

## Strata NWS 3379

Documents	Version	Date	Des
Pomeroy Assessment		March 9, 2007	PCM findings.
Robert Murphy Assessment		February 21, 2007	Roberts findings, research on building problems.
Pomeroy Background Information		February 26, 2007	PCM Background information.

Please note that this assessment needs to be reviewed by a third party. (as voted upon during our last XO)

Any work to be done will be voted on by owners attending XO/AGM meetings.

Pomeroy will be attending XO on March 14<sup>th</sup> to discuss options that they provide, and bring their own budgeting recommendations.

Please also note that these are not our only options. Robert Murphy has a few options that he is following up with, and will also be brought forward at the XO.

Please write down any questions, and comments you have, and bring them to the XO on March 14<sup>th</sup>.

STRATA PLAN NWS 3379  
11595 FRASER STREET  
MAPLE RIDGE B.C  
V2X 0X7

Following the extraordinary meeting Feb. 6th 2007, I volunteered to look into some of the reported damage and work being performed on the building by POMEROY BUILDING MAINTAINANCE.

In discussions with Pomeroy employees and numerous owners and a visual look of the complex there is some damage to the patio level exterior walls encompassing some Apts. facing south and south east. These Apts. are open and exposed to all weather conditions and in particular heavy deluges of rain and gusting winds. The damage is resultant of poor water drainage which inturn allows

large amounts of water to pool around the lower areas of these south and south east facing walls. Compounding this , water is trapped between the asphalt that was laid on top of the existing concrete patio.

With this amount of water laying dormant a blotting / ingress effect occurs and water has soaked upward in some areas

Poor maintainance is contributing to the surface membrane lifting on the decks which inturn allows water to seep between the deck structural surfaces and membrane causing a bubble effect on some decks. Bad caulking has also allowed water seepage around decks.

There is isolated cases of window water leaks. Apparantly some of these windows do not have the correct latch or no latch at all.

The interior of the complex is in excellent condition and the roof also is very sound.

Keep in mind however that the roof should be inspected regularly.

Work and repairs are required and should be initiated ASAP. once a completed engineering envelope report is evaluated.

All work and tendering should follow correct procedure at all times.

regards Rob Murphy , concerned owner APT 301

# **PCM POMEROY**

CONSTRUCTION & MAINTENANCE

**BUILDING ENVELOPE ASSESSMENT AND REPORT**  
March 8, 2007

**BRICKWOOD PLACE**  
**NWS 3379**  
11595 FRASER ST., MAPLE RIDGE, BC.



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**BUILDING ENVELOPE ASSESSMENT AND REPORT**  
**March 8, 2007**

**BRICKWOOD PLACE**  
**11595 FRASER ST., MAPLE RIDGE, BC.**

**INTRODUCTION:**

During February 2007, PCM Pomeroy Construction and Maintenance was retained by the Owners of Brickwood Place to perform an investigation into the condition of the building envelope components at 11595 Fraser St., Maple Ridge, BC. The purpose of the investigation is to determine the overall and specific performance of the building envelope and to determine if any of the specific components of the building have failed and are contributing to water ingress problems which could lead to premature building envelope failure to the structure. Repair work is currently underway at the base of wall to units 106, 108 and 110 and has indicated that certain areas of the building are suffering damage from water ingress. This repair work has been delayed in it's completion until a full building assessment has been completed. This investigation is also intended to identify specific detail failures, material and component condition and performance, and to supply specific repair and maintenance recommendations. Our observations, measurements and recommendations are outlined in the following report. This report does not address the mechanical ventilation systems, indoor air quality or health concerns related to the presence of mould. This report has been prepared according to generally accepted practices of building envelope inspection and the opinions expressed are based upon our experience and familiarity with building and building envelope construction and repair practices in the Vancouver and Lower Mainland Areas and the typical problems and solutions to water ingress issues which can arise.

**SCOPE OF INVESTIGATION:**

Several methods of investigation were used to inspect the building envelope components and structural elements of the building. Sensitive and integral details and areas of the building were targeted prior to any destructive testing. These areas were probed for moisture levels using a Belmhorst – J Lite wood moisture meter with 3" deep probes to reach the building sheathing and framing structure. In stucco areas, 3/8" holes were drilled through the stucco to provide access for the probes. After recording the moisture level, the holes are sealed again using a high grade exterior urethane sealant. In areas where high moisture readings are recorded, a 3" round hole is cored through the stucco to visually inspect the building components in that area. After recording the findings the hole is sealed with a 3" round PVC louvered vent and sealed into place. In wood or vinyl siding areas, the siding is removed and a moisture reading and visual inspection is made. After recording the findings the siding is then re-installed. In soffit areas, the soffit material is removed and then re-installed after a moisture reading and visual inspection are recorded. A photo record of typical and specific elements of the inspection have been performed, some of which are attached to this report to better indicate the findings and recommendations. The roof area and all its flashing and vent components were inspected to ensure a correct installation technique and to evaluate their performance. Sensitive areas of component interface are opened up to inspect the membrane and installation elements and record the findings and moisture readings at those locations. All drains, vents, scuppers and downspouts are inspected for performance and maintenance. A visual inspection is made of the windows, doors, and any penetrations through the buildings exterior walls. All balcony and deck areas components are inspected as well. Vinyl deck surfaces, rails and fasteners, flashings, sealants and general condition are all inspected and recorded.

## BUILDING DESCRIPTION:

Type of Building / Structure	4 Storey Multi-family
Age of Building	approx. 17 years
Foundation Type	Concrete
Wall Construction and Cladding	Wood Frame / Stucco and Vinyl Siding
Roof Construction and Type	BUR and Metal Clad
Window and Door Type	Aluminum, Double Glazed
Underground Parking ( y/n )	Yes

