



BC BUILDING SCIENCE PARTNERSHIP

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BUILDING ENVELOPE & STRUCTURAL CONSULTANTS - WWW.BCBUILDINGSCIENCE.COM

BUILDING ENVELOPE CONDITION REVIEW **YEAR 1**

CARLYLE AT VICTORIA HILL
280 ROSS DRIVE
NEW WESTMINSTER, BC

PREPARED FOR:
ONNI CUSTOMER RELATIONS
ATTENTION: RACHEL LEVENSTON

MAY 17, 2011



This report is prepared for the Owners, for the current Owners' information and may not be used or relied upon by any other person, unless that person is specifically named by us in this Agreement as a beneficiary of the Report, in which case the Report may also be used by the additional beneficiary we have named. You agree to maintain the confidentiality of the Report and reasonably protect the Report from distribution to any other person. If you directly or indirectly cause the Report to be distributed to any other person, you agree to indemnify, defend, and hold us harmless if any third party brings a claim against us relating to our inspection or the Report.

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Appendix A – Glossary of Terms

1. The first part of the document is a list of names and addresses.

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1. INTRODUCTION

1.1 INTENT AND SCOPE

As requested by Onni, BC Building Science Partnership (BCBSP) has conducted a One Year Building Envelope Condition Review / Warranty Review at the Carlyle, the residential complex located at 280 Ross Drive, New Westminster, BC.

The intent of this report is to provide an on-site visual review of the building envelope components approximately one year after substantial completion of the original construction. The scope of the review includes observations and discussions of the main exterior components and assemblies with respect to the durability and water tightness of the building envelope. The identification of quality or workmanship issues is a subjective matter and is not necessarily in the scope of this review unless it relates specifically to the performance of the building envelope.

The content of this review reflects our opinion based on visual observations during the site review and the information available at the time of preparation. Any use of, or reliance on, this report by any third party is the responsibility of such third parties. We accept no responsibility from damages, if any, suffered by any third party as a result of decisions made based on this review.

The actual responsibility of the listed warranty and maintenance recommendations should be determined by the Developer and the Strata.

1.2 BUILDING DESCRIPTION

The Carlyle is a twenty-seven storey multiple unit residential complex. The building is constructed of cast in place concrete and suspended slabs over a four level parking garage below grade with two levels partially above grade along south courtyard elevation. The project was substantially complete in June, 2010 and is approximately one year old. (See photos 1.2.1 to 1.2.4).



Photo 1.2.1: Partial east and north elevation.



Photo 1.2.2: Partial south and east elevation.



Photo 1.2.3: Front entry at the east elevation.

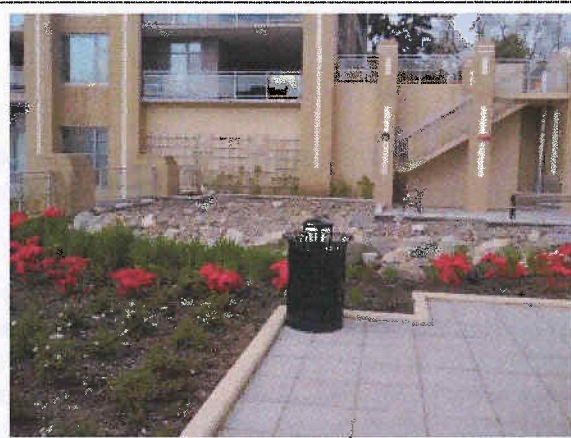


Photo 1.2.4: Level three Plaza deck along the east elevation north end.

1.3 HOME WARRANTY INSURANCE

The standard warranty coverage consists of the following coverage's starting at the date of substantial completion.

Home Warranty Insurance Broker:	National Home Warranty
Labour & Material Warranty:	2 years / 15 Months
Building Envelope Warranty:	5 years
Structural Defects Warranty:	10 years
Occupancy:	June, 2010

1.4 DOCUMENTS REVIEWED

Architectural Drawings from original construction were available for review to confirm the original wall assemblies.

1.5 OCCUPANT SURVEY

An occupant survey was not in the scope of this review.

2. OBSERVATIONS

The review of the complex was performed on May 17, 2011. BCBSP (Bryon Atkinson) attended the review of the site with the maintenance consultant (Ben Aghal from Accurate Building Maintenance Ltd.) and two representatives from the strata council. Weather conditions at the time of the review were cloudy with no precipitation.

The following section outlines our observations and recommendations for each main part of the building envelope.

2.1 EXTERIOR WALLS

The exterior wall assembly at the Carlyle is an exposed painted concrete mass wall assembly. Refer to the following figure for a description.

