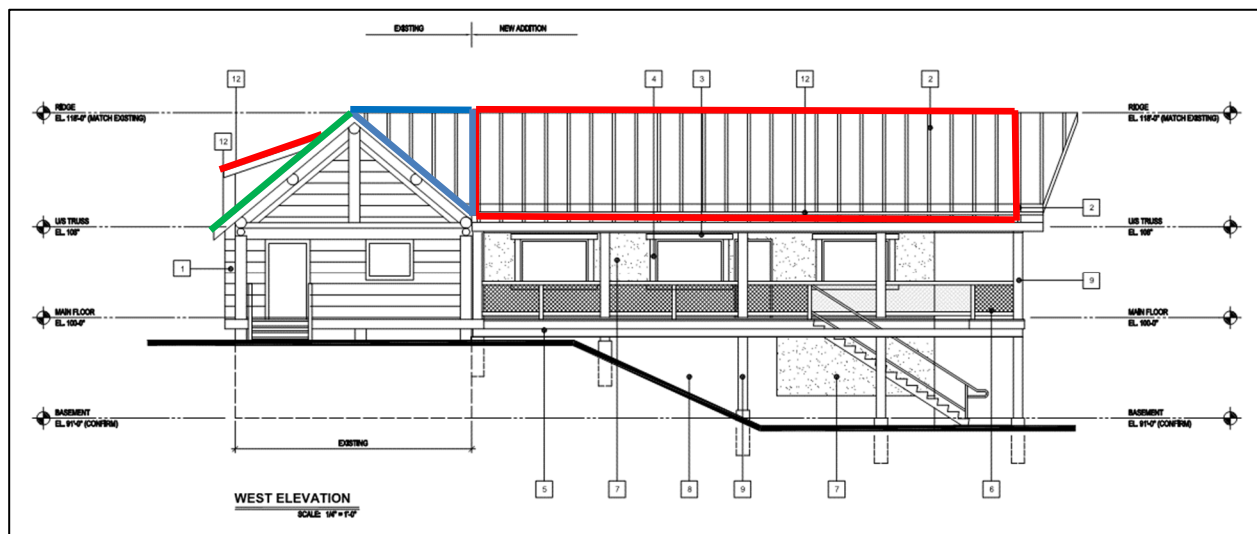


Photo #7: Ceiling to wall junction

In the existing roof area, the remaining roof structure along the south slope appears to have been insulated with $\frac{1}{2}$ lb/ft³ density, open cell, spray-applied, polyurethane foam, with a 25 mm thick layer of foil-faced, polyurethane insulation installed inboard, over the new roof framing. Please note that this foil-faced insulation was not used behind the tongue and groove (T&G) ceiling finish.

At the time of the site review, the ceiling drywall where the new roof joins the existing roof, had not been installed. The north portion of the existing roof appears unmodified with fibreglass batt insulation and polyethylene vapour retarder. The shed dormer is constructed in a similar fashion to the roof in the new area although a carbon-infused expanded polystyrene has been used which has a slightly higher thermal resistance (R-value) per inch.

It should be noted that, in all new construction areas that were examined, no polyethylene vapour retarder was found between the insulation and interior ceiling drywall.



Sketch #3: Insulation in various roof areas

- EPS Insulation between roof joists (addition)
- Original Batt Insulation with Poly Vapour Retarder
- Open Cell Spray Foam and Foil-Faced Polyurethane Board

The Ice damming observed during the site visit occurred on all elevations, except the south as no eave exists on that elevation. The amount of ice damming varied depending on location.



Photos #8, #9, #10: Examples of ice damming

Discussion

Ice damming can occur during cold weather when snow is present on the roof. If the roof sheathing is heated from below, the snow will melt at the shingle/snow interface. The meltwater runs down the roof to the eave. As the eave is typically outboard of the building envelope, the sheathing is at the outdoor ambient temperature. If the outdoor temperature is below 0°C, the water will freeze to the shingles. Subsequent melting events will add layers of ice to the eave, eventually forming a dam at the eave edge. The meltwater then backs up behind the dam which can then migrate under the shingles. Depending on whether underlayment has been installed below the shingles, and the type used, water penetration through the roofing system can occur.

Please note that, depending on the direction of roof exposure, icicle formation at the eaves can also occur due to solar heating of the shingles. This should not be confused with ice damming as the cause is completely different. Depending on the level of snowpack on the roof, and shingle colour, the shingles may be subjected to sufficient solar heat gain to melt the snow, producing runoff. If the water is not collected or controlled at the eave edge with eavestroughing or other water management systems, icicle formation will occur.

The control of ice damming requires the control of heat loss and air leakage through the roofing system. It is therefore important to construct a continuous thermal barrier with a suitable thermal resistance (R-value) as well as a tight air seal.

Conclusions and Recommendations

The current level ice damming on the building is caused by non-continuous thermal insulation and ineffective control of air leakage within the roofing system.

The portions of the original roofing system that still exist, with the batt insulation and polyethylene vapour retarder, are operating as designed but would still be inadequate to control warm air leakage to the underside of the roof sheathing.

The portions of the original roofing system that have been retrofitted with open cell spray foam insulation and foil-faced polyurethane insulation boards should perform significantly better than the original system however, the open cell foam does not provide an effective or durable air seal due to its open cell structure. Although a poly vapour retarder was not installed, the foil-facing on the foam board (with taped joints) will provide effective control of water vapour diffusion. It should be noted though that, although the board joints and terminations were taped, unsealed penetrations through the foam board will reduce its effectiveness as a vapour retarder.