Brickwood Place is a 4 storey wood framed multi-family residential building. It has two predominant wall cladding systems. On the South, East and North elevations a conventional sand and cement stucco system has been installed directly over a continuous layer of building paper. The building is laid out in an "L" configuration with a courtyard area on the NW portion which shall be considered as part of the East elevation. The East elevation is clad in vinyl siding installed over a continuous layer of building paper. The East elevation has an ornamental flashing band between the 2<sup>nd</sup> and 3<sup>rd</sup> floors but none of the elevations include any through-wall flashings. All balcony areas are similar in that they are surfaced with PVC deck membrane, have aluminum top mounted railing systems and a continuous vented aluminum soffit area. There is a metal flashing detail at the outside fascia area of the deck edge. In most cases, the dryer vent exhaust is located in the soffit area under the decks, other vents are located on the main wall areas of the building. The main roof area is a built-up tar and gravel roofing system (BUR) with central drains and a flashing covered curb system at the outside edge. Each unit on the upper floor has a bathroom sky-lite which opens up through the top roof. There are 13 small pitched roof areas which stand above the upper roof area which use a metal clad roof system. The windows on the project are non-thermally broken extruded aluminum frames with double glazed sealed glazing units. The mitres are screwed together and sealed in the mitre with a factory applied small joint sealant. The windows were installed with a small head flashing only. Stucco finishes were installed tight to the window frames without stucco stops or sealant. In vinyl siding clad areas no sealant was installed at the window frame areas. None of the other wall penetrations were sealed to the cladding. The expansion joints in the stucco clad areas were sealed in a previous repair with a clear caulk sealant of unknown composition.

## OBSERVATIONS:

### 1.0 Deck and Wall Areas

207 individual moisture readings were recorded from areas which encompass the entire exterior wall area of the building. Of these 207 readings, 103 were with the 3" deep probes and 104 were 3" round core holes. The following Table breaks these readings into 4 very distinct areas of the building to better identify the actual problem areas and to better present the information. These areas are identified by the wall cladding type and location, therefore, the 4 areas are: Deck and Soffit Areas in Stucco Clad Areas, Wall and Window Areas in Stucco Clad Areas, Deck and Soffit Areas in Vinyl Siding Clad Areas, and Wall and Window Areas in Vinyl Clad Area. To interpret the readings and understand how they relate to the building envelope the following guideline is used:

Moisture Reading	Description:
18% and Less	Acceptable reading, no indication of water ingress
19% to 22%	Some water ingress, potential for trouble if not corrected
23% to 29%	Unacceptable moisture level indicating active water ingress providing an active mould growth and structural decay environment, requires immediate correction.
30% and above	Water saturated environment indicating complete building envelope failure, structural damage likely occurring already, requires immediate attention

**Table 1.1 Deck and Wall Area Moisture Level Readings:**

Location	18% and Less	19 to 22%	23 to 29%	30% and Above	Total By Area
Deck and Soffit Areas, Stucco Clad Walls	5	8	11	31	55
Window and Wall Areas, Stucco Clad Walls	55	9	3	3	70
Deck and Soffit Areas, Vinyl Clad Walls	16	3	6	25	50
Window and Wall Areas, Vinyl Clad Walls	30	0	1	1	32
Totals	106	20	21	60	207

**Summary of Table 1.1**

Out of the 207 total moisture readings, 106 ( 51.2% ) indicate acceptable readings, 20 ( 9.7%) indicate some water ingress, 21 ( 10.1%) indicate active water ingress, and 60 ( 29%) indicate a saturated environment with complete building envelope failure with structural decay likely.

When we examine the readings by area it is important to understand that 73 of 82 readings which indicate active water ingress are in the deck and soffit areas in both the stucco and vinyl siding clad areas, and that 56 of 60 readings which are 30% and above are in these areas. By contrast, the window and wall areas of the building indicate a completely opposite result where only 8 of 102 readings indicate active water ingress.

**1.2 Visual Observations, Deck and Wall Areas:**

1. Aluminum soffit panels were removed from the underside of all of the deck areas. In many cases, the dryer vent exhausts through a soffit vent installed into the underside of the soffit. In every case, the duct work was not mechanically fastened to the exhaust vent, the vent was clogged with dryer lint, and the warm moist air from the dryer is venting directly into the joist area of the soffit. These areas were dripping with water and most had active and aggressive mould growth underway. Structural damage to the joist system was underway in several cases.
2. The deck railing systems are a "surface mounted" type, which is to say that the foot of the rail is fastened directly through the vinyl deck membrane and the holes are then sealed with a caulk sealant to prevent water from penetrating the deck surface. In most cases the sealant has not been maintained and has reached the end of it's serviceable life. In several cases water has penetrated the vinyl membrane and has caused structural damage to the joists and sheathing below.
3. None of the deck areas incorporate a deck edge diverter to keep water from traveling along the interface with the stucco wall surfaces at the deck edges and instead rely upon a caulk joint at this location. This caulking has failed in many cases and water ingress damage is evident to joists, deck sheathing and wall areas at these locations. A previous repair was performed at several locations on the South and East elevations at the deck edges which did not prevent this type of water ingress. In the deck areas directly above units 106, 108 and 110 wall areas were opened up for inspection with several problems noted which include: insufficient vinyl "boot" at deck edge, back-lapped building paper and deck membrane, insufficient "tie-in" between new building paper and existing, no deck edge diverters. In the areas opened

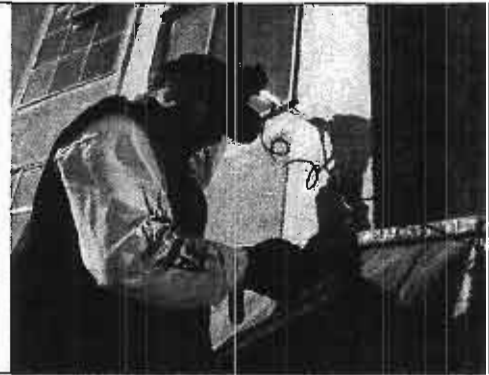
up, the wall sheathing was water saturated behind the repaired building paper and vinyl deck membrane and considerable structural damage was visible to the framing members below the deck edge.

