



Aqua-Coast Engineering Ltd.
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**BUILDING ENVELOPE REVIEW
and
MAINTENANCE RECOMMENDATIONS
for
VR 1308 – COMPASS POINT
3303–3391 Flagstaff Place
8010-8011 Spinnaker Place
Vancouver, BC**

SEPTEMBER 11, 2006



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**Report on Building Envelope Review and
Maintenance Recommendations**

for

**Compass Point
3303-3391 Flagstaff Place / 8010-8011 Spinnaker Place
Vancouver, BC**

Presented to:

**The Owners, VR 1308
Compass Point
c/o York West Property Management Ltd.
Suite 950 – 1200 West 73rd Street
Vancouver, BC V6P 3E5**

**August 5, 2006
File No. 2323**

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1 INTRODUCTION

1.1 Terms of Reference

Aqua-Coast Engineering Ltd. (ACE) was engaged by the owners, Compass Point to conduct a building envelope inspection at the above noted complex and to report on building code violations and building envelope deficiencies. Recommendations for further testing, repairs, and maintenance form part of this report.

1.2 Scope of Work

This investigation is not intended to be a comprehensive survey to confirm all areas that may be affected by moisture, but to be a sampling of the wall areas to be used to identify problems and where potential problems may occur. Our survey involved visual inspection, moisture content testing, and minor destructive testing. Building envelope deficiencies, construction defects, and maintenance deficiencies were noted. A cursory review of the roofing membranes was also performed. A ladder was used to gain access to upper walls and decks. Field investigations were carried out on July 25, 26, and 28, after a prolonged dry period.

1.3 Basic Information

The complex consists of 57 two and three storey town house units. The complex is 22 years old. The windows and patio slider doors are aluminum framed with insulating glazing units. The walls are clad with horizontal wood bevel siding installed over 30 minute building wrap and plywood sheathing. The roof of the building is both a two ply SBS membrane on the flat roof, with duroid shingles on the sloped sections. There are adequate overhanging eaves providing protection from rain. All balconies are exposed and unprotected from the elements.

2 INVESTIGATION OF EXISTING CONDITIONS

2.1 Owner Survey

Our investigation did include an owner survey via questionnaire. A preferred method for determining the existence of breaches in a building envelope is to perform an audit of the moisture related observations of the occupants by way of a brief questionnaire to the occupants. Less than 50% of the owners responded to the survey. Results have been considered and incorporated into this report.

2.2 Testing

In order to evaluate the performance of the building envelope, testing and probes were performed at more than 80 locations. The locations were selected by observing areas where water infiltration was possible, or from

our experience with problem areas encountered on similar buildings. Our test method involves inserting electronic probes through the cladding to the sheathing at each test location. The moisture content (MC) of the wood is read directly and tabulated for each location (See Appendix A). This was a small sampling only and was not intended to provide a full analysis of the entire building envelope.

Invasive testing was limited to confirming the details of building papers and flashing methods. Our test method in wood siding and trim involved removal of small areas of siding to observe the substrate.

The accepted criteria for building envelope investigation normally focuses on the premise that wood must be kept dry to prevent decay and to preserve structural integrity. The MC of the wood should not be allowed to rise above 20%. If the MC in the wood does exceed 20% it is prone to decay and structural failure. In addition, any initial decay and subsequent decay due to wetting cycles is cumulative, and it is for this reasons that wood must be protected from frequent and prolonged wetting. A prolonged MC in the range of 21%-23% will cause decay within a year or two. A MC over 29% may cause decay within a few months.

The test results of this investigation are tabulated for each location in Appendix A. Our testing indicated there were no locations where the moisture content exceeding 20% at the time of our visit at the locations tested.

This review is generally limited to observations of the surface details and minor destructive testing. Aqua-Coast Engineering Ltd. cannot assume any responsibility for concealed conditions and deficiencies. The reader must consider the weather conditions prior to the moisture testing; the preceding months have been unusually dry. It is possible the amount of moisture available for saturation of the substrate has been exceeded by the drying capability of the wall assemblies. This would possibly cause fewer high readings than would be anticipated in a season of normal rainfall. Additional sampling should be considered early next year after an extended period of rainfall.

3 OBSERVATIONS

3.1 Cladding and Trim

The cladding system on this project consists of horizontal wood bevel siding with vertical trim boards at corners and around the windows. The system is a face sealed assembly, as opposed to a rainscreen system. A rainscreen system has a drainage and air space between the siding and the building papers. In a face sealed cladding system the siding is the first defence

against water infiltration, and when properly applied and sealed, can be very effective. The siding interfaces at this project are not back caulked and are face caulked at only a few locations. The secondary line of defence from water infiltration is the building paper, with a resistance to water penetration of 30 minutes. If wetting is rare and drying weather more typical, this system works well. However, in our climate, drying times are limited and moisture may penetrate the building wrap, leaving the substrate saturated for extended periods. Water may be trapped at the sheathing and framing, creating ideal conditions for decay fungi and other organisms to develop. The joints between the siding elements and between the siding and all other wall components and penetrations are difficult to make waterproof and review of the sealants is required on a regular basis. New wood tends to split and check as it dries in the first few years after installation. Water can infiltrate directly through the joints and splits. Since this moisture is slow to escape it can cause decay of the wood substrate. Preventative maintenance is critical. The cedar siding is aged and over the years has dried out and cracked. These areas should be addressed at the time the next painting program is undertaken.

A notable problematic condition with many buildings in our area is the method of installation of the building papers or building wrap. These materials should be installed in a "shingled" manner in order to shed water effectively. Some of the details at this project present a reverse lap condition of the building paper. These could become a source of moisture ingress.

3.2 Window Installation Details

The window head flashings we investigated in the bevel siding is correctly lapped in most cases. The flashing in some instances is sloping slightly back toward the wall, possibly due to shrinkage of the building components. The flashing is short and ends at the jamb; it should have extended one inch past the jamb. There is a slight gap between the siding and the top of the flashing to permit movement and drainage. Water cascading down the wall could collect on the back sloping flashing and be deposited at the jamb since the flashing does not have an end dam. The flashings should be replaced or the detail monitored bi-annually for water ingress.

We performed testing at numerous window sills and noted a reverse lap paper condition by removing the trim board. The building paper is outside the window flange. The field of the building papers should have been lapped behind the window opening pre-strip paper. Water entering above at the head or jamb may be diverted behind the reverse lap and into the substrate.

The vertical interface of the window frame and wood cladding is required by the Building Code to have a properly designed sealant joint to keep moisture out. A 3/8 inch gap should have been created between the wood siding and the stone siding in which a backer rod would have been installed and caulked. Ideally the joint would have back caulking as well.

