

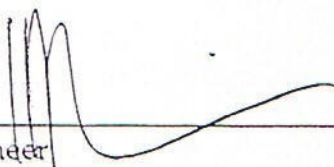
**MCCUAIG & ASSOCIATES ENGINEERING LTD**

439 McLean Drive, Vancouver, BC V5L 3M5


Tel: (604) 255-0992 Fax: (604) 255-1054

Info@mccuaig.net www.mccuaig.net**Building Envelope Restoration****CERTIFICATION OF COMPLETION ***PROJECT NUMBER: B10801PROJECT NAME: 1820 & 1880 East Kent Avenue South, Vancouver

To the best of our knowledge and in accordance to the accepted standard of practice, the above-referenced project has been completed in all respects in accordance with the Contract Documents.



Engineer30 July 03

Date

Project Manager13 August 03

Date

Inspector30 July, 2003

Date

Ref. No. B10801-CD-COC02

*Revised and reissued July 30, 2003 - previous window problem corrected by manufacturer.

A W D

ARCHITECTURAL
WINDOWS
AND DOORS INC.

COPY

To: McCuaig & Associates
Attn: Andrew Leonard
From: Chris Lambert

July 31, 2003

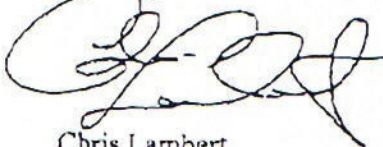
Page 1 of 1

Re: E. Kent Avenue - Unit 108 Cat Door Removed / Sealed Unit Replaced

Andrew this letter is to confirm that the service work has been performed on unit 108 where the homeowner had installed a cat door in place of the AWD sealed unit. The window has been returned to manufactured specifications and subsequently AWD warranty will apply to this window.

If you have any questions or concerns please call. Thank you for your consideration.

Best Regards,



Chris Lambert
Project Sales Representative
Architectural Windows and Doors Inc.
Phone 604-881-1382 Fax: 604-881-1384

ARCHITECTURAL WINDOWS
AND DOORS INC.

Unit 205-90878

1988 St. Mary

Langley, BC

V1M 3B1

Tel: 604-881-1382

Fax: 604-881-1384

www.archwindow.com


**MCCUAIG & ASSOCIATES ENGINEERING LTD**

439 McLean Drive, Vancouver, BC V5L 3M5


Tel: (604) 255-0992 Fax: (604) 255-1054

Info@mccuaig.net www.mccuaig.net**CERTIFICATION OF COMPLETION****SUPERSEDED**PROJECT NUMBER: B10801PROJECT NAME: 1820 & 1880 East Kent Avenue South, Vancouver

To the best of our knowledge and in accordance to the accepted standard of practice, the above-referenced project has been completed in all respects in accordance with the Contract Documents. A suite owner modification to one window was noted and is addressed under a separate letter (McC Ref. B10801-GD-LTR-09) dated May 26, 2003.



Engineer26 May 03
Date

Project Manager26 May 2003
Date

Inspector26 May 2003
Date

Ref. No.B10801-CD-COC01

Repair Certificate



Homeowner
Protection Office

1. I am a professional engineer licensed to practice in British Columbia.
2. I have been retained by (name of Strata Corporation, Equity Cooperative or Homeowner)

Strata LMS 2113

with respect to a Premature Building Envelope Failure at the following property (the "Property"):

Name of Property Pilot House

Civic Address(es) 1820 East Kent Avenue South

Vancouver, BC

Legal Description(s) Building Envelope Rehabilitation (Phase II)

3. In this Certificate:

(a) "Premature Building Envelope Failure" means premature deterioration of the building envelope assembly resulting from environmental factors including airflow, heat flow, radiant energy, water vapour or rain and snow; and

(b) "Eligible Repairs" means repairs necessitated by a Premature Building Envelope Failure.

4. I am independent of (name of Strata Corporation, Equity Cooperative or Homeowner)

Strata LMS 2113

and of all contractors and other parties to be engaged in the repairs described in this Certificate.

