

2-Year Warranty Review Report - DRAFT

District Crossing, 1673, 1677 and 1679 Lloyd Avenue, North Vancouver, BC



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1. Introduction

1.1. Terms of Reference

The Owners, Strata Plan BCS4175, retained RDH Building Engineering Ltd. (RDH) to prepare a building enclosure warranty review of the common property building enclosure assets (the Assets) at the building located at 1673, 1677 and 1679 Lloyd Avenue, North Vancouver, BC and known as District Crossing.

This report was prepared for The Owners, Strata Plan BCS4175 and is not to be relied on by others.

1.2. Report Organization

The warranty review was carried out using our proprietary building asset management software (BAMS). Data are collected and entered into the client-accessible software. Action items can be tracked and corrective steps can be recorded to provide an up-to-date record of the current conditions of assets. The software can generate a range of reports for use by Strata Council, Owners, trade contractors and others working on the building. The reports are also used as part of the appendices of this warranty review report, which also contains a narrative discussion of background information and a summary of the review findings.

The report is organized into five sections, in addition to two appendices.

The first section provides an overview of the warranty review and some background information to help readers understand the purpose and scope of the report, in addition to assumptions, limitations and terminology used in the report.

The second and third sections provide discussion regarding the results of the occupant questionnaire and our review of the available building documentation. The third section also includes an overview of the typical assemblies found at District Crossing.

The fourth section provides a more detailed analysis of specific observations and discusses the significance of the observations.

The fifth section provides our recommendations and guidance on the next steps, as they relate to the warranty process and to specific observations.

The appendices, based on reports generated by the BAMS software, include more detailed descriptions of observations and information gathered during the warranty review process. These include a list of all building enclosure assets (an asset inventory) and a list of condition observations.

1.3. Warranties

The Homeowner Protection Act (HPO) (1999) requires that all new homes constructed in BC must be covered by warranty insurance. This insurance is also known as the HPO-mandated warranty, 2-5-10 warranty, or third party warranty. The mandatory warranty provides 2-year coverage of the building enclosure for,

“coverage for any defect in materials and labour supplied for the exterior cladding, caulking, windows and doors that may lead to detachment or material damage to the new home,” (*Homeowner Protection Regulation, Schedule 3 – Minimum Standards of Coverage, 2007*)

Within strata properties, the coverage for individual units begins either on the actual occupancy date of the unit or the date of legal transfer—whichever is earlier. Coverage for common property, such as the building enclosure, begins on the same day as coverage of the first unit (the occupancy date or legal transfer date for the first unit).

Additional, optional warranty coverage may also be provided by:

- The original builder.
- The manufacturers of components or materials used in the original construction.

A review of actual warranty documents was not included within the scope of services to prepare this report. This report included items which may be considered defects, and which may be covered by the HPO-mandated warranty. The Owners are encouraged to review their warranty documentation to determine the extent of coverage by the HPO-mandated warranty and other warranties and the start date of warranty coverage.

The Owners should also consider providing a copy of this report and appendices to the developer and warranty provider prior to the expiration of the current warranty period.

For additional information on HPO-mandated warranties, refer to the *Guide to Home Warranty Insurance in British Columbia* prepared by the Homeowner Protection Office and available on their website, www.hpo.bc.ca. A Regulatory Bulletin is included in this report as an appendix.

1.4. Purpose of the Report

The purpose of this report is to identify building enclosure items of concern and defects that should be addressed. These defects may be covered by the HPO-mandated warranty or other warranties and, as such, their correction may be the responsibility of other parties. Alternately, they may be addressed by the Owners as part of routine maintenance of the building, or as part of the regular renewals program.

This report documents our observations, comments on items that should be addressed and provides recommendations that will assist in achieving effective performance and in prolonging the service life of the building enclosure. However, the report does not assign fault for defects or adjudicate any warranty claims or provide repair strategies to correct warranty defects or maintenance and renewal items.

Potential warranty issues are identified, as well as issues that should be addressed as part of the regular maintenance and renewals program implemented by the Owners. A determination of whether a particular item is considered a defect under warranty coverage, in many cases, requires a more detailed analysis and will require further review and input from others.

While the report focuses primarily on defects identified during the review, it should also be recognized that there are also many positive conditions that are not reflected in a report of this nature.

1.5. Scope of Services & Methodology

The report addresses the building enclosure assemblies of the common property of the building. An inventory of the common property building enclosure assets is

included in Appendix A. These assets include roofs, decks, balconies, exterior walls, windows, doors, and at-grade assemblies. Our scope of services for the warranty review is summarized as follows:

1. Provide an occupant questionnaire to be distributed to each owner/resident.
2. Undertake a detailed review of the architectural drawings with regards to the building enclosure, for the purpose of understanding the general arrangements. We will provide a report describing the design intent for the key building enclosure assemblies.
3. Review documentation relevant to ongoing maintenance and renewal activities.
4. Undertake a visual review of sample areas of the building enclosure. The review will include the following:
 - a. A visual review of the interior conditions of sample units in order to assess the influence of in-service conditions of units on the performance of the building enclosure.
 - b. A visual review of the exterior of the building. During the visual review, we will focus on areas that have reported problems. This visual review will be conducted from the ground and ladders, as well as from some of the balconies, decks, and roofs.
5. Make exploratory openings in key building enclosure assemblies to determine the condition of hidden building components and to confirm details of the building construction.
6. Based on the results of our review of documentation, questionnaire responses, and on-site reviews, prepare and submit a draft report (based on BAMS software-generated reports) to the Strata Council.
7. Meet with the Council to present the report to better explain the report's findings and associated implications, as well as to address questions.
8. Revise and submit the final report to the Strata Corporation's agent.

1.6. Description of Building Complex

The District Crossing complex consists of three low-rise mixed-use buildings. The District Crossing Complex also includes a number of ground floor commercial units. These units are owned by a separate strata corporation and were not included in our scope of work. The wood-framed residential portion of the buildings are constructed over a below grade concrete parkade and concrete first floor commercial units. The complex is built against a slope and the drawings indicate a concrete retaining wall is in place beyond the exterior parkade walls. The buildings typically each have a total of four levels; however, due to the sloping grade, 1677 Lloyd has an additional fifth level, for the northern portion of the building. The buildings are configured in a 'C' shape around a central courtyard and parking area (Fig. 1.6.1 to Fig. 1.6.5).



Fig. 1.6.1 Layout of District Crossing complex.



Fig. 1.6.2 Courtyard and parking area within complex.



Fig. 1.6.3 South elevation of 1673 Lloyd Ave along Marine Drive.



Fig. 1.6.4 North elevation of 1679 Lloyd Ave.



Fig. 1.6.5 Southeast corner of 1677 Lloyd Ave.

1.7. Assumptions & Limitations

A review of the warranty documentation was not included as part of the scope of work for this project. The report identifies items that include both warranty defects and maintenance and renewal items. For example, it is sometimes not known whether a defect dates from original construction or has arisen since the original construction as a result of building use and operation.

2. Occupant Questionnaire

An occupant questionnaire was distributed to all one hundred and twenty-nine (129) suites. A total of one hundred and twenty-three (123) questionnaires were returned representing 94.5% of total suites. Table 2.1.1 below summarizes the responses.

Table 2.1.1 Questionnaire Summary

Survey Question	
1) Does your suite have any current (within the past year) leaks associated with the building enclosure?	2/123 (2%)
2) Have you had leaks in the past that have been repaired (but no leaks within the past year)?	3/123 (2%)
3) Do you have condensation problems at the inside face of any windows or glazing assemblies?	2/123 (2%)
4) Do you have condensation problems between panes of glass at any windows (fogging)?	1/123 (1%)
5) Do you have any problems with mould, fungi, or mildew (typically black staining)?	4/123 (3%)
6) Do you feel cold drafts in your suite?	33/123 (27%)
7) Have you had problems related to decks or balconies?	10/123 (8%)

one location where the exterior door was not closing adequately.

- Comments regarding issues at balconies and decks typically related to ponding water on the balcony surface or concerns with drainage over the balcony edge.

A significant proportion of the residents responded to the questionnaire and a number of items should be noted:

- There were few reports of leaks or issues with condensation. Most of the reported leaks appear to be related to mechanical systems or were associated with the balconies and did not penetrate to the interior of the suite.
- Over a third of respondents in the complex commented that drafts are felt within the suite. There are two likely sources of this, first from the underside of suite entry doors. This may be part of the design of mechanical system to provide fresh air to the suites. The second may be from around the windows and exterior doors. We observed at least

3. Review of Documentation

The documents listed in Table 3.1.1 were provided to RDH and were briefly reviewed. These documents consisted of original architectural drawings, issued for final design or record drawings.

