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TO **Leanne Stier**  
 Willis Canada Inc.  
 1500 - 1095 West Pender Street  
 Vancouver, BC, V6E 2M6

PROJECT **1788.228****The Vine**DATE **December 02, 2009**

FAX: (604) 683-5746

REGARDING **1788.228 - The Vine, 2228 West Broadway, Vancouver, BC**  
**Post Construction Review for Warranty**

Dear Ms. Stier:

At your request, we are writing to provide you with a summary of our post-construction for the above project. The following comments and information are provided within the same context as our initial risk review.

**1.0 Post Construction Information**

Project Address:	2228 West Broadway, Vancouver, BC		
Date of Visit:	26/11/2009		
Attendance for Post Construction Review			
Company	Contact	Phone	Fax
RDH Building Engineering	Phil Johnson, P. Eng.	(604) 873-1181	(604) 873-0933
Consultant:	IBI / HB Architects 700 - 1285 West Pender Street Vancouver, BC, V6G 2T3	Contact: Alan Woolf Phone: (604) 683-4376 Fax: (604) 681-2770 E-Mail: alan@hbew.com	
Consultant:	Morrison Hershfield #610 - 3585 Graveley Street Vancouver, BC, V5K 5J5	Contact: Jamie A. McKay Phone: (604) 454-0402 Fax: (604) 454-0403 E-Mail: jmckay@morrisonhershfield.co	
General Contractor:	Scott Construction Group 100 - 1818 Cornwall Avenue Vancouver, BC, V6J 1C7	Contact: Alistair Raeburn Phone: (604) 874-8228 Fax: (604) 874-0273 E-Mail:	
Consultant:	Barnescraig & Associates 605 - 1185 West Georgia Street Vancouver, BC, V6E 4E6	Contact: Victor Machado Phone: (604) 689-7277 Fax: (604) 688-4989 E-Mail: vmachado@barnescraig.com	
Consultant:	Commonwealth Insurance Company Suite 1500, 595 Burrard Street - Box 49115 Bentall Tower Vancouver, BC, V7X 1G4	Contact: Linda Harvie, CIP Phone: (604) 683-5511 Fax: (604) 683-8968 E-Mail: lharvie@commonw.com	
Owner:	Crosby Property Management Ltd. 600 - 777 Hornby Street Vancouver, BC, V6Z 1S4	Contact: Marianna Pandya Phone: (604) 683-8900 Fax: (604) 689-4829 E-Mail: mpandya@crosbypm.com	

**2.0 Confirmation of Warranty Information**

Willis Warranty Duration

2 Year Labour and Material

10 Year Water Penetration

10 Year Structural

**3.0 Basic Description of Areas Covered, Specifically Excluded and Deductibles**

New construction of mid-rise, three building, mixed use, multi-unit residential complex.

We assume that the following assemblies are excluded from mandatory warranty coverage:

- Commercial area building envelope assemblies.

**4.0 Post Construction Review Content**

The post-construction review included a discussion with a Strata Council representative, Trevor Gibbons (Suite 208-2288 West Broadway, Vancouver B.C. V6K 0B3 C. 604.338.9920 gib\_bones@shaw.ca) prior to an on-site visit in order to identify any on going concerns related to the performance of building enclosure assemblies of the building. I was advised that there were no known performance issues other than the items included in section 4.1. The mechanical issues previously identified by the Owners and issued to the Warranty Provider are not within the scope of this review.

I understand that the Owners have commissioned Spratt Emanuel Engineering (SEE) to perform a building enclosure warranty and maintenance review of the buildings. Although I have not been provided with a copy of the report to review, I understand there are a number of issues identified by SEE.

In addition, my review included a discussion of the tasks identified within the maintenance and renewal plan (MRP). I discussed the overall strategies of the MRP with the Owner's representative and noted whether the Owners are utilizing the schedules and checklists with respect to both routine maintenance and renewals activities.

