

# **Discovery Place II**

**3970 Carrigan Court, Burnaby, BC**

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## **REPORT: Building Envelope Condition Assessment**

**Submitted To:**  
The Owners  
Strata Plan NW 2364



**Care of:**  
Baywest Property Management Services  
300 – 1770 Burrard Street  
Vancouver, BC, V6J 3G7

**Submitted By:**  
Chatwin Engineering Ltd.  
130 - 6400 Roberts St.  
Burnaby, BC  
V5G 4C9

Our Reference No. 916-01

## Executive Summary

Discovery Place II is located at 3970 Carrigan Court in Burnaby, BC and consists of a 26 Story tower and a 12 unit five-storey townhouse building. The building envelope of the tower and townhouses is comprised of various elements including poured in place concrete, pre-cast concrete panels, aluminum panels, aluminum framed sliding windows and sliding doors, with the townhouses having additional glass block window walls. The tower and townhouses are constructed over 3 levels of poured in place concrete parkade structure.

Deficiencies discovered during the course of this investigation include:

- The stucco system on the exterior of the building is installed as a face sealed assembly, which does not perform well where it has little overhang and is exposed to the weather.
- There is poor detailing on the townhouse building at the interfaces between the face sealed stucco and other elements such as windows, flashings, glass blocks, chimneys, etc.
- There is evidence of moisture ingress at the base of the glass block windows.
- Localized concerns with respect to Unit T4601 as noted in the report.
- Minor spalling of the concrete is occurring throughout the areas of poured in place concrete, primarily on the balcony parapet walls and on the underside of the slab edge of the balconies. The exposed reinforcing steel at the locations of the spalling is exhibiting evidence of corrosion.
- The glazing seals of a number of aluminum door and window units have evidence of failure in the form of condensation between the panes of glazing. In addition, the glazing tape installed between the glazed units and the aluminum frames has extruded at all windows and doors. Also, most sliding glass door units are difficult to operate.
- The full height balcony railings do not appear to be very stable and could potentially be a safety hazard.
- All balcony surfaces are exposed concrete and there is no waterproofing membrane installed overtop to provide protection from water penetration. In addition, some balconies were found to be covered with exterior carpet, which can potentially hold moisture for extended periods of time on the exposed concrete surface.
- There is spalled and broken concrete around some of the exhaust vents at the slab edges, which can allow migration of undesired moisture into the wall system. As well, some of the exhaust vents were found damaged.
- The caulking installed at joints between and within cladding elements on the entire building has cracked and/or separated from the surfaces.
- The roof on the tower building is generally in good condition, however, one of the cut tests exposed conditions within that require further examination.
- Roofing on the townhouses consists of areas of newer torch applied SBS membrane system, as well as areas of the original tar and gravel roofing membrane. The newer roofing membrane is generally in good condition except for a blister that requires repair, while on the existing roofing system, there is large amounts of organic debris.
- The seal at the interface between the glazed steel frame awning at the penthouse level of the tower and the wall has deteriorated thereby allowing water to run down the wall. As well, there is evidence of moisture damage on the steel members of the awning, and the rubber gasket at the glazing has begun to dislodge and separate.
- The below grade membrane at the building perimeter has deteriorated and is pulling away from the building assembly.

The recommended repair work to mitigate the building envelope problems includes, but is not limited to, the following:

- Seal all the joints and penetrations in the "face-sealed" stucco walls.
- Replace glass block window and waterproof the openings prior to installing new glass block window.
- Repair items of concern noticed in unit T4601.
- Contemplate relocating windows in the top end townhouse units located in the shower area to a different wall or completely removing the windows.
- Recoat the delaminated areas of coating on the chimneys.
- Identify and repair all spalled and loose concrete at the balcony parapet walls, slab edges, staircases, roof parapet walls, adjacent to exterior vents, etc. including cleaning of the exposed rusted reinforcing steel.
- Replace damaged vent screens. Incorporate hoods on new vent assemblies.
- Replace all window wall assemblies including sliding door units with new thermally broken aluminum framed, double glazed window wall systems and sliding doors.
- Clean and repair concrete balcony surfaces, and install a liquid applied waterproof membrane.
- Consider having the full height aluminum guards checked for structural adequacy.
- Remove, clean and install new caulking at all caulking seals present at the various interfaces on both the tower and townhouse buildings.
- Perform maintenance repairs on the roof as suggested.
- Consider installing a cap flashing over the parapet at the roof of the tower and the townhouses.
- Install a metal flashing in a reglet termination along the top of the awning at the penthouse level and refurbish the existing awnings.
- Replace the below grade membranes as deemed necessary.

The repairs can be phased over time as is outlined in the report to lessen the financial load.

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## **1.0 Introduction and Background**

### **1.1 Introduction**

Chatwin Engineering Ltd. (Chatwin) was retained by the strata corporation, Strata Plan NW 2364 to carry out a condition assessment of the building envelope components and assemblies at Discovery Place II, located at 3970 Carrigan Court, Burnaby, BC. Chatwin conducted a comprehensive visual review supplemented with both invasive and a non-invasive testing in order to identify and review the composition and condition of the "as-built" construction of the existing wall assemblies. The investigation included both the condominium tower as well as the townhouse buildings.

### **1.2 Project Description**

Discovery Place II consists of a 26 Story tower and a 12 unit five-storey townhouse building.

The facade of the tower building is constructed of various elements including poured in place concrete, pre-cast concrete panels, aluminum panels, aluminum framed sliding windows, and aluminum framed sliding glass doors. The tower building is constructed over three (3) levels of below grade parking.

The facade of the townhouse building consists of poured in place concrete, pre-cast concrete panels, rock dash finished stucco panels, aluminum framed sliding windows and aluminum framed sliding glass doors. Two units in the townhouse buildings also contain glass block windows.

### **1.3 Scope of Inspection**

Our scope of services is generally as presented in our proposal dated June 17 2006, and is summarized below:

- We reviewed the drawings that were available at the City of Burnaby. No other records or documents were made available to us.
- We carried out a visual review of the exterior walls from the ground, via swing stage over the entire height of the building at three locations, and from accessed balconies. Areas of interest were photographed using a high resolution digital camera.
- We carried out test cuts in the interior gypsum wall board and reviewed conditions of the elements within.
- We performed a hammer tap survey of the exposed concrete on the accessed balconies.
- We conducted a visual review of the roof system supplemented by conducting test cuts through the roof system at 3 locations.
- We visited 14 (of approximately 207 ) suites in the tower and 3 (of 12) townhouse units.
- We prepared a report summarizing our observations, their relevance to continuing performance, and have offered prioritized recommendation options.

Except where otherwise indicated, conditions noted throughout this report are general in nature. Although an attempt has been made to identify specific locations of deficiencies, a record of every location at which any one defective condition is present, has not been made.

## 1.4 Documentation Review

Chatwin obtained the following drawings from the city of Burnaby:

Jones Haave architectural drawings numbered A-18, A-27 A-32, A-33, A-35 through 37, A-39, A-40, A-42 through A-59, A-71 through A-74, A-76 through A-78, and A-80 through A-84. The drawings were dated March or August of 1983. We noted that drawing A-38 was missing.

Based on the review of the drawings, we found no drawings that provided any information regarding the specific components of the various wall types used. The only information that appeared on the drawings was an indication of the type of the exterior facade as noted below:

Townhouse building:

1. Stucco fascia
2. Stucco
3. Metal panel
4. Aluminum windows and sliding doors
5. Glass block
6. Stucco panels (assumed same as stucco as noted above)
7. Precast concrete panels.

