



MORRISON HERSHFIELD

REPORT

Building Envelope Review – The Avanti

3150-3188 West 4th Ave. & 2018-2028 Trutch St.
Vancouver, British Columbia

Presented to:

The Owners, Strata Plan LMS 3853

C/o Ms. Monika Siniarska, Property Manager
Kyle Properties Ltd.
108 – 1537 West 8th Ave.
Vancouver, B.C.
V6J 1T5

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1. INTRODUCTION

1.1 Terms of Reference

Morrison Hershfield (MH) was retained by the owners of The Avanti (Strata Plan LMS 3853) to undertake a visual review focusing on the general envelope condition on the exterior and interior of selected suites of their buildings located in Vancouver.

The main objective of this assessment was to review the various claddings, windows, balconies, podium and roof areas to identify any obvious deficiencies that could be addressed by the Strata and to provide the Strata with our recommendations with respect to any required remedial work or further investigations.

The scope of our services was outlined in our proposal letter to Mr. Chris Kyle of Kyle Properties Ltd. dated April 2, 2008. See Appendix A to reference the original scope of work.

1.2 Limitations

This assessment is based on the review of available documents and the visual site review. Our exterior review was limited to areas where on-site access to elements was accessible without apparatus. Our interior review was limited to the number of suites reviewed and the information gained from the 14 questionnaires returned to MH.

It is a basic assumption that any correspondence, material, data, evaluations and reports furnished by others are free of latent deficiencies or inaccuracies except for apparent variances discovered during the completion of this report.

This report documents the current condition of elements of the building envelope and may identify factors or mechanisms that lead to the current condition. The report is not intended to provide an opinion regarding responsibility of any party in causing or contributing to the found condition.

Any comments or conclusions within this report represent our opinion, which is based upon the documents provided to us, our field review of physical conditions, specifically identified testing and our past experience.

In issuing this report, MH does not assume any of the duties or liabilities of the designers, builders or owners of the subject property. Owners, prospective purchasers, tenants or others who use or rely on the contents of this report do so with the understanding as to the limitations of the documents reviewed, the general visual inspection undertaken and understand that MH cannot be held liable for damages which may be suffered with respect to the purchase, ownership, or use of the subject property.

1.3 Documents Reviewed

MH was provided with, and reviewed the following documents to assist in our assessment of the condition of the building envelope systems:

Document Description	Prepared By	Date
Architectural Drawings	Nigel Baldwin Architects	April 1998
Structural Drawings	Thomas Leung Engineering	February 1998
Electrical Drawings	Flagel Lewandowski Ltd.	May 1998
Landscape Drawings	Wendy Grandin Ltd.	January 1998
Mechanical Drawings	Keen Engineering	April 1998

1.4 Details and History of Building

The Avanti is a 3-storey wood frame apartment building with 50 units and 10 townhouses built partially over a reinforced concrete parking structure. The complex was built circa 1999.

The buildings are clad in a combination of vinyl siding, cementitious board panels, and a combination of wood and aluminum trim. Roofs are mainly flat SBS systems with some secondary sloped asphalt shingle areas. There are no amenity rooms.

The following table provides general information about the building.

Building Name/ Address	The Avanti – 3150-3188 West 4 th Avenue & 2018-2028 Trutch Street
Owner	Strata Plan LMS 3853
Property Manager	Monika Siniarska, Kyle Properties Ltd.
Building Type	Low-rise
Type of Construction	Wood frame
Occupancy	Residential Strata
Applicable Building Code	Vancouver Building By-Law No. 6134 as amended to the date of permit.
Sprinklered	Yes
Number of Suites	60 residential (50 units and 10 townhouses)

Number of Storeys	Three
Parking	1 level reinforced concrete below grade
Adjoining Properties	West elevation – Trutch Street North elevation– 4 th Avenue South elevation – laneway at rear of building East elevation – adjacent low-rise building

1.5 Report Format

In each section we provide a concise description of the issue, with comment on cause and our recommendation for further action. We have categorized each recommendation as follows:

