

REGIONAL MUNICIPALITY OF WOOD BUFFALO



Anzac Community Centre
Update to Anzac Recreation and Social Society

Recent Building Reviews

- **2012 Golder Facility Assessment**

- did not visually observe any mould growth
- site representative advised he was not aware of any ongoing mould problems or building system problems (ie. roof, wall, recent floods or mechanical leaks) that should be reasonably expected to cause excessive mould proliferation.

- **2015 DF Technical & Consulting Services Ltd**

- engaged to do a hazardous material assessment in relation to design phase of future renovation.
- Visible presence of mould on the building was not identified
- Fungal activity was not identified in any portion of the building

- **2017 Stantec**

- engaged to produce construction documents for renovation
- construction began 2018 when mould was discovered via demolition of the interior wall sheathing in the Rink Hall.

Current Building Review

- **Stantec (Lead Consultant)**
 - Overarching report Building Envelope and Mould Remediation Report.
- **Alberta Safety and Environmental Services**
 - Conducted Air Testing
- **Environmental Monitoring Solutions**
 - Fungal and Water Damage Assessments
- **Read Jones Cristoffersen Ltd.**
 - Building Envelope and Structure Review

CURRENT BUILDING REVIEW

Topics

1. Demolition Findings
2. Additional Testing
3. Envelope Review
4. Fungal and Water Damage Testing
5. Restoration Plan
6. Estimated Cost



Demolition Findings

- During demolition, Contractors on site discovered mould in the existing Rink Hall change rooms.
- Over several years the existing oriented strand board (OSB) applied over the gypsum board walls and ceilings were highly contaminated with mould.



PICTURE # 001
JAN 23, 2018
ROOM # 112

**Rink Hall
Moisture trapped between
Oriented Strand Board and
Gypsum board**



PICTURE # 002
JAN 30, 2018
ROOM # 119

**Washroom 119 to
Janitor 118.
Mould due to piping leaks.**



**Shower in change room 111
Water leak through shower
light.**

Required Additional Investigation

Other areas were further investigated and isolated locations of mould were discovered. Pictures below show findings in Mechanical Room and the Attic.



Removal

- Mould was remediated by the contractor in the Rink Hall and Janitor Room.
- The contractor scrubbed the air to clean it.
- Air Test was performed by Alberta Safety and Environmental Services.
- *Mould Air Sampling Results were provided.*

**Mould Air Sampling -
Results**


Project #: AS 9661

Client:
Corgan Industrial Ltd.

Project Location:
Anzac Community Centre
– 105B-4 Christina Drive,
Anzac, Alberta

Legend:



 Mould Air
Sampling Location

 Elevated/
Significant Mould
Species

 Mould Visually
Detected

Notes:

- Not to Scale



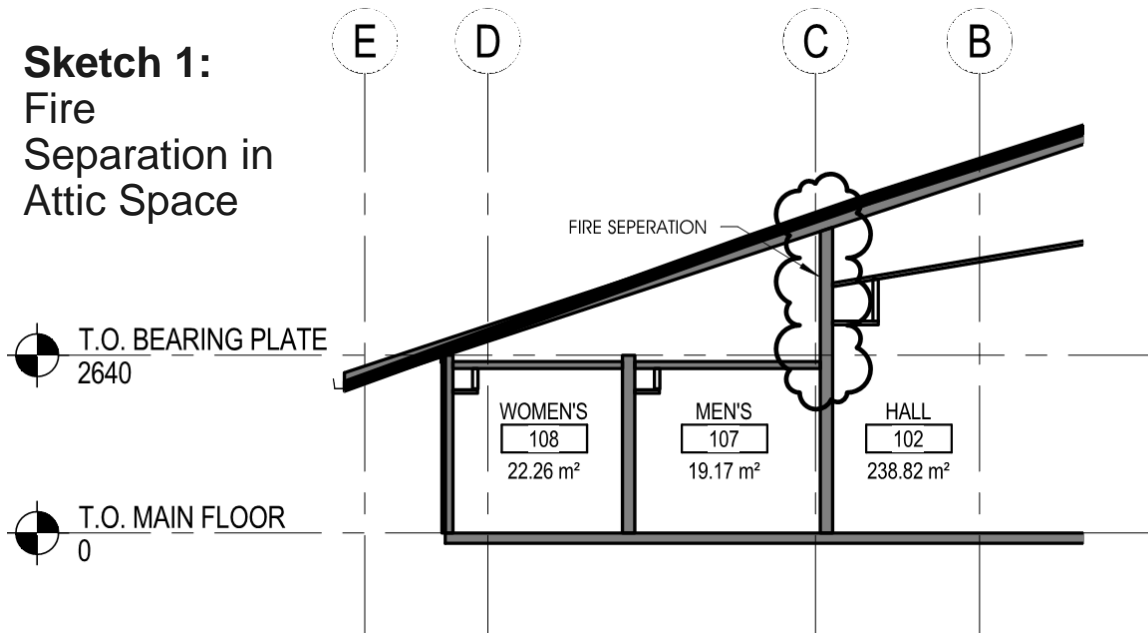
Air Quality Test Findings

- Significant Mould was found in Office (124), Nurses Office (121), Mechanical Room (114 and 105) and the Hall Stage.
- Visual Mould was detected in Mechanical Room (105).