Finally, a visual assessment of the enclosure assemblies was conducted in order to determine if there was any evidence of moisture related problems. The following table summarizes my observations:

Reviewed tasks identified during the Risk Review			
- 6.06 Green roof assemblies are not known to be exhibiting active water penetration.			
- 6.09 Window assemblies are not known to be exhibiting active water penetration. See 4.1 Windows regarding back-sloped sill flashing.			
- 6.13 Exposed sliders at the south elevation are not known to be exhibiting water penetration. See 4.1 Doors.			
- 8.08 Wood exterior doors are receiving significant rainfall and splash and are apparently leaking. See 4.1 Doors regarding water penetration at third floor entry doors.			
Owners have an understanding of the strategies of the plan			
- Based on my conversation with Trevor Gibbons, the Owners have an understanding of the strategies and importance of the MRP.			
Evidence that owners are utilizing the plans checklists and schedules			
- Based on my conversation with Trevor Gibbons, the Strata is aware of the MRP but have not started to utilize the list of recommended review and maintenance tasks therein.			
Discussed Maintenance and Renewals plan with owner representative(s)			
- I discussed the importance of maintenance and review tasks with Trevor Gibbons and, although the MRP is not being utilized currently, the Strata is proactively performing maintenance and reviews. Spratt Emanuel Engineering was been retained to perform a warranty and maintenance review of the building enclosure assemblies of the building and a report has been issued to which the Contractor and the Strata have reacted.			
Visual Observations Components	Condition Observed	Evidence of Potential Problem	Comment
Walls			
Sealant at reveals in architectural concrete	Yes	No	Both vertical and horizontal reveals are sealed where reviewed at the south elevation of buildings 1 and 2. Sealant is in satisfactory condition at this time at the locations reviewed.

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Elastomeric coating on exposed architectural concrete	Yes	Yes	At a number of locations around the third level of the buildings, the coating appeared to be thin or applied over a poorly prepared substrate, as revealed by the debris embedded in the coating. At some locations, the coating was blistered or peeled off the concrete. It is important to maintain a continuous water resistant coating on the exposed architectural concrete. I observed that the coating had been reapplied at several locations on the buildings.
Brick veneer	Yes	Yes	There is significant efflorescence over a small area of the surface of the brick veneer at the west elevation on the exterior face of the second floor residential deck up-stand wall. This staining may be indicative of extraordinary water penetration through the assembly and warrants investigation.
Water penetration through glazed spandrel	Yes	Yes	There is considerable water penetration in the stairway (no. 5) at the southwest corner of the podium (gridline A between baylines 17 and 18). There is water pooling on landing 8 which is seeping through the concrete slab and showing on the soffit over landing 6. At landing 6 there appears to be water penetration through the south elevation wall around the spandrel insert panel.
Water penetration through horizontal joint	Yes	Yes	In the north stairway (no. 1) of building 1, 2228 West Broadway, at the 7th level landing, there is water seeping between the east elevation concrete wall and the floor.
<b>Windows</b>			
Sill flashing	Yes	Yes	At the south elevation of building 2 (2268 West Broadway) at the third level, there were two windows with back-sloped sill flashing. Sill flashing should be sloped away from the window to facilitate drainage from the window assembly. We are not aware if this has resulted in water penetration although the inappropriately sloped flashing increases the risk.
<b>Doors</b>			
Exposed sliders at the south elevations of buildings 1, 2 & 3	Yes	No	The exposed sliders, identified in the risk review, are not known to be experiencing water penetration. There was evidence of moisture and splash-back debris on the third floor sliders reviewed. These exposed sliders require specific review and maintenance (as set out in the MRP) to reduce the risk of water penetration.
Front entry doors at third level townhouses	Yes	Yes	Third level townhouse doors (suites 311, 312, Amenity Room, 322, 323 and 324) are subject to water penetration. I understand that suite 311 has sustained a flood over the threshold and suite 323 currently is exhibiting staining and warping of the wood floor near the front door. Although the doors are somewhat protected by the concrete eyebrow roof canopies above, drainage from the canopies cascades down into the entry alcoves and splashes up onto the doors. The door thresholds have limited freeboard, with respect to the drain in the entry alcoves, so the risk of flooding, should the drain become plugged or overwhelmed, is considerable. The details of waterproofing the door thresholds are unknown but it appears that water resistance of the threshold is reliant on sealant installed at the toe of the threshold. With water running down the face of the doors, the threshold assemblies are required to be face-sealed since there appears to be no provision for drainage below the threshold plates.
<b>Roofs</b>			