Table 3.1.1 Documents Reviewed

Document	Prepared by
Architectural Drawings	Raymond Letkeman Architects Inc., Issued for Final Design, dated October 26, 2011.
Description: Plans, elevations and building sections. List: A0.0, A1.0-A1.2, A2.0-A2.8, A3.0.1-A3.4.1, A4.0.1-A4.2.7, A5.0.1-A5.0.5, A6.0.1-A6.2.11, A7.0-A7.5.A8.0-A8.33, A9.0-A9.1, A10.0-A10.8.	
Document	Prepared by
Mechanical Drawings	Jade West Engineering Co. Ltd., As-Built, dated September 15, 2011
Description: Site Plan, Mixed-use Development List: M1-M9.	
Document	Prepared by
Mechanical Drawings	Jade West Engineering Co. Ltd., As-Built, dated May 6, 2010
Description: Site Plan, Mixed-use development List: M1-M44, M46-53.	
Document	Prepared by
Electrical Drawings	DF & Associates Consulting Ltd., Issued for Construction, dated March 11, 2010
Description: Site Plan, Mixed-use Development List: E100-101, E200-203, E210, E300.1-302.2, E400-402, E500-504, E600-602, E700.	
Document	Prepared by
Structural Drawings	Weiler Smith Bowers Consulting Structural Engineers, Issued for Record Drawings, dated November 8, 2011
Description: Specifications, Details, Plans List: S1-S18.	

Document	Prepared by
Mechanical Drawings	Jade West Engineering Co. Ltd., Record Drawings, dated October 19, 2011
Description: Site Plan, Mixed-use development List: M1-M44, M46-53.	

3.2. Review of Architectural Drawings

A full set of architectural drawings and detail drawings were provided for our review. However the drawings provided did not include shop drawings for the window assemblies or the guardrails. We recommend obtaining these drawings as they may be helpful for future renewals and maintenance.

We observed the following items during our review of the architectural drawings:

- The drawings indicated that the below grade parkade walls were to be protected with a liquid-applied damproofing and drainage mat, as well as a waterproofing membrane at any moisture sensitive areas.
- The drawings show an appropriate interior insulated rainscreen assembly for the exterior siding and brick masonry clad walls.
- The detail drawings include a diagram for preparing the window rough openings to receive the drained vinyl window assemblies.
- The detail drawings also show the design intent for crickets to be installed at the balcony edges to divert water away from the exterior wall assemblies; these were not installed where reviewed.
- A note on the roof details indicates that gooseneck flashings are to be installed at any electrical penetrations at the roof level; these were not installed where reviewed.

RECOMMENDATION	
1	Obtain window and guardrail shop drawings.

3.3. Typical Assemblies

The following sections discuss the typical building enclosure assemblies at District Crossing. These descriptions are based on the information available from the documents provided. Details are provided of how

each assembly is intended to function as part of the building enclosure, based on our experience with similar assemblies in other buildings.

3.3.1 Exterior Walls

The principal exterior wall assemblies at District Crossing include coated poured-in-place concrete walls at portions of the first floor level, and rainscreen wood-framed walls with masonry veneer and fibre cement board cladding at the remaining wall areas.

Coated Architectural Concrete Walls

Exterior concrete walls at the first floor form part of the building's primary structural system and, in combination with interior concrete walls and columns, support the wood framed structure above the first floor. The exterior component of the wall assembly consists of a load bearing concrete wall or column, typically 8" or 10" thick. At District Crossing, the concrete wall is finished on the inside with steel stud furring, either batt or extruded polystyrene and an interior gypsum board finish. A polyethylene vapour barrier is located between the studs and interior gypsum board. The exterior surfaces of the concrete walls have an elastomeric painted finish.



Fig. 3.3.1 A section of coated architectural concrete wall at the first floor.

Exterior walls of this type are relatively robust assemblies. The structural component of the wall, the concrete, is not susceptible to moisture damage and moisture sensitive components of the wall, the steel stud furring and gypsum board finish, are located on the protected interior portion of the wall.

Generally when water ingress occurs at concrete walls the problems occur at cracks and joints in the concrete

and at interfaces between the concrete wall and adjoining assemblies and components, such as a window to wall interface.

Procedures to limit and control cracking include reducing the size and aspect ratio of concrete panels. Control joints and reveals are also used to encourage crack formation in specific areas and in a more regular pattern that will facilitate application of waterproofing sealant. At District Crossing horizontal reveals were installed along the slab construction joints and were typically sealed with sealant, to prevent water ingress at potential cracks.

The exposed poured-in-place concrete walls at District Crossing have an elastomeric finish on the exterior. In addition to having an aesthetic function, the finishes also provide a protective layer and limit or prevent the absorption of water into the concrete. A number of different coating types may be used. Elastomeric coatings are flexible and have an ability to span over small cracks that are in the concrete at the time the paint is applied.

Water vapour permeability is an additional important characteristic of exterior coatings, and refers to their ability to allow water vapour to penetrate through the coating. If walls do become wet, the presence of coating on the exterior surface may restrict the ability of the wall to dry to the exterior. A balance must be maintained between restricting water absorption and permitting drying. However, in most cases the protective characteristics of coatings will outweigh any restriction in drying that occurs.

Cementitious Fibre Board Siding Walls

The cementitious fibre board siding is installed on wood framed walls to create a rainscreen assembly. The back-up walls are typically tyvek sheathing membrane on plywood sheathing.

In rainscreen walls, the exterior cladding is intended to deflect most of the water that contacts the wall; however, a cavity is provided behind the cladding. If water does penetrate the cladding it reaches the cavity and cannot move further into the wall assembly. Instead water in the cavity will drain down on the inside face of the cladding or on the waterproof membrane at the other side of the cavity and will be deflected out of the wall assembly at a cross-cavity flashing. With a rainscreen wall it is not

essential that the outer cladding be completely sealed; some imperfection is acceptable.

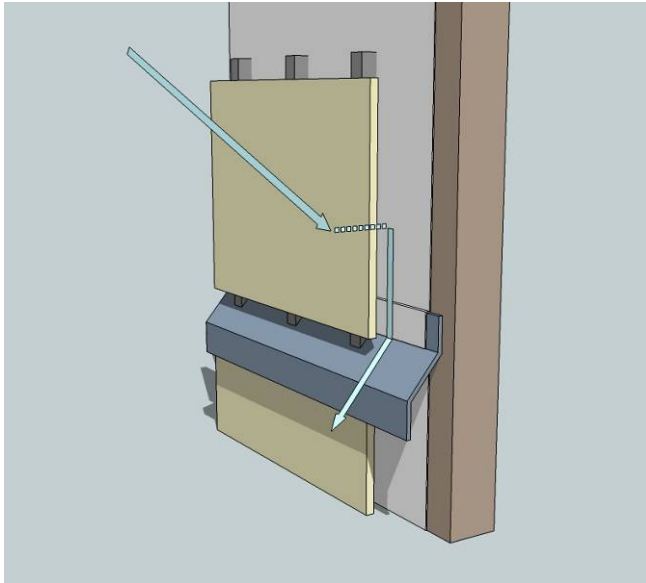


Fig. 3.3.2 Typical rainscreen assembly.

Brick Masonry Veneer Walls

Brick masonry veneer is installed in sections throughout the complex as a rainscreen assembly, (Table 3.2). At the first floor the masonry veneer is installed on a concrete back-up wall coated with a vapour permeable, water resistant coating. At the second floor and above, the masonry is installed on wood framed walls protected with tyvek sheathing membrane. In both cases the walls are insulated from the interior.

Table 3.1 Brick Masonry Veneer Wall Assemblies

Concrete Walls	Wood Framed Walls
Brick veneer	Brick veneer
Airspace	Airspace
Waterproofing (asphaltic emulsion coating)	Tyvek Homewrap
Concrete wall	Exterior Plywood
Air space	–
Steel studs	Wood studs
Batt insulation	Batt insulation
Poly vapour barrier	Poly vapour barrier
Gypsum wall board	Gypsum wall board
Interior painted finish	Interior painted finish

Brick veneer masonry walls are rainscreen assemblies and provide a means to direct water which does not penetrate the outer cladding to drain to the exterior through weep holes. In addition the masonry cladding has some ability to absorb water and later release it to the exterior through evaporation. However, the performance of masonry veneer wall assemblies is also critically dependent on the quality of construction particularly at penetrations, brick tie attachments to the substrate, and at shelf angles.

3.3.2 Windows and Doors

The glazed elements of the building consist of windows, sliding doors and swing doors.

Windows

There are two types of windows at District Crossing: punched windows and window wall. Punched windows are individual window units surrounded by wall area. Window-wall assemblies consist of individual windows coupled together, spanning from floor to floor and extending past the edge of the floor slab. The exterior appearance is of a glazed wall (Fig. 3.3.3).



1. Window wall 2. Punched windows

Fig. 3.3.3 Typical window types.

At District Crossing, the punched window assemblies utilize a vinyl framed window system, while the window wall assemblies utilize an aluminum framed system which incorporates opaque spandrel panels at floor levels.