Based on the original Architectural Drawings and visual observation, the exterior assembly consists of:

- Exterior Paint
- Structural Concrete
- Air Space
- Steel Framing
- Batt insulation in stud cavity
- Polyethylene sheet
- Interior Gypsum Wallboard

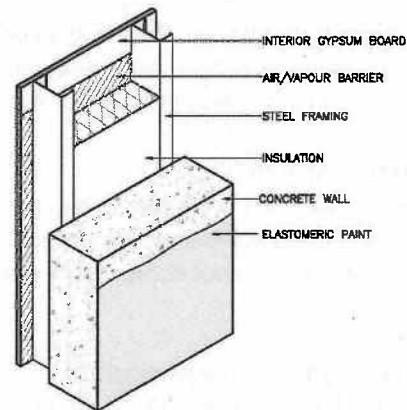


Figure 2.1.1: Structural Concrete with Steel Stud Wall Assembly

Observations:

The following was observed during the visual review (photos 2.1.1 to 2.1.12):

Structural Concrete:

- The structural concrete generally appeared to be in satisfactory condition. The concrete building wall is a mass wall assembly and does not incorporate a moisture barrier behind it as rainscreen cladding assemblies do. It is important that all moisture / precipitation be shed from the exterior face of the concrete walls. With that, the only line of defense that prevents water ingress from entering the interior of the building is the elastomeric coating.
- The elastomeric paint application to the concrete appeared to be in satisfactory condition and we did not observe any signs of cracking, bubbling, or peeling where reviewed.
- Some minor cracking was observed at concrete building walls and eyebrow locations, but is to be expected due to building settlement.
- Where reviewed, minor efflorescence staining was observed at the concrete walls, planter curbs, architectural pillars, balcony soffits, and the main roof eyebrows.
- The main building walls were sack rubbed to an architectural finish and we did not observe any pock marks within the concrete walls where reviewed; however, we did observe numerous pock marks within

the concrete pillars at the level four plaza deck. Bare concrete is visible within the pock marks. Water ingress within the pock marks will cause the paint to delaminate from the concrete surface.

- We observed numerous pock marks within the polyurethane waterproofing membrane at the main roof eyebrows.

- .1 *Recommendation:* Patch any cracks in the concrete as they occur. The crack should be routed out, cleaned, and sealed with a polyurethane sealant. Any cracks in excess of 1/16" (width) should be reviewed by a Structural Engineer.
- .2 *Recommendation:* Review concrete walls, planter curbs, architectural pillars, balcony soffits, and the main roof eyebrows to determine all locations where efflorescence stains are occurring and have a qualified contractor make repairs as required.
- .3 *Recommendation:* Review the pock marks within the concrete pillars at the level four plaza deck to determine the appropriate course of action.
- .4 *Recommendation:* Review the concrete eyebrows on the main roof and make corrections to deficient areas where the polyurethane membrane has pock marks within the membrane and where small holes in the concrete have not been covered with the membrane and bare concrete is visible.

Deck Up-stand Cap Flashing:

- The cap flashings appeared to be in good condition with no signs of separation at length joint s-lock seams or at standing seam corner joints. The flashings are sloped to drain to the back side of the up-stands and we did not observe any staining or standing water on the surface of the flashing where reviewed.

Mechanical and Electrical Penetrations:

- The mechanical penetrations appeared to be in good condition. Generally, there were no signs of excess dryer lint build up at most of the dryer vents under the soffits where reviewed. However, at some locations the vents were partially clogged. The lint needs to be removed in the near future, as a build up of lint can be a fire hazard. The Owners should be aware that the louvered vent covers are fully removable for cleaning.
 - The electrical penetrations appeared to be in good condition, with tight seals to the cladding at locations that were accessible to review. We noted one area where an electrical box was erroneously installed to the building wall approximately 4" beyond the outer face of the balcony railing at Unit 2406. The box does not appear to be wired, the plastic conduit is turned upwards which may allow water ingress into the interior of the unit. Also, a cover plate with a neoprene gasket has not been installed.
- .5 *Recommendation:* The dryer vents should be cleaned in the near future and on a regular basis. The owners should also clean the lint screens in their dryers periodically to reduce accumulation of lint within the vent ducts and on the interior side of the exterior louvered vent covers.
 - .6 *Recommendation:* Review the electrical box installed at the building wall 4" beyond the outer face of the balcony railing at Unit 2406 to determine the appropriate course of action.

Exterior Sealant:

- The exterior sealant joints generally appeared to be in satisfactory condition and were well adhered to dissimilar material intersections where reviewed.

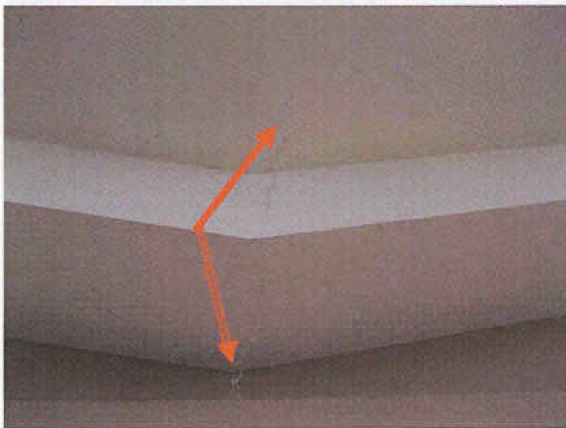


Photo 2.1.1: Horizontal cracks at the valley of the concrete eyebrow at the elevator stairwell roof with efflorescence staining below.

