Some Background on the WSP Moisture Study. Feb. 12, 2018.

The WSP design was second best to an RJC proposal.

The WSP design was doomed from the start to be a "second best" effort because an alternative proposal from RJC would have provided more complete and more accurate data by using two carefully selected 3.5" inspection ports in EVERY suite for a total of 608 ports. As well, it would have been done during the wet winter months. WSP only provided 79 inspection ports in 257 suites during hot summer months. WSP has itself admitted that it was a poor time of year for their study. The inherent inadequacies of the WSP study are so ingrained and obvious that one has to wonder if it was not selected for that very reason.

The approval process was flawed.

Unfortunately, the merits of the RJC proposal as compared to the WSP proposal were never debated in an open meeting of the council, nor was the WSP study ever submitted to an open bid process. I attended that series of council meetings and, had the two studies been openly compared and debated, I find it hard to believe that the WSP proposal would have been selected.

There are many other problems.

There are many other problems: in my suite, for example, the inspection was done on a wall which I asked the inspector not to open because I knew it had no moisture problems. He refused and also declined to inspect an alternative wall where I have chronic and severe mould problems in 15 feet of water collector and sill. My neighbour's suite, on the other hand, was not inspected and he has a wall with such severe water damage that there are two spots 12 feet apart where the wallboard has an open hole in it. He also has a warped window frame, with an open gap at the top, that allows significant and continuous air leakage into his suite. Paradoxically, he is also slated to have 6 IGUs replaced, none of which have any visible damage. There are many more examples that could be provided from other concerned owners. The limit

A major conclusion of the study makes no sense.

I completely fail to comprehend how the WSP study with these limitations led the firm to conclude that "Our findings do not suggest that any full scale replacement of the windows is required at this time, however they are showing signs of age and as such require maintenance. In future, the Owners should plan towards replacing windows as they fail." This conclusion is particularly puzzling in

view of the fact that the WSP Consulting was to have reviewed the BECA Report, the best envelope assessment we have yet had done, which unequivocally states that "the existing aluminum windows and doors are nearing the end of their functional service life and should be targeted for replacement over time."

The WSP study, with its obvious flaws and limitations, has been used in attempts to refute the years of professional advice we received from every one of the five respected firms that have advised us on our window and other asset renewal challenges.

Common sense tells us that the WSP study conclusions must be viewed with great caution and skepticism. Caution because the owners of Harbour Cove deserve a full and comprehensive analysis of the asset renewal challenges that they face, including the window problems. Skepticism because to continue to only do crisis maintenance , instead of a carefully planned proactive program of asset renewal coordinated with maintenance scheduling, is extremely wasteful and carries a huge risk of downstream financial crises.

What other more detailed studies have concluded.

For background information, here are the summarized comments about windows from the five firms that have addressed these questions since 2006.

1.Morrison and Hershfield Report: 2006.

Pages 18-19 describe three orders of priority for envelope remediation at HC. Complete replacement of windows and doors are listed as priority level #2 for action in 2-10 years.

2. Layton Consulting Memo, 2010:

Mid-term action.

Aluminum window systems have a limited life span. Repairs at this stage to existing windows are only a stop gap approach. Costs associated with sealed unit replacements (Including labour, materials, swing stages, etc.) could have been used towards a full window replacement.

Long term actions (5+10 years).

Full replacement of windows will be required at some point due to limited life spans of the frames and glass. [Meanwhile] as the age of the windows increase, the likelihood of the original sealed units failing will continue to increase at a higher rate. It is recommended that a contingency fund for window replacement be set up.

3. Lee Hanson Consultants – Council minutes,2010.

"This large window has numerous deficiencies; basically the various things we have found deficient in other areas are all a problem here (failed miter joints, no end dams at sill sections, no end dams at brick interface, inadequate void space drain at brick interface, improper sill extrusion used in one area, inadequate building wrap before sill installation, missing and/or improperly located sill drains, and failed caulking".)

His subsequent recommendation was to "replace all sills and window assemblies overall and install to modern best practices" and "drill weep holes at slab band/brick interface to facilitate draining of rain screen void space." He concluded that "the alternative is to try to repair the old sill and frames, which is no guarantee that the water ingress problem will be solved. If we then have to replace frames, sealed units, and sills, the money for the repairs will be wasted."

4. RDH Depreciation Report, 2013.

Page 11 presents the estimated cost of "capital expenditures" for window and door renewal over a 30 year period. The total for "roofs, windows, doors, etc" is $22,958,000.

5.Lee Hanson Consulting – council minutes , 2013:

"The water ingress problems are a combination of:

1. Poor original design construction of window assemblies. All Phases
2. Improperly designed sill assemblies. Phase 1 and 2.
3. Improperly installed window sills. All phases.
4. Improperly sized and cast window openings. Phase 3.
5. Lack of/or improper installation of building wrap. All Phases.
6. Failure of perimeter sealants. All Phases.
7. Post Construction – Improper installation of drain/weep holes. All Phases.
8. Corrosion of aluminum frames at joints. All Phases on high exposure faces.

The windows are reaching the end of their serviceable life."

6. BECA Report, 2014.

Page 1 from the BECA Report is an executive summary and includes the observation that "It is our opinion that the existing aluminum windows and doors are nearing the end of their functional service life and should be targeted for replacement over time."

7. RJC Depreciation Report, 2017.

Pages 50-51 describes the original construction details of our window assemblies and analyzes the problems that they present due to design deficiencies and aging. The conclusion is that all window assemblies should be replaced.

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