The corner mitres of the aluminum window frames have sealant that is prone to failure and should be inspected and replaced regularly. Failed sealed glazing units should be replaced promptly since they can add condensation that can migrate into the framing below the window.

3.3 Foundation Perimeter and Decks

The detail of the landscaping and foundation wall interface is not satisfactory. The soil is in close proximity with the cladding and wood substrate. We recommend all similar areas be reconfigured to allow eight inch clearance from the soil to the siding.

Many interface details at the balcony membrane and metal flashing on both buildings rely on surface applied caulking. We recommend that these areas have the siding removed and that proper membrane details be installed at some time in the future. Monitor and repair caulking in the meanwhile.

We reviewed the balcony drip through type decks. The majority of these decks demonstrate rot conditions. The decks are attached to the buildings most are in need of repair. Several decks have been repaired and are protected by a vinyl membrane. At these locations, the membrane does not appear to extend up the wall behind the siding and building papers for a minimum of eight inch return. The sliding doors were not removed and the membrane was terminated on to the flange and sealed with caulking. All decks, both the original and the vinyl decks, upgraded should be repaired correctly. There are structural concerns of the repair at the previously unrepaired decks which include the tie ins to original structural components. The original components (we have been told) were left insitu in a deteriorated condition.

3.4 Roof Membranes

The roofing on the buildings was reviewed. The flat roof membrane is a two ply SBS product and will require regular inspection and maintenance. The roof exhibits good slope and drainage.

The droid shingle roof is in good condition at this time.

Debris should be removed from roof areas and gutters at least once a year or more frequently if required. Frequent removal is generally necessary in areas of pronounced foliage.

The chimney enclosures and decorative chimney caps exhibit surface rusting (even though they have been painted). The condition should be monitored and replaced as necessary.

3.5 Caulking and Painting

The details on this complex which require caulking include the interfaces between the cladding and dissimilar materials, such as the vertical joints at the window and door jambs or at the trim board and wall interfaces. We caution against caulking installed at horizontal joints since caulking applied at horizontal locations may cause water to be trapped. Any vertical joints at interface or dissimilar materials such as wood to metal should have a properly engineered caulking joint. A thorough inspection and repair program by a qualified caulking contractor should be undertaken as part of a siding detail repair program. Inspect for missing or discontinuous caulk, remove and replace caulk that has dried, hardened, lost adhesion with the substrate, or which has lost cohesion as exhibited by splitting, cracking, or checking.

The wood trims on the project require inspection, repair, and repainting. The joints in the wood should be filled and sealed. Any cracks or checks should be similarly repaired. The painting contractor should be instructed to advise of any locations of rot or where conditions may lead to the deterioration of the wood trim.

3.6 In-Suite Humidity

An additional possible source of high moisture behind the siding is moisture escaping from the suites caused by high humidity within the suites. This humidity will permeate through the exterior wall assembly at poorly sealed penetrations and condense at the colder points in the wall cavity such as near corners or at openings, which are generally less adequately insulated. The suites are not equipped with dehumidistats in the bathrooms in order to reduce the in-suite humidity to acceptable limits. The dehumidistats will detect excessive moisture and cause the bathroom fan to start and stop automatically to exhaust the moisture. The occupants must maintain the in-suite humidity at acceptable limits. The correct year round setting for this location is 40%. The occupants should be advised to use the kitchen and bath exhaust fans when moisture producing activities are ongoing. The dryer exhaust ducts should be checked for proper connection or blockage. Occupants should clear the dryer lint trap after every use. An indication of high in-suite humidity is condensation on the interior glass surface of the windows, particularly on a cool morning.

4 INVESTIGATION, REPAIR, AND MAINTENANCE

The moisture content testing did not disclose any unacceptable locations of moisture in the substrate except at the decks. This may indicate that the deficiencies discussed in this report may not be of immediate concern or that the drying ability of the wall assembly is adequate. It is possible the unusually dry conditions this season are skewing moisture probe results. The Owners have the option to monitor the buildings and make appropriate repairs as they become necessary. This will require regular inspection and moisture sampling.

The Owners may wish to delay painting of the project until it is decided which maintenance program they choose to proceed with. In the meanwhile, a comprehensive caulking program should be undertaken under close supervision. The Owners must consider the possibility of repairs of the reverse lap conditions and deficient detailing in the future, regardless of the caulking to be undertaken.

4.1 Investigation and Budget

Further invasive testing should be considered and performed with contractor assistance at specific locations to confirm the extent of reverse lap conditions and poorly constructed details. This information will assist in determining the best methods of repair, and in setting detailed budgets for ongoing maintenance and repairs. Discussions with the Strata will be necessary in order to determine the general repair methods the Owners will wish to undertake and over what period of time.

4.2 Repairs

Repairs of unsatisfactory conditions as noted in this report or as confirmed by further destructive testing should be performed as soon as possible. This will place the building cladding and trims in an appropriately upgraded condition, and extend the service life of the cladding with proper care and maintenance. The recommendations are summarized below in the general order in which they appear in the report, and not as a prioritized listing:

- Consider additional moisture sampling early next year after repairs and after a normal rainy season (recommend January to April).
- Window head flashings and reverse laps should be corrected or the detail monitored for water ingress.
- The reverse lap condition at the window sills should be corrected or closely monitored. Correct or closely monitor the reverse lap at the interfaces of the siding and base flashings.

- Correct or closely monitor the reverse lap at the interfaces of the siding with flashing at the wood trim.
- Correct or closely monitor the reverse lap at the interfaces of the siding with flashing at the wood trim.
- Correct the interface details at the balcony membrane and metal flashing. We recommend these areas have siding removed and proper membrane details installed. Monitor until the work is completed. All decks should be repaired and the recently repaired decks revisited and determined if they need to be brought up to Code.
- Exposed areas with reverse lapped balcony membranes should have the siding removed to allow extension of the membrane.
- The landscaping and foundation wall interface detail should have the soil cribbed away from the wall of the building and a drainage layer installed.
- Install rain gutter down pipes where necessary.
- The chimney enclosures metal capping requires surface preparation and painting, or replacement as required.
- Inspect, repair, and repaint wood trims, subject to other repairs discussed previously (especially at the BAY WINDOWS). The joints in the wood should be filled and sealed and any cracks or checks should be similarly repaired. Repainting in the near future is advised since the wood has now reached equilibrium and further splitting is less likely.
- The cedar siding is brittle and needs to be maintained.