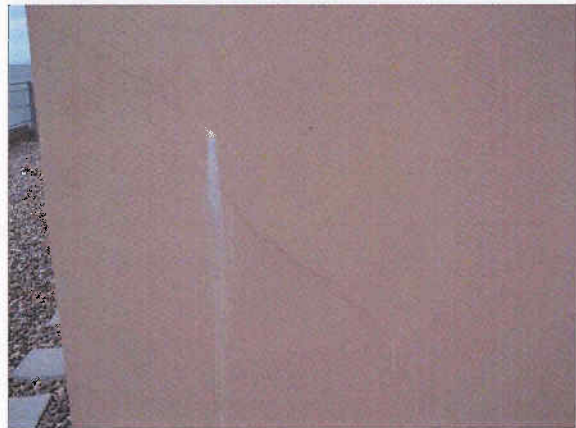


Photo 2.1.2: Horizontal crack at the elevator stairwell core wall above the main roof with efflorescence stains.

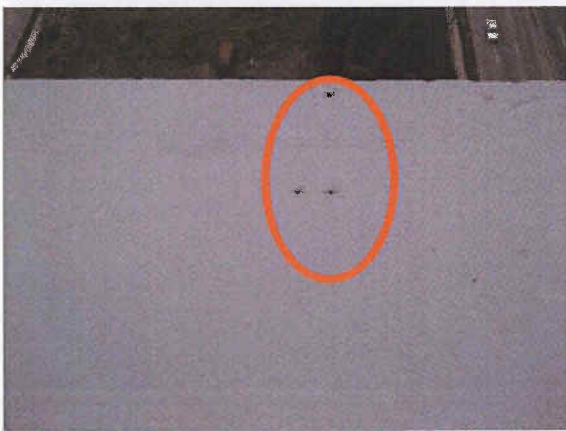


Photo 2.1.3: Small holes in the concrete eyebrow at the main roof.

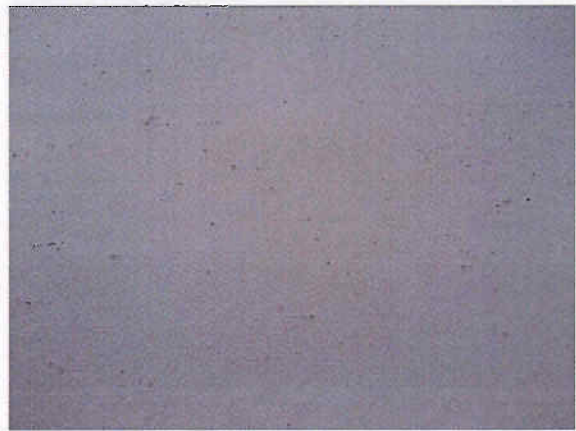


Photo 2.1.4: Pock marks in the urethane membrane at the main roof eyebrow.



Photo 2.1.5: Efflorescence stains at the underside of the balcony soffit above Unit 506.

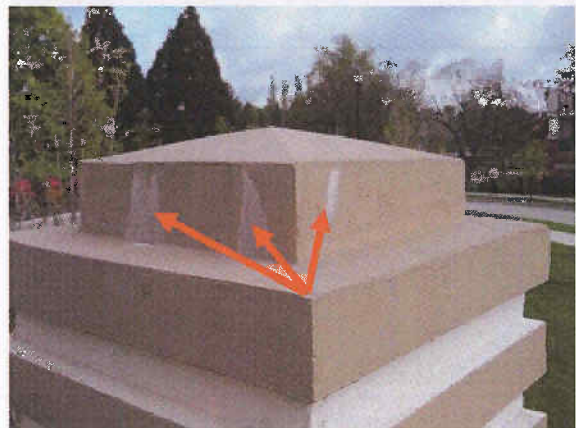


Photo 2.1.6: Efflorescence stains to a concrete pillar at the stairs leading to the level four plaza deck.



Photo 2.1.7: Pock marks with bare concrete visible at a concrete pedestal on the level four plaza deck.



Photo 2.1.8: Typical deck up stand cap flashing.



Photo 2.1.9: Typical balcony soffit with louvered exhaust vent grills.



Photo 2.1.10: Louvered dryer exhaust vent grill partially clogged with lint.



Photo 2.1.11: Typical exterior electrical box outlet.



Photo 2.1.12: Electrical box installed 4" beyond the outer face of the balcony railing at Unit 2406.

2.2 WINDOWS AND SLIDING DOORS

The windows and doors at Carlyle are aluminum framed and thermally broken, with double glazed insulating glass units (IGU's).

The windows are installed on building wall curbs and balcony / deck curbs and extend to the underside of the suspended slab ceiling of the next floor above.

The following was observed during the visual review (Photos 2.2.1 to 2.2.2):

Windows:

- The punch windows and vertically coupled punch windows are generally in satisfactory condition. We observed no damage to the aluminum extruded frames or condensation within the glass units where observed.
- Where tested, the operating window vents opened and closed smoothly.

.1 Recommendation: Have each owner / occupant inspect the window and door weather stripping and replace as necessary.

Balcony and Deck / Patio Sliding Doors:

- The balcony and deck / patio sliding glass doors appeared to be in good condition. These doors are generally under the cover of an overhang, located above the doors; thus, they are subjected to lower wind and rain pressures than the windows.
- Where tested the doors opened and closed smoothly and sealed tightly to the weather stripping excluding the door at Unit 702. The owner of Unit 702 reported that she has air leakage / infiltration into her unit between the window frame and sliding door frame and there is a whistling sound when air pressure from the wind is higher than normal. We reviewed the sliding door and found that the door is somewhat out of plumb and doesn't completely seal to the weather stripping when closed.

.2 Recommendation: Review and adjust the sliding door at Unit 702 that is experiencing air leakage / infiltration into the unit. If required replace deficient weather stripping.