4. 7 deck areas have holes and / or cuts in the vinyl deck membrane surface which have been left unrepaired. At least 3 units have had their vinyl deck membrane replaced, in all cases the vinyl was simply terminated beneath the stucco stop at the wall edges and is delaminated allowing water beneath the deck membrane surface.
5. The large 4<sup>th</sup> floor deck on the NE corner ( 416?) was reviewed specifically because of the large amount of staining visible to the underside of the soffit below it. Upon examination the following significant concerns were noted:
  - The vinyl had been replaced previously with a new surface placed over the previous surface. This installation terminated under the stucco stop only ( 1-1/2" upturn ) and was de-bonded along its entire length allowing water easy access to the wall and deck surface below.
  - There were four large soft and spongy areas of the deck surface which indicate the deterioration of the deck sheathing below.
  - There was no deck overflow scupper to the deck area.
  - This is a large cantilevered deck area with a support beam running perpendicular to the building at about the centre point. The soft deck areas are above this beam location and damage to this beam must be considered as serious.
  - The pitched roof area to the south of the deck area drains onto the deck surface and uses some questionable roofing and membrane practices. Roofing membrane has been bonded on top of the vinyl decking, there is a back-lapped and loose roofing membrane allowing water penetration, and ill-fitted flashing components.
6. The stucco surface expansion joints on the East, South and North elevations have been sealed with a clear caulk sealant at some time in the past. For the most part, this sealant seems to have worked well but is starting to reach the end of its serviceable life. Some areas are now missing and / or delaminated and will begin to allow water ingress if left unattended. In general, all the caulking observed on the building appears to have reached the end of its serviceable life and is starting to crack and / or delaminate.
7. Several different types of fireplace vents were evident on the buildings exterior which would indicate that they were probably added by individual owners over time. Different types and qualities of installation practices were used though most seem to be working reasonably well.
8. In both the vinyl siding and stucco clad areas, exterior exhaust vents are not caulked or flashed in properly with the siding or stucco and were not sealed at the wall penetration at the building paper. In the areas of wall where water ingress of some degree was noted, 3 of 7 areas were at vent locations.
9. The stucco has been applied directly to the edge of the aluminum windows on the East, South and North elevations. Due to the course of expansion and contraction from drying materials and weather condition changes over time, a crack has opened up at most window jamb and sill locations. The windows installed into the vinyl clad areas of the East elevation are not affected in this way, however, none of the vinyl "J's" were sealed to the window frames with an appropriate exterior caulk sealant. A few of the wall areas around the windows were opened up for inspection in both stucco and vinyl clad areas. In the stucco clad areas the building paper was brittle and indicated some exposure to moisture. In the vinyl clad areas, the building paper appeared to be in reasonable condition. No water proofing membranes were observed in the window installations.

### 1.3 Photo Record, Wall And Deck Areas:

#### Photograph 1:

Moisture level readings were taken at deck edges and the bottom of window frames at all locations.



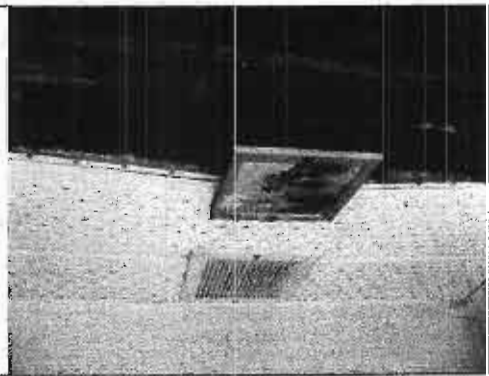
#### Photograph 2:

After a moisture reading or core hole reading has been recorded the hole is sealed.



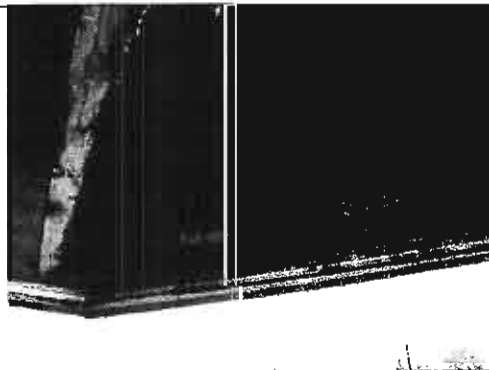
#### Photograph 3:

Dryer vent ducts in the balcony soffit areas are unsecured to the exhaust vent. As the vent clogs up the warm moist air enters into the deck joist cavity area.



#### Photograph 4:

The continuous wet environment created by the dryer air has caused considerable damage to many of the structural members in the balcony framing to most of the units.

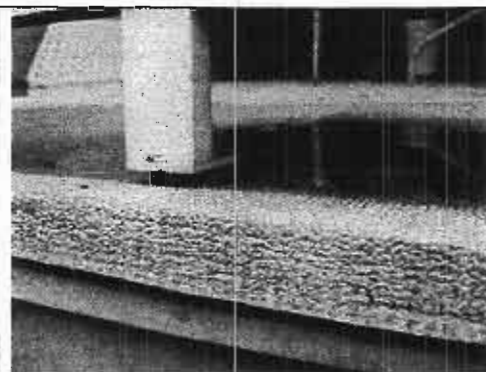




### 1.3 Photo Record, Wall And Deck Areas:

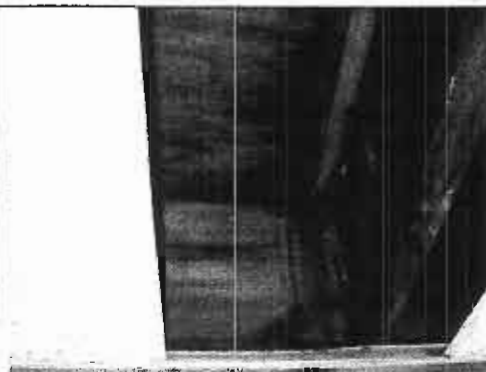
**Photograph 4:**

The top mounted deck rail "foot" has pulled away from the PVC deck membrane at this location allowing water to penetrate the deck surface.



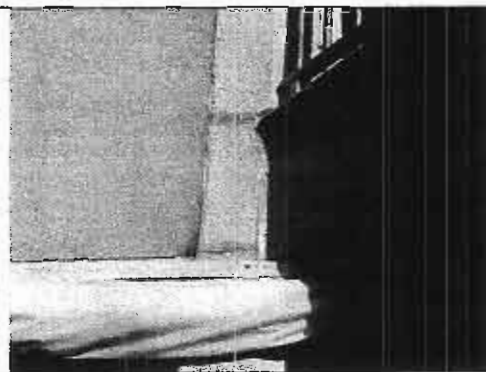
**Photograph 6:**

The damage to the deck structure is evident below the deck rail "foot" where the sealant and membrane have been compromised.