Tower building:

1. Concrete (mechanical penthouse walls)
2. Concrete (roof parapet)
3. Aluminum skylight (on the top floor)
4. Precast concrete panels
5. Cast in place concrete (columns and walls)
6. Anodized aluminum windows and sliding glass doors
7. Metal panels

In addition, the following specifics were also noted:

1. Detail A-74: indicates stud size for exterior walls are to be 5". A similar note for tower A on detail A-35 indicates wall studs are to be 5 1/2".
2. Detail A-76: indicates "gypsum board on rigid insulation" on the inside of the concrete walls of the machine room/stairwell shaft at upper mechanical penthouse floor level.

The following is the roofing assembly identified on the drawings:

1. Built-up roofing with metal flashing at the perimeter of the townhouse roofs.
2. Built-up roofing with metal flashing at the perimeter of the tower penthouse mechanical room.

## 1.5 Envelope Assemblies: Wall and Roof Types

Applicable building envelope details were not included in the architectural drawings obtained by Chatwin.

The following wall assembly construction was confirmed at test openings:

1. Precast concrete construction:
  - Concrete Panels
  - 2 1/2" steel studs separated from concrete in 4" cavity

- Batt insulation
  - Polyethylene vapour barrier
  - ½" gypsum wall board.
2. Cast in place concrete walls and columns.
- Concrete column/concrete wall
  - 2" or 3 ½" steel Studs in varying cavity (tight to and separated from concrete)
  - Batt insulation in the cavity
  - Polyethylene vapour barrier
  - 1 or 2 layers of gypsum wall board
3. Metal Panel Wall Assembly
- Metal Panel
  - Moisture Barrier (Not Confirmed)
  - Exterior gypsum wall board or plywood sheathing
  - 3 ½" Steel Studs infilled with batt insulation
  - Polyethylene air/ vapour barrier
  - 2 layers of gypsum wall board
4. Stucco "Rock Dash" Wall Assembly (townhouse building)
- Rock-dash stucco finish
  - Building paper
  - Plywood sheathing
  - 3 ½" steel studs infilled with batt Insulation
  - Polyethylene air/vapour barrier
  - ½" gypsum wall board.

## 1.6 Repair History

There was no record of repair or maintenance submitted for our review prior to the preparation of this report.

## 2.0 Preamble

### 2.1 The Environment: Building Exposure

A recent publication by CHMC entitled "Best Practices Guide for Wood Framed Envelopes in the Coastal Climates of British Columbia", defines a high exposure area as, "...walls regularly wet under normal service conditions and subject to significant exposure to wind". Although the building structure on this project is not wood framed construction, the theory on the effect of weather is applicable to the cladding system used on the townhouse building. The exposure condition of the cladding system is a function of the type of roof, the height of the building, and the depth of the roof overhang. The terrain surrounding the building also has an effect on the wind-driven rain that will impact on the walls of a building. The roof overhang offers some protection against wind driven rain, however the overhang on the townhouses is not continuous around the building thereby walls with no significant overhang to wind driven rain are present. The tower building does not have any significant overhang protection. The development is also not protected by surrounding construction of topographical features that would offer significant protection against wind-driven rain and therefore the development is rated as having a high exposure.

The existing rock dash stucco wall assembly consists of the exterior stucco finish, building paper, sheathing or drywall, wall studs filled in between with batt insulation, polyethylene air/vapour barrier and interior gypsum wall board. This wall assembly is present on both the tower as well as the townhouse building, and it is relatively protected by overhangs on the tower, however, on the townhouse building, there are various sections of the stucco wall that are exposed to the weather. This wall assembly is classified as a "face seal" cladding system and is designed to anticipate the control of moisture mainly at the exterior cladding. If water penetrates beyond the exterior face, it has limited potential to drain or dry, which can result in elevated moisture contents within the concealed wall assembly elements and associated deterioration.

The above referenced publication rates the performance of a "face sealed" cladding assembly as poor for the exposure conditions that are present at the development. Subsequently the stucco wall assembly may not meet its expected performance criteria. Consequently, a higher risk of water ingress and damage may develop during the intended service life of this type of wall assembly when compared to current "rainscreen" type wall assemblies.

### 2.2 Concrete

Concrete is the predominant construction material used on this development. There are two types of concrete walls used, namely cast-in-place concrete and pre-cast concrete panels. Most of the concrete construction of the buildings such as columns, beams, floors and some walls is cast-in-place concrete. Pre-cast concrete panels are also used as identified on the drawings and are identified by sealed joints in between the panels.

Problems that are typically associated with cast-in-place concrete structures include spalling, de-lamination, weathering of the surface and efflorescence. Pre-cast concrete typically doesn't exhibit these problems since they are manufactured in a controlled environment, however, the caulking installed at joints between panels requires periodic renewal.

Spalling is the separation of small pieces of concrete from the surface of a concrete structure. Spalling may be caused by mechanical impact, but is typically caused by corrosion of the embedded reinforcing steel.

Weathering is the effect of prolonged exposure of the concrete to the elements. Weathering can be identified by changes in colour, texture, strength, and chemical composition. The age of the buildings alone at Discovery Place predisposes it for having visible signs of weathering. There is very little shelter for the buildings except for the

overhangs that are built into it. Weathering is a natural process but it requires monitoring and periodic maintenance, to ensure the intended performance of the cladding.

Efflorescence is surface deposits, usually white in colour, which are formed by the soluble salts present in the concrete which are leached out of the concrete by the passing of water and deposited at the surface by the evaporation of the water.

### **2.3 Thermal Bridging**

Steel stud framing as opposed to wood framing is typically used in buildings constructed of concrete. Typically steel studs are used in concrete buildings since metal is non-combustible and it does not shrink as wood does. A disadvantage for metal over wood, however, is that metal is a good conductor of thermal (heat/cold) flow compared to wood, therefore reducing the overall thermal performance of the wall assembly.

In addition, a steel stud wall assembly is prone to thermal bridging. Thermal bridging occurs when there is a difference in temperature between two materials with high conductivity, which allows the transfer of heat through the assembly. In this instance the steel stud of the wall assembly is in direct contact with concrete on the exterior of the building. The cold temperature transfers through the steel stud allowing condensation to form on the interior side of the finished drywall in contact with the cold metal. The condensation of air vapour at these locations will dampen the surface of the drywall, causing airborne dust to stick onto these damp surfaces. This will then gradually form vertical lines reflecting the position of the steel in behind. This is commonly known as "Thermal Shadowing"

### 3.0 Field Observations

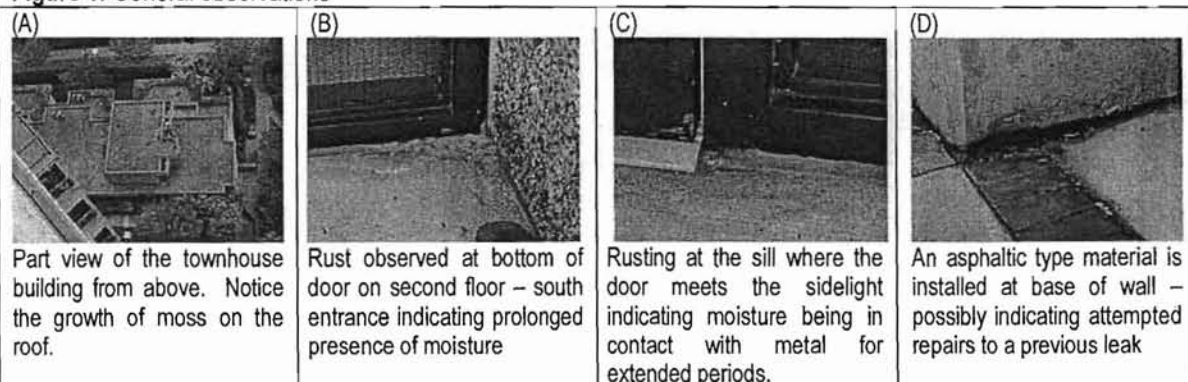
Chatwin conducted visual reviews on April 9th, 2007 and May 7<sup>th</sup>, and exploratory openings on May 8th, 2007. We have presented our observations in the form of Photographs representing examples of finding that affect building envelope performance and the potential for future/ current water penetration. Some Photographs may not show any items of concern but are provided to show general overview of the area.