Flashings:

- The window deflection headers and sill flashing appeared to be in good condition with no visible damage or back slopes to the building walls where observed.



Photo 2.2.1: Typical punch window with head and sill flashings.

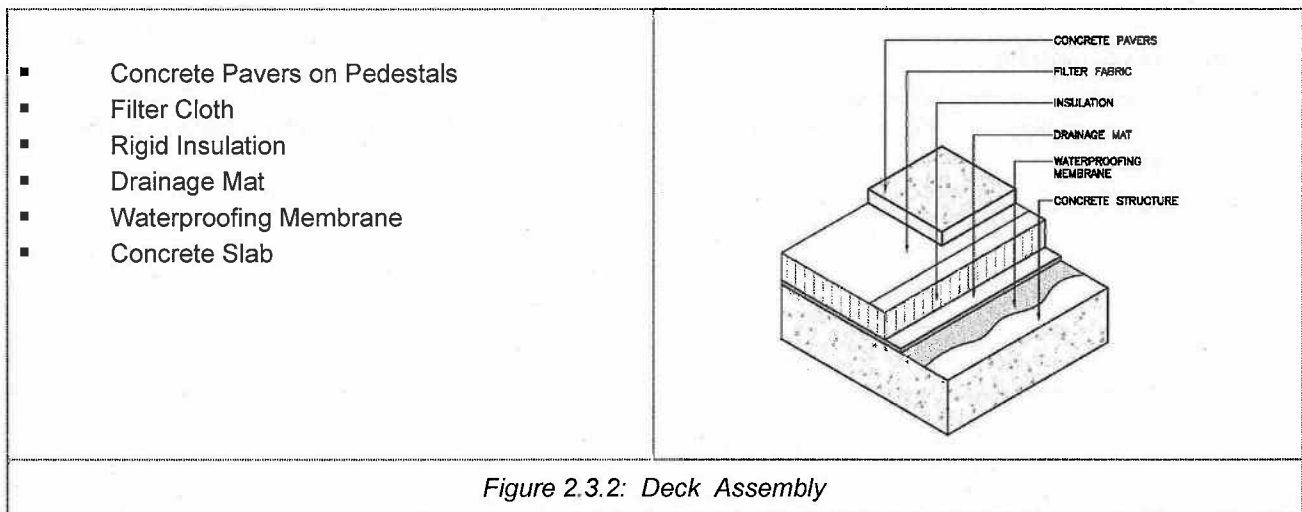
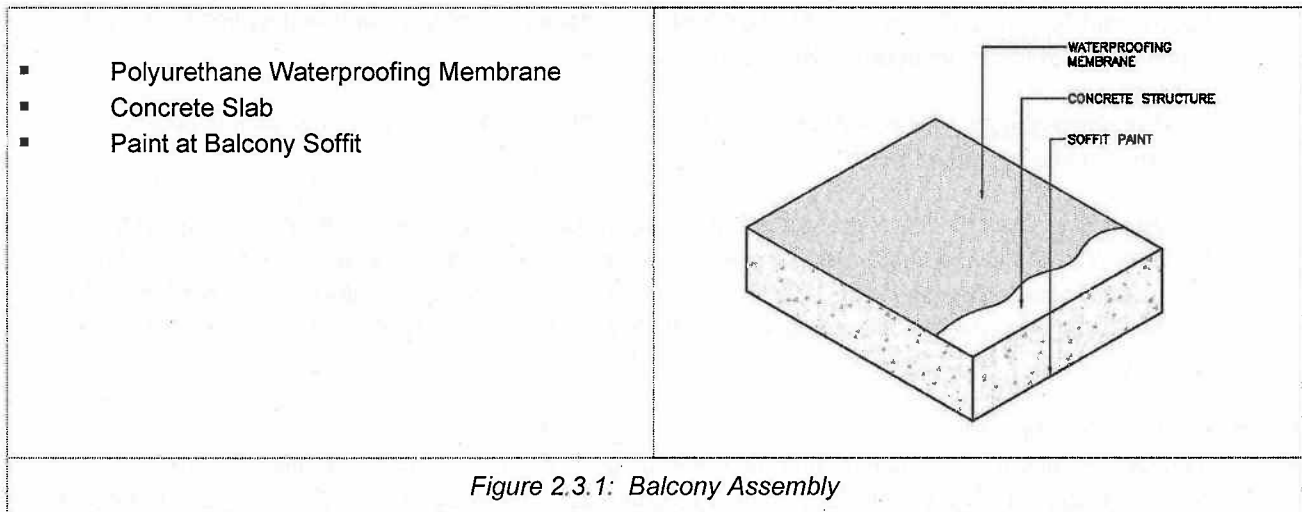


Photo 2.2.2: Typical deck / patio sliding glass door assembly.

2.3 BALCONIES AND DECKS

Balconies are generally defined as horizontal projections not over heated interior space, while decks are over interior heated space. The majority of the units have balconies.

Figure 2.3.1 and 2.3.2 lists a typical balcony and deck assembly:



The following was observed during the visual review (Photos 2.3.1 to 2.3.4):

Balcony Surfaces:

- The polyurethane balcony membrane appeared to be in good condition, with no signs of delamination, ponding water, or staining at locations that were reviewed.
 - .1 **Recommendation:** Review the balcony surfaces for ponding water and determine an appropriate course of action. Generally, if water on the balcony surface does not evaporate within 48 hours of dry weather, re-sloping of the balcony surface may be necessary.

