



Engineers

March 28, 2017

Daniel Drexler, Deputy Manager of Operations
City of Grand Forks
7217 – 4th Street
Grand Forks, BC V0H 1H0

Dear Daniel,

RE: Building Enclosure Assessment
7217 Riverside Drive, Grand Forks, BC

RJC No. KEL.117050.0001

Background

Whispers of Hope is a one-storey commercial building which was originally constructed in the 1960s. The original building consists of Concrete Masonry Unit (CMU) walls with a roof structure of unknown materials. At least one, and possible multiple additions and renovations have been made to the building since its original construction. One (1) addition was made to the south elevation which is assumed to have been constructed with wood-frame walls with wood joist roof. Another addition was made to the west elevation which appears to have been constructed with CMU walls with wood joist roof. The dates of construction for these additions are not available.

RJC met with the City on December 8, 2016 to review ongoing roof leaks. During that meeting we discussed potential long-term plans for the building. The City is seeking guidance to help make a decision as to whether to retain the building, with related maintenance and upgrades, or to retire the building and relocate the services.

Observations

While completing site observations for a separate roof condition assessment for Whispers of Hope on October 13, 2016, RJC observed water entering the interior space of the south addition at the east elevation along the door head (Photo 1 & 2). The leak above this door is puzzling as there is an awning present above the door. This would indicate that the leak is likely originating from the top of the roof and travels down through the wall system. Once the water reaches the door head, the water will take the path of least resistance which, in this case, is through the door frame.

Further review showed that there was also damage which appeared to be caused by water ingress at the south addition at the west elevation adjacent to the door. Paint was sagging under the electrical outlet and

the drywall was swelling in the surrounding areas (Photo 3). Again, due to this leaks proximity with the door, it is likely that the leak originates at the roof level and travels down through the wall system. In this case, it appears that once the water hits the door head, it diverts to the door jambs and continues downward which has caused the water damaged directly adjacent to the door frame.

Table No.01 – Leaks Observed at Wall Systems

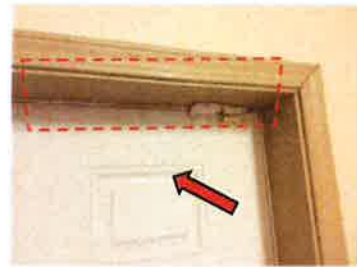


Photo 1 - Water ingress along door head at west door



Photo 2 - Water accumulation along door exit mechanism



Photo 3 - Damage to interior drywall at east door

During our review of the roof assembly on both October 13, 2016 and December 8, 2016, there were active leaks present through the south addition roof. These leaks were present at the south-west corner in the living room (Photo 4) and in the shelter rooms (Photo 5 & 6). The wood strapping (Photo 6) was in place prior to our review on October 13, 2016 indicating that these leak has been active for a prolonged period of time.

Table No.02 – Leaks Observed at Roof Systems



Photo 4 - Damage to ceiling drywall in living room area






Photo 5 - Puddle of water forming on room floor



Photo 6 - Damage to ceiling drywall in shelter room

From discussions with site personnel and further observations throughout the building, it appears that leaks through the roof assembly have been ongoing on central building (Photo 7) and the south addition (Photo 8). The central building roof was over-clad with a thin-gauge metal roof in an attempt to address active leaks through the existing roof membrane (Photo 9).

Table No.03 – Leaks Observed at Roof Systems		
		
<p>Photo 7 - Damage to ceiling drywall at central building</p>	<p>Photo 8 – patch to roof on south addition</p>	<p>Photo 9 – Overcladding of roof system on central building</p>

Future Considerations

Due to observed signs of ongoing water ingress, it is possible that there is some level of deterioration and organic growth present within the wall and roof cavities. Regardless of the level of deterioration, modifications to the roof and wall assemblies would need to be undertaken to eliminate the current water ingress issues. The table below provides a summary of the recommended steps involved with quantifying the issues related to the building enclosure, as well as an Opinion of Probable Cost (OPC) for what may be anticipated to rehabilitate the enclosure to address the current water ingress concerns.

Initial Investigation		
Item Name	Approximate Scope	OPC
Building Enclosure Condition Assessment (BECA)	<ul style="list-style-type: none"> ▪ Exploratory openings in façade to confirm conditions and detailing ▪ Visual review of exterior elements ▪ Summary report outlining findings and recommendations 	\$ 7,000
Document Preparation and Construction		
Item Name	Approximate Scope	OPC
Roof Replacement (South Addition)	<ul style="list-style-type: none"> ▪ Remove existing roof assembly (roofing, sheathing, insulation, etc.) ▪ Replace roof system with conventional 2-ply mod.bit. with exterior insulation 	\$ 35,000
Wall Rehabilitation (South Addition)	<ul style="list-style-type: none"> ▪ Removal of existing cladding and windows ▪ Removal of existing insulation and exterior sheathing ▪ Replace wall insulation, exterior sheathing, moisture barrier, cladding, windows and doors 	\$ 100,000
Roof Replacement (Central Building)	<ul style="list-style-type: none"> ▪ Remove existing roof assembly (roofing, sheathing, insulation, etc.) ▪ Replace roof system with conventional 2-ply mod.bit. with exterior insulation 	\$ 65,000



Allowances & Consulting		
Item Name	Approximate Scope	OPC
Restoration Allowance	<ul style="list-style-type: none"> ▪ Based on 20% of construction budget ▪ Allowance is to address unknown conditions (Deterioration) 	\$ 40,000
Anticipated Consulting Fees	<ul style="list-style-type: none"> ▪ Design Documents ▪ Tender ▪ Contract Administration ▪ Field Review 	\$ 50,000
	Taxes	\$ 15,000
	Total	\$ 312,000

Limits of Commission

The opinions provided are based on conceptual repair methods, recently obtained broad unit rates, and past experience with similar projects. A detailed estimate of costs has not been provided, as it would require the preparation of plans, details, specifications and schedules to achieve a quantified summary of estimated costs.

Opinions of Probable Cost are based on RJC's review of the present condition of the building. Deferral of the work will result in increased repair costs. Please note that the cost of remediation could vary greatly depending upon the materials chosen and any deterioration uncovered during the remediation work. There is no allowance for survey or abatement of hazardous materials that may be required for associated construction work.

An Owner contingency of 10% of construction costs is included with each OPC. A contingency of at least this amount should be included in all construction budgets to allow for variation in estimated unit prices due to competitive bidding, repair work resulting from additional deterioration, and additional work required to repair any damage caused by or discovered during construction. No allowance has been included for surveying or abating hazardous materials as required by WorkSafeBC. It is recommended that a pre-renovation hazardous materials survey be completed prior to tendering any work.

Neither RJC, nor any company with which it is affiliated, nor any of their respective directors, employees, agents, servants or representatives shall in any way be liable for any claim, whether in contract or in tort including negligence, arising out of or relating in any way to mould, mildew or other fungus, or hazardous materials including the actual, alleged or threatened existence, effects, ingestion, inhalation, abatement, testing, monitoring, remediation, enclosure, decontamination, repair, or removal, or the actual or alleged failure to detect mould, mildew or other fungus, or hazardous materials.



Closing

We trust the information contained within this report satisfies your current requirements. Should you have any comments, questions or concerns, please contact the undersigned.

Yours truly,

READ JONES CHRISTOFFERSEN LTD



John Bourcet, P.Eng., B.A.Sc.
Design Engineer

A large, stylized blue ink signature of Michael Blackman.

Michael Blackman, P.Eng., FEC, LEED® AP BD+C
Regional Manager/Associate

JVB/ceb