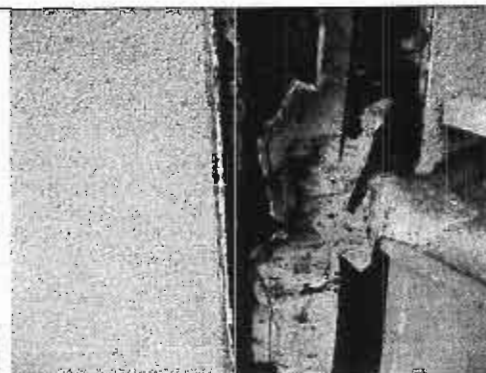
**Photograph 7:**

This is an example of the typical deck edge detail showing how it relies upon a caulk sealant to keep water from entering into the building structure below.



**Photograph 8:**

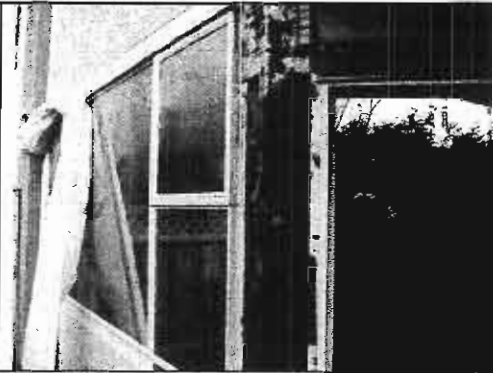
The same deck edge show in Photograph 7 above was taken apart to reveal an insufficient PVC deck membrane "boot", back-lapped building paper and deck membrane, no diverter at the deck edge, and an insufficient "tie-in" between the repaired area and the original building paper. The wall area behind the repair detail was water saturated.



### 1.3 Photo Record, Wall And Deck Areas:

**Photograph 9:**

At the wall area directly below the deck edge shown in Photographs 7 & 8, the sheathing and framing members were water saturated and significantly rotten. A similar wall condition was found in most areas below the deck edges.



**Photograph 10:**

Damage to sheathing and structural framing due to water ingress at the deck edge.



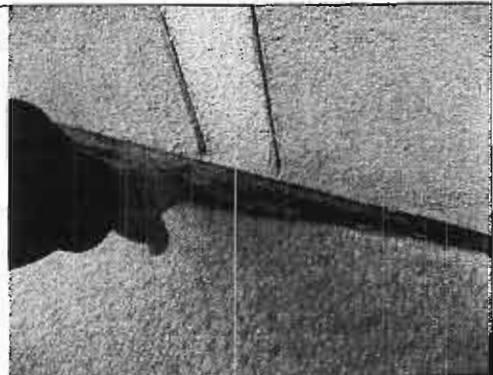
**Photograph 11:**

The deck area at unit 416 has several soft spots and water ponding.



**Photograph 12:**

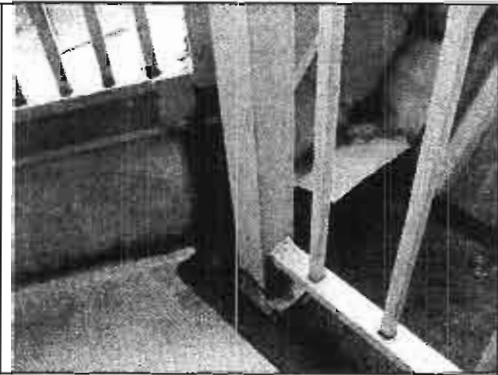
The repaired PVC vinyl deck membrane was installed without an upturn at the deck edge and simply cut-off at the underside of the stucco "J". This edge is delaminated and allowing water easy access to the wood framing structure below. This type of practice was evident at all decks where the membrane had been previously repaired / replaced.



### 1.3 Photo Record, Wall And Deck Areas:

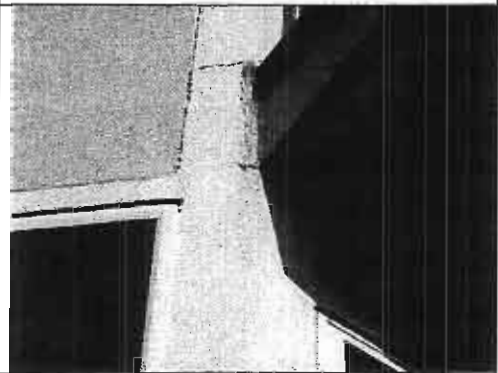
**Photograph 13:**

The pitched roof area to the South of the deck at unit 416 incorporates some very questionable practices in joining together and attaching the various non-compatible components.



**Photograph 14:**

The caulk sealant which was added during a previous repair into the stucco expansion joints and at the deck edges has started to crack and delaminate.



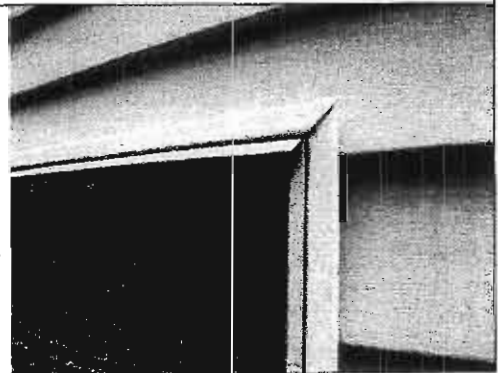
**Photograph 15:**

Cracks are opening up where the stucco has been applied directly to the edge of the window frames.



**Photograph 16:**

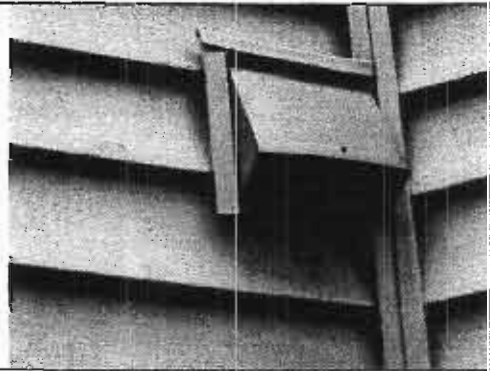
Very small window head flashings were incorporated into the window detail in both vinyl and stucco clad areas. No caulk sealant has been applied at the jambs or sills of the window areas in the vinyl clad areas.



### 1.3 Photo Record, Wall And Deck Areas:

**Photograph 17:**

No head or sill flashings, sealants or membrane work was seen at any of the vent or wall penetrations in either vinyl or stucco clad areas.