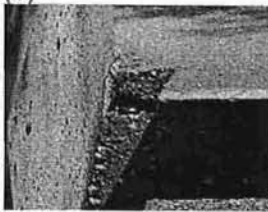
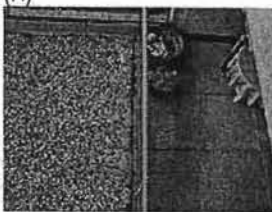


#### 3.1 Townhouse Building Review

Chatwin conducted a general review of the townhouse building from the exterior, interior, and from roofs and balconies of accessed units. Access was provided to three townhouse units. The following is a summary of the findings at these units:

- **General Observations:** The townhouse building consists of a four/five storey concrete building with the front elevation constructed in a terraced fashion with the roof over the floor below at each floor being utilized as a combination of a roof, planter area and deck. Some of the specific building envelope related observation include:
  - Observation of rust at second floor south entrance door.
  - An asphaltic material is present in locations at the base of the wall extending above the paved surface. This was only observed at the entrance to the second floor on the south side.
  - Prolonged water damage is evident on the wall that runs along the north side of the service way, with the steel channel that lines the outside edge of the "Rock Dash" stucco section heavily rusted.
  - There appears to be a waterproofing membrane beneath the walkways, however, our visual reviews of the areas where the membrane was visible revealed that it was delaminating from the substrate.
  - There was large amount of moss growth observed in many places on the roof.
  - Some exhaust vents were found clogged or semi-clogged with debris.

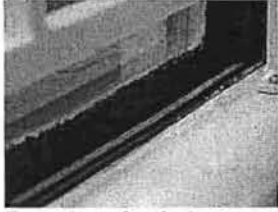

**Figure 1: General observations**



<p>(E)</p>  <p>Photograph of the metal channel used to frame the "Rock Dash" stucco has rusted due to continuous contact with water.</p>	<p>(F)</p>  <p>Water is draining out of the hole and flowing down the wall leaving a black stain under the drain.</p>	<p>(G)</p>  <p>Photograph showing improperly terminated membrane at stairwell, and the exposed membrane appears to have curled up from the substrate.</p>	<p>(H)</p>  <p>Example of moss growth on roofs.</p>
<p>(I)</p>  <p>Clogged vent.</p>	<p>(J)</p>  <p>Lack of seal at door to stucco interface can result in moisture to penetrate</p>		

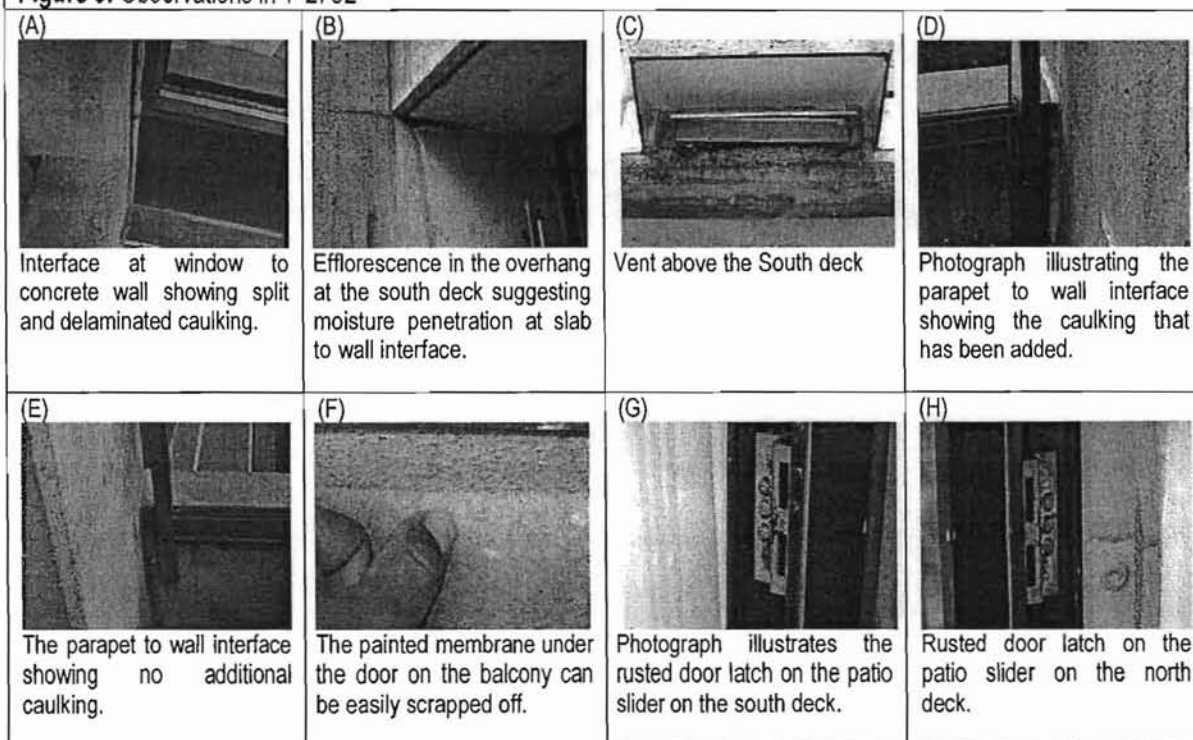
- **Townhouse T-1803** : Townhouse 1803 is a bottom unit on the north-east side of the townhouse building. The following observations were made at this unit:
  - The glazing tape material between glazing and the frame on most of the windows and the sliding door has extruded.
  - There was a covered ground floor patio with an exterior carpet on the slab.
  - The sliding door was difficult to operate.

