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