4.3 Maintenance

The following instructions were prepared by request of the Strata Corporation for use as general guidelines for the maintenance of the building envelope of the buildings located at 3300 Flagstaff Avenue, Vancouver, BC. The instructions are for the sole use of the Owners of the above mentioned building only. The use of the instructions by any other party on any other building is not permitted without the prior written consent of the Consultant. These instructions should be reviewed by the contractor and the construction phase building envelope consultant and agreed to in writing prior to implementation. Liabilities and warranties may otherwise be voided.

Aqua-Coast Engineering Ltd. recommends the maintenance and inspections described in the following sections be performed by qualified trades only. The frequencies indicated with each maintenance activity is the minimum recommended. Additional maintenance should be performed in response to complaints and observations from the Owners and Strata Council annual maintenance items should be performed in the spring or

early summer when adequate dry weather occurs to allow sufficient time for the proper repair of any defect, well in advance of the next rainy season. The rainy season in the Lower Mainland generally begins late October or early November and extends into March or April of the following year. The exception is the roof drain and gutter cleaning, which should be done in late fall, after trees have shed and prior to the rainy season.

4.3.1 Wood Siding and Wood Trim

- The wood trims and wood siding are applied directly to the building paper and sheathing with no allowance for drainage. Moisture content sampling should be performed annually to check for trapped moisture. An approved building envelope consultant should be hired to perform this work, and will select probably problem areas by close observation and review of previous conditions.
- Annually inspect all siding and wood trim for signs of failure or damage. Inspect wood trims for signs of cracking, open joints, or staining caused by excessive moisture.
- Annually inspect all flashings for integrity ensuring all sections are securely fastened and all joints are properly attached and sealed.
- Annually inspect all sealants for any signs of failure such as loss of adhesion and cohesion, and for drying and cracking.
- Annually inspect all vents for blockages. Dryer lint around a dryer vent is an indication the dryer lint trap is not cleaned after each use. This may contribute to blocked ducts and lead to unacceptable in-suite humidity.
- Annually inspect all penetrations through the cladding including wires, pipes, vents, and fasteners. Ensure all penetrations are sealed at the top and sides.
- Cleaning of the exterior cladding is not a maintenance requirement to ensure adequate performance of the building envelope. If cleaning is required for cosmetic reasons, only low pressure washing should be performed with brushes using clean, potable water. Do not use soaps, detergents, cleaning agents, or any chemicals or solvents. Water spray should be directed in a downwards angle and avoid spraying into openings or caulking joints.
- Siding on the chimney chases has deteriorated. This siding should be replaced and roof crickets installed on the upslope side (see Photos 14 and 15).
- Annually (fall) shut off all exterior hose bibs and disconnect garden hoses prior to onset of freezing temperatures to prevent cracking of pipes due to freezing.
- Dehumidistats should be installed to minimize the potential for elevated indoor humidity.

4.3.2 Windows and Patio Doors

- Annually inspect all windows and patio doors for damage including frame damage, cracked glass, condensation within the sealed units, and leaking into the suites.
- Annually inspect the frame miter sealants and replace as required.
- Annually inspect all flashings around the windows and patio doors for signs of failure.
- Annually inspect window and door flashings for integrity ensuring all sections are securely fastened and all joints are properly attached and sealed.
- Instruct occupants to observe moisture on the glazing, particularly on colder days, and report to appropriate party. Moisture that forms on the warm side of the window glazing and can be wiped off by the occupants is a sign of excessive humidity in the suite. Investigate for properly used dehumidistats, exhaust fans, and blocked exhaust ducts and vents. Moisture that forms in the air space between the two layers of glass indicates a failure of the sealed unit and prompt replacement is recommended.
- Annually inspect and test moisture in the framing around the window and patio door openings.
- Refer also to window manufacturer's warranty and maintenance information.

4.3.3 Roof Membranes and Duroid Shingles

- Annually inspect membranes for any signs of wear or failure and correct as required. Obvious signs of distress include blistering and membrane delamination. Inspection should be performed by a qualified roofing contractor or building envelope consultant.
- Annually inspect flashings for integrity ensuring all sections are securely fastened and all joints are properly attached and sealed.
- Weekly during rainy season, inspect all drains for blockages and membrane wear or failure, or loss of adhesion with drain rim. Ensure all drain screens are in place and adequately restrained. Clear debris from drains.
- Inspect all plumbing vents and flashings. Ensure all caps are in place. Inspect all vents. Clear all obstructions.
- Bi-annually inspect roof shingles for lifting or splitting. Annually inspect gutters and down pipes for leakage or blockage and repair or clean as required. Inspect gutters from below for joint leakage and repair as required.
- Annually inspect gutters and down pipes for leakage or blockage and repair or clean as required. Inspect gutters from below for joint leakage and repair as required.

- Refer also to manufacturer's and installer's warranty and maintenance information.

4.3.4 Caulking and Painting

- Bi-annually inspect caulked joints for indications of failure such as excessive drying and hardness, cracking, loss of adhesion, or loss of cohesion. Remove failed caulk, clean substrate, install bond breaker as required, and replace with new material in accordance with manufacturer's recommendations. Avoid horizontal caulking except after careful analysis of the condition.
- Bi-annually inspect the painted wood surfaces for deterioration. Observe scaling or loose paint, signs of excessive moisture, open joints and cracks, and loose material. Refasten, seal and caulk, remove loose coatings by scraping, and prime and repaint during favorable weather conditions with compatible products.

4.3.5 Balcony Decks

- Rebuild all drip through type balcony decks with properly detailed membraned assemblies.
- Ensure all structural components at tie-ins to buildings are sound. Replace deteriorated wood components as required.
- Review the previously repaired decks for appropriate attachment to structures. Repair to meet Building Code requirements.
- At new balconies, adequately slope, install protective membranes, and install face mounted guard rails.

4.3.6 Other Concerns

- All occupants must pay close attention to any incidents that may indicate water ingress is occurring inside the suites and common areas. A conscientious effort must be made by all occupants to record any problems promptly and report them to a designated party. Successful repair of water ingress problems requires proper recording of all pertinent conditions including date, time, weather, wind direction, frequency and prompt action to repair the problem. Signs which may indicate water ingress include: and traces of visible water inside the suites and on the balcony soffits (ceilings), water stains on wall or ceiling finishes, dampness.
- Occupants should notify the appropriate party of unusual moisture or other concerns anywhere on the project.
- Set dehumidistats at 40% year round. Occupants must be instructed to use kitchen and bathroom exhaust fans whenever any steam or water vapour is generated inside the suites. Excessive humidity in the suites may diffuse into the exterior walls and roof and cause condensation to occur. Avoid spilling water or liquids on the floors or

window ledges. Wipe up spills promptly. Monitor windows for condensation, which is a sign of excess insuite moisture.