Envelope Review

- Stantec and RJC visited the site on March 1, 2018.
- **Scope of work:**
Review the building exterior, interior, accessible attic spaces and review the wood structure and building envelope.

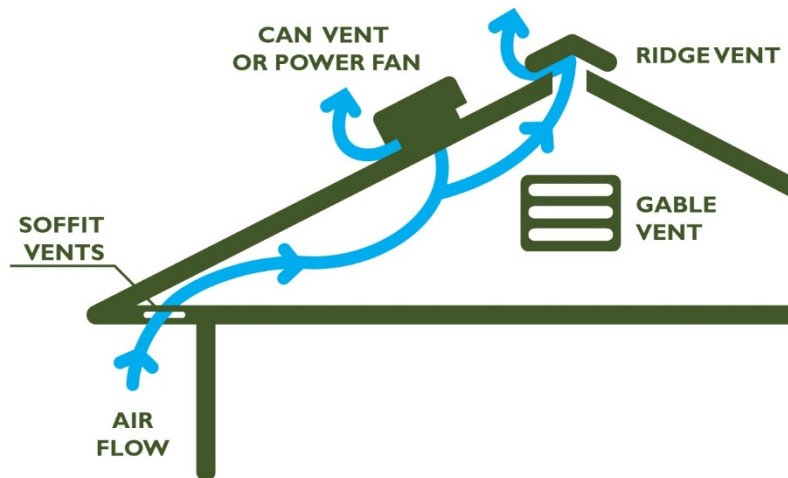
Sketch 1: Fire Separation in Attic Space



Due to the fire separation required for this building.

The attic space is separated into compartments and creates concealed spaced without ventilation.

This is a diagram of the ideal air flow.



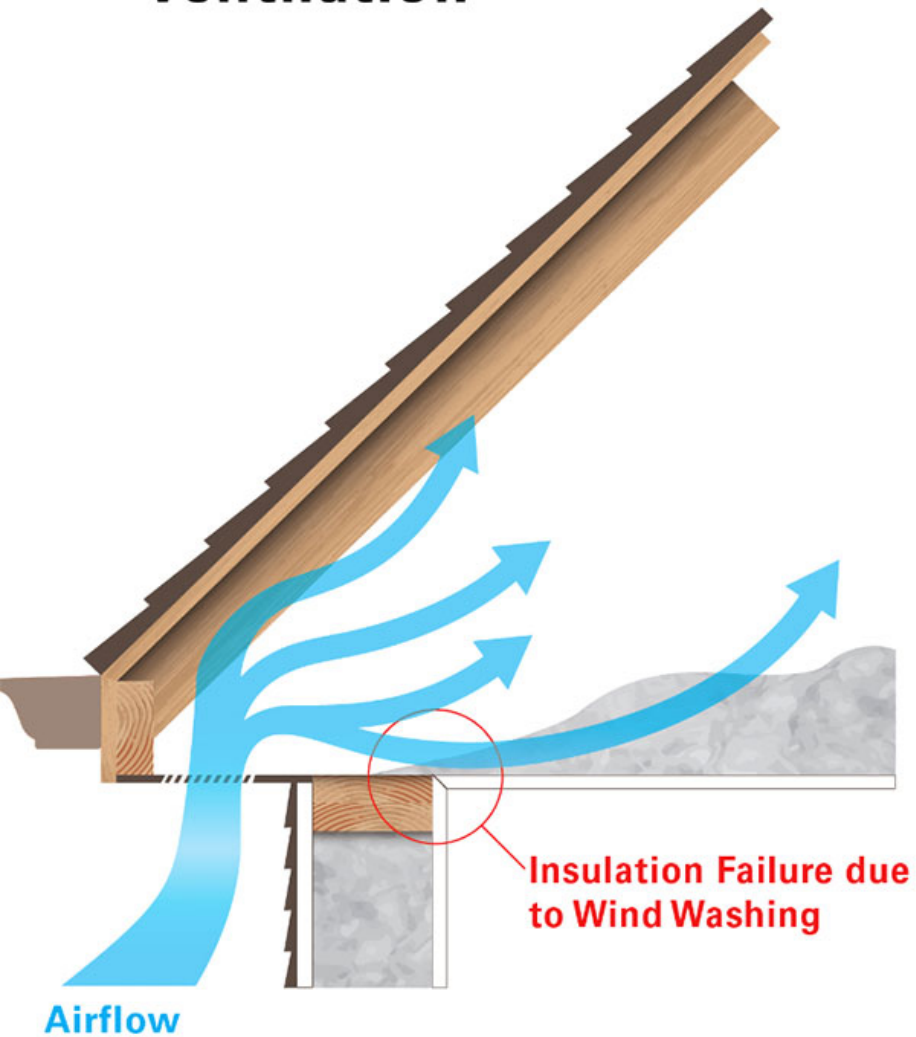
This promotes moisture build-up.