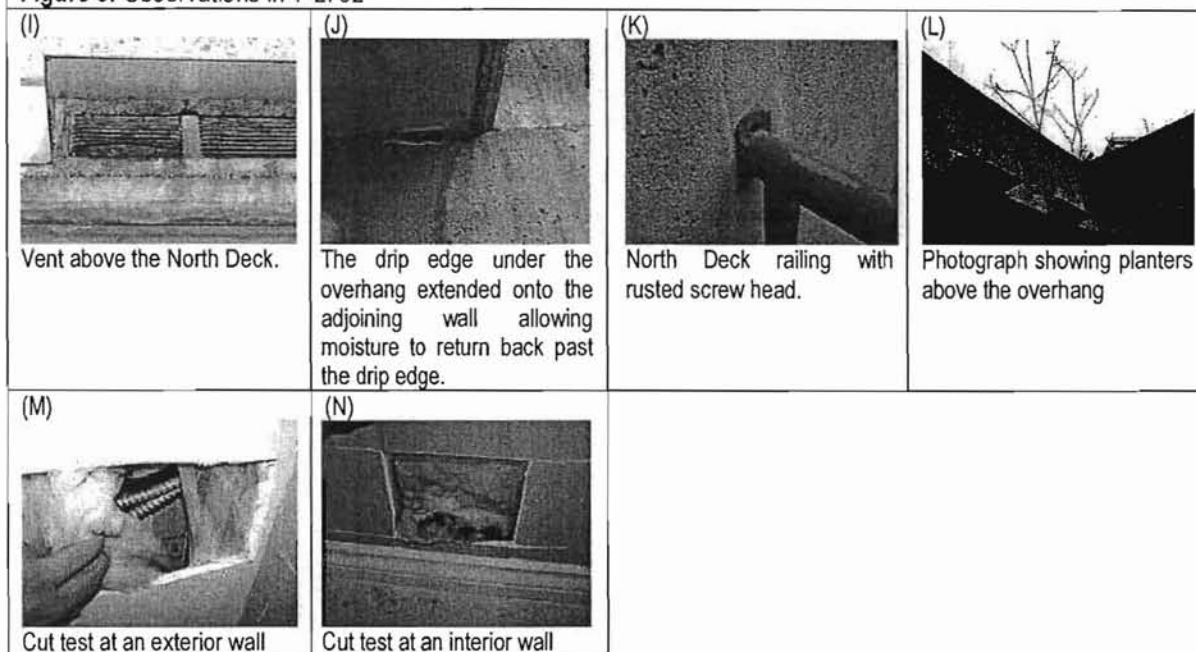
**Figure 2:** Observations in T1803

<p>(A)</p>  <p>Example of glazing tape extrusion between framing and glazing</p>	<p>(B)</p>  <p>Photograph of the patio</p>
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- **Townhouse T-2702** : This is a centre unit on the second floor. The following observations were made:
  - Caulking at door and window to wall interfaces as well as between dissimilar cladding materials had deteriorated, which is a common issue observed throughout the development.

- Efflorescence was noticed on the underside of roof overhang to wall interface, which at some locations was very close to the building wall. This indicates moisture penetration from the roof above.
- An exhaust vent at the slab edge was found to contain debris, and another vent was found with a damaged screen.
- The south deck was found to have a caulking seal installed at the interface between the deck parapet and the building wall, whereas the north deck did not have the seal. It appears that caulking may have been installed to address a previous leak.
- The balcony appears to have been painted and this paint in some locations was flaking off.
- The latches on the sliding doors at both balconies were rusted, along with the screws holding the frame in place.
- Sections of concrete adjacent to the door on both balconies sounded hollow when hammer tapped indicating potential delamination of concrete.
- The sliding door on the north balcony is tight fitting and difficult to operate.
- Cut test through the exterior wall revealed exterior gypsum wall board, batt insulation which had blackened in places where it was in contact with metal studs or metal conduit, polyethylene air/vapour barrier and one layer of interior drywall. Moisture content was around 0.5% in gypsum, which suggests an increased humidity level and therefore susceptible to organic growth.
- Cut test of an interior wall also revealed black staining on batt insulation where it was in contact with the metal stud.





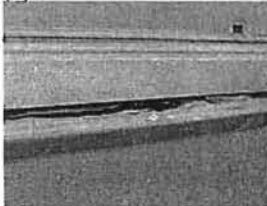
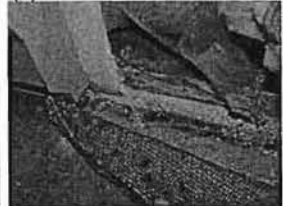






**Figure 3: Observations in T-2702**

**Figure 3: Observations in T-2702**




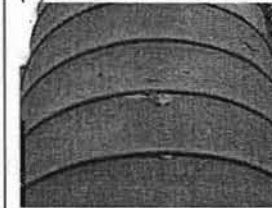

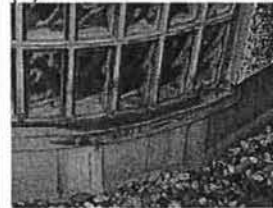
- **Townhouse T-4601** : This is a two-level unit and is located on the top floor of the townhouse building at the southwest corner. Observations made in this unit include the following:
  - There was evidence on the carpet and walls in the living room of a previous leak in the form of staining on the carpet. It was indicated that there hasn't been any more evidence of moisture in the unit.
  - An area on the roof in front of the living room had blister which may indicate that moisture is present underneath.
  - There were numerous sections on the various roofs with moss growth which indicates presence of moisture for extended period of time.
  - The common systemic problem of deteriorated caulking was also evident on the exterior walls of this unit as well. There were also areas where new caulking had been installed without removing the original caulking, however, both caulking exhibited failure.
  - There is a window located in the shower area in the main bathroom which is subjected to water from both the interior as well as the exterior.
  - A flashing trim on the jamb of a window on the top floor was found to have been detached exposing the elements in behind. One layer of building paper was observed, however, the paper was discontinuous revealing the substrate in behind, which was plywood.
  - Caulking had delaminated from underneath the sliding door which revealed that the waterproofing membrane had not extended up into the opening to provide protection of the rough frame opening.
  - There is evidence of water penetration underneath the glass block window in the form of dark staining. The interfaces of the glass block window with the stucco is not sealed.

- A cut test of an exterior wall revealed plywood sheathing, black staining on batt insulation where it was in contact with metal studs, steel stud walls with evidence of rust along the bottom, polyethylene air/vapour barrier, and one layer of interior gypsum wall board. Moisture content taken of the wood sheathing read 9%, which is within acceptable limits.

**Figure 4:** Observations in T-4601

<p>(A)</p>  <p>The roofing surface around the roof drain is elevated which results in ponding around the drain</p>	<p>(B)</p>  <p>Moss growth at the corner where the patio meets a parapet wall.</p>	<p>(C)</p>  <p>The membrane has a blister at the location indicated by the arrow.</p>	<p>(D)</p>  <p>Caulking is pulling away and there is a pinhole in the caulking underneath the window</p>
<p>(E)</p>  <p>Photograph showing failed caulking at base of sliding door as well as exposed wood in behind suggests the lack of waterproofing membrane extending into the opening.</p>	<p>(F)</p>  <p>Photograph of cut test adjacent to the location that exhibited moisture ingress in the past, as the carpet was stained and nails were covered in rust, however, there was no indication of new moisture ingress.</p>	<p>(G)</p>  <p>Staining on the stucco indicates moisture runoff from the flashing down the stucco wall.</p>	<p>(H)</p>  <p>Photograph of the window in the shower.</p>
<p>(I)</p>  <p>Rock Dash stucco cladding on the wall of T4603 showed stained control joint as well as organic growth on the wall indicating large amount of moisture running down the wall.</p>	<p>(J)</p>  <p>Large amounts of organic growth as well as debris from the trees.</p>	<p>(K)</p>  <p>Cracked and failed caulking at the interface between the parapet flashing and the wall.</p>	<p>(L)</p>  <p>Organic growth and staining on flashing possibly suggesting that ponding of water is occurring at the corner.</p>