5. I have reviewed and relied upon information that has been made available to me, and I have completed such inspections and investigations as I, in my professional judgement, consider necessary to enable me to make this Certificate.

6. A Premature Building Envelope Failure has occurred at the Property as described as follows:
(describe Premature Building Envelope Failure)

South Elevation - water ingress and wood rot at balcony and wall
details, window and door openings, and at flashing work.

East Elevation - water ingress and wood rot at balcony and wall
details, window and door openings, and at flashing work.

West Elevation - water ingress and wood rot at balcony and wall
details, window and door openings, and at flashing work.

7. I recommend that the following Eligible Repairs be undertaken to remedy the Premature Building Envelope Failure: (describe Eligible Repairs) (attach additional pages if necessary)

Repair, replace and rehabilitate all failed building components
including framing, sheathing, roofing, wall penetrations, flashing,
balcony components, etc. North side previously done. All of East
side, all of South side targetted repairs on West face.

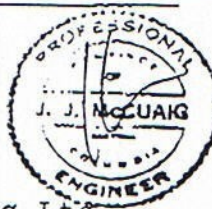
8. In my opinion, the Eligible Repairs described above will, if properly undertaken, remedy the Premature Building Envelope Failure.

9. ~~A contract has been entered into between _____ and _____ for the completion of the~~
~~Eligible Repairs described above for a contract price of \$ _____ including GST and other applicable taxes.~~

Signed on 20 February 2002

[Signature]
Signature of Engineer

(Engineer's Seal)



McCuaig and Associates Engineering Ltd.

Company:

439 McLean Drive

Address:

Vancouver, BC

V5L 3M5

Phone:

(604) 255-0992

NOTE: Item #9 has been deleted, as project has yet to go to tender.

Mayuga, Roselyn

From: Bill Hokan [wrhokan@telus.net]
Sent: February 28, 2005 2:23 PM
To: Mayuga, Roselyn; Pandey, Marianna
Subject: McCuaig Engineering Report 2004

Please find attached the text version of the McCuaig Engineering Report dated October 28, 2004.

This report should be made available to owners, potential buyers or their agents upon request.

A full printed version with diagrams and pictures should be sent to Crosby with the return of the Stratas files from Clark, Wilson shortly.

Bill

2/28/05

Should the Owner choose to raise additional funds, a cost budget could be prepared and presented to assist the Owners in determining how much extra money is required.

Should the Owners elect to defer the work to a later date the current wood framing and repairs must be protected with a waterproofing detail. It is important to note, that regardless of which option is selected the membrane work on the suspended slab would not be included in the third party warranty provided by London Guarantee. As such, their primary interest is to protect the wood framed structure above. Protection of the repaired and affected wood frame structure above can be provided by cutting a reglet into the suspended slab and installing new membrane material from the removed topping area over the reglet and up the upstand wall onto the wood sheathing. Since the wood framing is above grade, and there is good adhesion of the membrane on this vertical surface, it is unlikely that water will travel up the wall from this area. Cracks in the slab however, may allow water to travel through the concrete beneath the new membrane and under the footprint of the building. That said, the more distance between the reglet and the building, the more difficult it is for water to migrate from the failed original membrane through concrete cracks and joints towards the building. The peer review consultant has recommended the reglet be cut a minimum distance of eighteen (18) inches from the building. The Owners should be advised that regardless of how far out the reglet is cut, leaks into the parkade below will not be eliminated.

As stated previously, it is the recommendation of all parties that the entire membrane be replaced to provide the best level of protection. Please advise our office on how you wish to proceed with this matter at your earliest convenience.

Sincerely,

MCCUAIG AND ASSOCIATES ENGINEERING LTD.

Andrew Leonard, P.Eng.