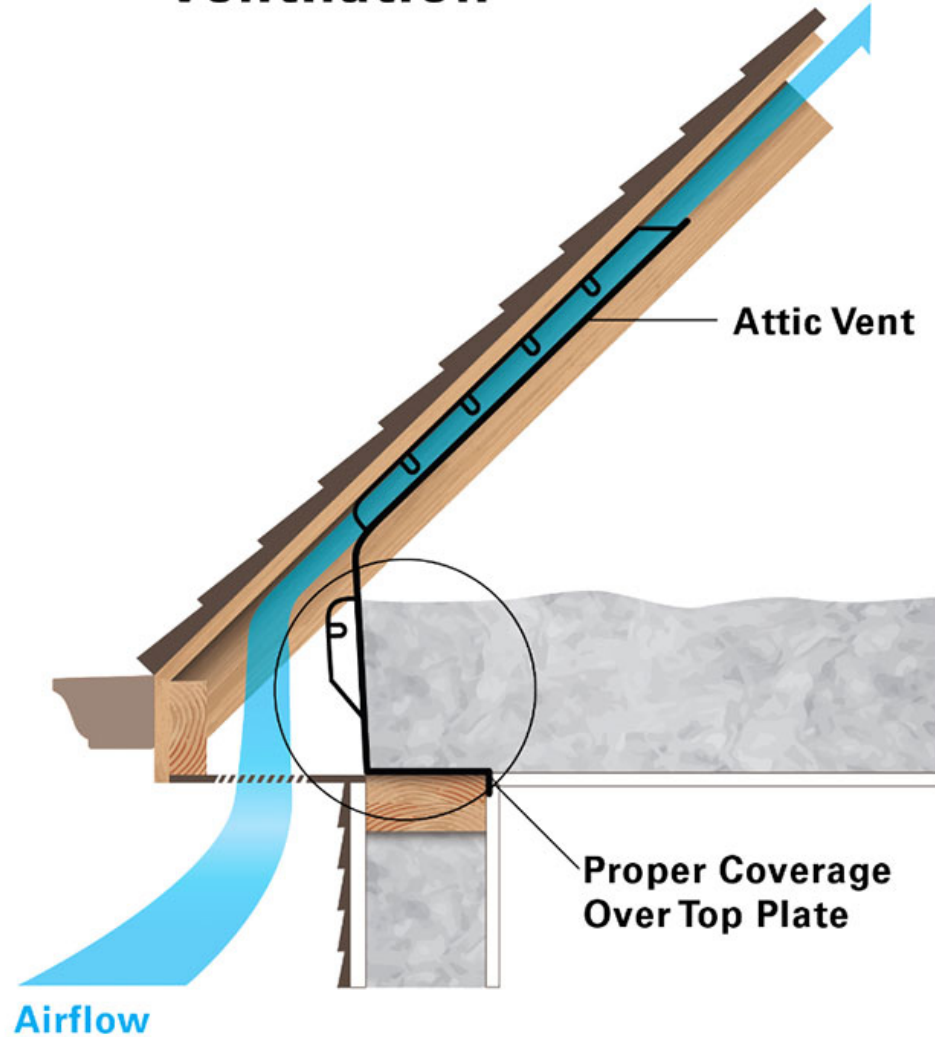
Cold Attic required to be vented at the eave and throughout the attic volume.

Typical eave is 4.5" deep and does not allow for adequate insulation or venting and the heel of the truss is completely blocked.

Improper Attic Ventilation



Proper Attic Ventilation





South West Elevation

Moisture trapped between
Concrete Block veneer.

- Weep Holes are not provided.
- Sill and head flashings are not provided.
- Roof eave is not protecting the wall. Moisture is entering the wall cavity and can not escape. Promoting Mould.



North West Elevation

Envelope deficiencies.