Type:	Investigation	Further investigation is required (This could include further evaluation, testing or destructive openings)
	Action	A remedial task has been identified for the Strata to address
	Monitor	Continued monitoring is required
Priority:	1	Immediate – required because of codes, life safety issues, high liability or severe risk of escalated damages
	2	Recommended by MH – good practice, to reduce risk of future damage
	3	Owner discretion is appropriate – low risk, immediate action not required
Timeframe:	I	Immediate – High risk of future damage
	II	Plan within 2 years – Risk of future damage
	III	Timeframe is flexible – Preventative maintenance

Suite #	Address	Elev.	Comments (from questionnaire)	Water Leakage
3	3130 W. 4th	South	Leakage onto LR floor from exterior patio pipe.	Living Room
1	3140 W. 4th	North	Mold and mildew at window sills	Living Room
319	3150 W. 4th	North	Balcony wood decking cracking, with nail pops	
304	3150 W. 4th	North/ South	--	Dining Room, Other
307	3150 W. 4th	South	--	Patio sliding door

Recommendation 1

Confirm occupant concerns at all units not reviewed during this visit.

Type: Action

Priority: 3 (discretion)

Timeframe: III (flexible)

2.3 Interior Conditions

Each suite has a principal exhaust fan in the bathroom and a range hood over the stove. The bathroom exhaust fans are manually controlled with a switch. These fans should ideally be controlled by a humidistat to moderate moisture within the suite. The kitchen range hood is also manually controlled and should be utilized when occupants use the stove.

Each suite has a thermostat centrally located to control the baseboard heaters to moderate thermal comfort.

Recommendation 2

Instruct tenants on the use of exhaust fans for ventilation and air circulation to reduce condensation.

Type: Action

Priority: 2 (rec. by MH)

Timeframe: II (within 2 years)

2.4 Walls

The wall assembly used at The Avanti is primarily rainscreened vinyl siding (including horizontal siding and modular sheets of faux shingles at roof level) and cementitious panels.

MH reviewed the exterior envelope and observed several common deficiencies:

- Sealant at several wall panels has failed. In some areas, sealant is still resilient but has been poorly applied. When renewing sealant, ensure proper application procedures are followed, including removal of old sealant.

- The use of starter strips and termination bars for the vinyl siding sections is inconsistent across the complex. Moss growth was noted at the starter strip in several locations.
- At the courtyard of 3140 W. 4th, staining from an exhaust vent is visible on the cladding (see Photo 1.)
- MH noted at least two locations where vinyl cladding had been deformed due to heat from patio barbeques (see Photo 2.)
- Light fixtures in common areas are not sealed to the vinyl cladding. In at least one location in the courtyard of 3130 W. 4th, the housing for the light fixture has come loose and wires are exposed (see Photo 3.)

Recommendation 3

Review, maintain and replace sealant as required. *Plan for complete replacement within the next 5 years.*

Type: Action **Priority:** 3 (discretion) **Timeframe:** III (flexible)

Recommendation 4

Ensure all exterior fixtures and housings are secure. Seal to cladding as required.

Type: Action **Priority:** 2 (rec. by MH) **Timeframe:** II (within 2 years)

Recommendation 5

Instruct occupants to keep barbeques away from wall surfaces

Type: Action **Priority:** 3 (discretion) **Timeframe:** III (flexible)

Recommendation 6

Replace warped cladding sections, and clean cladding on a regular basis.

Type: Action **Priority:** 3 (discretion) **Timeframe:** III (flexible)

2.5 Interior Visual Review

MH conducted an interior review of the suites listed below at locations where the owners reported water ingress or building envelope concerns.

Unit 319, 3150 W. 4th

- The second level balcony has slippery and deteriorated wood decking.
- The door sill track fills with water when raining, but resident reports that it does not overflow. This is typical of exposed sliding doors. If water does overflow

and causes damage, consideration should be given to providing overhead protection to the door, or replacing the door with a better performing unit.