Vinyl framed punched windows are a commonly used window system for low-rise, wood framed residential buildings and can provide an appropriate level of water management performance in the low to medium

exposure conditions typically experienced by these types of buildings. Aluminum window wall frames are typically used on high rise buildings and are suitable for use in medium and high exposure conditions. When correctly designed and installed, they can also provide appropriate levels of water management performance in low-rise residential buildings.

In both cases, the window frame is designed to accommodate some degree of water penetration and to direct intruding water to the exterior through a series of weep holes in frame members. In addition, it is common practice to design the rough opening (the opening in the wall into which the window is placed) to accommodate water leakage through the window and to divert this water to the exterior. Based on the architectural detail drawings reviewed, the rough openings at District Crossing are designed and constructed in this manner.

Glazed Doors

Residential suites have sliding or swing doors providing access to balconies and decks. Typical balconies and decks have swing doors, while only a small number have sliding doors. Both types of door generally provide poor levels of water management performance when used in medium or high exposure locations. At District Crossing typical balcony doors are protected by the projection of the upper level balcony or roof overhang and have a low exposure to wetting. In these circumstances water ingress is rarely a problem. In two cases on the fifth floor of 1677 Lloyd, metal framed canopies are installed above the sliding doors for the roof decks, which also provide some level of protection.

3.3.3 Balconies and Decks

Prior to the discussion of balconies and decks, it is useful to review the definitions of a number of terms. Terminology used in this report differs in some respects from common usage. These differences are used to differentiate between elements that might initially appear to be similar but for reasons of function or performance are different.

Balcony refers to a horizontal surface exposed to the outdoors, and intended for pedestrian use, but projecting from the building so that it is not located over an occupied space and does not act as a roof.

The term deck is used to refer to a horizontal surface exposed to the outdoors, located over occupied space,

and intended for pedestrian use in addition to performing the function of a roof.

The importance of the distinction between the two types of assemblies lies in the degree of risk associated with failure of waterproof membranes in each case. A leak in a balcony membrane will not generally result in water entering the interior of the building and is therefore, to some degree, not as serious as the consequences of leakage in a deck where it is likely that water will penetrate to the interior of the building or parkade, or affects the structural slab of the parkade. For this reason, liquid-applied urethane membranes or single ply vinyl membranes are often used on balconies. Decks, on the other hand, are commonly designed with higher quality roofing membranes.

Based on these definitions, there are both balconies and decks at District Crossing (Fig. 3.3.4).



Fig. 3.3.4 Balcony and deck locations.

1. Typical Balcony

2. Typical Deck

Balconies

The majority of suites above the second floor have exterior balconies. Balconies are wood framed with the surface sloping to the outer edge for drainage.

The balconies are protected with a cold-applied urethane waterproof membrane applied directly to the plywood sheathing. The membrane is brought up the adjacent building walls to protect the transition to the exterior walls. There is some concern with using a liquid applied membrane over plywood sheathing as wood products may be subject to shrinkage, or other movement, which the membrane may not be able to accommodate. However, we noted that reinforcement strips were used at upturns to the exterior building walls and no signs of

cracking or failure of the membrane were observed during our review.



Fig. 3.3.5 Typical balcony with liquid-applied urethane membrane.

The balconies are typically sloped to the exterior and drain over the balcony edge. At balconies that drain at the edge, problems can arise if concentrated flows of water occur at the interface between the balcony edge and the adjoining concrete exterior wall, particularly if the concrete is cracked at this location. Diverters (also known as crickets) can be used at these locations to divert water away from the interface. Where reviewed, crickets were not installed at District Crossing.

Decks

The decks at District Crossing are typically located on the second floor over either the ground floor commercial units or the upper level portion of the parkade. These areas function as roofs for the units on lower floors or the parkade. Decks are constructed as protected membrane assemblies. The 2-ply SBS membrane is protected by drainage mat, extruded polystyrene insulation and concrete pavers (fig. 2.29).



Fig. 3.3.6 Deck at second floor above parkade.

Additionally, there are two roof decks located at 1677 Lloyd which are constructed over the main building roof (Fig. 3.3.7).



Fig. 3.3.7 Roof deck at fifth floor, 1677 Lloyd.

3.3.4 Roof Assemblies

Conventional Membrane Roofs

The principal roof assemblies at the buildings are low-slope membrane, conventional assemblies. In this type of roof, the waterproof membrane is exposed and applied directly to the plywood roof sheathing. The insulation is provided within the framing space below. The membrane installed at the main roofs is a 2-ply torch applied SBS modified bitumen membrane. We note that this type of membrane does not require protection; however properly designed protection, at locations where roof access is required for maintenance activities, can sometimes result in a longer service life.



Fig. 3.3.8 Roofing assembly at main roof.

Below-Grade Assemblies

The below grade assemblies occur at the exterior parkade walls. The drawings indicate that the parkade walls were to be protected by a liquid-applied damproofing and drainage mat. At locations adjacent to moisture sensitive areas such as service rooms and locker rooms, a waterproofing membrane was to be installed to the exterior walls.



While the current conditions of these assemblies cannot be verified, we observed some water leakage into the parkade at the exterior walls. However, we note that it is not uncommon for below grade parkades to experience some water ingress.

4. Visual Review of Building Enclosure

4.1. Interior Review

Access was provided to nine units in the complex, (Table 4.1). Our interior review focussed on the building enclosure, the balconies, decks, and the interior operating conditions of these units.

Table 4.1 Reviewed Suites

Building	Suite
1673	410
	206
	205
1677	301
	308
1679	201
	301
	506
	510

4.1.2 Interior Operating Conditions

The issue of high interior humidity and condensation is common in residential buildings. Many normal everyday activities such as cooking, bathing, and laundry, generate humidity within residential suites. Humidity is intended to be removed from suite interiors by a combination of natural and mechanical ventilation. Ventilation removes interior humid air and replaces it with drier exterior air. Natural ventilation involves opening windows and is not always effective, as windows are not opened during cold weather or when it is raining. Unintended natural ventilation may also occur when air leaks through joints in the building envelope, for example around windows and doors.

Mechanical ventilation is achieved by means of exhaust fans located in areas where humidity is generated such as bathrooms and kitchens. Humid air is exhausted through ductwork to the exterior when the fans operate. Fans are typically activated automatically by a humidistat when humidity reaches predetermined levels

(humidistats should be set at 40% RH). Clothes dryers incorporate fans and also exhaust humidity to the exterior through ductwork.

In low-rise wood framed buildings ducts are typically located within the floor framing. Ductwork from the exhaust fan or dryer connects to the in-floor duct through the ceiling and the in-floor duct terminates at the exterior of the building either at the exterior wall or on the soffit of the balcony. At District Crossing, the ducts terminate at the exterior walls, the balcony soffits and at roof vents (Fig. 4.1.1, Fig. 4.1.2 and Fig. 4.1.3).



Fig. 4.1.1 Typical exhaust vents at exterior walls.



Fig. 4.1.2 Typical exhaust vents at balcony soffits.



Fig. 4.1.3 Exhaust vents at main roof.

Make-up air, to replace air exhausted from the building is typically provided by air handling units located on the building roof. Make up air is provided to corridors and enters individual suites at the undercut at suite entry doors. Make-up air also functions to control odours by maintaining a positive pressure in corridors.

Interior humidity becomes a problem when ventilation systems do not operate as intended and humid air is not removed quickly enough from the suite interior. Mechanical ventilation systems can be ineffective for a number of reasons:

- Duct runs are too long (or have too many elbows) and the exhaust fans cannot move humid air quickly enough from the bathroom or dryer to the end of the duct at the exterior wall.
- Ducts are not adequately connected to the fans or to the exhaust hood at the building exterior.
- Dryer ducts become blocked with lint and the space available to exhaust air is reduced.

When humid air comes into contact with a cold surface, such as a window frame or glass, condensation occurs and moisture is deposited on the surface. If the occurrences of condensation are infrequent and humidity levels are low there is not generally a problem. However problems do arise when humidity levels are excessive and condensation occurs on a regular basis.

Condensation can result in problems in a number of ways. Condensation deposited on windows can run down and cause damage to interior sills and potentially to the wall below the sill. Condensation can occur at cold spots on exterior walls, typically at the ceiling or floor. In these locations mould growth can occur.

Few of the residents reported issues with condensation; however a number reported drafts from below suite doors. As discussed earlier, these drafts are likely due to the mechanical system providing make-up air below the suite doors.

4.2. Exterior Review

A visual review of the exterior of the complex was conducted from the ground, balconies, decks and roofs.

4.3. Observed Conditions

This summary is intended to provide a more detailed discussion of key observations included in Appendix B – Condition Observations. The summary does not comment on all observations, and the Owners should refer to Appendix B for a complete list.