- .2 Recommendation: *The owners should clean their balcony surface regularly to ensure that the integrity of the waterproofing membrane is not compromised.*

Decks:

- The decks appeared to be in good condition with no signs of debris or moss growth on the concrete pavers.
 - At the level four plaza deck along the north elevation we noted that two bi-level drains are installed approximately 3/4" to 1" above the finished walking surface (concrete pavers) and as installed pose a tripping hazard to the occupants / visitors at the complex.
- .3 Recommendation: *Review the bi-level drains installed at the level four plaza deck to determine the appropriate course of action.*
- .4 Recommendation: *The bi-level drains installed throughout the complex should be cleaned twice per year (i.e. spring and late fall) to ensure that no debris is clogging the system. Note: The main drainage path of these drains is at the base of the drain cast iron hub intersection, which is in the same plane as the suspended concrete slab and in order to clean them the concrete pavers or other topping will have to be removed.*

Balcony and Deck Guardrails:

- The balcony and deck aluminum guardrails were in good condition and did not move when considerable force was applied. The penetrations at mounting plates appeared to be sealed at the fasteners where reviewed.

Common Area Guardrails:

- The aluminum common area guardrails were in good condition and did not move when considerable force was applied. The penetrations at mounting plates appeared to be sealed at the fasteners where reviewed.



Photo 2.3.1: Typical balcony surface.



Photo 2.3.2: Typical deck over interior heated living space.



Photo 2.3.3: Bi-level drain extends above the finished walking surface at the level four plaza deck.



Photo 2.3.4: Typical top mounted balcony guardrail.

2.4 ROOFS

The main roof assembly is a flat (low-slope) roof. Based on the original Architectural Drawings, the assembly is listed below.

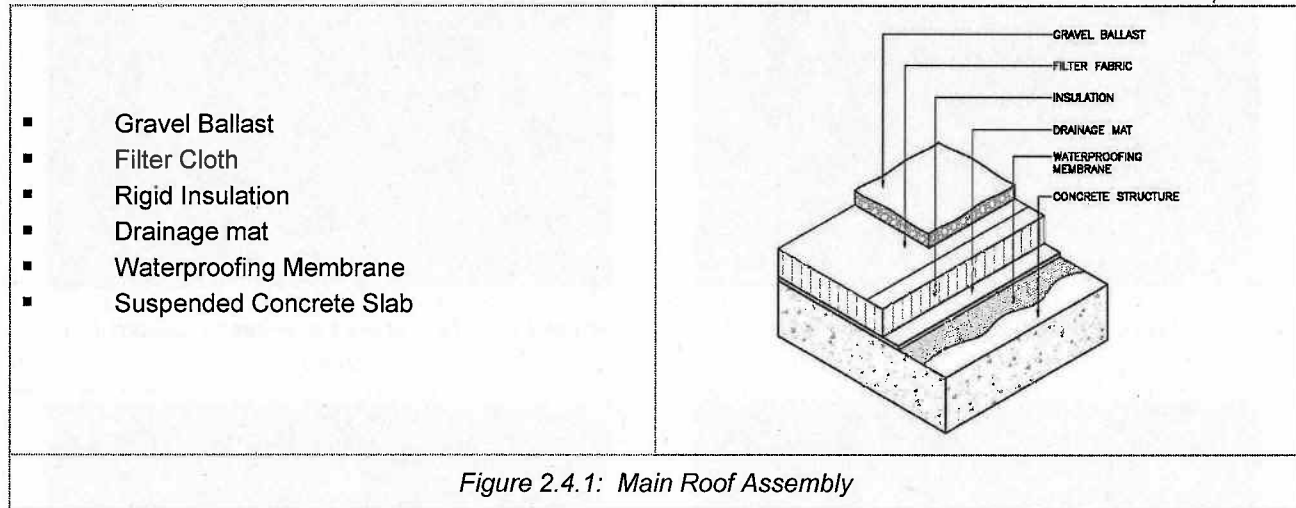


Figure 2.4.1: Main Roof Assembly

The following was observed during the visual review:

Flat Roof Assembly:

- The main roof generally appeared to be clean with no signs of debris where reviewed. The representatives from the strata council reported that there has been no water ingress to the interior of the units below the roof and we assume that the waterproofing membrane is performing as intended.
- The drainage system appears to be functioning properly.

.1 *Recommendation:* The roof drains and overflow scuppers should be inspected (i.e. spring and late fall) to ensure that no debris is clogging the system.

2.5 AT AND BELOW GRADE ASSEMBLIES

The Carlyle is a twenty-seven storey multiple unit residential complex. The building is constructed of cast in place concrete and suspended slabs over a four level parking garage below grade with two levels partially above grade along south courtyard elevation.

The following was observed during the visual review (Photos 2.5.1 to 2.5.6):

At Grade Assemblies:

- The majority of the building walls at grade are surrounded with sloped to drain concrete pavers that extend out from the building walls.
- The waterproofing membrane over the parking garage extends up the perimeter building walls approximately 6" to 12" with a gum-lip flashing over which protects the membrane from ultra violet rays and water ingress between the membrane and building walls. The flashing also acts as a termination bar at the top leading edge of the membrane.
- There are several locations where planters are installed against the building walls, but the soil in the planters is approximately 6" below the waterproofing membrane and gum-lip flashing at most locations. Also, at a few locations a gravel trench has been installed between the planters and building walls to accommodate drainage.