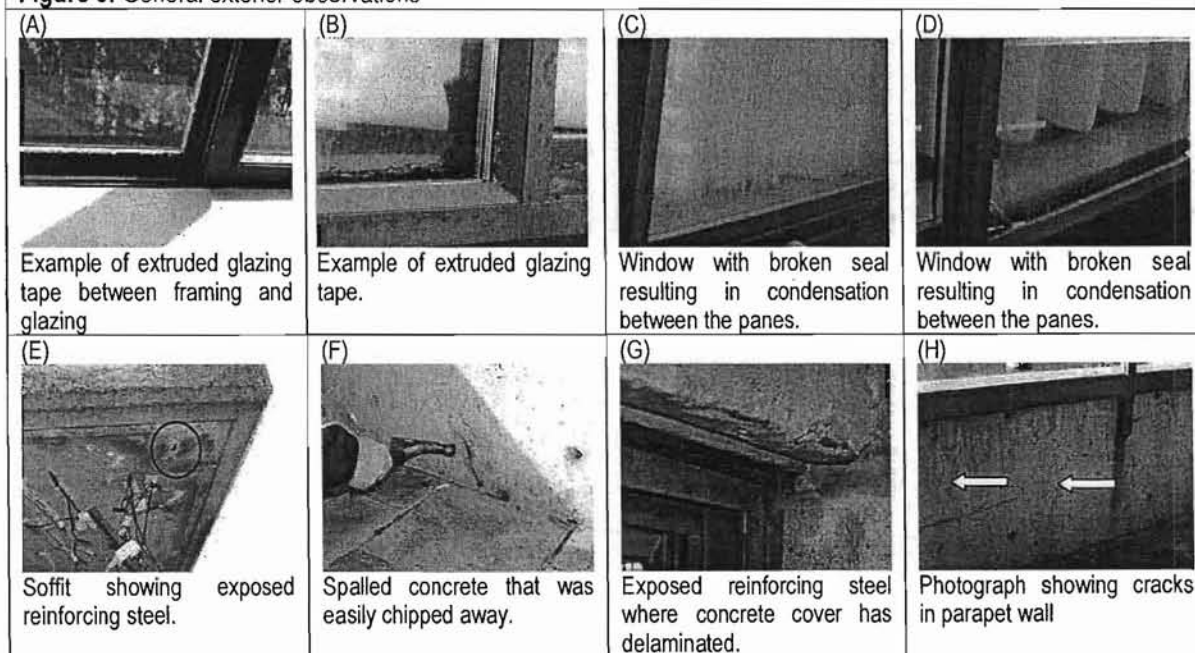
**Figure 4: Observations in T-4601**

<p>(M)</p>  <p>Loose window trim reveals building paper and plywood sheathing. This condition can potentially allow moisture to gain ingress into the wall assembly.</p>	<p>(N)</p>  <p>Organic growth near the bottom of the downspout.</p>	<p>(O)</p>  <p>The flashing on the top of the mechanical vent showing depression and possible location for moisture to accumulate.</p>	<p>(P)</p>  <p>Photograph showing localized delamination of the coating on the chimney exposing the metal underneath.</p>
<p>(Q)</p>  <p>There is no caulking at the interface between dissimilar materials which can potentially allow moisture to penetrate behind the cladding.</p>	<p>(R)</p>  <p>Staining on the flashing suggests moisture ponding against the glass block and also penetrating under the glass block which is indicated by the staining underneath the glass block.</p>		

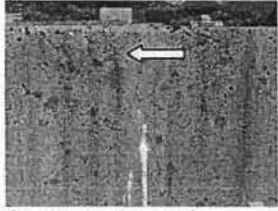
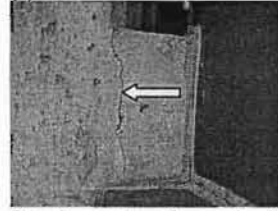

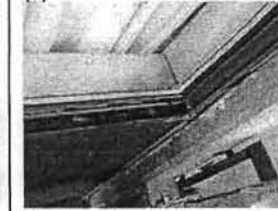


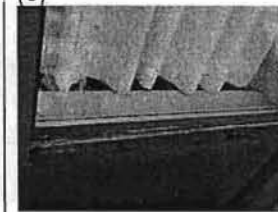



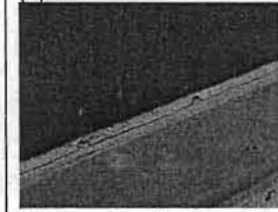
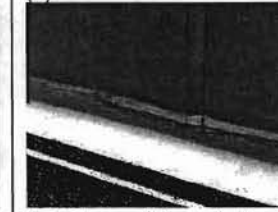
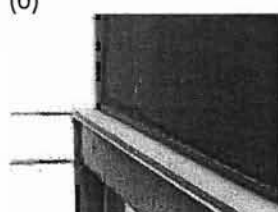



### 3.2 Visual Observations- Tower

- **Exterior Review :** Three locations were reviewed over the entire height of the building via swing stage and the following observations were made:
  - A common issue noted with all the windows and sliding doors was that the glazing tape installed between the frame and the glazing is extruded or "squeezed out" likely due to repeated cycles of heat and wind-pumping action.
  - A systemic issue noted with all windows and sliding doors was the splitting and delaminating caulking installed between window frames and concrete, between metal panels and concrete, around window and sliding door frames, and between stucco and concrete.
  - Some of the windows were noticed to have condensation between the panes suggesting a failed seal between the panes.
  - Some windows were noted to have organic matter growing in the sill track which also indicates that the window is subjected to moisture and is being held for extended period of time. This condition can impede drainage of the sill track.
  - Caulking installed at the mitred joint of the window frame was found to be delaminating.
  - Fasteners for the metal panels were seen to becoming loose and protruding out in locations. These locations could become potential ingress points for moisture to penetrate behind.


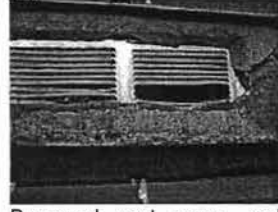


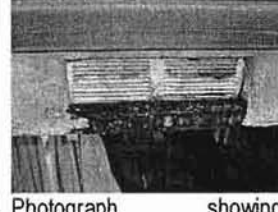
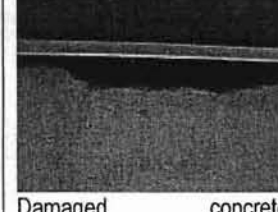





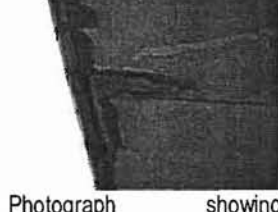
- A common issue noted with cast-in-place concrete was the minor spalling and delamination of the concrete. There were numerous areas noted especially on the soffit of balconies and other overhangs, soffit of stairwells, balcony parapet walls and cast-in-place concrete walls where concrete had delaminated exposing the embedded reinforcing steel.
- Another common observation was the presence of efflorescence (white coloured staining) on most of the soffits of the balconies and overhang edges.
- Cracks have developed at numerous locations in the concrete at parapet walls, curbs, roof parapet wall, and cast in place concrete walls.
- There were cracks, holes and chipped concrete around most of the exhaust vents. Some of the vent screens were damaged and some of the vents were plugged with dryer lint. In some locations, where accessible for review from the swing stage, condensation formation was present along the top of the duct work inside of the vent.
- At slab edge interfaces with adjacent walls, black staining was noticed indicating that water is running to the ends of the flashing and running down the adjacent concrete walls.
- There is a membrane present at the base of the wall that extends from below grade, however, the membrane was delaminated from the wall in locations.
- All of the balcony surfaces consist of an exposed concrete finish with no waterproofing membrane installed. A few owners have painted their balconies and a few have laid an exterior carpet on the floor.