Unit 1, 3140 W. 4th

- Resident reported that the interior frame of the patio slider door gathers condensation and exhibits mold in the winter.
- Water has also seeped in during periods of rain or when the door assembly is being washed.
- The sliding door has no protective overhang. This is typical of most sliding doors at the Avanti.

Unit 3, 3130 W. 4th

- Water ingress that was reported on resident questionnaire was due to plumbing problem, and has since been remedied. No water damage was noted.

Unit 307, 3150 W. 4th

- Resident noted water ingress at patio door sill during a period of heavy wind two winters ago. Water dripped down into bedroom light socket located directly below patio door sill above. Upon investigation by resident, door sill wood stool was damp to the touch. No pooled water was noted at door sill.
- Staining present on gypsum at inside of door sill (see Photo 4.) Staining also on carpet, where metal object (barbell weight) had left corrosion behind after water ingress was discovered.
- Paint on wood door sill stool flaked and wood showing signs of deterioration. This could be due to exposure to water during ingress incident.
- Exterior patio light fixture, receptacle box, fireplace vent, wall panel joint, and door trim were all sealed with thick bead of clear sealant after water ingress incident (see Photo 5.) 6" vertical edge of trim above east door jamb not sealed.
- After sealing, no subsequent water ingress noted by resident.
- If leak reoccurs, investigation should include looking for a breach in the moisture barrier behind the cladding.

Unit 304, 3150 W. 4th

- The exterior wood jambs of the north patio swing door are weathered, and in some places deteriorated. Paint is flaking from the wood, and the bottoms of the jambs are in poor condition (see Photo 6.)

- Sealants at the jamb-trim transition have failed.
- At the south patio slider, the exterior wood sill trim is weathered. At the west end of the trim, wood is severely deteriorated and easily flakes off in dry pieces (see Photo 7.)
- The exposed wood decking is weathered and approaching renewal. This is typical of all the wood decking we observed at the Avanti.

Recommendation 7

Renew wood decking as required.

Type: Action

Priority: 3 (discretion)

Timeframe: III (flexible)

Recommendation 8

Renew and repaint wood trim as required. Consideration should be given to replacing sill wood trim with a metal flashing for durability.

Type: Action

Priority: 3 (discretion)

Timeframe: III (flexible)

Recommendation 9

Monitor source of water ingress at Unit 1, 3140 W. 4th. Overhead protection may be required at the slider if water ingress continues.

Type: Investigation

Priority: 2 (rec. by MH)

Timeframe: II (within 2 years)

2.6 Windows Units

The table identifies the primary glazed assemblies used in the project.

Window Type and Use	Punch windows
Manufacturer	Almetco
Frame Material	Thermally broken vinyl
Corner construction	Welded mitre joints
Drainage	Drained Glazing Cavity.
Type of Operator	Casement & Awning
Glazing installation	Dry seal ext. / dry seal int.
Glazing	Insulated Glazing Unit (IGU)
Flashing	Sill flashing
Perimeter seal and trim	Mostly vinyl trim, with areas of wood and aluminum trim

Observations:

- The windows are typically surrounded by vinyl trim. At the Avanti, this trim is not generally sealed to the window frame, nor to the adjacent cladding (see Photo 8.) Though the Avanti window frames are often tightly fitted into the surrounding trim pieces, it is good practice to seal these transitions. It is also common to seal transitions between dissimilar materials (see next observation).
- Metal trim has been installed at some window and door locations. This trim may be an overcladding on top of a different material. In several instances, we observed metal trim at the jambs and head of a sliding patio door, with the sill trimmed in wood. Generally the sill is the region most vulnerable to deterioration, yet the material used here is not as resilient as metal. The transitions between these dissimilar materials are not always sealed.
- Some of the transitions that are sealed have sealant that is failing (see Photo 9.) Sealants generally have a lifespan of 5-10 years. The sealant at the Avanti is approaching its renewal age (see Recommendation 3).
- In the courtyard of 3170 W. 4th, a vertical rectangular window has been installed into a horizontal opening. This can be confirmed by the presence of weep holes on the side rail of the frame. These holes are supposed to be at the bottom rail of the frame. The configuration of this installation is inappropriate, as cavity drainage is inhibited (see Photo 10.)
- Based on the age of the window units, failure of insulated glazing units (IGUs) will begin to occur. Strata should plan on replacing a number of IGUs each year (~10%).