5 SUMMARY

The repairs and maintenance work recommended should be scheduled in the near future to prevent possible water ingress and the associated deterioration of the substrate. We are available to review the contents of this report at your convenience.

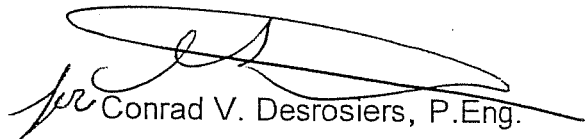
Aqua-Coast Engineering Ltd.

Prepared by:



Gary Fish

Reviewed by:



per Conrad V. Desrosiers, P.Eng.

6 APPENDIX A: Moisture Content Test Results

TESTING REPORT DATA

COMPASS POINT FLAGSTAFF VANCOUVER BC

UNIT NUMBER	READING %	LOCATION	Elevation
3391	8.5%	Trim board above garage door bay window	N
"		Paper reverse lap	
"	7.0%	Test holes/ lower left corner bay	E
"		Rear deck/beam not papered - post not attached	S
"	ROT	Correctly /deck boards rot	S
3389		Left side patio wall above concrete	S
"	12.0%	Base of patio post	S
"		Center column (Photo)	S
"	ROT	Column base right	S
3387		Corner of small deck (note previous repair)	S
"	ROT	Not to Code (ROT) present	S
"		Upper deck repaired no deck cost applied (Photo)	S
"	12.5%	Left corner window 2nd floor	S
3389 Front	7.8%	Trim board upper window entry	N
3385		Rear corner deck post loose	S
"		Bay window trim reverse lap	S
3381	ROT	Joists at deck (photo)	S
		Rear deck replaced	S
	10.2%	Bay window trim reverse lap	S
3379		Bathroom front window reverse lap	N
		Upper corner window at entry trim has popped	
3377			S
3371		Outside deck beam rotten	S
	12.0%	Bay window lower trim reverse lap	E
3367		Reverse lap front bay window lower left trim board and top flashing	N
3361	7.5%	Reverse lap rear bay window lower left trim board	S
		Under deck joist (Photo)	
3359		Lower corner bathroom window trim reverse lap	N
3357		New vinyl deck (no info on tie in)	S
	11.0%	Lower bay window reverse lap	
3355		Deck beam rear not fastened correctly.	S
		Reverse lap side bay window west	
3351		Bay window reverse lap	N
	9.4%	Corner garage wall	E

TESTING REPORT DATA

COMPASS POINT FLAGSTAFF VANCOUVER BC

UNIT NUMBER	READING %	LOCATION	Elevation
3349	9.0%	Front bay window trim/ staining on bay siding	N
"		Reverse lap/ upper flashing(photo)	
3345			N
3341	Probed	Rear deck corner deterioration right / beam at corner	
"		not Wrapped South bay window trim rev lap	S
3339	ROT	Corner of deck beam and deck rot present	S
"			
3337	12.6%	Front Bay / Trim also reverse lap	N
"		Bathroom window lower corner /reverse lap	
3335		New vinyl deck / mechanically fastened to outside	
"		New railings top mounted / under mount no blocking	S
3331			
"			
3329	ROT	Lower deck rot / joists and beam (Photo)	S
"	9.5%	Front bathroom lower corn trim reverse lap	
3327	ROT	Lower deck rot / joists and beam (Photo)	S
		Bay window reverse lap	S
		Original repair on deck were not resloped	S
3325			N
			N
3321	10.0%	Side bay tested / reverse lap	W
Vent	7.0%		N
3319 Rob		Heavy rot was found before repair initiated / unable to asertain	N
		damage to interior	N
3317	11.0%	Main bay window reverse lap / bathroom trim reverse lap	N
"		Lower bay window reverse lap / bathroom trim reverse lap	
3315		Lower bay window reverse lap / bathroom trim reverse la	N
3313	7.0%	Reverse lap at front main bay window	N
		Upper bathroom window / and flashing reverse lap	N
3309	ROT	Lower deck rot (interior damage unknown)	S
		Lower bay trim reverse lap	S

TESTING REPORT DATA

COMPASS POINT FLAGSTAFF VANCOUVER BC

UNIT NUMBER	READING	LOCATION	Elevation
3307		Soffit problem / rear patio	S
3305	ROT	Bathroom window trim board reverse lap Lower deck rot / upper deck rot	S
3303		Bathroom window trim board reverse lap	N
3360		Work in progress on deck repair	N
3354	8.0% 9.5%	Front bay / reverse lap Seal failure top bay reverse lap window header	N
3350	8.2% 7.5%	Front entry lwr bay window rear Side bay lower trim	N W
3346	8.0%	Front bay window trim left side	S
3344	ROT ROT	Deck rot Lower and upper deck signs of rot	N
3342	7.5% 40.0% ROT	Above front bay also reverse lap / flashing Rear deck rot	S
3340	12.0% 8.5%	Rear patio deck interface rear patio post	N N
3326	9.0% 10.5%	Bay window upper left corner Side bay window under trim	E
3324	10.0% ROT	Beneath beam Photo deck lower	E S
3322	9.0% ROT	Reverse lap on bathroom window lower trim Deck (Photo)	S S
3320	10.0%	Bay window west	W
3316	ROT ROT	Rear deck shows rot Rear deck shows rot	N/W N
3314		Reverse lap bathroom trim	S N
3310	10.0% 2.0%	Side bay left side at lower trim Frnt bay (reverse lap)	W
8022	9.0%	Front bay	E

TESTING REPORT DATA

COMPASS POINT FLAGSTAFF VANCOUVER BC

UNIT NUMBER	READING	LOCATION	Elevation
8018	8.0%	Front bay/ rear deck 7% post and beam	W
		Front bathroom window under trim reverse lap	
8014	8.5%	Bathroom window lower corner / reverse lap	E
		Front bathroom window under trim reverse lap	
8010	7.0%	Bathroom window lower corner / reverse lap	E
	4.0%	Rear deck post	E

7 APPENDIX B: Budget

See attached Columbia Restoration Company Ltd. letter dated September 5, 2006.

Aqua-Coast Engineering Ltd.
#24 – 15531 – 24th Ave.,
Surrey, BC, V4A 2J4

Attention: Gary Fish, Conrad Desrosiers

RE: REPAIRS AT COMPASS POINT

Please find below the various pricing that Gary Fish and I discussed on Friday, September 15.

I have provided pricing on the two types of bay windows as well as the two styles of balconies.