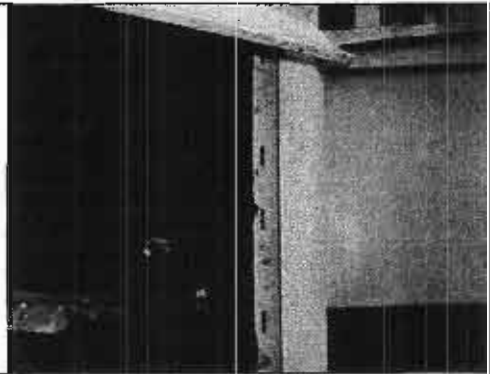
**Photograph 18:**

Deck edges in the vinyl clad areas rely heavily upon a caulk sealant to divert water at the deck edges. Heavy algae growth and deck vinyl membrane delamination was evident on the East elevation wall and deck areas.



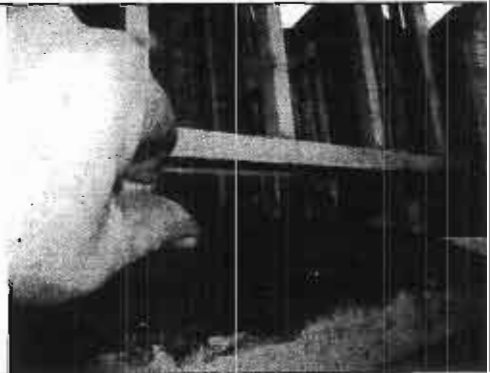
**Photograph 19:**

Poor detailing at the deck edges was evident when the vinyl siding was removed. None of these decks appear to have been remediated previously. Most deck edges were water saturated but did not generally show the same level of aggressive deterioration as the stucco clad areas.



**Photograph 20:**

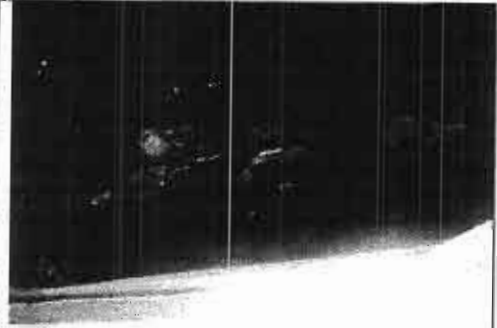
Metal deck edge flashings are corroding and rusted from exposure to moisture. Damage to the deck edge sheathing is also evident from this photograph.



### 1.3 Photo Record, Wall And Deck Areas:

#### Photograph 21:

The deck joist framing in the vinyl clad areas are suffering from the same sort of deterioration and rot caused from the unsecured dryer vent exhaust. High moisture level readings, mould growth and structural decay were widespread.



#### Photograph 22:

The exposed wall areas around the windows show the building paper and window installation detailing. No water proofing membrane installation was evident.



## 2.0 Suspended Slab Area

During the course of the performance of work at units 106, 108 and 110 the suspended slab and slab topping were examined where they meet the exterior base of wall at these units. The slab topping was cut away to reveal an asphalt topping which varied in depth from 2" to 4" which was installed over a water proofing membrane of unknown specification which was applied to the concrete suspended slab surface. It was suspected that water from the failed membrane surface was allowing water into the units through the cold joint in the base of wall curb as it connected to the suspended slab.

After the asphalt topping and approx. 12" of the membrane were removed it was noted that water was moving beneath the membrane surface between the membrane and concrete indicating a failed membrane surface. This water source was dried and a liquid applied membrane was installed to seal the base of the wall in the areas which were opened up. A visual inspection only was made to the edges and undersurface of the suspended slab in other areas of the project.

### 2.1 Visual Observations – Suspended Slab Area:

1. The slab surface covers the underground parking structure and covers most of the property. It extends out from the dwelling units to provide a paved patio surface to the main floor units. A wood fence is attached to the outside face of the slab area on the West, South and East elevations.
2. Access to the underground parking is located on the SE corner of the property. At this location a gutter has been installed to catch rainwater run-off from the slab area overhead.

3. For the most part, the slab surface seems almost flat and does not channel water away from the building very effectively. Large water ponding areas are observed after rainfall.
4. Water can be seen dripping from behind the wood fascia board along the East elevation indicating that the membrane has failed in this area and is allowing water to run along the suspended slab surface.
5. The edge detail of the suspended slab is exposed on the North East corner of the slab area. It shows that the wood fascia board has been installed level to the top of the asphalt topping and a flashing has been installed over this fascia board and "sandwiched" into the membrane surface. This detail essentially creates a bathtub at the membrane surface layer and does not allow the water to run off or drain.
6. There are no surface drains installed into the slab surface which could be seen.
7. The aluminum soffit area at the front entrance near the underground parking access is water stained and drips during rainfall. No other leaking was observed inside the lobby area or underground parkade.

## 2.2 Photo Record, Suspended Slab Area:

### Photograph 23:

The slab and asphalt topping and base of wall curb were exposed at the base of wall at units 106, 108 and 110



### Photograph 24:

The suspended slab edge at the South East corner shows the attached fence rail system, the gutter system, the underground garage access area, and the main building entrance.



## 2.2 Photo Record, Suspended Slab Area:

### Photograph 25:

The slab edge detail is exposed at the NE corner showing the fascia board, cap flashing and asphalt topping.



### Photograph 26:

A section of this detail shows how the various components can trap water at the slab membrane.



## 3.0 Roof Area:

The roof is a tar and gravel BUR ( Built-up roofing) system which appears to be the original installation for the project. It is a flat roof area primarily with a continuous raised curb at its perimeter and 13 small pitched roof areas built upon it which are roofed with a metal clad roofing system. At several of the small pitched roof areas a few pieces of roof curb flashing were removed to examine the roofing surface and curb condition and to take a moisture level reading. A visual inspection was made to each fixture and penetration on the roof surface. No other destructive testing was performed. There is a pitched roof area on the 4<sup>th</sup> floor on the West elevation which was inaccessible by ladder but was reviewed previously from unit 416 in our report dated Feb. 6, 2007.