4.3.1 Exposed SBS Membrane Roofs (Encl 4

We observed some accumulation of lint at the roof below dryer exhaust vents. Exhaust vents should be cleaned as part of a regular maintenance program; as well residents should be encouraged to clean lint traps within dryers regularly (Fig. 4.3.1).



Fig. 4.3.1 Lint accumulation below dryer vents at roof level.

We noted that gooseneck flashings were not installed at electrical penetrations through the roof, as indicated in the architectural drawings and instead penetrations were either left exposed or sealed with sealant (Fig. 4.3.2).



Fig. 4.3.2 Improperly sealed electrical penetrations at roof level.

4.3.2 Brick Masonry Veneer Wall (Encl 12)

At several areas on the roof level of the buildings we observed loose bricks and cracks within the mortar joints at the masonry clad parapet walls. Cracking is likely due to differential settling or shrinkage within the framing members. Additionally, we observed sections of self-adhesive membrane which was left exposed (Fig. 4.3.3).



Fig. 4.3.3 Loose bricks and cracked mortar joints at roof level.

4.3.3 Vinyl Framed Swing Doors (Encl 12)

At suite 301, in 1677 Lloyd, the balcony swing door is out of alignment and is not closing properly. The door should be adjusted to ensure it may be properly closed and locked (Fig. 4.3.4).



Fig. 4.3.4 Exterior balcony door at suite 301, 1677 Lloyd.

4.3.4 Exposed Urethane Balcony Membrane (Encl 13)

The balcony surface at suite 506, 1679 Lloyd, was not adequately sloped to the exterior and had a back slope of up to 1/2", resulting in minor ponding near the balcony edge (Fig. 4.3.5).



Fig. 4.3.5 Backslope of balcony surface at suite 506, 1679 Lloyd.

Also at unit 506, we observed water draining onto the wall assembly from the gutter for the balcony above. It appears that the gutter is sloped towards the wall and is not well sealed (Fig. 4.3.6).



Fig. 4.3.6 Water draining onto wall assembly from balcony gutter above.

4.3.5 Below Grade Vertical Dampproofing and Waterproofing – Drained (Encl 16 and 17)

We observed water ingress at the exterior parkade walls in a number of locations, most notably along the parkade entry ramp. The water was located at cracks or along the concrete construction joint in the exterior walls. It should also be noted that the parkade is situated at the base of a large slope at the north elevation, which may increase the hydrostatic pressure against the below grade walls. The drawings indicated that there is a concrete retaining wall to the exterior of the parkade walls, and the above grade retaining walls are constructed using sandbags. It does not appear that the water ingress is affecting cars or storage lockers at this

time; however these areas should be monitored.



Fig. 4.3.7 Water ingress along entry ramp exterior wall.

5. Recommendations and Next Steps

5.1. Recommendations

We recommend the Owners provide a copy of this report and the appendices to the warranty provider prior to the expiry date of the building warranty.

In addition providing this report to the warranty provider, we also recommend the Strata consider obtaining all of the original documentation for the building, including all shop drawings for the windows and guardrails and specifications.

Table 5.1 provides a summary of the recommended items in addition to the observed conditions in Appendix B.

Table 5.1 Summary of Recommendations

RECOMMENDATION	
1	Obtain window and guardrail shop drawings.

5.2. Next Steps

Pursuant to the requirements of the Homeowner Protection Act, we trust that the Owners and Property Manager will transmit a copy of the report to the Warranty Provider and the residential builder or developer for their review and comment.

It is often possible to negotiate acceptable solutions to problems with the warranty provider, developer or contractor. However, providing the report should not be confused with making a formal warranty claim. If the Owners wish to pursue a warranty claim they should follow the procedures outlined in their warranty documentation. A copy of this report should also be provided in support of the claim. Legal advice may be appropriate prior to a decision to make a claim under the warranty.

RDH Building Engineering Ltd.

Darienne Deans, BASc LEED AP

Paul Kernan, Architect AIBC

Appendix A

Asset Inventory

District Crossing

Asset Inventory

Enclosure

Roofs & Decks

Encl 01 - Protected SBS Membrane Roof/Deck/Podium (Conventional Assembly) with Traffic-Bearing Surface



Location

Decks and podium level.

Description

SBS membrane overlaid with (paver, deck board, etc.) traffic-bearing surface.

Planning Information

Service Life: 30
Installed Year: 2000
Chronological Age: 13
Effective Age: 13
Next Renewal Year: 2030

Encl 02 - PVC Panel Soffit



Location

Balcony soffits.

Description

Perforated PVC panel soffit.

Planning Information

Service Life: 30
Installed Year: 2000
Chronological Age: 13
Effective Age: 13
Next Renewal Year: 2030

Encl 03 - Wood Soffit



Location

Roof overhangs.

Description

Wood soffit over a wood framing substrate.

Planning Information

Service Life: 30
Installed Year: 2000
Chronological Age: 13
Effective Age: 13
Next Renewal Year: 2030

Encl 04 - Exposed SBS Membrane Roof



Location

Main roof areas.

Description

Bituminous and modified bituminous (SBS)(styrene-butadiene-styrene) membrane at low-slope roof.

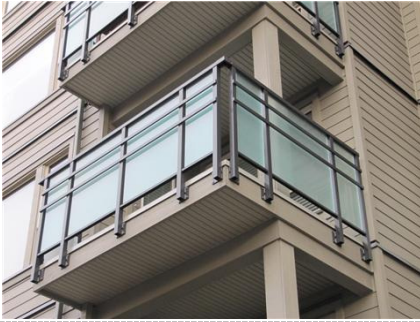
Planning Information

Service Life: 25
Installed Year: 2000
Chronological Age: 13
Effective Age: 13
Next Renewal Year: 2025

District Crossing Asset Inventory

Fall Protection

Encl 05 - Guardrail Glazed Aluminum



Location

Balconies and decks.

Description

Aluminum Posts and glass infill panels functioning as a protective barrier at the open sides of stairs, landings, balconies, decks, raised walkways or other locations to prevent accidental falls from one level to another.

Planning Information

Service Life:	30
Installed Year:	2000
Chronological Age:	13
Effective Age:	13
Next Renewal Year:	2030

Walls

Encl 06 - Coated Architectural Concrete Wall



Location

Ground floor level.

Description

Poured-in-place architectural concrete wall with protective coating.

Planning Information

Service Life:	75
Installed Year:	2000
Chronological Age:	13
Effective Age:	13
Next Renewal Year:	2075

Encl 07 - Fiber Cement Wall - Drained



Location

Primary wall assembly.

Description

Fiber cement cladding installed on wood strapping to create a drained cavity over the exterior sheathing membrane.

Planning Information

Service Life:	40
Installed Year:	2000
Chronological Age:	13
Effective Age:	13
Next Renewal Year:	2040

Encl 08 - Clay Masonry Veneer Wall



Location

Primary wall assembly.

Description

Clay masonry units applied as a veneer with a drained and vented cavity over exterior sheathing membrane.

Planning Information

Service Life:	50
Installed Year:	2000
Chronological Age:	13
Effective Age:	13
Next Renewal Year:	2050

District Crossing Asset Inventory

Glazing Systems

Encl 09 - Aluminum Framed Window



Location

Isolated locations.

Description

Aluminum framed, thermally broken windows with double insulating glazing units, and awning operators. Windows are arranged in either to three configurations - punched window, strip windows or window-wall all based on the same window system.

Planning Information

Service Life: 40
Installed Year: 2000
Chronological Age: 13
Effective Age: 13
Next Renewal Year: 2040

Encl 10 - Vinyl Framed Window



Location

Primary window assembly.

Description

Vinyl framed windows with double, triple insulating glazing units, and awning operators.

Planning Information

Service Life: 30
Installed Year: 2000
Chronological Age: 13
Effective Age: 13
Next Renewal Year: 2030

Doors

Encl 11 - Vinyl Framed Sliding Glass Door



Location

Upper floor decks.

Description

Sliding glass doors, double insulating glazing units, vinyl framing.

Planning Information

Service Life: 30
Installed Year: 2000
Chronological Age: 13
Effective Age: 13
Next Renewal Year: 2030

Encl 12 - Vinyl Frame Glazed Swing Door



Location

Balcony and deck locations.

Description

Vinyl frame swing door with insulating glazing units.

Planning Information

Service Life: 25
Installed Year: 2000
Chronological Age: 13
Effective Age: 13
Next Renewal Year: 2025

District Crossing Asset Inventory

Balconies

Encl 13 - Exposed Urethane Balcony Membrane - Wood Substrate



Location

Balconies.

Description

Liquid applied urethane membrane applied over wood balcony sheathing.

Planning Information

Service Life: 10
 Installed Year: 2000
 Chronological Age: 13
 Effective Age: 3
 Next Renewal Year: 2020

Canopies

Encl 14 - Wood Frame Canopy



Location

Ground floor entrances.

Description

Canopy constructed with wood framing.