Single Bay Window:

- set up scaffold
- remove the existing wood trims and 3 aluminum windows and dispose
- cut back drywall and sills to accommodate new windows
- install peel and stick at sill
- install 3 new vinyl windows
- install new wood trims and paint to match existing, install blinds
- install backer rod and caulk window perimeters

Price per Bay: \$ 4,468.00 plus GST

Double Bay Window:

- set up scaffold
- remove the existing wood trims and 6 aluminum windows, wood siding between windows and dispose
- cut back drywall and sills to accommodate new windows
- install peel and stick at sill
- install 6 new vinyl windows
- install new wood siding, trims and paint to match existing, install blinds
- install backer rod and caulk window perimeters

Price per Bay: \$ 9,554.00 plus GST

Large Balcony:

- set up scaffold
- remove the existing wood trims and 1 patio door, wood siding, deck membrane and framing, balcony guard rail and dispose
- reframe balcony at new lower location using new lumber
- install new plywood sheathing
- install new 60 mil vinyl deck membrane
- install 1 new vinyl patio door
- install new wood siding, trims and paint to match existing, install blinds
- install backer rod and caulk window perimeters
- install new face mounted aluminum and glass hand rails

Price per Bay: \$ 8,600.00 plus GST

Double Balconies:

- set up scaffold
- remove the existing wood trims and 1 patio door and 1 window, wood siding, deck membranes and framing, balcony guard rails and dispose
- reframe balconies at new lower location using new lumber
- install new plywood sheathing to the 2 balconies
- install new 60 mil vinyl deck membranes
- install 1 new vinyl patio door and 1 new window
- install new wood siding, trims and paint to match existing, install blinds
- install backer rod and caulk window perimeters
- install new face mounted aluminum and glass hand rails

Price per Bay: \$ 10,935.00 plus GST

If you have any questions please feel free to contact me at any time at our office at 604.574.1580 or on my cellular at 604.968.4548.

Thank you,

THE COLUMBIA RESTORATION COMPANY LTD.

Rick Snelgrove

Rick Snelgrove
President

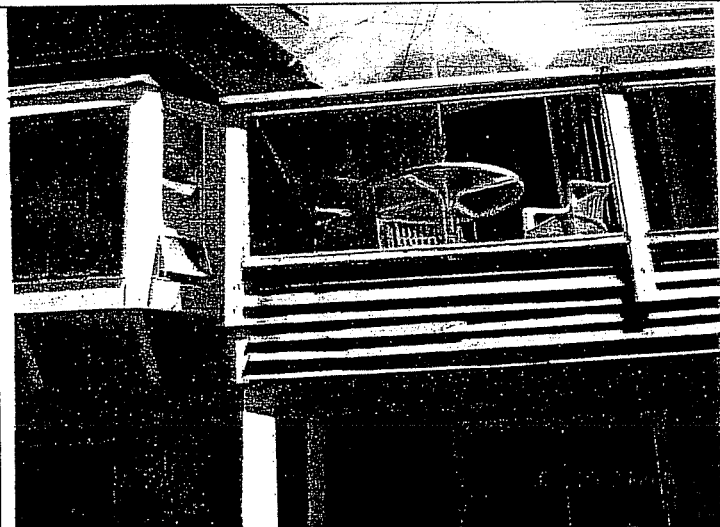
8 APPENDIX C: Photographs

APPENDIX C: Photographs



1- Previous repair of existing deck showing water ingress through vinyl

COMPASS POINT VANCOUVER



2- Previous repair of existing deck showing water ingress

COMPASS POINT VANCOUVER



3- Previous repair showing structural concerns. Appears existing joist which was cantilevered has been cut and new joist sistered on to it. Structural Engineer will have to review and comment.

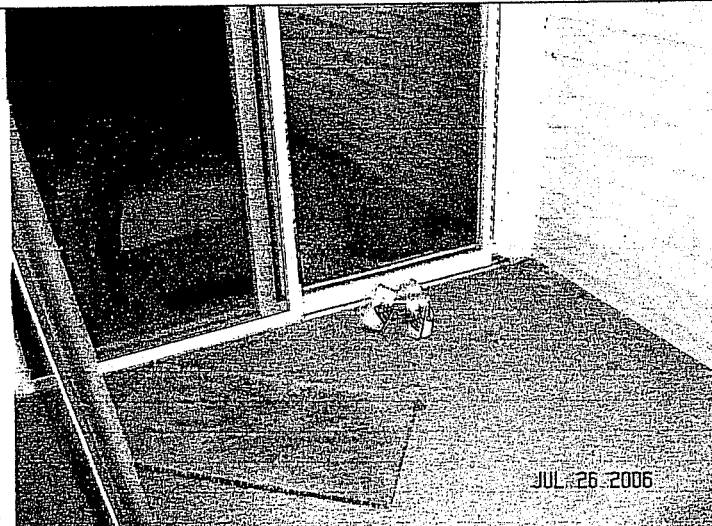
COMPASS POINT VANCOUVER

APPENDIX C: Photographs



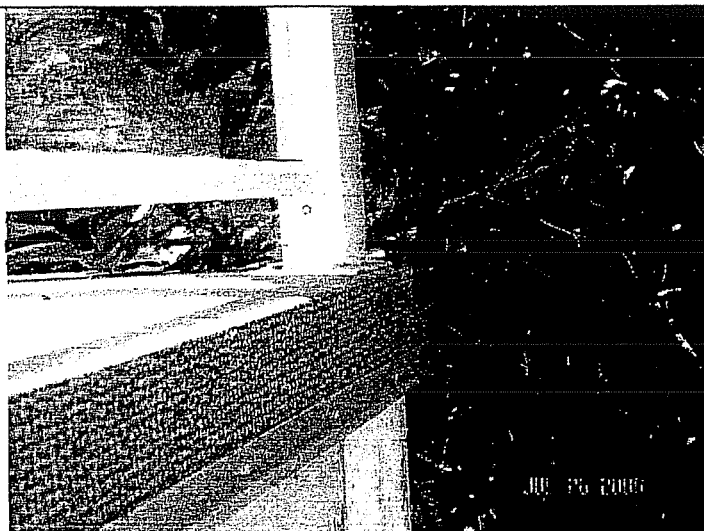
4- Original drip type deck showing rot at out side corner

COMPASS POINT VANCOUVER



5- Previously repaired deck showing door was not removed resulting in vinyl being caulked to flange at sill. Membrane should return into sill opening to create a "dam"