Below Grade Assemblies:

- Cracks, efflorescence staining, water stains, and minor water ingress was observed on the surface of the below grade parking garage foundation walls and underside of the suspended slabs at several locations. The majority of the cracks were dry with no active water ingress noted. The contractor has repaired several active leaking cracks with urethane injection and it appears to be effective.
- Efflorescence stains are typically a result of exterior moisture sources migrating through the concrete. Moisture migrating through the concrete picks up soluble salts within the concrete and deposits the salts on the surface of the concrete when the moisture evaporates. Since the concrete is porous, minor moisture migration within the concrete is considered normal. The concrete should however be sound, free from significant cracking and free from visible moisture ingress.
- The urethane traffic membrane installed over the suspended slabs in the parking garage generally appeared to be in good condition, but there were several areas where the membrane is delaminated at drive aisles and at the perimeter of grate drains.
- To the north of parking stall 63 we noted that the concrete is delaminating at the top of the column suspended slab intersection and there is a potential that the concrete may spall and cause damage to a vehicle or injure a person passing by.

- .1 *Recommendation: Review the foundation walls and suspended slabs in the below grade parking garage to determine the appropriate remedial action.*
- .2 *Recommendation: Review the urethane traffic membrane in the below grade parking garage to determine the appropriate remedial action.*
- .3 *Recommendation: Review the delaminated concrete at the column suspended slab intersection to the north of parking stall 63 to determine the appropriate remedial action.*



Photo 2.5.1: Gum-lip flashing installed at a building wall 8" above the finished walking surface at level four.



Photo 2.5.2: Gravel trench and gum-lip flashing installed at a planter building wall intersection.



Photo 2.5.3: Water ingress at the base of the concrete wall sub-grade slab intersection at parking stall 59.



Photo 2.5.4: Urethane traffic membrane delaminated around the perimeter of a drive aisles drain.



Photo 2.5.5: Urethane traffic membrane delaminated at the drive aisle south of parking stall 156.



Photo 2.5.6: Delaminated concrete at the top of the column north of parking stall 63.

2.6 INTERIOR CONDITIONS

The following was observed during the visual review (Photos 2.6.1 to 2.6.2):

- Where reviewed the suite interiors displayed no signs of water staining on ceilings or walls, and no signs of condensation on the surfaces of the interior walls, or windows.
- Refer to (2.2) windows and sliding doors for recommendations regarding air leakage.

.1 *Recommendation:* The occupants should continue to control the interior humidity levels by: opening exterior doors or windows, proper use of fresh air vents, continual use of kitchen and bathroom exhaust fans. If interior humidity levels remain consistently high, occupants should avoid, extensive plant growth, the use of humidifiers, and daily living activities leading to excessive interior moisture.



Photo 2.6.1: Interior of the exterior wall at Unit 506.

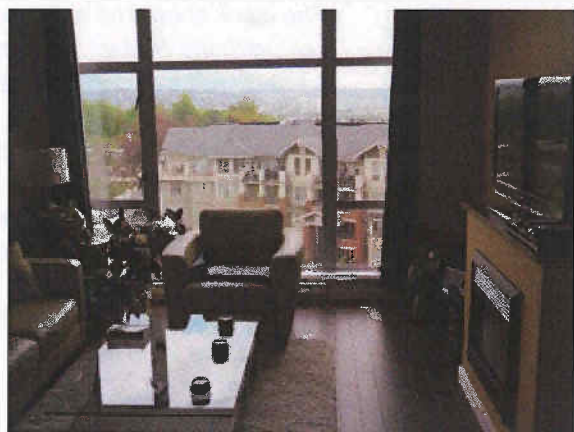


Photo 2.6.2: Interior of the exterior wall at Unit 702.

3. RECOMMENDATIONS

3.1 SUMMARY OF OBSERVATIONS

As outlined in the body of this report there are issues of varying significance with respect to the building envelope. The Strata should confirm which of these issues are covered by the Warranty and determine an appropriate plan of remedial action.

Ref. Section	Recommendation	Opinion of Responsibility
2.1 Exterior Walls	.1 <u>Recommendation:</u> Patch any cracks in the concrete as they occur. The crack should be routed out, cleaned, and sealed with a polyurethane sealant. Any cracks in excess of 1/16" (width) should be reviewed by a Structural Engineer.	Contractor / Strata (Maintenance)
	.2 <u>Recommendation:</u> Review concrete walls, planter curbs, architectural pillars, balcony soffits, and the main roof eyebrows to determine all locations where efflorescence stains are occurring and have a qualified contractor make repairs as required.	Contractor / Strata (Maintenance)
	.3 <u>Recommendation:</u> Review the pock marks within the concrete pillars at the level four plaza deck to determine the appropriate course of action.	Contractor / Strata (Maintenance)
	.4 <u>Recommendation:</u> Review the concrete eyebrows on the main roof and make corrections to deficient areas where the polyurethane membrane has pock marks within the membrane and where small holes in the concrete have not been covered with membrane and bare concrete is visible.	Contractor
	.5 <u>Recommendation:</u> The dryer vents should be cleaned in the near future and on a regular basis. The owners should also clean the lint screens in their dryers periodically to reduce accumulation of lint within the vent ducts and on the interior side of the exterior louvered vent covers.	Strata (Maintenance)
	.6 <u>Recommendation:</u> Review the electrical box installed at the building wall 4" beyond the outer face of the balcony railing at Unit 2406 to determine the appropriate course of action.	Contractor
2.2 Windows and Doors	.1 <u>Recommendation:</u> Have each owner / occupant inspect the window and door weather stripping and replace as necessary.	Strata (Maintenance)
	.2 <u>Recommendation:</u> Review and adjust the sliding door at Unit 702 that is experiencing air leakage / infiltration into the unit. If required replace deficient weather stripping.	Contractor