### Moisture Reading

### Description:

18% and Less	Acceptable reading, no indication of water ingress
19% to 22%	Some water ingress, potential for trouble if not corrected
23% to 29%	Unacceptable moisture level indicating active water ingress providing an active mould growth and structural decay environment, requires immediate correction.
30% and above	Water saturated environment indicating complete building envelope failure, structural damage likely occurring already, requires immediate attention

**Table 3.1 Roofing Curb Area Moisture Level Readings:**

Location	18% and Less	19 to 22%	23 to 29%	30% and Above	Total By Area
Roof Curb Areas Near Pitched Roof Areas	4	0	2	6	12
Totals	4	0	2	6	12

### **Summary of Table 3.1**

Out of the 12 total moisture readings, 4 ( 33.3% ) indicate acceptable readings, 0 ( 0%) indicate some water ingress, 2 ( 17.7%) indicate active water ingress, and 6 ( 50%) indicate a saturated environment with complete building envelope failure with structural decay likely.

2 of the areas of 30% and above relate to water ingress which is occurring at the octagonal tower at the South East corner of the project.

### **3.2 Visual Observations – Roof Area:**

1. The roof curb edge flashing was installed in a continuous fashion around the roof edge creating a back-lapped seam condition at each of the 13 pitched roof areas. As the caulk sealant has become brittle and failed, water is being allowed into the roof curb area.
2. There is no continuous roofing membrane, paper, or any other membrane over the roof curb . The exposed wood in these areas is susceptible to moisture damage as sealants in the flashings fail and from rain and wind pressure. Water ingress at this location will lead to an undermining of the roofing membrane and premature structural decay to these members. If water is able to access the building envelope through these unprotected areas it may enter into the wall areas below. Some of the roof band areas seem to show signs that this may be starting to occur.
3. The EPDM gutter system to the octagonal tower at the South East corner of the roof was never installed correctly. Holes were cut in the EPDM but were never attached or sealed to the downspouts. This uncontrolled water has caused some significant damage to the wood gutter framing components at two locations on this feature.
4. The PVC vent covers are slowly deteriorating from UV exposure but are all still in place and in working condition.
5. There are two roof top air supply units which are in need of some service. The fan belts are loose and the filters are completely clogged and collapsed within the units.
6. In two areas specifically, the B-Vents have been extended and are not supported correctly, some of the vent caps are unsecured.
7. Each of the 4<sup>th</sup> floor units have a sky-lite which is installed onto the flat roof surface. Most of these units



have interior drywall and paint damage visible around the sky-lite. This damage could be caused by leaks or from high interior moisture levels and condensation during colder months.

8. Only one "soft spot" was noted on the roof surface. This spot was located approx. 6' north of the roof access hatch. A soft spot normally indicates deterioration to the sheathing below due to water ingress through a roofing leak.
9. The roof drains all appear to be working properly and were generally clear of debris, the overflow scuppers also appeared to be free of debris. The roof appears to be sloped correctly towards the roof drains, only one significant puddle was noted during rainfall.
10. There appears to have been some roof repair performed in the past, the patched areas appear to be performing as intended with only a reasonable amount of tar "bleed-out" visible.

### 3.3 Photo Record, Roof Areas:

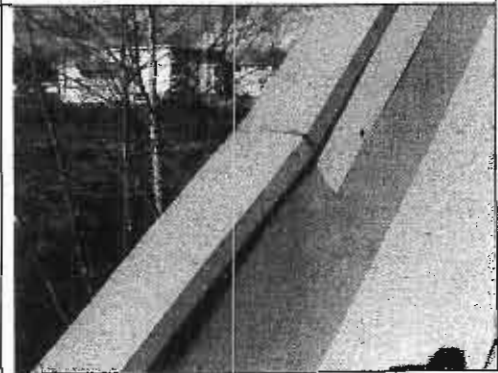
#### Photograph 27:

This photo shows the general components of the roof area which include the flat roof area, the pitched metal clad roof areas, the sky-lites, vents and air handling units.



#### Photograph 28:

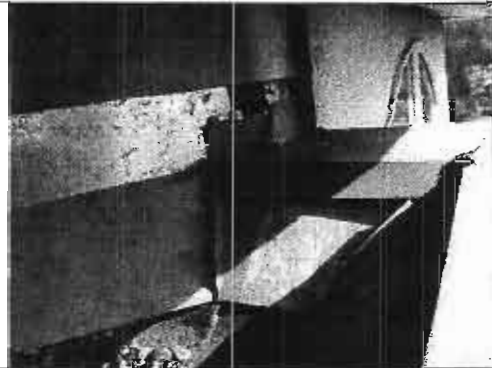
Back-lapped flashing installation typical at each to the pitched roof areas.



### 3.3 Photo Record, Roof Areas:

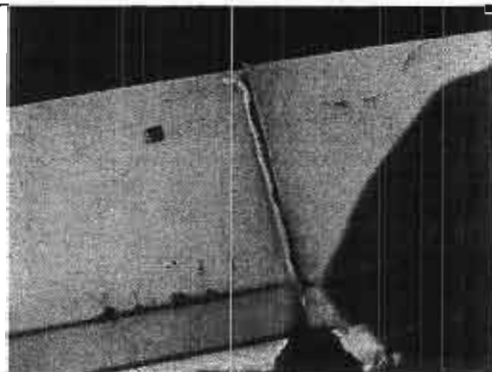
**Photograph 29:**

Some of the finished detail work was incomplete. This photo shows exposed wood sheathing, a poorly fit cap flashing component and a lack of membrane or sealant.



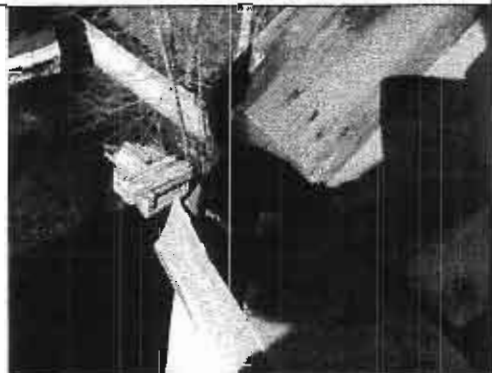
**Photograph 30:**

Caulk sealant at all exposed roofing areas has become brittle and delaminated. Water will soon find its way through these flashings into the building's wood frame structure and undermine the existing roofing membrane.



**Photograph 31:**

When cap flashings were removed it showed that there was no membrane coverage over the roof curbs. Some of these areas are moisture saturated and evidence of deterioration to sheathing and framing components had begun in some areas.