CC: Jack Vantell, McArthur Vantell (Fax# 737-1090)
Jan Rasilainen, London Guarantee (Fax# 682-3096)
Michael Keenan, Heatherbrae Construction (Fax# 277-2311)

28th October, 2004

Strata Plan LMS 2113
C/O Mr. Bill Hokan
#208 - 1880 East Kent Avenue South
Vancouver, BC V7V 1J5

Attention: Mr. Bill Hokan

**RE: Building Envelope Review at Pilot House - 1820 and 1880 East Kent Avenue South,
Vancouver, BC**

Dear Mr. Bill Hokan,

This report documents the follow-up building envelope review for the non-remediated portions of Strata Plan LMS 2113, commonly referred to as Pilot House. Inspections, testing and analyses were completed on the sections buildings not repaired during the recent two remediation projects. An initial investigation report for the entire complex was produced by McCuaig and Associates Engineering Ltd. in June 2001, (McCuaig Reference 01187B10501.)

The scope of this report is to complete a limited investigation on the remaining wall areas of original construction. The purpose is determine the status of these wall areas and to determine if water ingress concerns exist.

For reference, McCuaig and Associates Engineering completed the field investigation work for this report on February 5th, 2004 and February 6th, 2004. The weather was a mix of cloud and rain on both days with temperature around 6 degrees Celsius. Environment Canada records indicate that there was rainfall on 23 of the 28 days prior to our inspection.

The results of our study follow.

BACKGROUND & GENERAL DESCRIPTION

Pilot House is a nine-year old strata condominium complex consisting of two buildings located on the North side of the Fraser River on East Kent Avenue South in Vancouver, BC. The building located at 1820 East Kent Avenue South is situated on the Western portion of the property and has 40 residential units. The building located at 1880 East Kent Avenue South is

Mr. Enns informed our office that no leaks had been reported to him. Mr. Whitty informed our office that no in-suite leaks have been reported; however, leaks into the parking structure below have been reported. These leaks were investigated by our office with Mr. Whitty.

SUITE INSPECTIONS

No in-suite inspections were completed as part of this follow-up investigation.

ROOFS

Roofs were not inspected as part of this follow-up investigation.

EXTERIOR WALL SYSTEMS – VISUAL INSPECTION

Cladding systems for the areas of wall system being investigated for this report consist of three major types of exterior cladding. The three types are: painted cedar siding, stucco, and concrete masonry units (CMU). Both the cedar siding and the stucco can be classified as a face sealed wall cladding system. No destructive testing was carried out on the CMU walls. Most of the exterior walls on the buildings are clad with painted cedar siding and a combination of Tyvek and Typar building wrap system. The recessed alcove walls above the fire exits and the protected wall areas under the exterior walkways on the north elevations are clad with stucco and Tyvek building wrap system. Architectural concrete masonry units are used around the front entrances at the north elevation of each building.

The following comments relate to our visual inspection:

Cedar Siding

- The cedar siding was re-painted at the time of the last phase of repairs;
- Overall, the cedar siding appears to be satisfactory condition;
- Rusted staples and nails were noted under the siding at several cut locations;
- The Oriented Strand Board (OSB) sheathing under the siding is generally in good condition;
- Previously problematic details at balcony deck and wall corners were investigated and water staining was noted on the exterior surface of the plywood furring strips of three locations. The moisture content was in the acceptable range. A detailed description of this detail is included in the previous report;
- Similarly, the previously problematic vertical wood trims details between the window and sliding doors were reviewed, and water staining was noted on the exterior surface of the plywood furring strip at three separate locations.