<p>2.3 Balconies and Decks</p>	<p>.1 <u>Recommendation:</u> Review the balcony surfaces for ponding water and determine an appropriate course of action. Generally, if water on the balcony surface does not evaporate within 48 hours of dry weather, re-sloping of the balcony surface may be necessary.</p> <p>.2 <u>Recommendation:</u> The owners should clean their balcony surface regularly to ensure that the integrity of the waterproofing membrane is not compromised.</p> <p>.3 <u>Recommendation:</u> Review the bi-level drains installed at the level four plaza deck to determine the appropriate course of action.</p> <p>.4 <u>Recommendation:</u> The bi-level drains installed throughout the complex should be cleaned twice per year (i.e. spring and late fall) to ensure that no debris is clogging the system. Note: The main drainage path of these drains is at the base of the drain cast iron hub intersection which is in the same plane as the suspended concrete slab and in order to clean them the concrete pavers or other topping will have to be removed.</p>	<p>Strata (Maintenance)</p> <p>Strata (Maintenance)</p> <p>Contractor</p> <p>Strata (Maintenance)</p>
<p>2.4 Roofs</p>	<p>.1 <u>Recommendation:</u> The roof drains and overflow scuppers should be inspected (i.e. spring and late fall) to ensure that no debris is clogging the system.</p>	<p>Strata (Maintenance)</p>
<p>2.5 At and Below Grade Assemblies</p>	<p>.1 <u>Recommendation:</u> Review the foundation walls and suspended slabs in the below grade parking garage to determine the appropriate remedial action.</p> <p>.2 <u>Recommendation:</u> Review the urethane traffic membrane in the below grade parking garage to determine the appropriate remedial action.</p> <p>.3 <u>Recommendation:</u> Review the delaminating concrete at the column suspended slab intersection north of parking stall 63 to determine the appropriate remedial action.</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p>
<p>2.6 Interior Conditions</p>	<p>.1 <u>Recommendation:</u> The occupants should continue to control the interior humidity levels by: opening exterior doors or windows, proper use of fresh air vents, continual use of kitchen and bathroom exhaust fans. If interior humidity levels remain consistently high, occupants should avoid, extensive plant growth, the use of humidifiers, and daily living activities leading to excessive interior moisture.</p>	<p>Strata</p>

3.2 MAINTENANCE AND RENEWAL PLANS

If not already in place, the Owners should consider implementing maintenance and renewal plans for the building. A scheduled maintenance program should include documented annual inspections by maintenance personnel or qualified consultant to review each component of the building envelope. Proper maintenance is required in order to ensure warranty provisions are met. Meeting these provisions can provide protection against premature failure. Owners should understand the type of coverage and conditions of any applicable product warranties. Warranties vary in coverage: some cover both installation and materials, while others cover only materials.

In addition to regular maintenance, a renewal plan is equally important in preserving the life of the building. A renewal plan provides a timeline of the expected service life for the main systems and components and allows budgeting for their replacement. Although replacement of an entire system may not be required at the end of the service life, it can be expected that extensive repairs and replacement of some components will be needed in order to maintain the performance. It is also expected that maintenance requirements will become higher as the systems and components age.

Through the maintenance of all individual components, the overall function and integrity of the building envelope is preserved for the expected service life of the building.

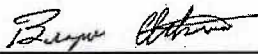
4. CLOSING

With the exceptions as outlined in the body of this report, the building envelope appears to be performing adequately with respect to durability and water tightness at one year after substantial completion.

Please contact our office if there are any questions or for further information.

Respectfully Submitted,
BC BUILDING SCIENCE PARTNERSHIP

Prepared By:

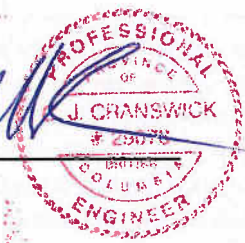


Bryon Atkinson

Reviewed By:



Chad Cranswick P.Eng.



APPENDIX A – GLOSSARY OF TERMS

Definitions with * have specific meanings as per the Vancouver Building By-law and the BC Building Code

***Air barrier system** means the assembly installed to provide a continuous barrier to the movement of air.

***Attic of roof space** means the space between the roof and the ceiling of the top storey or between a dwarf wall and a sloping roof.

Balcony means a horizontal surface or projection exposed to the exterior.

***Basement** means a storey or storeys of a building located below the first storey.

***Building** means any structure used or intended for supporting or sheltering any use or occupancy.

Building Envelope means building materials that separate environmentally dissimilar interior space, or, building materials exposed to exterior space or the ground.