Planning Information

Service Life: 30
 Installed Year: 2000
 Chronological Age: 13
 Effective Age: 13
 Next Renewal Year: 2030

Encl 15 - Metal Canopy



Location

Upper floor decks.

Description

Canopy constructed with metal framing and clad with sheet metal.

Planning Information

Service Life: 40
 Installed Year: 2000
 Chronological Age: 13
 Effective Age: 13
 Next Renewal Year: 2040

At and Below Grade

Encl 16 - Below Grade Vertical Waterproofing



Location

Below grade parkade walls at moisture sensitive locations.

Description

Waterproof membrane on below grade concrete walls, protected by drain mat and soil.

Planning Information

Service Life: 40
 Installed Year: 2000
 Chronological Age: 13
 Effective Age: 13
 Next Renewal Year: 2040

District Crossing Asset Inventory

Encl 17 - Damp-proofing



Location

Below grade parkade walls.

Description

Damp-proof membrane on concrete walls, protected by drain mat back-filled with porous medium or soil.

Planning Information

Service Life:	30
Installed Year:	2000
Chronological Age:	13
Effective Age:	13
Next Renewal Year:	2030

General & Inspections

Encl 18 - General & Inspections



Location

Description

Miscellaneous interior and exterior components, such as service penetrations and interface details, not related to any particular assembly. Warranty and general reviews.

Planning Information

Service Life:	3
Installed Year:	2000
Chronological Age:	13
Effective Age:	1
Next Renewal Year:	2015

Appendix B

Condition Observations

District Crossing
Condition Observations

Enclosure

Roofs & Decks

Encl 02 - PVC Panel Soffit

WR 001



Observation

Vinyl soffit panel bent out of place.

Recommendation

Reinstall soffit panels correctly.

Location

Building 1677, Unit 301.

Encl 03 - Wood Soffit

WR 002



Observation

Staining observed on wood soffit.

Recommendation

Refinish panels and monitor.

Location

Building 1673, Unit 410.

Diagnosis

The cause of the staining is currently unclear, however it may be related to moisture within the soffit cavity.

District Crossing
Condition Observations

Encl 04 - Exposed SBS Membrane Roof

WR 003



Observation

Dryer lint accumulation on lower roof level under vent hoods.

Location

Building 1679, roof level.

Diagnosis

Build up of lint from dryer vents. Owner's should be encouraged to clean lint traps within dryers prior to each use to prevent build up.

Recommendation

Clean dryer vents as part of regular maintenance activities.

Encl 04 - Exposed SBS Membrane Roof

WR 004



Observation

Minor ponding observed below raised roof section.

Location

Building 1679, roof level.

Diagnosis

Small area of poorly sloped roof sheathing.

Recommendation

Monitor for increased ponding. Correct slope at first membrane renewal cycle.

Encl 04 - Exposed SBS Membrane Roof

WR 005



Observation

Exposed membrane under flashing at roof. Membrane is not well adhered in some locations.

Location

Building 1673, roof level.

Diagnosis

Exposed membrane is not UV resistant.

Recommendation

Remove flashing, trim membrane and reinstall flashing.

Encl 04 - Exposed SBS Membrane Roof

WR 006



Observation

Unsealed roof penetrations at mechanical unit.

Location

Buildings 1673, 1679.

Diagnosis

Water can enter at the roof penetrations and penetrate below the roof membrane.

Recommendation

Gooseneck flashings should be installed at all electrical penetrations within roof, as per drawings.

District Crossing
Condition Observations

Fall Protection

Encl 05 - Guardrail Glazed Aluminum

WR 007



Observation

Missing screw in top-mounted guardrails on deck at roof level.

Location

Building 1676, Unit 502.

Diagnosis

May affect structural capacity of guardrail, however guardrail shop drawings to confirm design intent were not available for review.

Recommendation

Correct in accordance with approved guardrail shop drawings.

Walls

Encl 07 - Fiber Cement Wall - Drained

WR 008



Observation

Peeling sealant at exterior wall interface between fibre cement board siding and wood trim.

Location

Building 1673, Unit 205.

Diagnosis

Poor preparation of the substrate.

Recommendation

Remove delaminated sealant and prepare substrate and install new sealant.

Encl 07 - Fiber Cement Wall - Drained

WR 009



Observation

Water leaking from gutter onto exterior wall.

Location

Building 1679, Unit 506.

Diagnosis

The gutter may be blocked by debris, or may not be adequately sealed or sloped away from the building.

Recommendation

Review gutters to ensure there is no blockage, clean or adjust slope as necessary and renew gutter sealant.

District Crossing
Condition Observations

Encl 08 - Clay Masonry Veneer Wall

WR 010



Observation

Exposed self adhesive membrane at roof parapet.

Location

Building 1673, roof level.

Diagnosis

Membrane is not UV resistant.

Recommendation

Provide metal flashing cover in conjunction with masonry repair, see WR011.

Encl 08 - Clay Masonry Veneer Wall

WR 011



Observation

Cracks in brick mortar, loose and missing bricks at roof level.

Location

Various locations on all roofs.

Recommendation

Recommendation

Remove masonry and repair. Provide vertical joint at line of lower parapet wall.

Diagnosis

Cracks in the brick mortar and subsequent loose or missing bricks, are likely a result of settling or shrinkage of the building and inadequate support of the brick at these locations.

Glazing Systems

Encl 09 - Aluminum Framed Window

WR 012



Observation

Loose gasket at lobby window assembly.

Location

Building 1679, lobby.

Diagnosis

Air seal between glazing unit and frame may be affected.

Recommendation

Reinstall gasket correctly.

District Crossing
Condition Observations

Encl 10 - Vinyl Framed Window

WR 013



Observation

Various cracks were observed at the interior drywall finish.

Location

Building 1679, Unit 301.

Diagnosis

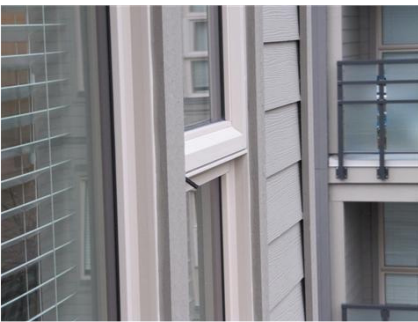
Owner stated that the developer was scheduled to repair cracks in drywall.

Recommendation

Repair drywall finish.

Encl 10 - Vinyl Framed Window

WR 014



Observation

Weatherstripping loose at operable windows.

Location

Building 1673, Unit 410.

Diagnosis

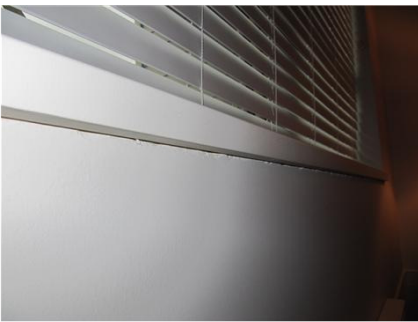
Loose or missing weatherstripping may affect air seal at operable unit.

Recommendation

Repair weatherstripping.

Encl 10 - Vinyl Framed Window

WR 015



Observation

Poorly finished drywall below interior window sill.

Location

Building 1673, Unit 206.

Recommendation

Repair drywall finish.

Encl 10 - Vinyl Framed Window

WR 016



Observation

Rust staining at window frame exterior.

Location

Building 1673, Unit 205.

Diagnosis

Staining is likely due to metal debris from construction remaining on window frame.

Recommendation

Clean window frame.

District Crossing
Condition Observations

Doors

Encl 12 - Vinyl Frame Glazed Swing Door

WR 017



Observation

Exterior door difficult to close.

Location

Building 1677, Unit 301.

Diagnosis

Door is out of alignment and may need adjustments to close.

Recommendation

Adjust door alignment.

Balconies

Encl 13 - Exposed Urethane Balcony Membrane - Wood Substrate

WR 018



Observation

Water staining on balcony surface.

Location

Building 1679, Unit 506.

Diagnosis

Staining is due to minor water ponding on balcony resulting from poor slope at the balcony edge.

Recommendation

Reslope balcony.

Encl 13 - Exposed Urethane Balcony Membrane - Wood Substrate

WR 019



Observation

Water staining on balcony surface.

Location

Building 1679, Unit 301.

Diagnosis

Staining is likely due to water dripping from the dryer vent above and pooling near the balcony edge.

Recommendation

Reslope balcony.

District Crossing
Condition Observations

At and Below Grade

Encl 17 - Damp-proofing

WR 020



Observation

Cracks and dark stains on wall by parkade ramp

Location

Parkade

Diagnosis

Staining may indicate previous or current water ingress into the parkade.

Recommendation

Monitor for water ingress and repair by injection as necessary.

Encl 17 - Damp-proofing

WR 021



Observation

Cracks and staining at interface of ramp and wall.

Location

Parkade

Diagnosis

Staining may indicate previous or current water ingress into the parkade.