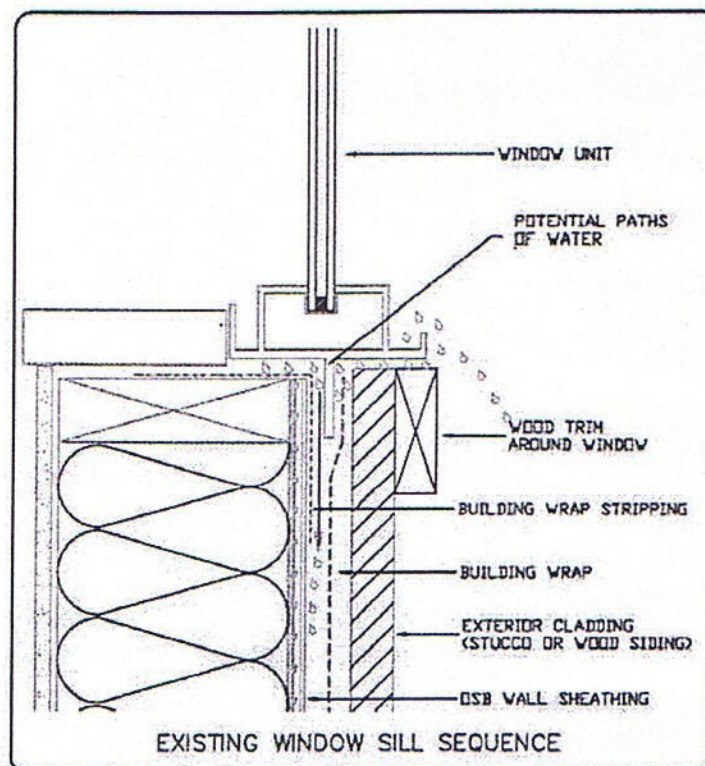


Figure 1. Original Construction Window Sill Sequence

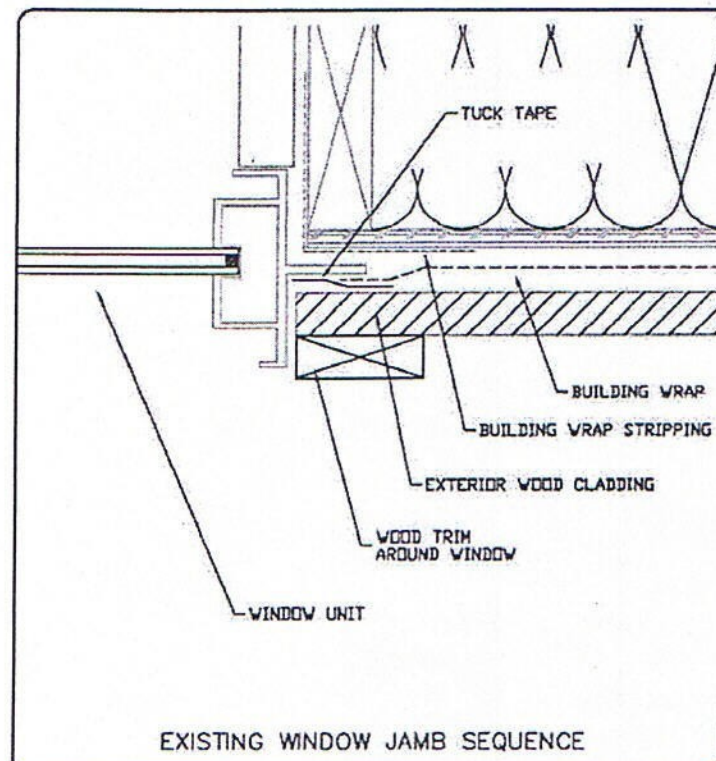


Figure 2. Original Construction Window Jamb Sequence

Since the original windows are of questionable quality, and the sill details are negatively lapped with the building wrap. Leaks and damages will likely occur at some of the original window openings at some point in the future. However, no wood rot was noted during this survey. As such, the remaining original windows may provide several more years of service before requiring replacement. Regular monitoring should be completed to determine the optimal replacement time. It is difficult to estimate the remaining life of these windows; however, based on the results of our current investigation, the window should provide at least another five years of service.

Wall Penetrations

The original hood vents on the North and West elevations of both buildings are detailed with the top and the two sides of the hood flashing sealed to the building wrap with Tuck Tape. The bottom flange is typically reverse lapped with the building wrap, and the application of Tuck Tape is inconsistent. The detailing and installation of the original hood vents were previously found to be contributing to water ingress problems on the repaired elevations. During the current follow-up review, however, moisture readings under most hood vent details were in the acceptable range. An isolated elevated moisture probe reading was recorded below one vent. It was determined after the field work that the source of moisture ingress was a recent cleaning that involved spraying that wall area with a garden hose and sprayer. These areas should not be sprayed with pressurized water and no water should be sprayed onto the wall from below the vents. The vents are not intended to address upward water spray.