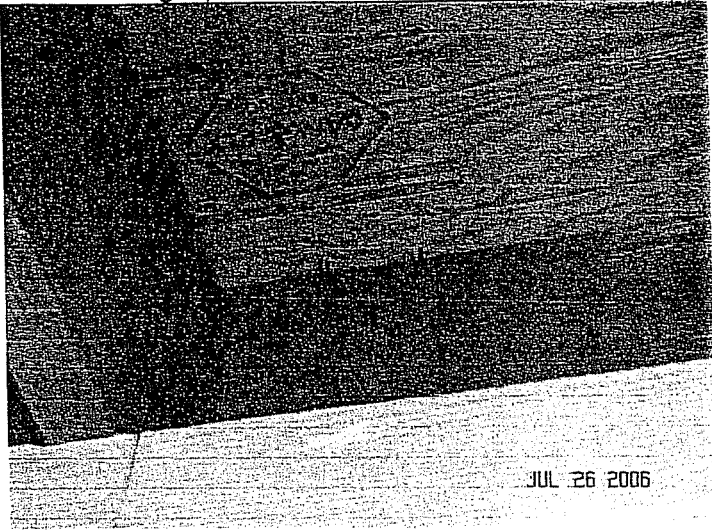
COMPASS POINT VANCOUVER



6- New railing top mounted. No neoprene washer between membrane and bottom of post

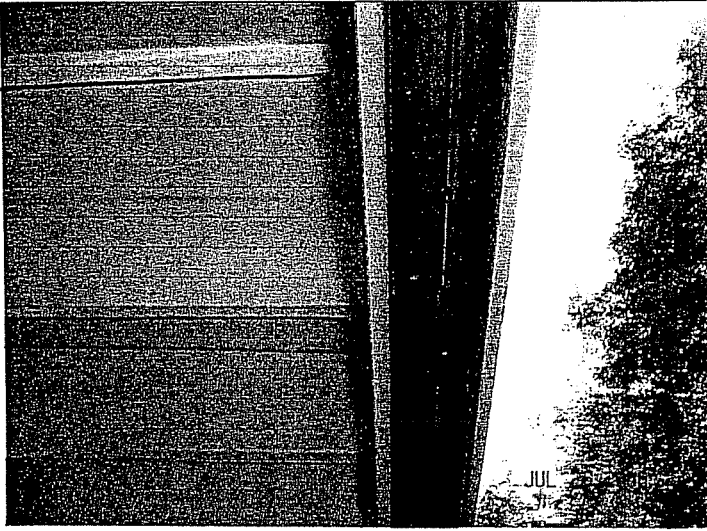
COMPASS POINT VANCOUVER

APPENDIX C: Photographs



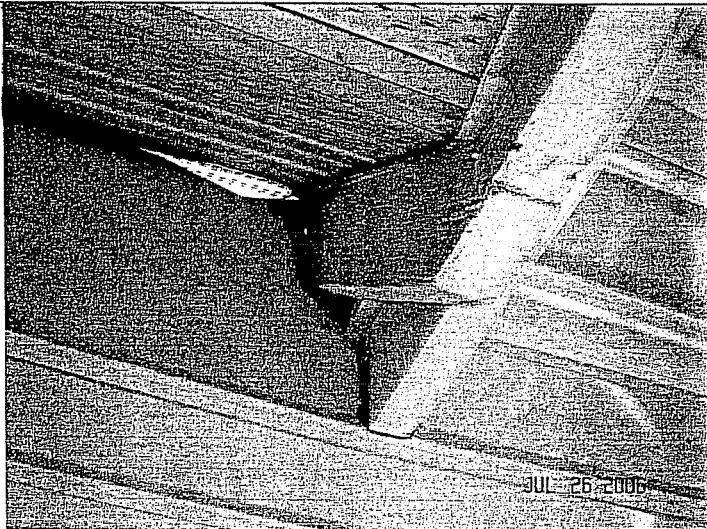
7- Note there is no blocking where railing post attached to sheathing

COMPASS POINT VANCOUVER



8- Previously repaired deck showing 2 x 10's at outer edge have not been nailed correctly. Note the gap between the two. Structural Engineer will need to review and comment.