Recommendation 10

Seal or renew sealant at all transitions between window and trim, and between dissimilar materials.

Type: Action

Priority: 2 (Rec. by MH)

Timeframe: II (within 2 years)

Recommendation 11

Replace improperly installed window with correct window for this location, with weep holes located at the bottom rail.

Type: Action

Priority: 2 (Rec. by MH)

Timeframe: II (within 2 years)

2.7 Roofs and Decks

There are two different roof assemblies and deck assemblies (over occupied conditioned space) used on the buildings.

The roof assemblies are SBS membrane with cap sheet (flat roofs) and asphalt shingles (sloped roofs). Some flat areas adjacent to shingled roofs appear to be covered with an asphaltic sheet layer. We could not confirm if the assembly at these flat areas is thicker than one ply.

The deck assemblies consist of wood deck planks laid over and fastened through the underlying SBS membrane. MH could not confirm the structural integrity of the fastening method or the penetration detailing at the membrane.

In both the roof and deck assemblies, the membranes are protected with a granulated cap sheet. Flat roofs were generally well-sloped to provide drainage (see Photo 11.) Because it had rained the morning of our review, there were areas of pooled water on the flat roofs, but none significant enough to warrant concern. The shingled roofs appeared to be in good condition. These types of roof assembly should have a service life of approximately 20 years.

MH did not conduct any exploratory openings to confirm the roof assemblies. The assembly make-ups are based on observation of materials used and knowledge of these roofing systems.

No ladder access was available for the westernmost and easternmost flat roof areas. As such, we conducted a visual review of these areas from the nearest roof surface.

Observations:

- One downspout leading from an upper flat roof to a lower flat roof empties directly onto the roof membrane (see Photo 12.) Good practice would involve installing a paver (splash pad) or redirecting the downspout into the nearby gutter.
- Several gutters appeared to be blocked. Regular maintenance should include cleaning of these gutters.
- The small flat areas covered with sheets of asphaltic material (typically over 3rd floor bay windows in the courtyard) may not provide the same level of resilience as the SBS membrane which covers the majority of the flat roof surfaces.
- An area of flat roof above the courtyard of 3140 W. 4th exhibited wrinkling in the asphalt sheet membrane (see Photo 13.)
- A soft spot exists in the membrane on the southern portion of the large flat roof second from the east.
- Many wood decks are weathered from constant exposure (see Units 319 and 304 above for more detail).
- The wood privacy fences between south-facing roof decks are weathered and in need of repair.

- The guardrails at the south-facing roof decks are fastened to wood decking and also to the privacy fences, which are in turn bolted to the decking (see Photo 14.) The privacy fences are only attached at the base, and their top halves deflect easily. As an informal test, MH pushed outwards on the guardrail of Unit 307, and it felt solid. However, no guardrail shop drawings were available to further examine the structural integrity of the fastening method used on these balcony guardrails.

Recommendation 12

Clean out debris from gutters. Maintain all drains.

Type: Action **Priority:** 3 (discretion) **Timeframe:** III (flexible)

Recommendation 13

Supply splash pad for downspout. Alternately, run downspout into gutter.

Type: Action **Priority:** 3 (discretion) **Timeframe:** III (flexible)

Recommendation 14

At time of next roof replacement, replace dormer flat roof areas with a 2-ply SBS membrane.

Type: Action **Priority:** 3 (discretion) **Timeframe:** III (flexible)

Recommendation 15

Monitor soft spots and wrinkles in roof membrane, and repair as required.

Type: Investigation **Priority:** 2 (rec. by MH) **Timeframe:** II (within 2 years)

Recommendation 16

Maintain and renew privacy fences at roof patios.

Type: Action **Priority:** 2 (rec. by MH) **Timeframe:** II (within 2 years)

Recommendation 17

Review structural integrity of roof deck guardrails.