***Building Envelope Professional** means a member of the Architectural Institute of British Columbia or the Association of Professional Engineers and Geoscientists of British Columbia who has completed a recognized program in building envelope studies and has met all of the requirements for listing as a Building Envelope Professional with the Institute or Association.

Building Paper means a breather-type asphalt sheathing paper rated in minutes based on preventing water flow at saturation in accordance with a standard test.

Built-up Roof (BUR) means a waterproof system constructed of multiple felt layers mopped down with hot bitumen.

***Cavity wall** means a construction of masonry units laid with cavity between the wythes. The wythes are tied together with metal ties or bonding units, and

are relied on to act together in resisting lateral loads.

Cladding means a material or assembly that forms the exterior skin of the wall. Cladding types include; stucco, EIFS, metal panels, brick/stone veneer, various siding materials.

***Contractor** means a person who contracts with an owner or an authorized agent of an owner to undertake a project, and includes an owner who contracts with more than one person for the work on a project or undertakes the work on a project or any part thereof.

Control Joint means a joint in a structure, usually applicable to stucco cladding used to regulate the amount and location of cracking.

Delamination means a separation along a plane parallel to the surface.

Deck means a horizontal surface exposed to the outdoors, located over a living space.

Drip Edge means a projection detailed to direct water run-off to the exterior.

***Exhaust Duct** means a duct through which air is conveyed from a room or space to the outdoors.

Face-Seal means a wall assembly where the performance of the wall depends on the ability of the exterior surface and associated sealants to shed water and prevent any water infiltration. This system has no drainage plane as provided by a rainscreen wall assembly.

***Firewall** means a type of fire separation of noncombustible construction which subdivides a building or separates adjoining buildings to resist the spread of fire, has a fire-resistance rating, and has structural stability to remain intact under fire conditions for the required fire-rated time.

Fishmouth means a deficiency in the installation of sheet membranes which results in a fold in the

leading edge which can allow water penetration.

Flashing means a sheet metal or other material used in roof or wall construction designed to direct or shed water, typical type include: cap or parapet flashing (top of walls, roof parapets), head or sill flashing (top or bottom of windows or other penetrations), cross-cavity (sheds water from the moisture barrier to the exterior, across the cavity and cladding), saddle flashing (flashing used at wall to horizontal planes), base flashing (used at the bottom edge of wall surfaces or edges of soffits)

Frame means the associated head, jamb, sill, and, where applicable, mullion and muntin that, when assembled, house the sash or fixed glazing.

***Grade** means the lowest of the average levels of finished ground adjoining each exterior wall of a building.

***Guard** means a protective barrier around openings in floors or at the open sides of stairs, landings, balconies, mezzanines, galleries, raised walkways or other locations to prevent accidental falls from one level to another. Such barrier may or may not have openings through it.

Gum Lip means a method of sealing a flashing to a wall surface whereby the top edge of the flashing is bent outwards to provide a location for a sealant bead.

Head means horizontal member forming the top of the frame.

Housewrap means a sheet plastic material, which is used as a sheathing paper, usually a spun-bonded polyolefin material. This material has a low liquid material air leakage rate and a high water vapour diffusion rate.

Insulating Glass Unit (IGU) means two or more panes spaced apart and hermetically sealed in a factory

Jamb means the upright or vertical members forming the side of the frame.

***Load-Bearing** (as applying to a building element) means subjected to or designed to carry loads in addition to its own dead load, excepting a wall element subjected only to wind or earthquake loads in addition to its own dead load.

Mullion means a vertical or horizontal frame member that separates two or more lights within a window unit.

***Partition** means an interior wall 1 storey or part-storey in height that is not load-bearing.

***Party Wall** means a wall jointly owned and jointly used by 2 parties under easement agreement or by right in law, and erected at or upon a line separating 2 parcels of land each of which is, or is capable of being, a separate real-estate entity.

Punched Window means a single window frame and glass assembly surrounded by cladding as opposed to a number of frames coupled horizontally or vertically (window wall assembly).

Rainscreen (or Drainage) Cavity means a wall design providing a drainage plane behind the exterior cladding material. Allows incidental water entering the wall system to drain by gravity and allows venting and drying of underlying wall assemblies.

***Roof Drain** means a fitting or device that is installed in the roof to permit storm water to discharge into a leader.

***Roof Gutter** means an exterior channel installed at the base of a sloped roof to convey storm water.

Scupper means a metal pipe or trough section, which directs water to the exterior from a roof or balcony.

Sheathing means a panel material used to provide stiffness to the wall framing and /or provide backing for the cladding.

Sheathing Paper means a material in a wall assembly whose purpose is to protect materials from water penetration.

Spall means a piece of material, which has delaminated due to mechanical damage, or weather action (usually as a result of freeze / thaw condition).

Strapping means strips of wood or metal to form a cavity in a rainscreen wall assembly.

UV means ultra-violet radiation (from the sun), which has a degrading effect on many membrane and sealing materials (asphalt based) unless protected by an appropriate shielding layer.

***Vapour Barrier** means the elements installed to control the diffusion of water vapour.

Weep Hole means an opening in a wall or window assembly, which allows incidental water to drain to the exterior. Weep holes also act as vents allowing air movement and drying of cavity wall assembly

