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THE DONOVAN
1055 RICHARDS STREET
VANCOUVER, BC
PROPERTY CONDITION ASSESSMENT
FEBRUARY 25, 2011

PREPARED FOR:

STRATA PLAN BCS 3395
1055 RICHARDS STREET
VANCOUVER, BC V6B 0C2

ATTN: PHILLIP PINCUS

PREPARED BY:

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OMICRON PROJECT NO. 10-10-221

PROPERTY CONDITION ASSESSMENT
1055 RICHARDS STREET
VANCOUVER, BC

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February 25, 2011

Phillip Pincus
Strata Plan BCS 3395
1055 Richards Street
Vancouver, BC V6B 0C2

Dear Phillip:

Re: Property Condition Assessment
1055 Richards Street, Vancouver BC

Omicron is pleased to present this Property Condition Assessment for the above-noted building.

This condition assessment is based on a walk-through survey and available drawings and supporting documents, and is conducted in general conformance with ASTM E2018-08. Opinions are based on a representative sample of exposed conditions. No exploratory work or materials testing was conducted.

The report includes a general description, assessment of the condition/issue, level of importance of the situation, recommendations for improvement or further review and estimated costs where appropriate. Costs have been categorized by level of importance. It should be noted that the estimated costs are only approximate and would need to be confirmed by way of a more defined scope of work and sub-trade pricing.

We trust that you find this report meets your requirements and we look forward to meeting with you to discuss it in further detail.

Yours truly,
OMICRON ARCHITECTURE ENGINEERING CONSTRUCTION LTD.

Doug Vincent, P.Eng., CP, LEED® AP
Principal

DV/ab

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February 25, 2011

PROPERTY CONDITION ASSESSMENT
1055 RICHARDS STREET
VANCOUVER, BC

EXECUTIVE SUMMARY

We trust the information contained herein will be useful in discerning the issues related to the long term maintenance program for 1055 Richards Street. We are available to answer further questions based on our review. If it is deemed necessary, the review can be augmented by closer investigations, including non-destructive testing. Our findings are based on our assessment of the building components on December 2, 2010. The weather conditions on our assessment date were raining, 5.5 °C.

THE TEAM

Omicron's Architectural, Structural, Mechanical, and Electrical personnel conducted the investigation, with the following team members:

- Architectural — Jack Giddings, Dip. Tech.
- Mechanical — Jeanette Frost, B.Sc., AScT
- Electrical — Al Bonisteel, MIESNA

INVESTIGATION SUMMARY

Following is a summary of our investigation.

1. GENERAL

1.1 The Donovan, located at 1055 Richards Street, is an 18 storey, 152 suite residential condominium high-rise, a 4 storey townhouse podium and a 4 level underground parkade (**Photo A-1**). The building was designed by Rafii Architects and built by Cressey Development in 2008. Exterior finishes consist primarily of painted concrete and aluminum window wall glazing systems.

1.2 Amenities include a lounge, common area 5th floor rooftop decks, a spa and fitness centre. The building is located in the Yaletown neighbourhood of downtown Vancouver close to the corner of Richards Street and Helmken Street.

2. ARCHITECTURAL/BUILDING ENVELOPE

2.1 A full set of architectural drawings marked 'Final Design Plans', dated January 27, 2009 prepared by Rafii Architects Inc. and the 'Building Envelope Maintenance Manual', dated October 1, 2009 prepared by Morrsion Hershfield were made available for review.

2.2 The tower roof consists of four rooftop decks for the penthouse suites and a landscaped roof system at the centre. The podium roofs are a combination of rooftop decks and landscaped roofs. The roof systems are inverted with the insulation installed on top of the roof membrane. The roof assemblies generally consist of gravel ballast, concrete pavers or landscaping/engineered soil, filter cloth or root barrier (for planter areas),

drainage rock or drainage mat (for planter areas), grooved extruded polystyrene insulation and a hot rubberized asphalt waterproofing membrane on concrete slab. The roof systems appeared to be installed as per the drawings reviewed. We recommend annual inspections by a roofing consultant and a comprehensive inspection a few months prior to the expiry of the roof warranty.