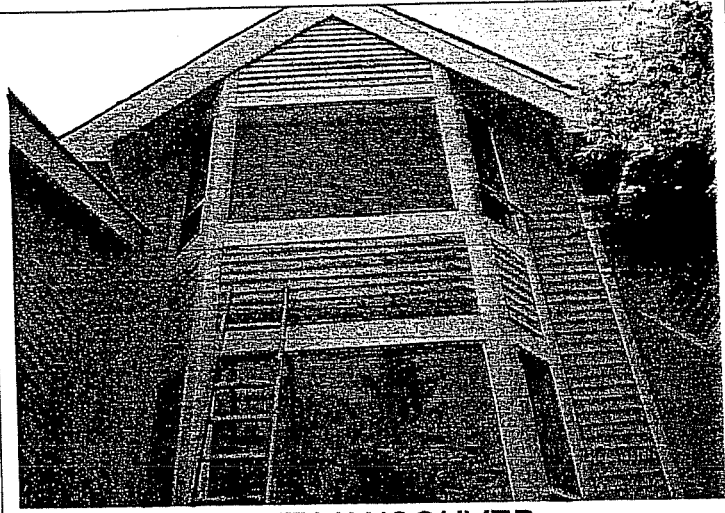
COMPASS POINT VANCOUVER



9- Canopy has not been flashed at interface with main structure

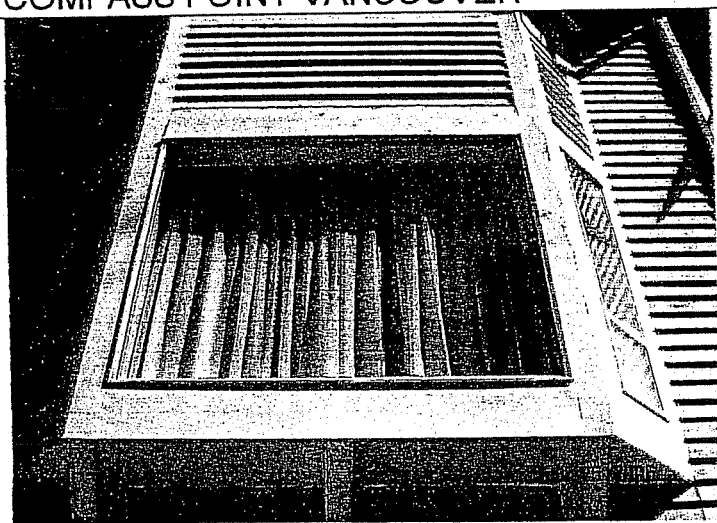
COMPASS POINT VANCOUVER

APPENDIX C: Photographs



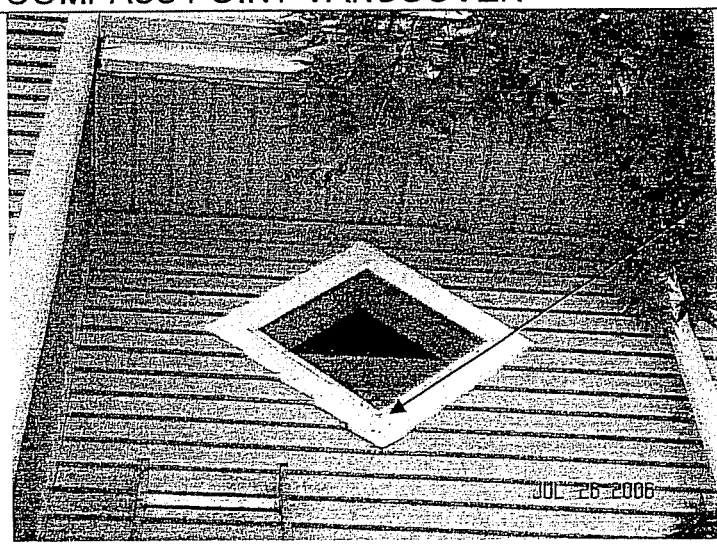
COMPASS POINT VANCOUVER

10- Bay windows appear to have been installed incorrectly. There is reverse papering at locations investigated. The paper at the jambs is not back caulked to the flange



COMPASS POINT VANCOUVER

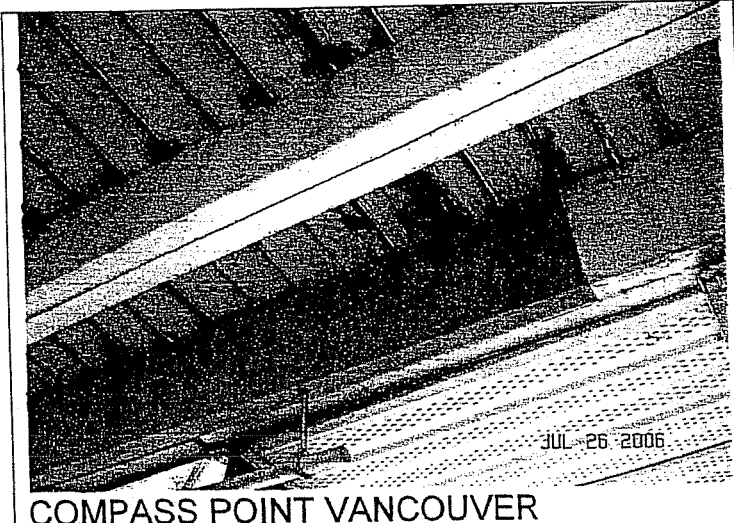
11- Bay windows appear to have been installed incorrectly. There is reverse papering at locations investigated. The paper at the jambs is not back caulked to the flange. Note there has been shrinkage of the trim boards around the windows and that has resulted in heavy caulking being used to fill the gaps



COMPASS POINT VANCOUVER

12- Bathroom windows are not detailed correctly regarding the installation and papering. Water could enter behind building paper at lower portion of the window and flow behind the paper.

APPENDIX C: Photographs



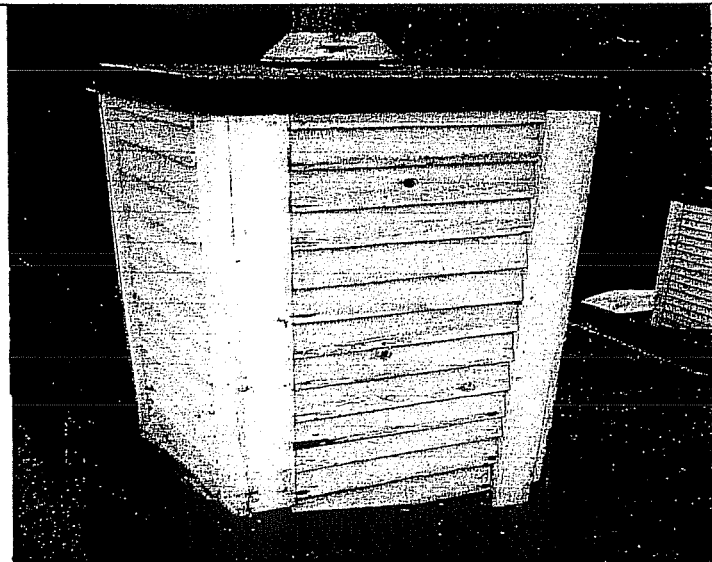
13- Previously repaired deck showing sistering of joist not to code. Structural Engineer to advise

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14- No crickets at top side of chimney chases can result in debris and or snow build up. Note siding rotting at bottom. These chases need to have siding removed repapered then installed correctly

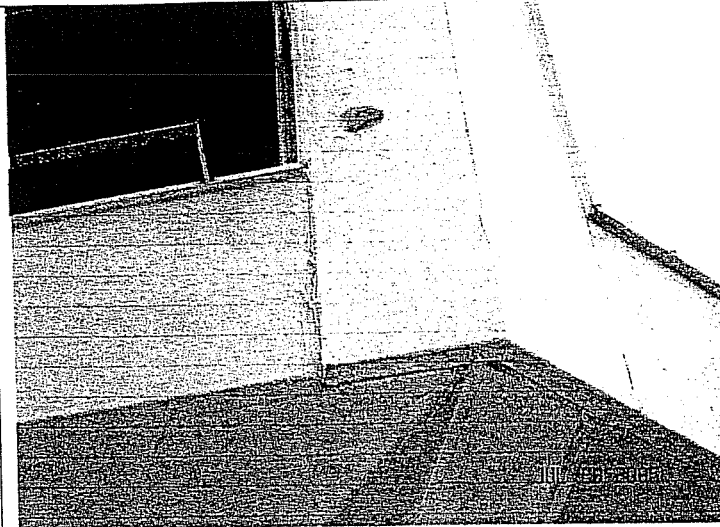
COMPASS POINT VANCOUVER



15- Chimney chase showing siding needs replacing. Should have a cricket installed on upslope side to direct water past chimney.