Type: Investigation **Priority:** 1 (immediate) **Timeframe:** I (immediate)

2.8 Landings and Porches

The Avanti has a liquid-applied polyurethane traffic membrane at all exposed landings and porches. This membrane typically has a service life of 7-10 years, depending on traffic and exposure.

The membranes at the Avanti are approaching renewal age. The Strata may wish to consider a more durable waterproofing membrane, such as an SBS system covered with pavers. However, this system requires greater height clearance between landing substrate and door threshold, and may not be suitable for all locations.

Additional observations:

- At 3130 W. 4th, one unit had mid-sized planters on the front porch. The planters were directly on the membrane. Planters should be raised on pedestals for optimal drainage of the landing.
- At 2028 Trutch St., the membrane at the front porch has been damaged and needs repair. Also at this location, bolts are missing from one railing post.
- At 3178-3188 W. 4th, ponding water was noted on the porches (see Photo 15.). Also at this location, doors are missing some of their original weatherstripping.

Recommendation 18

Renew membranes as required. The Strata should plan on phased renewals in the next 5 years. Reslope as required to facilitate drainage.

Type: Action **Priority:** 3 (discretion) **Timeframe:** III (flexible)

Recommendation 19

Raise planters onto pedestals to allow for drainage.

Type: Action **Priority:** 3 (discretion) **Timeframe:** III (flexible)

Recommendation 20

Repair railing post at 2028 Trutch St. to ensure structural integrity of guardrail.

Type: Action **Priority:** 1 (immediate) **Timeframe:** I (immediate)

Recommendation 21

Replace missing weatherstripping at 3178-3188 W. 4th.

Type: Action **Priority:** (discretion) **Timeframe:** III (flexible))

2.9 Parking Garage

The parking garage consists of a single level slab-on-grade structure with suspended slab above.

Based on our visual review, we did not see any current conditions to indicate structural distress. In our climate, water leakage can cause deterioration of steel reinforcement and spalling of concrete over the course of several years, something which should be addressed in the long-term maintenance of the building. Leaks into below-grade structures are often difficult to trace and may be costly to repair. Because of the time that it takes for corrosion of reinforcing steel in the concrete to occur due to water ingress, leaks into parking garages often cause more of a nuisance than a danger to occupant health or safety.

Observations:

- No fireproofing insulation is installed at the underside of the suspended slab (i.e. below the buildings above – see Photo 16.) Typically, spray insulation covers the entire underside of the building footprint above.
- Efflorescence is visible along hairline cracks in the suspended slab (see Photo 17.) This indicates water ingress from the podium above. Typically this is due to membrane failure above.
- Two cracks larger than a hairline were observed at stall 73 (see Photo 18.)
- No active leaks were noted in the perimeter walls of the garage.
- Several large trees grow above the garage in the courtyards of the Avanti (see Photo 19.) Landscape drawings do not show a root barrier below these trees. Organic roots can penetrate waterproof membranes over the long term. This could lead to leaking in the garage below.

Recommendation 22

Further investigate leaks in the parking garage and repair cracks in the concrete as necessary.

Type: Action **Priority:** 2 (rec. by MH) **Timeframe:** II (within 2 years)

Recommendation 23

Investigate need to provide fireproofing insulation at underside of suspended slab with fireproofing consultant.

Type: Investigation **Priority:** 2 (rec. by MH) **Timeframe:** II (within 2 years)

Recommendation 24

Investigate possible link between roots of trees in courtyard and membrane failure.

Type: Investigation **Priority:** 2 (rec. by MH) **Timeframe:** II (within 2 years)

3. SUMMARY OF RECOMMENDATIONS

The following recommendations are based on visual observations as described above. This report provides a review of the overall condition or status of the building envelope and components and focuses on specific locations where deficiencies or water ingress were noted. Locations requiring further investigation or confirmation of as-built conditions in addition to items requiring maintenance were also noted.