**Figure 5: General exterior observations**

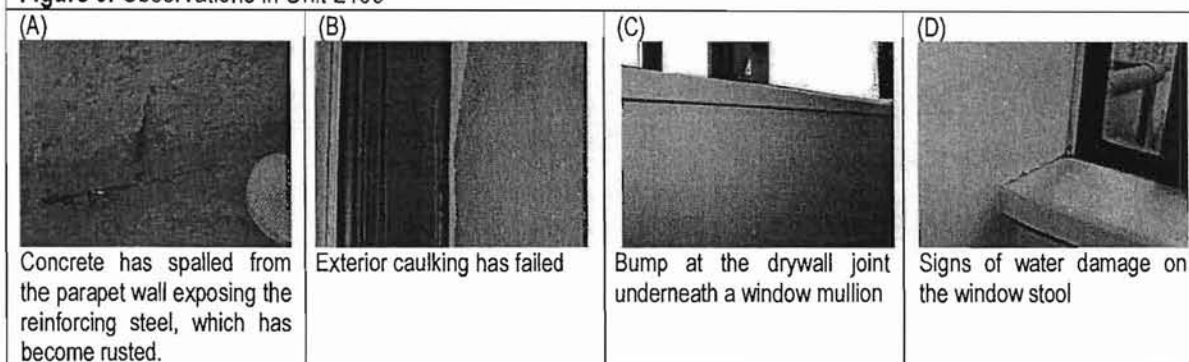
**Figure 5: General exterior observations**

<p>(I)</p>  <p>Cracks in the roof parapet wall.</p>	<p>(J)</p>  <p>Development of crack is common at the transition between the different height walls.</p>	<p>(K)</p>  <p>Evidence of condensation related moisture draining out of the window frame weep hole.</p>	<p>(L)</p>  <p>Photograph showing organic matter present on window sill, and evidence of moisture damage to the finishing inside.</p>
<p>(M)</p>  <p>Photograph showing moisture collected at the window sill wicking onto the adjacent concrete wall.</p>	<p>(N)</p>  <p>Photograph showing separated caulking at window mitred joint.</p>	<p>(O)</p>  <p>Photograph showing condensation between the panes and organic matter on the window sill.</p>	<p>(P)</p>  <p>Photograph showing split caulking between slab edge and flashing, and metal panel and adjacent concrete wall.</p>
<p>(Q)</p>  <p>Failed caulking between metal panel/window frame and concrete wall.</p>	<p>(R)</p>  <p>Failed caulking between metal panel/window frame and concrete wall.</p>	<p>(S)</p>  <p>Photograph showing failed caulking between metal panel and flashing, and protruding fasteners.</p>	<p>(T)</p>  <p>Failed caulking between flashing and metal panel, with presence of organic matter on the caulking indicating that the flashing is improperly sloped.</p>
<p>(U)</p>  <p>Cracked caulking at fasteners.</p>	<p>(V)</p>  <p>Protruding fastener at metal panel.</p>	<p>(W)</p>  <p>Photograph showing protruding fasteners in the metal panel as well as organic growth along the back edge of the flashing indicating an improperly sloped flashing.</p>	<p>(X)</p>  <p>Caulking extruding out from between the window frame and metal panel.</p>

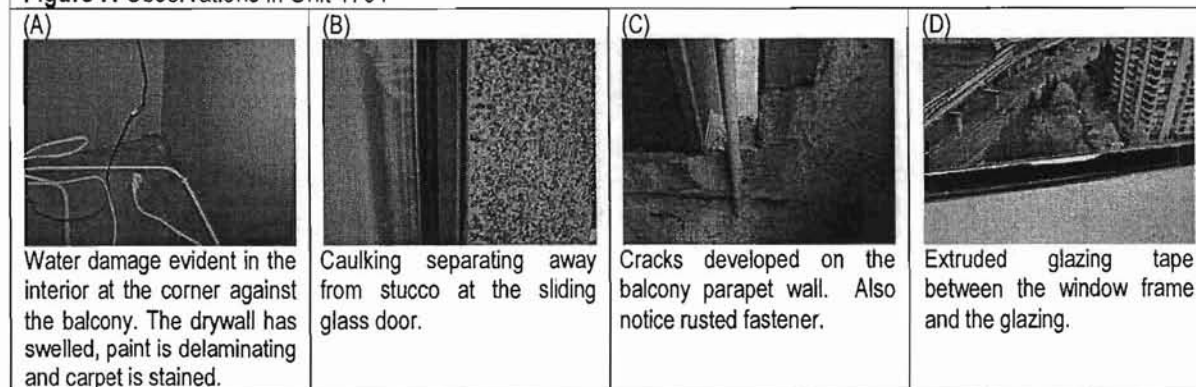
**Figure 5:** General exterior observations

<p>(Y)</p>  <p>Photograph showing new caulking installed over original failed caulking.</p>	<p>(Z)</p>  <p>Damaged vent cover, and cracked and spalled concrete around the vent opening</p>	<p>(A1)</p>  <p>Chipped concrete around the vent opening.</p>	<p>(B1)</p>  <p>Clogged vent screen.</p>
<p>(C1)</p>  <p>Damaged vent cover.</p>	<p>(D1)</p>  <p>Photograph showing moisture coming out of the vent.</p>	<p>(E1)</p>  <p>Damaged concrete underneath the slab edge flashing.</p>	<p>(F1)</p>  <p>Plugged vent grille.</p>
<p>(G1)</p>  <p>Photograph showing spalled concrete at slab edge. As well the precast concrete panel section in line with the slab edge is showing signs of localized delamination.</p>	<p>(H1)</p>  <p>Photograph of roof access door exhibiting failed caulking, and rusted sections.</p>	<p>(I1)</p>  <p>Rust present on roof access door framing.</p>	<p>(J1)</p>  <p>Below grade waterproofing membrane de-bonding from the substrate.</p>
<p>(K1)</p>  <p>Photograph showing efflorescence on the underside of roof overhang extending past the drip channel</p>			

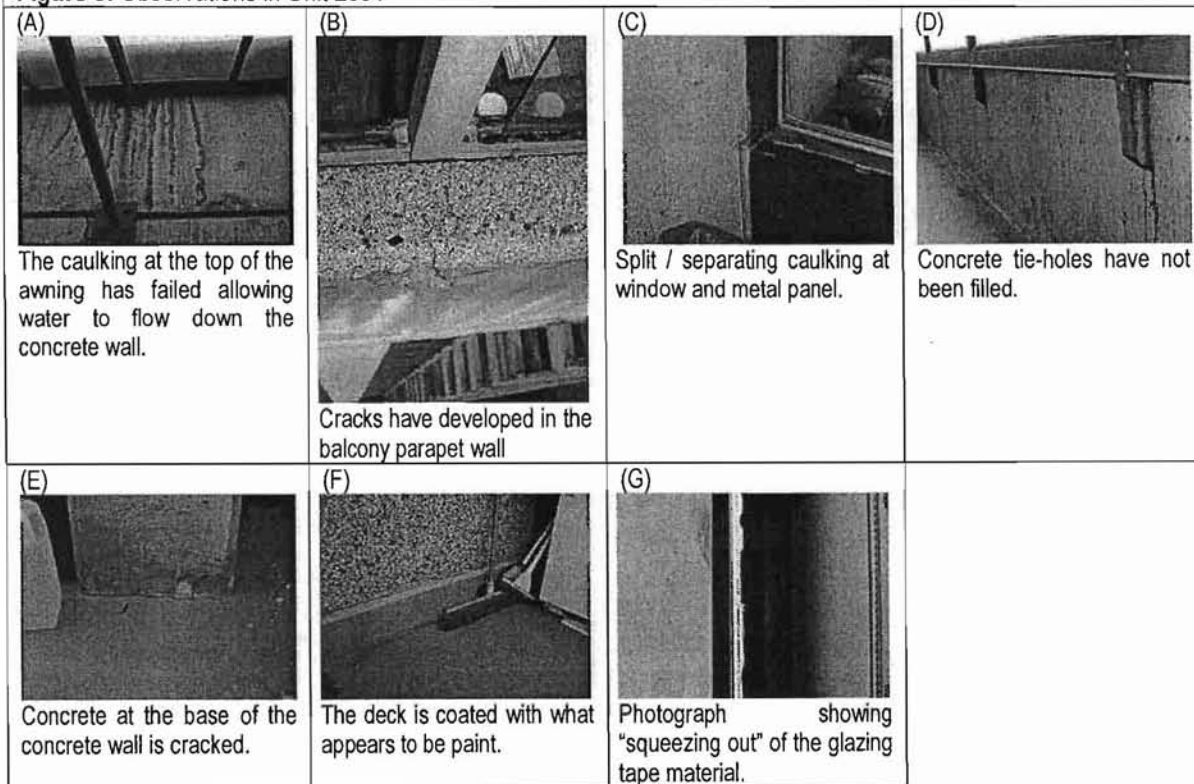
- **Unit 2106**: The following was observed in the unit:
  - Spalled concrete exposing corroded reinforcing steel.
  - Systemic failure of caulking around windows and doors.
  - There is a bump at the joint in the drywall underneath the mullion of the living room window.
  - Window stool had signs of damage from moisture.
  - Operation of the sliding door is relatively difficult.