2.3 There is a cracked concrete paver on one penthouse deck (**Photo A-2**); **replace cracked paver.**

2.4 Saddle transitions have been detailed with self-adhered membrane (SAM) extending up the wall with metal flashing installed above. The SAM extends beyond the flashing in at least one location and has been inappropriately painted (**Photo A-3**). Metal flashings have been wrapped around the wall at a few locations. Saddle flashings have been typically left open at the edge (**Photo A-4**). It is inappropriate to leave SAM exposed and to leave open edges at flashings. **We recommend installing pre-formed prefinished metal closure wrap that extends around the wall with a gum pocket to receive caulk at returns to the face of the wall**.

2.5 Some guardrails on the tower roof have been inappropriately installed through the top of the parapet cap flashing; the standing seam of the cap flashing has been bent down at one location (**Photo A-5**). **We recommend the post attachments be grouted between the flashing and base plate and a liquid applied membrane (ie. Parapro) installed from flashing surface and over mounting plate and bolts and extending up posts at least 4".**

2.6 Balconies have a slip resistant liquid urethane waterproof membrane applied to the concrete slab. Urethane waterproof membrane has been applied to floor slab edges that extend beyond the window wall systems. Staining was observed on balcony slab edges and concrete eyebrows at floor slab edges (**Photo A-6**); the staining is unsightly and will be an ongoing maintenance issue. This detail appears to have been constructed in accordance with drawings reviewed. However, based on experience with similar details on other buildings reviewed, unless flashings are installed, exposed edges could potentially lead to the spalling of the concrete. **We recommend installation of flashings from the top surfaces of the balcony slab/floor slab and down the face edge of the concrete; with drip edge and end dams to protect concrete and reduce maintenance**.

2.7 An area of peeling paint was reported on the underside of the balcony above Unit 515; **we recommend stripping the paint, allowing slab to dry out and repainting**. There is also efflorescence on the concrete wall adjacent to the electrical outlet on the balcony; **we recommend cleaning the efflorescence and repainting**.

2.8 There are glass canopies on steel frames on floor levels 5, 15 & 17, at building entrances and at the townhouse entrances. Drawings indicate laminated tempered safety glass. Corrosion was observed at several locations on the steel frames (**Photo A-7**). **We recommend grinding off the corrosion, treating of the bare metal with zinc rich paint and then repainting the canopies**. There is a gap between the canopy and the wall allowing water to drain through at some locations (**Photo A-8**); whereas, some locations have been flashed and caulked. The structural connection of the canopy frame was observed to be corroded on townhouse canopies that lacked flashings; **clean corrosion and repaint damaged steel structure.** Drawings indicate a flashing and gumlip detail to prevent water from passing through; **we recommend installation of flashing and gumlip as per drawings**. The main entrance canopies appear to have been constructed according to drawings reviewed; however, there is a large gap between the wall and the canopy which allows rain water to fall on the intercom panel (**Photo A-9**). Although not a deficiency, **we recommend installing a transition flashing from the canopy to the wall face c/w with gum pocket to receive sealant at the wall face**.

2.9 There are unusually wide caulk joints at multiple locations of the transitions from the window wall frames to the concrete walls and to metal flashings. We recommend monitoring these transitions as part of regular maintenance. The sealant joint at the transition from window frame to concrete wall adjacent to Unit 1063 has failed (**Photo A-10**); **remove sealant, prep surfaces according to manufacturer's recommendations and re-caulk joint**.

2.10 The glazing systems in the building consist mainly of window wall systems with an area of curtain wall glazing at the ground floor front and rear lobbies. The window wall system is the Starline 9000 Series which is a thermally-broken aluminum frame with double glazing. Windows are a combination of fixed units with casement or awning type openers. Details reviewed indicate the window systems incorporate proper back pans, membranes and rain screen principles. Window systems appear to be installed according to drawings reviewed. Weepholes appeared to be free to drain; we recommend an annual cleaning of weepholes as part of a regular maintenance program.