General Comments:

- Overall, the building envelope of the Avanti is in acceptable condition. Roofs appear to be performing well. Vinyl siding issues noted by MH are largely aesthetic. Sealants and membranes are approaching renewal age and are performing accordingly.
- The exposed wood decking, guardrails, and some exposed wood trim, is generally weathered and in some cases deteriorated. These wood items should be renewed for aesthetic, safety, and performance reasons.
- Windows appear to be performing to acceptable levels. Continued monitoring, especially at trim intersections and at locations where residents have noted concerns, is highly recommended to ensure optimal performance.
- Efflorescence at the ceiling of the parking garage indicates water has migrated through the suspended slab. This is likely due to membrane failure above. There is a possibility this membrane failure could be related to the roots of trees in the courtyards above, but MH's visual review alone cannot confirm this. No active leaks were noted in the parking garage.

3.1 Immediate Action (First Priority)

No.	Recommendation	Type	Timeframe
17	Review structural integrity of roof deck guardrails.	Action	I (Immediate)
20	Repair railing post at 2028 Trutch St. to ensure structural integrity of guardrail.	Action	I (Immediate)

3.2 Highly Recommended (Second Priority)

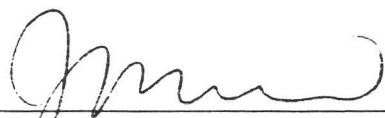
No.	Recommendation	Type	Timeframe
2	Instruct tenants on the use of exhaust fans for ventilation and air circulation to reduce condensation.	Action	II (within 2 years)
4	Ensure all exterior fixtures and housings are secure. Seal to cladding as required.	Action	II (within 2 years)
9	Monitor source of water ingress at Unit 1, 3140 W. 4 th . Overhead protection may be required at the slider if water ingress continues.	Action	II (within 2 years)
10	Seal or renew sealant at all transitions between window and trim, and between dissimilar materials.	Action	II (within 2 years)
11	Replace improperly installed window with correct window for this location, with weep holes located at the bottom rail.	Investigation / Monitor	II (within 2 years)
15	Monitor soft spots and wrinkles in roof membrane, and repair as required.	Action	II within 2 years)
16	Maintain and renew privacy fences at roof patios.	Investigation	II (within 2 years)
22	Further investigate leaks in the parking garage and repair cracks in the concrete as necessary.	Investigation / Action	II (within 2 years)
23	Investigate need to provide fireproofing insulation at underside of suspended slab with fireproofing consultant.	Investigation	II (within 2 years)
24	Investigate possible link between roots of trees in courtyard and membrane failure.	Investigation	II (within 2 years)

3.3 Maintenance Work (Third Priority)

No.	Recommendation	Type	Timeframe
1	Confirm occupant concerns at all units not reviewed during this visit.	Action	III (flexible)
3	Review, maintain and replace sealant as required. <i>Plan for complete replacement within the next 5 years.</i>	Action	III (flexible)
5	Instruct occupants to keep barbeques away from wall surfaces.	Action	III (flexible)
6	Replace warped cladding sections, and clean cladding on a regular basis.	Action	III (flexible)
7	Renew wood decking as required.	Action	III (flexible)
8	Renew and repaint wood trim as required. Consideration should be given to replacing sill wood trim with a metal flashing for durability.	Action	III (flexible)
12	Clean out debris from gutters. Maintain all drains.	Action	III (flexible)
13	Supply splash pad for downspout. Alternately, run downspout into gutter.	Action	III (flexible)
14	At time of next roof replacement, replace dormer flat roof areas. Replace with a 2-ply SBS membrane.	Investigation /Action	III (flexible)
18	Renew balcony membranes as required. The Strata should plan on phased renewals in the next 5 years. Reslope as required to facilitate drainage.	Action	III (flexible)
19	Raise planters onto pedestals to allow for drainage.	Action	III (flexible)
21	Replace missing weatherstripping at 3178-3188 W. 4 th .	Action	III (flexible)

Please do not hesitate to contact the undersigned if you have any questions.

MORRISON HERSHFIELD LIMITED



Jeremy Balden
Building Science Consultant



Jacquelyn White, P.Eng.
Project Manager