**Figure 6: Observations in Unit 2106**

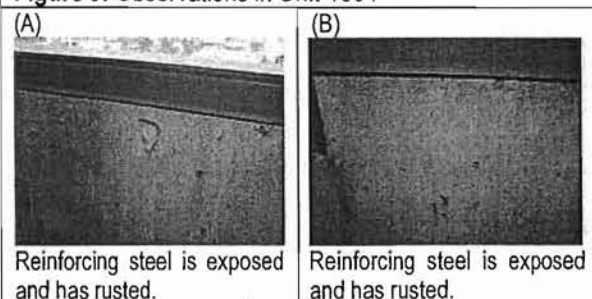
- **Unit 1701**: The following was observed in the unit:
  - In both bedrooms there is evidence of water infiltration from the exterior. In the inside corners of the bedroom there is damage to the drywall where it has swelled and the paint has begun to delaminate from the wallboard.
  - Observed deteriorated and delaminated caulking throughout.
  - Cracks have developed at the interface of the different height concrete walls.
  - Some of the fasteners were rusted.
  - Observed "squeezing-out" of the glazing tape between the window frame and the glazing.
  - Operation of the sliding door was relatively difficult.

**Figure 7: Observations in Unit 1701**

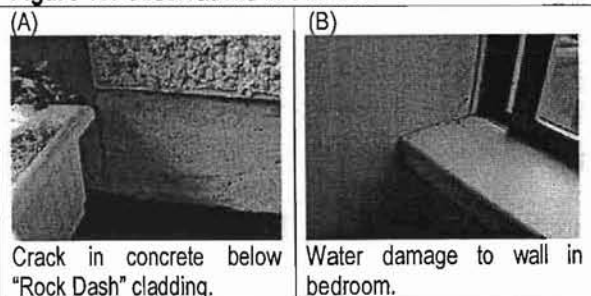
- **Unit 2604**: The following observations were made in the unit:
  - Water stains are evident on the concrete surfaces underneath the glass skylight awning indicating that the seal between the skylight and the concrete above has failed.
  - The metal structure of the awning itself is rusting, and is further staining the concrete cladding as a result.
  - The parapet walls that the railing attaches to have developed several cracks.
  - The owner indicated that he has previously repaired all spalled concrete areas. It is unclear how the concrete was repaired.
  - Similar to other units, caulking has deteriorated.
  - Glazing tape between the glazing and window frame has squeezed out.
  - Operation of the sliding door is relatively difficult.
  - Base of concrete wall is cracked at the end of the wall.

**Figure 8:** Observations in Unit 2604

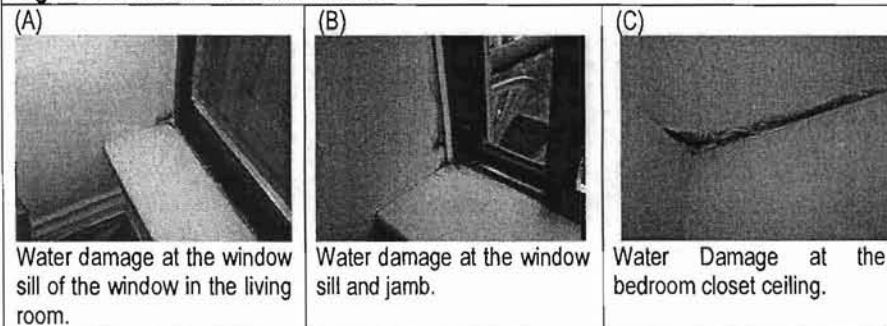
- **Unit 1501**: The following observations were made in this unit:
  - Systemic failure of the caulking, glazing tape at windows and sliding door, and difficult operation of the sliding door.
  - Exposed reinforcing steel was found on parapet walls at a few locations and the reinforcing steel appeared to be situated close to the surface.
  - There are hollow sounding areas on the parapet wall possibly indicating concrete that has delaminated.
  - Bedroom door has shifted.

**Figure 9: Observations in Unit 1501**

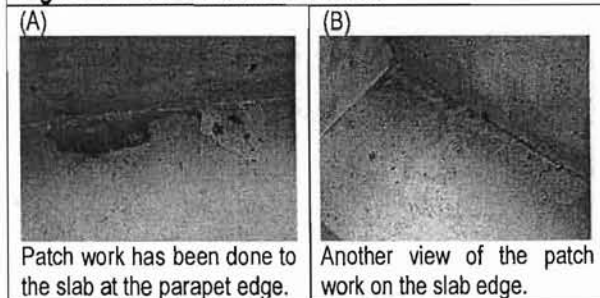
- **Unit 1302**: The following observations were made in this unit:
  - There is a large crack below the "Rock Dash" cladding on the concrete upstand wall.
  - There is evidence of water damage along the window stool in the bedroom.
- **Unit 802**: The following observations were made in this unit:
  - There is a large crack below the "Rock Dash" cladding on the concrete upstand wall.
  - There is evidence of water damage on the window stool in the bedroom.
  - Systemic failure of the caulking, glazing tape at windows and sliding door, and difficult operation of the sliding door.
  - The balcony floor is covered with an exterior grade carpet.

**Figure 10: Observations in Unit 802**

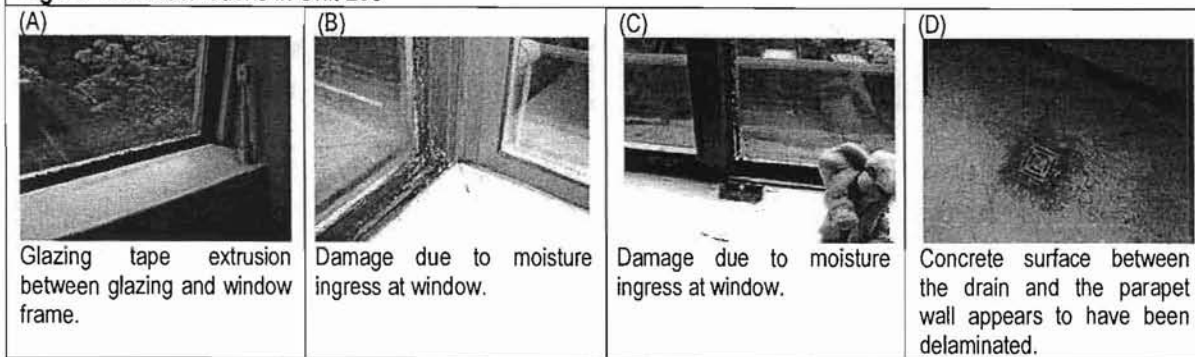
- **Unit 806** : The following observations were made in this unit:
  - There is dark staining due to water damage at both the windows as well as the sliding door.
  - Systemic failure of the caulking, glazing tape at windows and sliding door, and difficult operation of the sliding door.
  - The balcony floor is covered with an exterior grade carpet.
  - The closet in the bedroom also has water damage in the upper corner along the wall.