2.11 There is a large gap above the canopy at the south roof access door on level L5 between the concrete canopy and the window frame (**Photo A-11**). **We recommend installing closure flashings.**

2.12 There is a damaged window on level L5 unit 605 that was previously reported; however, had not been repaired as of the deficiency review. **Replace the damaged unit**. There is reportedly a failed insulated glazing unit (IGU) in Unit 1601; **replace the failed IGU**.

2.13 The exterior wall systems consist of exposed painted concrete or concrete with stone veneer to the lower four floors and townhouses. The exposed concrete wall assembly consist of elastomeric paint, cast-in-place concrete, R-12 spray-on insulation, steel studs, gypsum board with painted finish. Documents indicate horizontal and vertical concrete cold joints are treated with a crystalline slurry with a caulked reveal to the exterior. There are several areas of efflorescence (**Photo A-12**). **Strip areas of efflorescence to bare concrete and repaint after cracks in concrete are v-grooved and filled with epoxy crack sealant system.** Efflorescence with active water seepage was observed at the concrete slab joint on the penthouse porticos (**Photo A-13**). The existing detail is vulnerable to water ingress at the cold joint and will be an ongoing maintenance issue. **We recommend installing SAM over the portico slab and a pre-finished metal cap extending down past the cold joint for a proper long term solution**.

2.14 There are several areas of repainting that are not blended with the original paint (**Photo A-14**); **blend paint finishes.**

2.15 Efflorescence was observed on the underside of the penthouse exterior stair landings leading to the rooftop deck (**Photo A-15, Photo A-16**). The area was apparently repaired in Unit 2003 but efflorescence has re-appeared since the repair. **Remove threshold plate from deck to landing, install a waterproof membrane to extend over the joint between the deck and landing and install a larger threshold plate to cover the membrane.**

2.16 There is one location of "bubbling" paint finish on level L5 north rooftop deck area wall (**Photo A-17**); **we recommend stripping the area of bubbling paint to bare concrete and repainting**. There has been a crack repair in the exterior concrete wall of the north podium exit stair (**Photo A-18**); however, it has not been repainted. **Repaint area of crack repair**.

2.17 There is a polyurethane traffic coating on the suspended slabs in the parkade. Several locations of repair patching were observed. We recommend annual review and repairs as part of a regular maintenance program.

2.18 The door threshold in Bike Room #4 on parking level P1 is not properly secured; **properly secure the door threshold**.

2.19 Drawings indicate exterior foundation walls below grade are dampproofed with sheet waterproofing at blind side forming locations and water stops at all vertical and horizontal joints except at footings. Water ingress was observed at the base of the concrete block parkade vent shaft (**Photo A-19**). The shafts have steel grates at the top and are open to the weather. **The proper solution is to remove the concrete block to provide access to**

the interior of the shaft and install a liquid applied waterproof membrane extending up the inside wall a minimum of 2'-0" to create a reservoir.

2.20 The leak at parking stall #409 was reportedly repaired; however, signs of water ingress were observed during the walk through review. **We recommend epoxy injection repair system to repair the leak**.

2.21 There is a water leak into the Level P4 storage locker area through a crack in the slab. The urethane membrane on the floor slab of the Geothermal mechanical room above is damaged at the location of the crack. **We recommend routing the crack, installing epoxy and repairing the membrane.**

2.22 Water ingress was also observed at the base of the stairs in the elevator machine room on Parking Level P4(**Photo A-21**) ; drawings indicate a waterproof membrane on the core footing. **We recommend cleaning out the joint of the stair to the slab and epoxy injection; this will be an ongoing maintenance issue. Given the water ingress issue, we recommend raising the electrical conduit and heater to 3'-0" above the floor level as a safety precaution in case of flooding**.