**Photograph 32:**

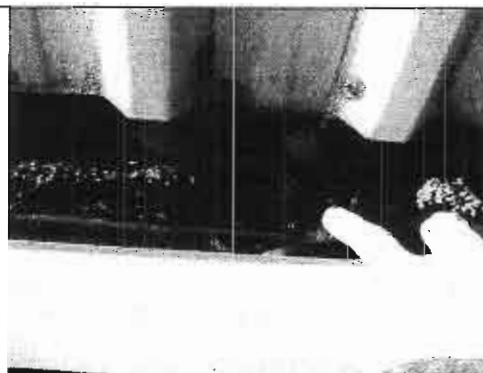
The EPDM gutter system at the South East corner octagonal tower was never completed. The EPDM membrane was never attached to the drain and downspout system. This photo shows that a hole was simply cut into the membrane to allow it to drain.



### 3.3 Photo Record, Roof Areas:

**Photograph 33:**

A lapped seam in the EPDM membrane shows that it is not bonded and that water is moving freely between the two layers.



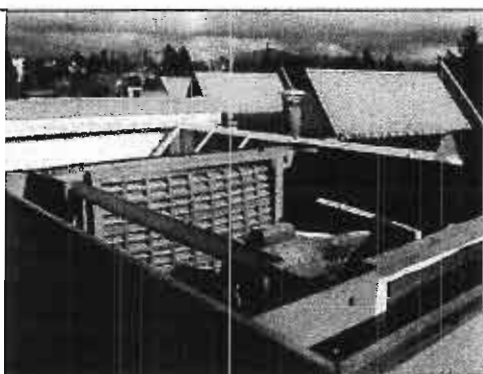
**Photograph 34:**

When the EPDM membrane was pulled back it revealed a significant amount of wood frame damage to the gutter system at this location.



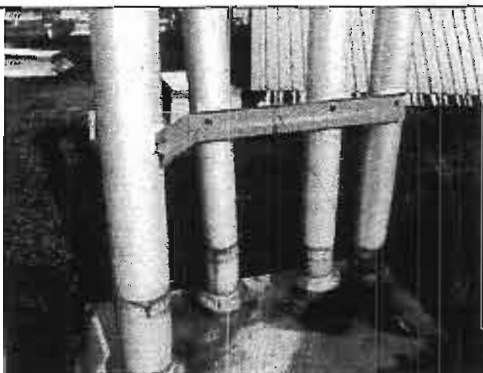
**Photograph 35:**

The roof top air handling units were opened up. The air filters were clogged with debris and had collapsed into the unit. The fan belts on the unit were loose and were showing some wear.



**Photograph 36:**

B-vents which were extended were not supported correctly and could easily become unattached.



### 3.3 Photo Record, Roof Areas:

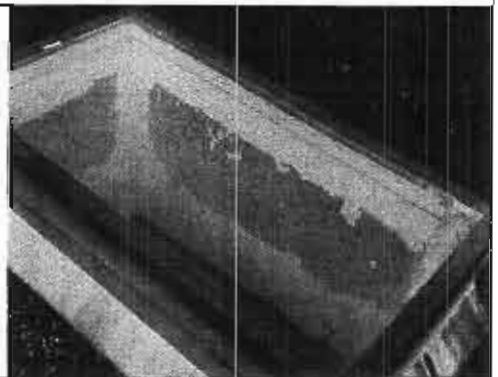
**Photograph 37:**

**B-vent caps were loose and some were ill-fitted and unsecured.**



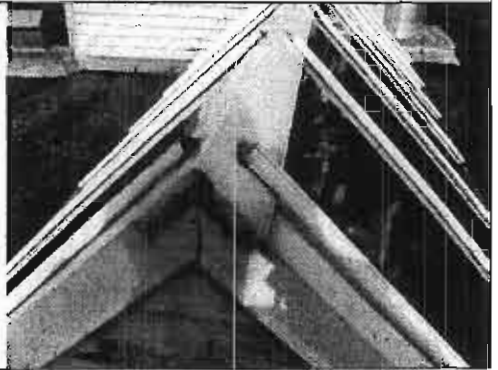
**Photograph 38:**

**Damage to paint and drywall was evident at most of the sky-lite areas.**



**Photograph 39:**

**The common area sky-lite relies upon the caulk sealant to maintain water tightness. This sealant is showing signs of failure and brittleness. Normally a unit of this type would incorporate an flashing cover at its apex.**



### 4.0 Conclusions:

1. The deck and adjoining wall areas on all elevations are suffering from significant structural damage from water ingress due to premature building envelope failure. The engineered floor joist systems, deck and wall sheathing and wall framing components are all being affected to greater and lesser degrees at all deck locations. Water is being introduced into the deck and wall systems through poor deck edge detailing (which is largely reliant upon caulking), failed sealants at deck railing connections, and unsecured and plugged dryer vent exhaust systems in the deck joist cavity. Previous repair efforts which were exposed in these areas were not effective in their efforts and inadequate in the quality of their installation.

2. PVC deck membrane surfaces have reached the end of their serviceable life. Several deck surfaces are torn or cut, edges are delaminated and drip edges are corroded and rusting. Water ponding is occurring to several of the decks, therefore, sufficient slope may not have been incorporated into the original deck construction. Decks surfaces which have been re-surfaced or repaired did not incorporate correct installation detailing and these deck membranes have failed as well, contributing to the water ingress problems.
3. The general wall surface planes in both stucco and vinyl siding clad areas seem to be performing in an acceptable manner. Some water ingress is occurring at a few wall penetration locations such as vents and windows, but overall, there does not seem to be any evidence of a significant failure. Staining to the building paper does indicate that some water penetration is occurring in the stucco clad areas. This water ingress is being controlled largely by the sealant which has been installed into the stucco expansion joint and is now starting to show signs of failure through de-lamination and brittleness. The stucco application at the window locations are also showing cracks which are opening up and will begin to create a water ingress potential.
4. The flashing and membrane detailing at the windows is minimal. The sealant in the window mitre has reached the end of its serviceable life and water ingress from this location will be able to bi-pass the building paper and gain access into the wall structure. Some of the head flashings were back-sloped and offered only minimal protection at the window head.
5. The suspended slab area, slab membrane, and asphalt topping are inadequately sloped to drain water away from the building effectively. The membrane has failed at the South East area of the slab allowing water to run unrestrained between the slab surface and the slab membrane. The slab edge detail along the East elevation does not allow proper surface water drainage and will contribute as well to water retention and wood structure damage to the fencing and fascia materials along this elevation. The slab edge details along the South and West elevations were not able to be confirmed. The slab edge on the North elevation does not incorporate the fascia or flashing detail. Water pressure beneath the membrane at the base of the wall where the concrete curb and suspended slab form a cold joint can produce water ingress at the main floor units. Standing water on the topping surface has contributed to slippery algae conditions and will shorten the life of the asphalt topping.
6. Failed caulk sealants and inadequate cap flashing installations at the roof curb area are allowing water to enter the roof at the cap flashing locations. A lack of membrane at this location has left the building vulnerable to water ingress damage to the framing members below and may undermine the roofing membrane at these locations. Some damage at these locations was observed.
7. The EPDM gutter system at the South East corner tower feature was incorrectly installed and has failed, causing significant structural damage at this location.
8. Some of the ancillary roofing components require some correction. For example, the B-vent stacks and their vent caps should be properly secured and braced, the roof top air handling units require some service to filters and belts.
9. The flat BUR roof area and the pitched metal clad roof areas seem to be performing adequately with the exception of one "soft spot" located near the roof access hatch. We are not aware of any leaks being reported in the roof areas. Typically, this type of BUR roofing should be considered for replacement in 15 to 20 years. Some water ponding is evident which can be corrected during a re-roofing process but does not seem to present an imminent concern. All the drains, scuppers and drainage appear to be working correctly, the roof area was generally clean and free of debris which could otherwise restrict the operation of the drains.
10. Moisture damage which is evident at the roof top sky-lite features is probably due to condensation resulting from high interior moisture levels during colder winter months.