**Figure 11: Observations in Unit 806**

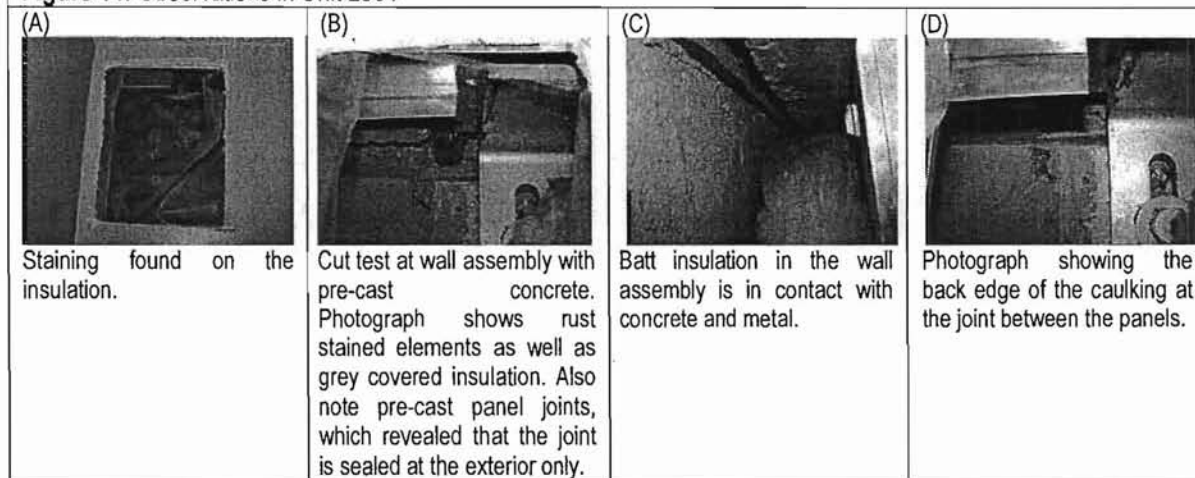
- **Unit 304** : The following observations were made in this unit:
  - Systemic failure of caulking throughout.
  - There appears to have been several patches at the concrete of the balcony slab.
  - The outer edge of the balcony sounds hollow possibly indicating that the concrete surfaces have delaminated.

**Figure 12: Observations in Unit 304**

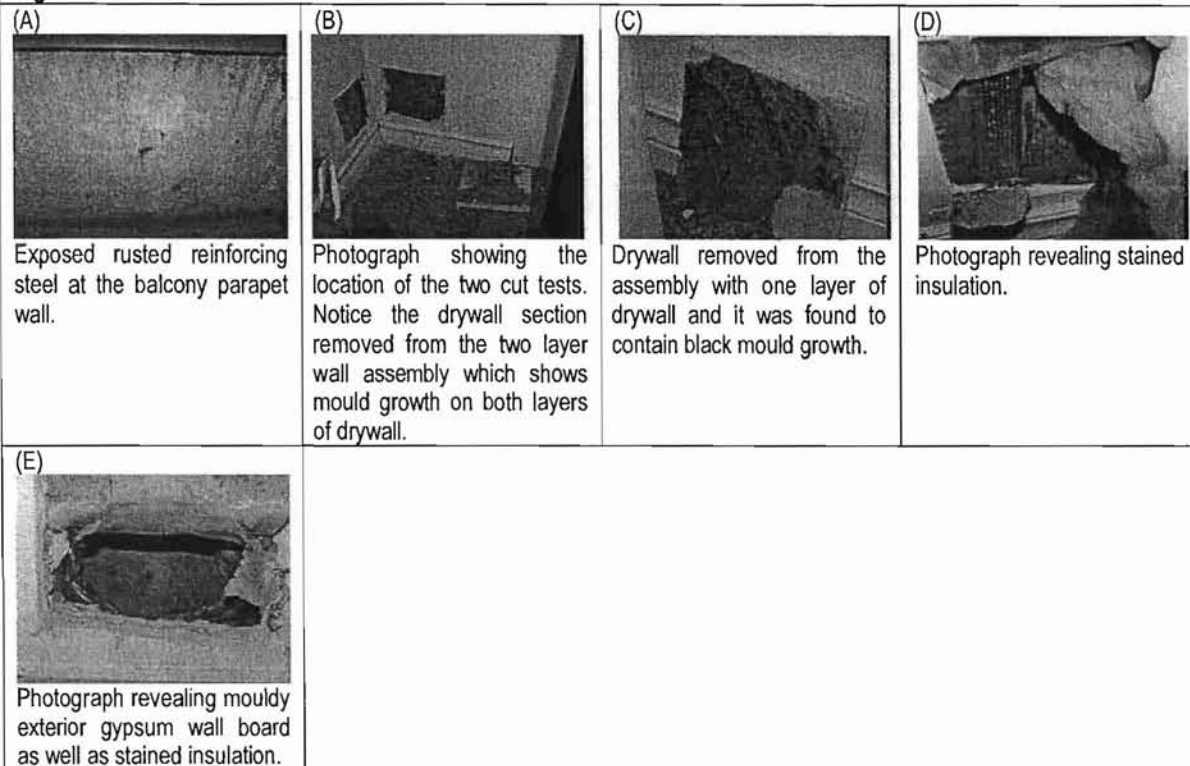
- **Unit 205** : The following observations were made in this unit:
  - Systemic caulking failure throughout.
  - Presence of organic material and evidence of moisture ingress at windows.
  - Extrusion of glazing tape from between the window frame and glazing.

**Figure 13: Observations in Unit 205**

- **Unit 2504 :** The following observations were made in this unit:
  - Systemic failure of the caulking, glazing tape at windows and sliding door, and difficult operation of the sliding door.
  - A cut test was made in the exterior wall from the interior revealing stained insulation and corroded metal components.

**Figure 14: Observations in Unit 2504**

- **Unit 1807 :** The following observations were made in this unit:
  - Systemic failure of the caulking, glazing tape at windows and sliding door, and difficult operation of the sliding door.
  - Two cut tests were performed on this unit. One of the wall assemblies consisted of one layer of drywall, whereas the other wall assembly consisted of two layers of drywall as seen on Photographs below. Both cut tests showed that the back side of the drywall contained varying degrees of mould/fungal growth.
  - Moisture content testing read approximately 0.1% for inside drywall from the one layer wall assembly, and approximately 0.2% for inner layer of gypsum and approximately 0.4% for the outer layer of the two ply gypsum wall assembly, all of which are within the expected dry range of moisture content.

**Figure 15: Observations in Unit 1807**

- **Unit 2403:** The following observations were made in this unit:
  - Systemic failure of the caulking, glazing tape at windows and sliding door, and difficult operation of the sliding door.
  - One cut test was performed on the interior which revealed slight staining of the batt insulation. Moisture content reading of the exterior drywall read approximately 0.3%, which is within acceptable limits.

**Figure 16: Observations in Unit 2403**