2.23 Several of the glass doors in the gym amenity area on the ground floor are contacting the jambs or other doors and not functioning properly. The sauna door in the men's sauna contacts the jamb at the top, the double glass doors to the yoga studio are contacting each other at the top, and the men's toilet stall door must be lifted up in order to engage the door lock. **Adjust the doors in the amenity spaces for proper function**.

2.24 There are no door stops in amenity space washrooms which were reportedly not included in the specifications or as part of the final deficiency review. **We recommend installing door stops**.

2.25 There is a gap between the sidewalk slab and the wall at the main entrance (**Photo A-22**). The concrete is not cracked and does not appear to be settling. The waterproof membrane appears to extend up the wall and is terminated with a prefinished metal flashing. There is an asphalt impregnated protection board in the gap. Based on drawings reviewed, there is provision for drainage below the sidewalk. **We recommend removing the existing counterflashing and installing a flashing with an extension leg to divert water away from the gap**.

2.26 Efflorescence was observed on the concrete wall below the canopy on the balcony of Unit 1809 (**Photo A-23**). A repair was reportedly attempted; however, was not successful. **As indicated in Item 2.13, we recommend stripping areas of efflorescence to bare concrete and repainting after cracks in concrete are v-grooved and filled with epoxy crack sealant system. Also, as indicated in Item 2.8, we recommend installation of flashing and gumlip at transition of the canopy to the concrete wall as per drawings**.

2.27 Spalling concrete on Townhouse Unit #1057 patio curb wall was observed (**Photo A-24**). The spalling is occurring at the cold joint at the base of the concrete curb. **We recommend the removal of loose concrete and repair of the damaged areas**. The curb attachment detail is **unclear but there is a concern of water ingress in the cold joint resulting in corrosion of the reinforcing steel. We recommend supplying the as built of the curb detail including attachment for further review**. Drawings indicate polyurethane paint finish to curb; however, this does not appear to have been completed.

3. MECHANICAL

3.1 HVAC and plumbing drawings M-1 to 32 prepared by Jade West Engineering were made available for our review. The drawings were dated March 30, 2007 and noted as "Issued for Construction".

3.2 Fire dampers and fire stopping appear to have been installed in all ducts and piping penetrating horizontal and vertical fire separations. Given that the mechanical installation occurred in 2007 and 2008, all of the piping and equipment where required would have been seismically restrained.

3.3 The building HVAC system consists of a ground source geothermal heat pump system to serve suite heat pumps. Heating and cooling is supplemented by two boilers and a cooling tower. The building was constructed in 2008 with all of the equipment inspected being original. The fans, cooling tower, pumps and boilers have at least 20 years of serviceable life remaining if well maintained. A replacement program for many of the 171 heat pumps will need to be initiated within the next 15 years. Pace chemical treatment is used to treat the boiler, geothermal and condenser water loops. Maintenance and topping up of the systems would be an annual maintenance cost.

3.4 The ground source heat pump loop consists of 32 – 300 foot vertical wells which provide approximately 54 tons of cooling. The ground source water is pumped through a water to water heat exchanger **(Photo M-1)**. The pumped condenser water on the other side of the heat exchanger delivers condenser water to the heat pumps.

3.5 The one bedroom suites have 1 heat pump and the two bedroom suites have 2 heat pumps installed to provide heating and cooling to the spaces **(Photo M-2)**. The heat pumps require regular filter changes. As the units age they will require controls, fans and compressor maintenance and replacement. Depending upon usage when the 171 heat pump units reach 15 to 20 years old they will require complete replacement. Currently, access to the heat pumps is difficult due to their confined space location. This makes servicing and eventual replacement difficult and adds additional costs to do repairs and replacement. Some units did not have proper connections between the return air filter and the return air ductwork. Providing increased service area is not an option from a practicable perspective (ceilings would need to be lowered and walls perhaps relocated). **It is suggested that Trotter and Morton review the installation of all heat pumps and note which units can be easily serviced for filter changes, controls repairs and compressor replacement. Any units where service is a problem should be considered a warranty issue.** Repair and replacement of the heat pumps is reportedly an Owner responsibility.