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Glazed canopy	Yes	Yes	At the front entry to building 1, 2228 West Broadway, one of the lites of the glazed canopy has failed and should be replaced. Leaving the failed lite in place for a protracted period of time may constitute a safety hazard and also may indicate lack of response to maintenance and repair issues.
At Grade Assemblies			
Splash-back onto the base of the building walls	Yes	Yes	Due to the configuration of the concrete roof canopies and the limited width of the gravel splash pad around the base of the building, drainage from the roofs cascades into the landscape soil and splashes back onto the building walls. The dirt and water on the walls will require additional cleaning. In addition, the risk of water penetration is increased due to the load of moisture on the concrete surfaces at the base of the walls. The Owners should give consideration to decreasing the intervals between cleaning, review and maintenance tasks.
Parkade Membranes			
Level P2 suspended concrete slab	Yes	Yes	In the area of the suspended slab between gridlines A & D and between baylines 2 & 4, there are a number of cracks in the slab which have telegraphed through the traffic-bearing membrane. These cracks require repair to restore the integrity of the continuous waterproofing of the suspended concrete slab. Note that the upper surface of the slab is in the commercial parking area of the garage, however, the resultant leaks are into the residential area of the garage at P3.
Level P2 suspended concrete slab	Yes	Yes	In the area of the centre dividing wall on gridline D near bayline 4, there is a significant vertical crack in the wall visible from the south face of the wall. At the base of the crack, there is a spall in the concrete floor surface and the membrane is split open. From the north side of the wall, a floor crack extends through the upper portion of the suspended floor slab. This crack is significant and should be investigated for structural significance. The integrity of the traffic bearing membrane requires restoration.
Level P3 slab-on-grade	Yes	No	The concrete slab-on-grade is in satisfactory condition, based on my brief visual review. The cracks in the slab are coincident with the cast-in-place control joint strips and there are very few random cracks. Generally, the concrete surface is in satisfactory condition although the surface finish quality is variable.

### 5.0 Key Factors in Post Construction review

Key issues possibly affecting the effective performance of the building envelope within warranty period identified during the post construction review include:

- Owners' application of the recommendations for review and maintenance tasks set out in the MRP.
- Revisit interval for cleaning the building at the base of walls due to splash-back
- Revisit interval for review and maintenance of architectural concrete coating and exterior sealant in view of splash-back.
- Third level townhouse front entry doors are vulnerable to water penetration - revisit intervals for clearing floor drains and review and maintenance of sealant and coatings at the front entry doors.
- Appropriate attendance to claims made for potential water penetration: efflorescence at brick veneer, stairways No. 1, 2 & 5 and suite 323.
- Attend to appropriate review for windows with back-sloped sill flashing and to exposed sliders.
- Attend to applicable issues identified in SEE report.
- Restoration of traffic-bearing membrane at parking level P2. -

There were additional issues that were cited by the Owners, which I have not reviewed nor have they been verified as resolved. The following issues also require either verification that the issues are appropriately resolved or investigation and repair:



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- Evidence of a leak at the ceiling of suite 712.
- Slider at suite 210, 2288 West Broadway, not operating properly.
- Leak at the north stairway (no. 2) of building 2, 2268 West Broadway, at the 7th level landing.
- Leak adjacent to slider of suite 411.

As stated earlier, mechanical issues are not within the scope of the post-construction review of building enclosure assemblies. However, a significant safety hazard was brought to my attention by the owners at suite 323. A sewer backup was experienced in the suite that required a significant clean-up. I understand that the warning symptoms of the issue are recurring (noise and odour emanating from the bathroom floor drains) and the causes of the problem may not have been appropriately identified and corrected. There is risk that sewer gas may enter the suite through the floor drains or sewer backup may reoccur.

Yours Truly,



Phil Johnson, P. Eng.

Building Science Specialist