Recommendation

Monitor for water ingress and repair by injection as necessary.

Encl 17 - Damp-proofing

WR 022



Observation

Evidence of moisture ingress along cold joint in exterior parkade wall by ramp.

Location

Parkade

Recommendation

Monitor for water ingress and repair by injection as necessary.

District Crossing
Condition Observations

General & Inspections

Encl 18 - General & Inspections

WR 023



Observation

Crack in wall above elevator shaft.

Recommendation

Repair and monitor.

Location

Building 1679.

Diagnosis

Likely due to typical shrinkage of the building materials.

Encl 18 - General & Inspections

WR 024



Observation

Steel exit door not closing properly, damaging adjacent wall finish.

Recommendation

Adjust door and repair finishes.

Location

Building 1679, stairwell.

Encl 18 - General & Inspections

WR 025



Observation

Crack in interior wall near window.

Recommendation

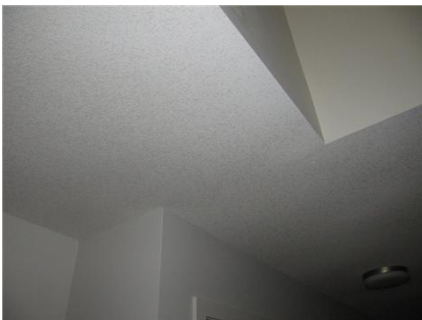
Repair and monitor.

Location

Building 1676, south stairwell.

Encl 18 - General & Inspections

WR 026



Observation

Cracks at interior ceiling finish.

Recommendation

Repair and monitor.

Location

Building 1679, Unit 506.

District Crossing

Condition Observations

Encl 18 - General & Inspections

WR 027



Observation

Crack in ceiling finish at roof hatch.

Recommendation

Repair and monitor.

Location

Building 1679, roof hatch

Diagnosis

Encl 18 - General & Inspections

WR 028



Observation

Crack at interface of ceiling and wall.

Recommendation

Repair and monitor.

Location

Building 1679, stairwell.

Diagnosis

Appendix C

Occupant Questionnaire Summary

Appendix C - Occupant Questionnaire

Building (if applicable)	Suite	Suite Faces	1. Does your suite have any current (within the past year) leaks associated with the building enclosure?		2. Have you had leaks in the past that have been repaired (but no leaks within the past year)?		3. Do you have condensation problems at the inside face of any windows or glazing assemblies?		4. Do you have condensation problems between panes of glass at any windows (fogging)		5. Do you have any problems with mould, fungi or mildew (typically black staining)?		6. Do you feel cold drafts in your suite?		7. Have you had problems relating to decks or balconies?		Additional comments
			yes / no	Comments	yes / no	Comments	yes / no	Comments	yes / no	Comments	yes / no	Comments	yes / no	Comments	yes / no	Comments	
1673	201	north	no		no		no		no		no		no		no		
1673	202	north	no		no		no		no		no		no		no		There are some grey stains on some window frames, I cannot distinguish if it is dust or something different.
1673	203	north	no		no		no		no		no		no		no		
1673	204	north/east	yes	leak at balcony, worried will go into walls (see 7)	yes	sprinkler leak, stopped on its own.	no		no		no		yes	when it rains hard a major leak pours down in my balcony area through a large ceiling/support beam. I am worried this leak into my walls	yes	sometimes - the seal around my front door might not be done correctly.	leak from balcony above is like a waterfall all over the outdoor furniture - balcony needs to be seen asap
1673	205	south	no		yes	from inside of fire detector (on ceiling)	no		no		no		no		no		The location of unit main shut-off valves (cold and hot water) is not clear. A unit detailed map (specifying location of important stuff) to be provided. Also it seems that the noise transfer from upper unit is rather high.
1673	206	south	no		no		no		no		no		no		no		drywall under window sill is crumbling
1673	207	south	no		no		no		no		no		no		no		
1673	208	west	no		no		no		no		no		no		no		
1673	301	north	no		no		no		no		no		no		no		
1673	302	north	no		no		no		no		no		yes	no drainage, when cleaning balcony, I have to throw it off the balcony	yes		
1673	303	north/west	no		no		no		no		no		no		no		
1673	304	west	no		no		no		no		no		no		no		
1673	305	south	no		no		no		no		no		no		no		
1673	306	south	no		no		no		no		no		no		no		
1673	308	south	no		no		no		no		no		no		no		
1673	309	south	no		no		no		no		no		no		no		
1673	310	south	no		no		no		no		no		no		no		
1673	401	north	no		no		no		no		no		-		no		The paint on top of the bedroom entrance is cracked, not sure if it is due to leak or other reason.
1673	402	north	no		no		no		no		no		no		yes		living room floor is damaged in a few places (flipping?)
1673	403	north	no		no		no		no		no		no		no		
1673	404	north/east	no		no		no		no		no		yes		no		
1673	405	south	no		no		no		no		no		no		no		
1673	406	south	no	paint in bathroom is coming off in two places - due to moisture	no		no		no		no		no		no		
1673	407	south	no		no		no		no		no		no		no		
1673	408	south	no		no		no		no		no		no		no		There is a water ingress problem at my parking stall - R27. It is bad. I have been fighting this for 1 year. Mould is developing too.
1673	409	south	no		no	not sure only moved in nov 2012	no		no		no		yes	around living room + dining room	no		kitchen overhead light flickers & creaking floors around kitchen.
1673	410	north/west	no		no		no		no		no		no		no		occasionally when it rains heavily, water drops down onto my stove top - this is from the shaft for the kitchen fan.
1677	201	east	no		no		no		no		no		no		no		
1677	202	east	no		no		no		no		no		no		no		
1677	203	east	no		no		no		no		no		no		yes		weeds and moss
1677	204	east	no		yes		no		no		no		no		no		
1677	205	south/east	no		no		no		no		no		no		no		
1677	206	east	no		no		no		no		no		no		no		
1677	207	west	no		no		no		no		no		no		no		
1677	208	east	no		no		no		no		no		no		no		
1677	209	east	no		no		no		no		no		no		no		hinge of doors not fully sealed when closed
1677	210	east	no		no		no		no		no		no		no		

Appendix C - Occupant Questionnaire

Building (if applicable)	Suite	Suite Faces	1. Does your suite have any current (within the past year) leaks associated with the building enclosure?		2. Have you had leaks in the past that have been repaired (but no leaks within the past year)?		3. Do you have condensation problems at the inside face of any windows or glazing assemblies?		4. Do you have condensation problems between panes of glass at any windows (fogging)		5. Do you have any problems with mould, fungi or mildew (typically black staining)?		6. Do you feel cold drafts in your suite		7. Have you had problems relating to decks or balconies?		Additional comments
			no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no		
1677	211	west	no		no		no		no		no		no		debris from dryers falling onto our deck (not a huge concern)		1. Didn't have hot water in bathroom when first moved in. 2. Floors crack when walking on them. 3. Granite counters were not sealed, so they stain easily.
1677	212	west	no		no		no		no		no		no				
1677	213	east	no		no		no		no		no		no				
1677	214	east	no		no		no		no		yes	near patio door bell	no				
1677	215	west	no		no		no		no		no		yes				
1677	301	west	no		no		no		no		no		no				
1677	302	-	no		no		no		no		no		no				
1677	303	east	no		no		no		no		no		no				
1677	304	south	no		no		no		no		no		no				
1677	305	south	no		no		no		no		no		no				
1677	306	west	no		no		no		no		no		no				
1677	308	west	no		no		no		no		no		no				
1677	310	east	no		no		no		no		no		no				
1677	311	west	no		no		no		no		no		no				
1677	312	west	no		no		no		no		no		yes		just under the main door to the hall. Cold air, even from the bedroom entrance.		
1677	313	east	no		no		no		no		no		no				
1677	314	west	no		no		no		no		no		no				
1677	315	east	no		no		no		no		no		no				
1677	401	west	no		no		no		no		no		no				
1677	402	west	no		no		no		no		no		no				
1677	403	-	no		no		no		no		no		no				
1677	404	south/east	no		-		no		no		no		yes		major!		
1677	405	south	no		no		no		no		no		yes				
1677	406	west	yes		no		no		no		no		yes				
1677	407	south	no		no		no		no		no		no				
1677	408	west	no		no		no		no		no		no				
1677	409	east	no		no		no		no		no		no				
1677	410	west	no		no		no		no		no		no				
1677	411	west	no		no		no		no		no		no				
1677	412	east	no		no		no		no		no		no				
1677	413	north/east	no		no		no		no		no		no				
1677	414	west	no		no		no		no		no		no				
1677	415	west	no		no		no		no		no		no				
1677	501	-	no		no		no		no		no		no				
1677	502	south	no		no		no		no		yes		yes		coming from fan above the stove, lots of cold air coming in.		
1677	503		no		no		no		no		no		no				
1677	504	south	no		no		no		no		yes		yes		door (hallway) + above stove		
1677	505	south/west	no		no		no		no		no		no				