3.6 The main electrical room is air conditioned with 2 6.0 ton heat pumps **(Photo M-3)**.

3.7 Two LAARS PNCH 750 85% midefficient copper tube water boilers with 750 MBH stainless steel burners have been provided to supplement the condenser water loop during the heating season **(Photo M-4)**. As the boilers run intermittently during the heating season they should provide, if well maintained at least 20 to 25 further years of reliable service.

3.8 A 62 ton Evapco RW 1872 cooling tower c/w variable speed fans for energy savings has been provided to supplement the condenser water loop during the cooling season **(Photo M-5)**. As the tower runs intermittently during the cooling season it should provide, if well maintained, at least 20 to 25 further years of reliable service.

3.9 10 inline circulating pumps ranging from fractional horsepower (FHP) to 7.5 HP circulate heating and condenser water to all equipment and the heat pumps **(Photo M-6)**. For redundancy the main systems have duty and standby capability which are controlled by a lead/lag schedule to extend their serviceable life. Apart from annual maintenance of seal and motor replacement the pumps should have at least 20 further years of serviceable life remaining.

3.10 By code multi-residential buildings must be provided with 100% outdoor air units to pressurize the common corridors on each floor. This ensures that odours from one suite do not enter the common areas and potentially other suites. A Greenheck PVF 300H natural gas fired roof top unit has been installed c/w ducting and grilles to the 17 floors **(Photo M-7)**. A 300 MBH burner tempers the 8,000 cfm of air being delivered to the floors. The unit will last a further 20 to 25 years but as the burner is heating 100% outdoor air and is used 24/7 during the

heating season it may require replacement in 15 to 20 years. Filter, belt and motor changes should be part of the annual maintenance budget.

3.11 Each suite is provided with a washroom exhaust fan in each washroom and a kitchen exhaust fan over the gas range. The air is exhausted through in slab ductwork to perimeter soffit grilles. The suite dryers are provided with a booster fan which runs when the dryer is operational. The fans are an Owner's responsibility. The dryer exhaust and duct system require annual cleaning. **On the north and south sides the combined exhaust wire mesh opening was filled with construction debris/paint in several instances. All openings should be inspected and where the openings were obstructed the grilles should be removed and the paint/debris removed.** This is a construction deficiency.

3.12 The parkade is exhausted by 4 inline exhaust fans energized by carbon monoxide and propane sensors **(Photo M-8)**. The exhaust fans are interlocked to 3 outdoor air supply fans which provide makeup air. The fans are used only during high vehicle load and other than routine maintenance/calibration of the sensor and replacement of belts and motors the fans will have at least 20 years of serviceable life remaining.

3.13 The parkade lobby areas are pressurized with 2 supply fans which operate during a fire alarm to ensure smoke does not enter the vestibules. A third fan runs continuously to ensure carbon monoxide does not enter the vestibules.

3.14 There are 21 smaller FHP fans located throughout the building to supply and exhaust air to such spaces as the fitness area, service rooms and common washroom areas **(Photo M-9)**. Other than routine maintenance and replacement of belts and motors 10 of the fans will have at least 20 years of serviceable life remaining. The other 11 run continuously and will probably require replacement in 15 to 20 years.

3.15 Trotter and Morton provide regular maintenance twice a year and are on call on an "as needed" basis. There are 3 mechanical rooms – the ground source heat pump room in the parkade, the water entry and sprinkler room in the parkade and the boiler and domestic hot water room in the penthouse. All equipment and piping was neatly labelled. The rooms were neat and tidy and are not currently being used for storage.