The use of EPS insulation in the addition and dormer sections is acceptable from an insulation perspective however, little to no effort appears to have been made to make the underside surface of the EPS airtight at joints and connections. Further, given the position of the log framing, there would be certain areas where creating an effective airtight connection would be exceedingly difficult.

The restoration options fall into the three categories shown below and are based on the roof restoration design. A discussion of each option is provided. All options include replacement of interior finishes.

1. Unvented roof
2. Vented Roof
3. Insulated roof

Option #1: Unvented Roof

This option requires the removal of the existing drywall, interior finishes, and insulation materials to expose the roof structure and underside of the roof deck. The underside of the roof deck would then be sprayed with 150 mm (5") of 1.8 – 2.0 PCF density, closed cell, spray-applied polyurethane foam insulation (BASF "Waltite", Icynene "MD-C-200", etc.). The insulation would be applied in maximum 50 mm lifts to ensure any cavities that form in the billowing foam are sealed. The thermal resistance of the roofing system would be approximately R-30. Please note that although spray foam is very effective in creating a tight air seal, vapour seal and thermal blanket, it is unreasonable to assume that all holes will be eliminated. The benefit of spraying to the underside of the roof deck is that, if a small hole (or "inlet") in the foam exists, as there is no ventilation space between the foam and the underside of the roof deck, there is no "outlet" to allow for air to escape. Air flow is therefore significantly restricted if not completely eliminated. Another issue may pertain to the warranty of the shingles installed on the building. A number of shingle manufacturers will not warrant their products in an unvented application as it is believed that without the ventilation space below, excessive solar heat gain would reduce the life span of the shingles. This would have to be confirmed with the manufacturer of the shingles used on the building.

Estimated Cost Option #1: \$14,000 - \$18,000

Option #2: Vented Roof

This option is similar to Option #1 in that the roof structure and deck would be exposed and 1.8 – 2.0 PCF density, closed cell, spray-applied polyurethane foam insulation would be used to create the air barrier, vapour seal and thermal blanket. The difference here would be that cardboard baffles would be installed between the roof joists to create a 63 mm (2.5") ventilation gap between the underside of the roof sheathing and insulation. This would have to be installed in conjunction with ridge and soffit ventilation required by the BC Building Code for a roof of this type. The ventilation area requirement is 1/300th of the insulated roof area relatively evenly split between the soffits and ridge. Therefore, a ventilated soffit and ridge venting would need to be constructed. As the soffit is currently constructed of T&G boards covering the structural elements, this would need to be removed so a vented soffit could be constructed. Further, as it appears there is horizontal blocking between the joists at the building-to-walkway roof transition on the west elevation, this would have to be modified to allow for air flow from the ventilation space through the soffit. At the roof peaks, a continuous ridge vent would need to be constructed as it appears that the roof sheathing was not strapped. Given the heavy winter snowpack, the ridge vent would need to be a raised "dog house" style to ensure the vent is not covered over with snow. As stated above in Option #1, some minor air flow through the spray foam is possible. As this methodology provides an "outlet" through the roof vent space, air leakage may occur. The requirement of the spray foam installer achieving a tight air seal is therefore much more critical. Please note this methodology can be used with simple batt and poly in lieu of spray foam insulation however, achieving a tight air seal is exceedingly difficult and is not recommended.

Estimated Cost Option #2: \$22,000 – 26,000

Option #3: Insulated Roof

This option also requires the removal of the existing drywall, interior finishes, and insulation materials to expose the roof structure and underside of the roof deck. The shingles and underlayment would also be removed. A new self-adhered membrane would then be installed over the entire roof. One layer of 75 mm (3") rigid insulation would be installed over the membrane, held in place with 75 mm (3") vertical Z-girts. A second layer of 75 mm (3") insulation would then be applied over top with the Z-girts installed horizontally to reduce thermal bridging. The thermal resistance of the roofing system would be approximately R-30. The assembly would be covered with an underlayment and the roof finished with a sheet metal system. Shingles could be applied, but an additional layer of exterior sheathing would be required over the Z-girts to allow for fastening of the shingles. This method effectively seals the roof and moves the roof joists to within the building envelope.

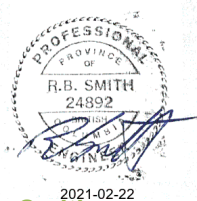
Estimated Cost Option #3: \$45,000 - \$55,000

CLOSURE

This report has been prepared based upon the information referenced herein. It has been prepared in a manner consistent with good engineering judgement. Should new information come to light, Williams Engineering Canada Inc. requests the opportunity to review this information and our conclusions contained in this report. This report has been prepared for the exclusive use of the client, and there are no representations made by Williams Engineering Canada Inc. to any other party. Any use that a third party makes of this report, or any reliance on or decisions made based on it, are the responsibility of such third parties.

Yours truly,

Williams Engineering Canada Inc.



Randy Smith, P.Eng., LEED AP
Practice Leader – Building Science

T 778.484.3900 M 250.870.3698
E rsmith@williamsengineering.com

Reviewed by,

Williams Engineering Canada Inc.

A handwritten signature in black ink, likely belonging to Matthew Osterhout, positioned above a horizontal blue line.

Matthew Osterhout, Diplo. Tech
Technologist - Building Science

T 604.851.7576 M 250.681.4114
E mosterhout@williamsengineering.com