Appendix C - Occupant Questionnaire

Building (if applicable)	Suite	Suite Faces	1. Does your suite have any current (within the past year) leaks associated with the building enclosure?		2. Have you had leaks in the past that have been repaired (but no leaks within the past year)?		3. Do you have condensation problems at the inside face of any windows or glazing assemblies?		4. Do you have condensation problems between panes of glass at any windows (fogging)		5. Do you have any problems with mould, fungi or mildew (typically black staining)?		6. Do you feel cold drafts in your suite		7. Have you had problems relating to decks or balconies?		Additional comments
			no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	
1677	506	west	no		no		no		no		no		no		no		
1677	508		no		no		no		no		no		no		no		floor staining
1677	509		no		no		no		no		no		no		no		hearing the heeping from fan time to time.
1677	510		no		no		no		no		no		no		no		
1677	511	east	no		no		no		no		no		no		no		concern this questions are being asked before the 2 years end.
1679	201	south/west	no		no		no		no		no		no		no		
1679	202	north/west	no		no		no		no		no		no		no		
1679	203	north	no		no		no		no		no		no		no		lots of cracks on the walls and ceiling. Some people throw away newspapers and styrofoam in my deck.
1679	204	north	no		no		no		no		no		no		no		As of yet, I haven't had any issues other than suite being very cold (including our hallway) will contact if anything changes.
1679	205	north	no		no		no		no		no		no		no		Some cracks around some windows, ripple on door, laminate has popped up in places
1679	206	south/west	no		no		no		no		no		no		no		
1679	207	west	no		no		no		no		no		no		no		
1679	208	south	no		no		no		no		no		no		no		
1679	209	south	no		no		no		no		no		no		no		
1679	301	south	no		no		no		no		no		no		no		Just like to see the report after.
1679	302	north/west	no		no		no		no		no		no		no		numerous settlement cracks in drywall and door ajar in 2nd bathroom.
1679	303	north	no		no		no		no		no		no		no		
1679	304	north	no		no		no		no		no		no		no		
1679	305	north	no		no		no		no		no		no		no		
1679	306	north	no		no		no		no		no		no		no		fire alarm doesn't seem to work
1679	308	north/west	no		no		no		no		no		no		no		
1679	309	south/east	no		no		no		no		no		no		no		from 2nd bedroom there is cold air coming in
1679	310	south	no		no		no		no		no		no		no		low pressure on kitchen sink
1679	311	south	no		no		no		no		no		no		no		
1679	401	west	no		no		no		no		no		no		no		settling cracks in drywall in several rooms.
1679	402	north/east	no		no		no		no		no		no		no		
1679	403	north	no		no		no		no		no		no		no		
1679	404	north	no		no		no		no		no		no		no		not with the enclosure
1679	405	south	no		no		no		no		no		no		no		suite feels really hot in summer and stays pretty warm through the year.
1679	406	north	no		no		no		no		no		no		no		
1679	407	north	no		no		no		no		no		no		no		
1679	408		no		no		no		no		no		no		no		the door to the patio does not close properly, the lock is broken.
1679	409	south/east	no		no		no		no		no		no		no		only occupied for 2 weeks.
1679	410	north	no		no		no		no		no		no		no		balcony door does not stay shut unless locked.
1679	411	south	no		no		no		no		no		no		no		
1679	412		no		no		no		no		no		no		no		
1679	501	south/west	no		no		no		no		no		no		no		
1679	502	north/west	no		no		no		no		no		no		no		
1679	503	north	no		no		no		no		no		no		no		only been here for 2 months
1679	504		no		no		no		no		no		no		no		
1679	505	north	no		no		no		no		no		no		no		the hook on the back of the bathroom door isn't screwed into anything solid so it keeps falling off
1679	506	north	no		no		no		no		no		no		no		balcony overhang has a gap that causes excess water to run down in heavy rain

Appendix C - Occupant Questionnaire

Building (if applicable)	Suite	Suite Faces	1. Does your suite have any current (within the past year) leaks associated with the building enclosure?	2. Have you had leaks in the past that have been repaired (but no leaks within the past year)?	3. Do you have condensation problems at the inside face of any windows or glazing assemblies?	4. Do you have condensation problems between panes of glass at any windows (fogging)	5. Do you have any problems with mould, fungi or mildew (typically black staining)?	6. Do you feel cold drafts in your suite	7. Have you had problems relating to decks or balconies?	Additional comments
1679	507	north	no	no	no	no	no	no	no	the exhaust fan from the parkade is sometimes turned on at night and I can hear it in my bedroom. I asked to reprogram the monitor and it now turns on rarely but it still does it on occasion. The fact that the vibrations transfer to my suite is of a concern.
1679	508	north/east	no	no	no	no	no	yes	no	
1679	509	south/east	no	no	no	no	no	yes	no	patio door cold air coming in from under front door.
1679	510	north	no	no	no	no	no	no	no	there is a problem with the insulate heaters, they don't work. I checked the breaker box. Two of the breaker (6,7) are not in their position when I tried to put them back, there was electric spark and the breaker did not stay on and jump back again.
1679	511	south	no	no	no	no	no	yes	no	seems to take ages for the hot water to come through when tap is turned on.
1679	512	south	no	no	no	no	no	yes	no	
Summary										
			Quantity of							
			Yes	3	2	1	4	33	10	
			Responses							
			Total	123	123	123	123	123	123	
			Percent Yes	2%	2%	1%	3%	27%	8%	

PRIVACY STATEMENT

We are collecting your personal contact information so that we can contact you if we need more information on your response to this questionnaire. The personal information you provide will be stored securely, kept confidential, and will be used by RDH staff in order to process survey responses and perform contracted services. A summary of survey responses may be included in RDH's report to the owners, and this summary may include suite numbers, but not occupant names or contact information. RDH collects and uses personal information in accordance with the RDH Privacy Policy. Please direct any questions about RDH's use of your personal information to Mary Watts, RDH Privacy Commissioner, by email mwatts@rdhbc.com.

Appendix D

Glossary

Appendix D - Glossary

A number of the terms used in this report have specific meaning in the context of this report and are therefore defined below:

Air Barrier refers to materials and components that together control the flow of air through an assembly and thus limit the potential for heat loss and condensation due to air movement.

Assembly refers to the collective layers of material or components, which together comprise the complete cross section of the wall or roof.

Balcony refers to a horizontal surface exposed to outdoors, and intended for pedestrian use, but projected from the building so that it is not located over a living space or acting as a roof.

Base Flashing refers to the part of the roofing that is turned up at the intersection of a roof with a wall or another roof penetration. It may be made of the same material as the main roofing membrane or of a compatible material.

Building Envelope, now called an environmental separator in Building Codes, refers to those parts of the building, which separate inside conditioned space from unconditioned or outside space, and includes windows, doors, walls, roofs, and foundations.

Cap Flashing sheds water from the tops of walls. It is difficult to make metal cap flashing waterproof at joints and intersections, and it, therefore, requires a secondary, continuous and waterproof membrane below it.

Cladding refers to a material or component of the wall assembly that forms the outer surface of the wall and is exposed to the full force of the environment.

Counter Flashing prevents water from penetrating behind the top edge of base flashing, and consists of a separate piece of flashing placed over the top of the base flashing. It is usually made of sheet metal.

Cross Cavity Flashing intercepts and directs any water flowing down the cavity of a wall assembly to the exterior.

Deck refers to a horizontal surface exposed to outdoors, located over a living space, and intended for pedestrian use in addition to performing the function of a roof.

Deflection refers to a water management principle that utilizes features of the building and assembly geometry to limit the exposure of the assemblies to rain.

Drainage refers to a water management principle that utilizes surfaces of the assemblies to drain water away from the assembly.

Drip Flashing directs water flowing down the face of vertical elements, such as walls or windows, away from the surface so that it does not continue to run down the surface below the element.

Drying refers to a water management principle that incorporates features and materials that speed diffusion and evaporation of materials that get wet.

Durability refers to a water management principle that utilizes materials that are tolerant of moisture.

Face Seal refers to a strategy for rain penetration control that relies on the elimination of holes through the cladding.

Flashing refers to materials used to deflect water and make water proof connections at interfaces and joints within and between wall and roof assemblies.

Horizontal Movement Joint refers to a horizontal joint on a wall, which provides capability for differential movement of portions of the building structure (expansion joint) or prevents or localizes cracking of brittle materials such as stucco (control joint).

Housewrap refers to a sheet plastic material that is used as a breather type sheathing membrane, generally between the wall sheathing material and the exterior cladding. Although at one time used as a proprietary term, housewrap is now used to represent a generic group of materials. One common type of housewrap consists of Spun-Bonded Polyolefin (SBPO); another is made of perforated polyethylene.