3.16 A 6" combined domestic water and fire protection service feeds the building from the City main on Richards Street. The water entry room is located in the P1 level. The domestic water station is complete with a double check valve, pressure reducing valve, City water meter and bypass **(Photo M-10)**. The domestic water system serves 2 zones – Level P-4 to 8th floor served with City water pressure and 9th floor to penthouse (19th floor) served with a booster pump system **(Photo M-11)**. The booster pump has 3 pumps (2- 7.5hp and 1 -1 5hp) which operate in sequence to provide adequate pressure and flow to the uppermost plumbing fixtures. At the time of the site visit only the 5 hp pump was running.

3.17 The incoming 6" domestic water service was leaking in the parkade. Currently a drain pan has been installed below the piping to protect the vehicle below **(Photo M-20)**. **The insulation should be removed and the leak repaired.**

3.18 Domestic water piping is a combination of copper for the main water entry station and vertical risers and Wirsbo PEX piping for the "home run" in slab domestic hot and cold water piping. Domestic water piping where visible was insulated. Piping within the parkade was heat traced for freeze protection; **the piping requires labelling as being heat traced**. Copper domestic water piping typically has a life span of 30 to 40 years. With the domestic water piping being 2 years old it should have at least another 30 to 35 of serviceable life remaining before re-piping needs to be considered.

3.19 Each suite is provided with domestic hot and cold water services with a set of shut off valves to isolate the suite from the rest of the building. The drawings note that these shut off valves are located within interior walls

near the kitchen or washrooms and are presumably accessed via access doors. Owners have noted that they have not been informed as to their location. **Contractor to provide "Hot and Cold Water Shut Off Valve" labels on each suite's access door.**

3.20 For cross connection control the water entry station and all domestic water piping used for make up water for irrigation systems, boiler and condenser water makeup and the steam room steam generator must be protected with a back flow prevention device. All systems were provided with either a double check valve or a reduced pressure back flow preventor **(Photo M-12)**. The systems had their last annual testing in March 2009. **The testing should have been part of the annual maintenance program.**

3.21 The building gas service connects to the Terasen gas main on the lane with the meter being located at the west side of the property. The gas piping serves the gas boilers, makeup air unit, the suite gas ranges and the deck barbeque connections in the 2nd, 4th, 16th, 17th and roof levels. Gas piping was yellow banded for identification purposes.

3.22 Domestic hot water is generated by a hot water system in series. In the first phase a 10 ton Climate Master water to water heat pump **(Photo M-13)** is connected to the condenser water loop and provides hot water for 2 domestic hot water heat exchanger storage tanks. This 110°F preheated domestic hot water then feeds 2 hot water storage tanks with heat exchangers fed from 2 Laars boilers (see Section 3.7) **(Photo M-14)**. The 125°F hot water then is distributed via 2 circuits (upper and lower floors) to the plumbing fixtures. 4 circulating pumps and 2 domestic hot water re-circulating pumps serve the system. The water to water heat pump will require replacement in 15 to 20 years. The lower 7 floors are provided with domestic hot water from the penthouse system. The drawings note that a 10 gallon 9.0 kw electric hot water tank is located on the main floor to supplement the hot water recirculation and eliminate the need to pump the recirc back to the mechanical room. Omicorn was not shown the hot water tanks but as electric hot water tanks typically have a life span of 10 years it will require replacement in the next 5-10 years.

3.23 The main floor steam room is served by an electric steam generator **(Photo M-21)**. The steam room was not being used at the time of the inspection. Depending upon usage steam generators typically have a serviceable life span of 20 to 25 years.

3.24 The 8" sanitary sewer system collects the waste from all of the plumbing fixtures and discharges it into the City main on Richards Street. All sanitary piping is either cast iron or copper. P-traps in the parkade are insulated to prevent freezing. An oil interceptor has been provided at the P4 car washing area; the outflow connects into the sanitary system. All catchbasins including the elevator pit sump in the parkade connect into the sanitary system. The oil interceptor and catch basins should be cleaned annually as part of the maintenance program.