Flashing

Generally, the original flashing installed at this building is poorly installed. We made the following observations related to the flashing:

- Wall base flashing is typically lapped over the bottom of the Tyvek or Typar membrane coming down the wall. The building wrap should lap over the flashing to create a shingle effect;
- Nails were found in flashing seams at several areas. This is not the proper method to install flashing;
- Cap flashing at balcony fascia and beam interfaces typically terminates at the fascia and is then sealed with caulking. The preferred design is to use a saddle flashing at this detail. This detail now only exists on one column of balconies at the West elevation of 1820 East Kent Avenue South.

Table 1 & Table 2- Moisture Probe Data Summary - Test Points, Moisture Contents and Commentary, showing the summary of the results of our measurements. Full details are shown in Tables B1 through B4 in Appendix B. The location of test points and colour-coded legend are shown in Drawings B01 through B07 Appendix B.

TABLE 1					
1820 East Kent Avenue South					
Moisture Probe Data Summary - Moisture Content (M.C.)					
North Elevation					
M.C.(%)	<17%	17-19%	19-28%	>28%	Subtotal
Test Points	4	0	1	0	5
Test Cuts	6	0	0	0	6
Total	10	0	1	0	11
West Elevation					
M.C.(%)	<17%	17-19%	19-28%	>28%	Subtotal
Test Points	17	0	0	0	17
Test Cuts	6	0	0	0	6
Total	23	0	0	0	23
Grand Total	33	0	1	0	34
Percentage	97%	0%	3%	0%	100%
Legend					
< 17%	Acceptable				
17 - 19%	Potential Problem Area				
19 - 28%	Wood Rot				
> 28%	Wood Rot & Germination				

Of the 23 test cuts, no significant wood decay was found. Some water staining and minor rust on fasteners was identified in some test cut locations; however, the sheathing and building materials were generally clean and sound. Additionally, some minor water damage was noted around the jamb of a ground level patio door in one location.

Material sequencing for window sills, balcony membrane interfaces, and vent penetrations were typically found to be reverse lapped. These details are consistent with the original construction details noted during previous work. Despite the improper detailing, the tested areas appear to be performing adequately at this time.

As part of a pilot project, McCuaig and Associates Engineering Ltd installed a series of permanent test probes in select locations of these buildings. The intention of the probes is to allow ongoing monitoring in these locations without having to dismantle the wall assemblies and building components. Test probes consist of two brass nails with insulated copper wire extensions. The nails are spaced at the same distance as the probes of the moisture meter. Equal length insulated copper wire is run from the nails to a convenient locations to allow future readings. The wall cladding or trim boards were subsequently reinstalled. An initial reading was taken directly in the wood with the moisture meter. The nails and wires were subsequently installed in the same holes and a second reading was taken at the ends of wires to confirm the initial reading. The locations of the permanent probes are shown in Drawings B05 through B07 in Appendix B. The test points are not intended to replace a thorough investigation. The accuracy of the results over an extended period of time is not known and will be reviewed on an ongoing basis.

OBSERVATIONS & RECOMMENDATIONS

Having reviewed the building envelope at the non-remediated areas, we offer the following observations:

- Poor or improper original construction details exist throughout the non-repaired sections of both buildings; however, no significant moisture content or water ingress damage was noted during our investigation;
- Some previous indications of water ingress were noted at some test cut locations; however, the wood material was found to be below 17 percent moisture content;
- One isolated moisture content reading was above 19 percent; however, no wood rot was noted in the area. Moreover, the source of the moisture was determined to be water sprayed for cleaning purposes. As noted previously, these areas should not be sprayed with pressurized water and no water should be sprayed onto the wall from below the vents. The vents are not intended to address upward water spray;

Appendix A

Photo Log and Photos

Appendix B

Tables and Drawings