Maintenance refers to a regular process of inspection and minor repairs to the building envelope.

Moisture Barrier is generally considered to be the surface farthest into the assembly from the exterior, which can accommodate moisture without causing damage to the assembly.

Moisture Content of wood refers to the weight of water contained in wood expressed as a percentage of the weight of oven dry wood.

Operation of the building or envelope refers to normal occupancy of the building where the envelope is affected by interior space conditioning, changes to light fixtures, signs, vegetation and planters, and accidental damage or vandalism.

Oriented Strand Board (OSB) is an engineered wood product, often used in place of plywood as a sheathing material.

Parapet refers to a low wall surrounding a flat roof area. A parapet typically does not separate interior from exterior space and is for this reason not considered to be part of the building envelope.

Penetration refers to an intentional opening through an assembly in which ducts, electrical wires, pipes, and fasteners are run from inside to outside.

Pressure Treatment refers to a variety of processes for treatment of wood to provide greater durability.

Rainscreen refers to a strategy for rain penetration control that relies on deflection of the majority of water at the cladding but also incorporates a cavity, which provides a drainage path for water that penetrates past the cladding.

Saddle refers to the junction of small horizontal surfaces, such as the top of a balcony guardrail or parapet wall, with a vertical surface, such as a wall.

Scupper refers to a drain or an overflow.

Sheathing refers to a material (generally OSB or plywood) used to provide structural stiffness to the wall framing and to provide structural backing for the cladding and sheathing paper.

Sheathing Membrane refers to a material in an exterior wall assembly whose purpose is to retard penetration of water further into the structure once past the cladding. Waterproof type sheathing membranes can also perform the function of the air barrier and the vapour barrier. These materials include both breather type sheathing membranes such as sheathing paper and housewraps, and waterproof sheathing membranes.

Sheathing Paper refers to asphalt impregnated organic sheet material (breather type sheathing membrane) which creates a water shedding surface behind the cladding.

Soffit refers to the underside or finish on the underside of the elements of a building, such as balconies, roof overhangs or beams.

Stepped Flashing is installed at the junction between a sloping roof and a wall running parallel to the slope. Both base and counter flashing are overlapped and installed in pieces following the slope to form the complete stepped flashing.

System describes a combination of materials and components that perform a particular function such as an air barrier system, or moisture barrier system.

Styrene-Butadiene-Styrene (SBS) refers to a type of modified bitumen roofing membrane typically applied using a torch-on method.

TPO (Thermoplastic PolyOlefin) is a type of sheet waterproofing membrane often used for roofing applications. It can be installed as fully adhered or mechanically fastened, with welded seams.

Through-wall Flashing refers to a water proof membrane or metal flashing placed under segmented precast concrete, stone masonry or brick units known as copings close to the tops of masonry walls to prevent water from entering the wall at joints in the coping. Through-wall flashing is also used to prevent capillary transfer of moisture through porous materials such as concrete or masonry if they extend from high moisture locations such as below grade.

Valley Flashing is installed in the valleys of sloping shingle roofs to give continuity to the roofing system.

Vapour Barrier refers to a material with low vapour permeability that is located within the assembly to control the flow of vapour and limit the potential for condensation due to diffusion.

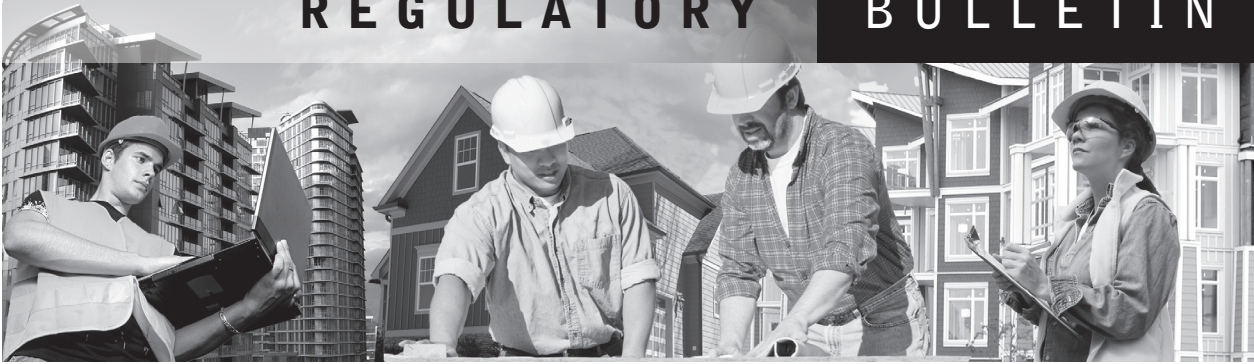
Walkway refers to a corridor exposed to outdoors that provides pedestrian access between suites and stairwells or elevators. It may or may not also be a roof.

Appendix E

HPO Bulletin 2-5-10 Year Warranties



Homeowner
Protection Office
Branch of BC Housing



2-5-10 Year Home Warranty Insurance

Home Warranty Insurance Requirements for New Homes

To increase consumer protection for new home buyers, the *Homeowner Protection Act* regulations for residential builder licensing and mandatory, third-party home warranty insurance were implemented on July 1, 1999. As a result, all new homes constructed with building permits applied for on or after July 1, 1999 must be built by residential builders licensed with the Homeowner Protection Office (HPO) and covered by a policy of home warranty insurance. In geographic areas where building permits are not required, licensing and home warranty insurance is required for new home construction commenced on or after July 1, 1999.

Home warranty insurance can only be provided by insurance companies that have been approved by the Financial Institutions Commission (FICOM) and meet the requirements of the *Homeowner Protection Act*. See the HPO's online guide entitled *Guide to Home Warranty Insurance in British Columbia* for further information.

Standards of coverage, commencement dates, exclusions and limits on coverage are now set by government to ensure clarity and a consistent base-level of consumer protection.

Minimum Standards of Coverage Required: 2-5-10

Home warranty insurance on new homes includes a minimum of 2 years on labour and materials (some limits apply), 5 years on the building envelope, including water penetration, and 10 years on structure. The 2-year labour and materials coverage is broken down as follows:

Any defect in materials and labour:

- 12 months on detached homes and on non-common property in strata units (includes fee simple homes)
- 15 months on common property of strata buildings

Defects in materials and labour related to the delivery and distribution systems (electrical, plumbing, heating ventilation, air conditioning, etc.):

- 24 months for all buildings.



Regulatory Bulletins are a series of publications developed by the Homeowner Protection Office (HPO), a branch of BC Housing, to provide information on and interpretation of the *Homeowner Protection Act* and regulations. All current regulatory bulletins can be viewed on the HPO website.

This bulletin and the website copy are for convenience only and do not constitute legal advice. For complete details consult the Act and its regulations. For more information, contact the HPO at:

Homeowner
Protection Office,
Branch of BC Housing

Phone: 604-646-7050
Toll-free: 1-800-407-7757
Fax: 604-646-7051

licensinginfo@hpo.bc.ca
www.hpo.bc.ca

Commencement Dates:

Commencement dates on home warranty insurance are:

Fee simple (primarily detached dwelling units):

- Custom homes: date of first occupancy or date of first occupancy permit, whichever transpires first.
- Spec. homes: Date of first occupancy or date of transfer of legal title to first owner, whichever transpires first.

Strata homes:

- Strata unit: earliest of date of first occupancy or date of transfer of legal title to first owner.
- Common property: earliest of date of first-unit occupancy in strata building or date of transfer of legal title to first owner in building.



Home Warranty Insurance Exclusions

The *Homeowner Protection Act* regulations specify what the home warranty insurance companies can exclude from their policies.

General exclusions can include: landscaping; non-residential detached structures (however, parking structures, recreational and amenity facilities in multi-unit buildings are covered); commercial use areas; roads, curbs and lanes (however, driveways are covered); site grading and surface drainage; the operation of municipal services; septic tanks and fields; and water quality and quantity.

Defect related exclusions can include: normal wear and tear; normal shrinkage of materials from construction; use of new home for non-residential purposes; materials, labour and design supplied by the owner; damage caused by anyone other than the residential builder; damage caused by insects or rodents; failure of an owner to prevent or minimize damage and acts of nature.

Homeowners can search the HPO's online *Residential Construction Performance Guide* to help determine whether a possible defect in design, labour or materials in their new home may be covered by home warranty insurance. Visit the HPO website to view this guide.

Limits on Coverage

Coverage on claims is as follows:

Fee simple (primarily detached dwelling units):

- The lesser of the first owner's purchase price or \$200,000.

Strata homes:

- Strata unit: lesser of the first owner's purchase price or \$100,000.
- Common property: the lesser \$100,000 times the number of dwelling units in the building or \$2.5 million per building.

Home warranty insurance on new homes includes a minimum of 2 years on labour and materials (some limits apply), 5 years on the building envelope, including water penetration, and 10 years on structure.