- No window flashing
- Brick sill cap is not flashed or sloped to drain water. Moisture penetrates the wall cavity.
- Water from the roof is not draining away from the building. Staining is apparent on the siding from the eavestrough leaking.
- Downspouts are not taking water away from the building.
- Site is not graded properly.





North West Elevation

Roof deficiencies.

- Roof valley does not built to shed water.
- Water from the downspouts is trapped in the gravel perimeter base and is likely migrating to the foundation.





Interior Elevation

Moisture trapped in wood framing.

- Exterior wall base plates and framing have been deteriorated by moisture trapped in cavity.





North West Elevation Site drainage.

- Ice slab paving causes water to drain towards the building. The water appears to be infiltrating under the foundation. This requires further investigation and mitigation.





Building Structure

Floor slab deficiencies.

- Floor vents have pulled away from the concrete slab. The sub base supporting the concrete floor slab has fallen away. This could be due to site water infiltration below the grade beam which has causes structural movement. Investigation is required by a geotechnical engineer.



Roof Structure Lintels.

Table 2: Lintel Review Summary

Lintel Location	Lintel Assembly
1	3 - 2 x 10
2	3 - 2 x 10
3	3 - 2 x 10
4	3 - 2 x 10
5	3 - 2 x 10

- Roof supporting lintels were reviewed by the structural engineer. The lintels are required to be upgraded to support the building properly. They are under capacity in bending.

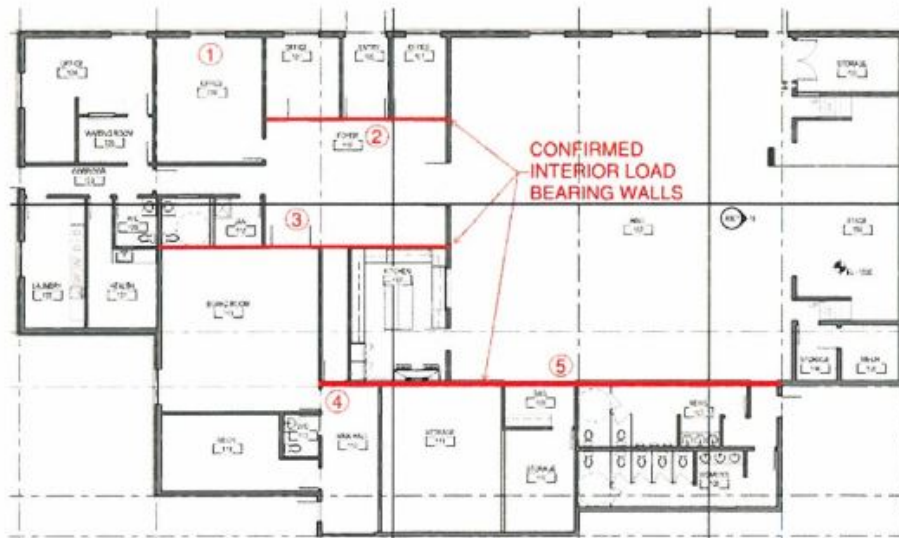


Figure 3: Reviewed lintels and noted load bearing walls

Fungal and Water Damage Testing

- Environmental Monitoring Solutions conducted a destructive testing report and hazard assessment on May 4th, 2018.
- **Scope of work:**
Destructive fungal assessment, site observations, suggested actions.



Attic Observations

Foyer 116 Tower - Water damaged gypsum board



Water damage on the roof sheathing at the plumbing stack.



Mould growth observed on a glulam beam.



Wall Observations

Exterior base plates have visible water staining and mould growth.



Mould growth noted on bottom of walls.



Mould growth and damage on exterior sheathing.

High Level Restoration Plan

- Remove all exterior wall materials.
- Remediate mould and repair walls as structurally required.
- Replace all Interior walls to the height of 2ft.
- Remove all attic insulation.
- Selective demolition of ceilings.
- Remove all roofing including sheathing to expose roof trusses
- Build up top chord of truss for proper ventilation.
- Upgrade lintels supporting roof.
- Remove all HVAC ducting and insulation.
- Investigate support of concrete floor and determine extent of repairs.
- Apply protection to the exterior grade beams
- Regrade site to ensure proper drainage.
- New roof system with proper ventilation.

For full details please refer to report.

Remediation Cost Estimate

Project Initial Cost -	\$ 945,270.25
Remediation ROM Cost -	\$1,300,000.00
Consultant Fees -	\$130,000.00
ROM Total Cost -	\$ 2,375,270.25 + GST

For full details refer to report.

Cost Comparison

New Building Cost -	\$2,940,000.00 +/-
Demolition Cost -	\$325,000.00

Typically, when the renovation and restoration costs exceed 50% of the costs of new construction the Owner must analyze and review fiscally.