11. The common area pitched sky-lite on the roof does not include an apex flashing component to protect the vulnerable components. As a result, sealant has been installed to maintain water tightness. This sealant is showing signs of distress and will eventually result in water ingress at this location.

#### 5.0 Recommendations:

all deck  
no deck system  
Quick Repair

1. We recommend that all deck surfaces, soffit areas and surrounding wall areas receive immediate remediation. Damaged structural components will require repair or replacement as required. The potential for increased damage to the structural floor joists represent a significant concern in that they are more complex to repair than typical dimensional lumber. All membrane and finishing components should be installed using current building envelope remediation practices which will include diverters at deck edges, correct membrane installation upturns and "boots", and proper "tie-ins" to existing and/or remaining wall components. Adequate deck sloping is to be accomplished and we would recommend the replacement of the top mounted rail system with a face mounted system which could incorporate a deck edge gutter system to catch rainwater run-off from the deck edge. Work should be coordinated to complete "stacks" of units from the 1<sup>st</sup> floor to the 4<sup>th</sup> floor to ensure correct installation of detailing and to prevent the undermining of corrected wall areas from water ingress coming from above. For this reason, work at units 106, 108 and 110 has been postponed. Adjacent wall areas which are not affected by structural repair work do not appear to require complete remediation.

Gutter  
180,000

2. We recommend that the dryer vent ductwork and exhaust system which currently exhaust beneath the deck surfaces be repaired and re-configured to prevent the dryer exhaust air from entering into the joist cavity. The duct work and exhaust vent must be sealed to prevent the warm moist air from escaping into the joist cavity. Some of the duct work is situated at different locations of the deck, therefore it may be necessary to design a repair detail which is adaptable to the specific repair requirements.

Wood  
deck  
not  
1 inch  
to main  
deck

3. We recommend that all wall, window, expansion joint and roof area sealants be removed and replaced with an exterior grade urethane sealant. At stucco clad elevations a small relief should be cut into the stucco at the frame of the windows to accommodate a urethane caulk fillet installation which will accommodate expansion and contraction at this location and prevent further cracking and the potential for water ingress. At vinyl siding clad areas, a urethane sealant should be installed at all appropriate locations at window and wall penetrations.

70,000

4. We recommend that appropriate membranes, sealants and flashings be installed at all wall area vents and penetrations. All window head flashings should be checked for correct slope and adjusted as required.

75,000

5. We recommend that the current base of wall repair detailing continue around the entire perimeter of the building as it meets the suspended slab and asphalt slab topping. We further recommend that a system of draining the surface water from the slab topping be considered. This system may incorporate the creation of drainage access at the base of the wall connected to the rainwater leader through surface drains or through passive drainage channels to a slab edge gutter or drainage system.

50,000

6. We recommend that the roof cap flashing be removed and replaced with a new cap flashing with a larger face profile to assist in preventing water ingress at this location. It should be installed in a fashion to prevent any back-lapped installation circumstances, with a positive slope to the roof top surface, and with a continuous membrane covering to protect the underlying wood structural components. All seams and joints are to be sealed with a urethane caulk sealant.

20,000

7. We recommend that the EPDM gutter system and structural damage at the South East tower feature be repaired with a similar gutter product correctly installed and sealed to the gutter and downspout system.

2,000

90,000 K  
not review

- 4000
8. We recommend that the soft spot in the flat roof area be investigated and repaired as required. Since the roof should be considered for replacement in the next few years, we recommend a professionally qualified roofing inspection and assessment prior to any significant repair work performance.
  9. We recommend that the ancillary roofing components be corrected to ensure proper performance and safe operation. B-vents and exhaust hoods should be secured correctly and the air handling units should be serviced.
  10. We recommend that the common area pitched sky-lite be fit with an apex flashing component and that the sealants should be removed and replaced with a urethane sealant.
  - 8600 11. We recommend that the building receive a power washing to stained and dirty wall and slab surfaces to remove algae and dirt. A regular cleaning to these surfaces will increase their performance and life span.
  - 8000 12. We recommend that the small joint mitre sealant in the window mitres be removed and replaced to prevent any water ingress through the window frame extrusion.

It should be noted that this report is based upon conclusions which are limited by the extent to which we are able to examine the building given the scope of the tests and observations which our investigation employs. For this reason, our comments cannot be considered a guarantee or warranty on any aspect of the as yet undiscovered actual condition of the building.

This report is intended for the sole use of Strata Corporation NWS 3379 ( Brickwood Place ) who further agree to indemnify and hold harmless PCM Pomeroy Maintenance and Construction from any and all liability which Strata Corporation NWS 3379 may incur through the use or misuse of this report.

We anticipate that this information shall meet with your approval. If you have any questions, or if you require any additional information please contact us.

Yours truly,  
PCM Pomeroy Construction & Maintenance

425,000