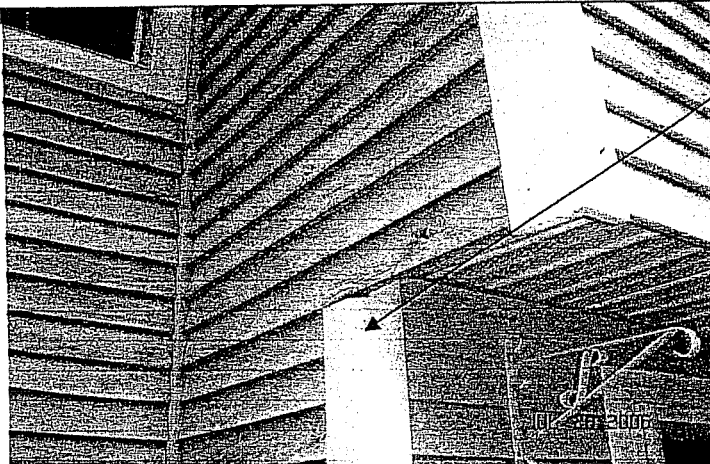
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APPENDIX C: Photographs



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16- Excessive caulking at window trim boards. Note no 3/8" gap between trim board and window frame to allow for backer rod and caulking



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17- Corner boards require flashing in many location where they extend past the bevelled siding



COMPASS POINT VANCOUVER

18- One layer of 30 minute building paper with lapping at 4" was used on the buildings

APPENDIX C: Photographs



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19- There should be approximately 8" clearance between the bottom of the siding and the ground . See photo # 20



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20- There is the required clearance between the dirt and the bottom of the siding in this instance.

9 APPENDIX D: Terminology

ACE AQUA-COAST ENGINEERING LTD.

Balcony An above ground walkway or platform connected to the outside of a building.

Building Code Published regulations controlling design, construction, quality of materials, use and occupancy, and location of structures within the area for which the code has been legally adopted.

Building envelope The entire assembly of the exterior skin of a building including cladding, sheathing papers, windows and doors, joint sealants, and roof, balcony, parking roof, and deck membranes.

Building paper A general term used to describe a heavy paper, usually asphalt impregnated for water resistance, and used under exterior cladding. Product performance is measured in minutes of resistance to moisture penetration, as in 30 minute or 60 minute ratings.

Built-up roofing (BUR) A roofing system "built-up" with layers of sheet felts and asphalt. The asphalt provides the waterproofing and the felts act as the reinforcement.

Capillary action The tendency of water to rise in a network of small spaces, caused by the surface tension of the water. In a rain-screen assembly, a gap is provided between the parallel layers of material to break the surface tension of water and promote rapid passage of water to the exterior via through-wall flashings.

Cladding The material used on an exterior wall to protect the structure and interior spaces from environmental forces. Types of cladding include stucco, vinyl siding, brick and concrete, stone veneer, wood siding, and EIFS.

Concealed barrier A cladding assembly such as vinyl siding that relies on the building papers or house-wrap to provide the primary defence against moisture and air infiltration.

Deck An exterior area similar to a balcony, but usually located over an occupied part of the building.

Efflorescence A white powder-like deposit appearing on the surface of concrete, stucco, or brick. It is generally caused by soluble salts within the material being carried to the surface by moisture and deposited as a residue when the water evaporates.

EIFS Exterior Insulation Finishing System (EIFS) is composite cladding system which consists of insulation board fastened to an exterior grade gypsum board on steel stud framing; a fiber mesh and acrylic based stucco product (primus) is applied to the insulation complete with a finish coat. The cladding is a "face-sealed" assembly, and depends on the acrylic coating and the caulked joints at interfaces to prevent moisture ingress. By its very nature this cladding system requires constant monitoring and immediate repair should deficiencies become apparent.

Face-seal A building envelope strategy, which depends on the cladding and windows and associated sealants to shed water. No ancillary method of positive drainage is provided behind the face sealed exterior. This system is prone to failure.

Fascia is the exposed vertical edge of a roof or balcony deck.

Flashing Sheet metal weather protection utilized at details that are subject to movement, or details having membranes that require protection from mechanical or environmental damage. Common flashing types and usage include:

- Cap flashing: on parapet walls, columns or chimney enclosures
- Head or sill flashing: above or below a wall opening to effect the transition between dissimilar materials or assemblies
- Saddle flashing: A three dimensional flashing, usually welded, and installed in a location where 3 or more planes intersect, for example at the interface of a parapet wall cap flashing with the main building wall.
- Through-wall flashing: A flashing that extends from behind the sheathing paper material, across the cladding, and extends outside and slightly down over the cladding, and is shaped to redirect incidental moisture to the exterior side of the cladding.

House-wrap A sheet polyethylene material used as a sheathing paper between the wall sheathing material and the exterior cladding. One common type of house-wrap consists of Spun-Bonded Poly-Olefin; another is made of perforated polyethylene. Their resistance to liquid water is high, but resistance to water vapour is lower than many common "vapour barrier" materials. These products are used primarily as air barriers in buildings.

Insulating glass Glazing units consisting of two pieces of glass spaced apart, usually ½ inch, and hermetically sealed leaving air or inert gas in the space to provide improved thermal efficiency.

Maintenance Regular inspection of the building envelope and systems including roof, walls, windows, gutters, downspouts and drains, followed by the cleaning and repair of those items as required.

Moisture content The amount of water contained in a sample of wood expressed as a percentage.

Movement Joint A joint intentionally introduced into the building envelope to permit differential movement between portions of the building structure (expansion joint), or to control and localize cracking of materials such as stucco (control joint).

Oriented Strand Board A panel material commonly used for exterior sheathing in wood frame construction. The material consists of chips of softwood pressure bonded with adhesives into panels. This product is somewhat more susceptible to moisture damage than wood or plywood.

Parapet wall A partial height wall surrounding a balcony, roof deck, or roofing area.

Penetration An opening in the building envelope through which ducts, electrical wires, pipes and fasteners pass.

Plywood A sheathing product made by gluing several thin layers of wood together in a perpendicular direction.

Rain-screen (also drained cavity) A building envelope strategy using a positive drainage plane created immediately behind the exterior cladding material. Incidental water entering this system is allowed to drain to the exterior by way of flashings and membranes.

SBS (Styrene Butadiene Styrene) Modified Bitumens: Sheet membranes consisting of a bitumen base modified with SBS to provide improved flexibility, elasticity, and aging characteristics. Commonly used as roofing or deck membranes.

Scupper drain A type of drain passing through the vertical portion of roof curbs or balcony parapet walls.

Sheathing (See also Oriented Strand Board and plywood) Panel material used to provide structural stiffness to wall framing and to provide structural backing for the cladding and sheathing paper. Also includes exterior grades of gypsum board, and some rigid insulations.

Sheathing paper See **building paper** or **house-wrap**.

Strapping or furring The use of wood or metal strips to form a drainage cavity and to introduce a capillary break behind the cladding material.

UV Ultra-violet radiation that has a degrading effect on some membrane materials unless protected by an appropriate shielding layer such as flashings or gravels.