3.25 The storm system collects the roof drainage, footing drains, and area drains around the building. The footing drains discharge into a sediment sump prior to connecting into the storm system. The 8" storm water discharges into a sump at the south east side of the upper parking level as required by the City of Vancouver prior to connecting into the storm main on Richards Street.

3.26 A sump with duplex 2.0 HP sanitary pumps is located on the P4 level and serves the lower level floor drains, catch basins and oil interceptor **(Photo M-15)**. A sump with duplex 7.5 HP storm pumps also on the P4 level serves the footing drains. The pumps could not be inspected. A control panel complete with a lead/lag schedule and a high level alarm was provided for each duplex pump system. It could not be confirmed whether the high level alarms were also tied into either a security system or the building DDC system.

3.27 Roof drains could not be inspected on the roof as they are covered with gravel and planting material and the PVC access ports could not be removed. The drains are reportedly 2 level c/w membrane clamps. The upper decks are provided with pavers; these areas drain thru a scupper to adjacent small roof areas. The lower level

decks have pavers with roof drains below clamped to the membrane. The preferred detail is to use 2 level patio drains with a grate on the top and a membrane clamp c/w drain weep holes at the lower level. As part of the maintenance all patio drains should have the pavers removed and the drains cleaned and flushed annually. The upper level scuppers should be hosed out and the adjacent drains cleaned. Scuppers have been provided where required.

3.28 The building is fully sprinklered with wet and dry sprinkler zones **(Photo M-16)**. Each floor is separately zoned – the zone valves are connected into the standpipe riser within one of the exit stairs. The 4 levels of the parkade are each served by a dry sprinkler zone. All zones are separately annunciated on the fire alarm panel. The 6" service for the sprinkler system connects into the combined domestic water/fire protection line in the P1 water entry room. A double check valve for back flow prevention has been installed on the fire protection service **(Photo M-17)**. The fire department connection is located at the east side of the property and is within 45M of the fire hydrant located on the north west corner of Richards and Helmken Streets.

3.29 The double check valve had its last annual testing in March 2009. There was no test card on the wet and dry sprinkler stations. **The DCVA and the sprinkler stations should be tested immediately; typically this work is part of the annual maintenance program.** Fire extinguishers had their last annual testing in September 2010.

3.30 The Building Code at the time of construction required that the uppermost standpipe be capable of providing 500 gpm of flow at 100psi. A 500 gpm 50 HP fire pump c/w a control panel and power off the emergency circuit provides the required water boost **(Photo M-18)**. The pump had its last annual testing in February 2009. **The fire pump should be tested immediately; typically this work is part of the annual maintenance program.**

3.31 Each exit stair is provided with a standpipe riser with a 2 ½" hose connection located at each floor **(Photo M-19)**.

3.32 Suite 518 reportedly has drainage problems on their balcony. The problem may be a blocked scupper drain. Cressey is addressing this problem.

3.33 Townhouse unit 1057 reportedly has water ponding issues in the landscaping to the left of the entry stairs. The problem may be a blocked lawn drain. Cressey is addressing the problem.

3.34 There is a leak in the rated enclosure adjacent to parking stall 131 on the P1 level **(Photo M-22)**. The leak is caused by either the rainwater leader pipe in the enclosure or the outdoor air louver above connecting to the ductwork in the enclosure. Futher investigation is required.

4. ELECTRICAL

4.1 The incoming dual radial 12.5 kV BC Hydro service enters the site underground, entering via a pulpit and terminates in the high voltage disconnect and load break switches located on Level P1. The high voltage cubicle is in a separate room on Level P1 and consists of two high voltage load break switches for the dual radial services and a main over current breaker feeding the transformer **(Photo E-1)**. Ground fault protection has been installed. A single line of the high voltage service is posted on the equipment. The transformer is 12.5kV-120/208V 1500 kVA unit with temperature monitoring and is located in the main electrical room, also located on Level P1.

4.2 The secondary distribution section rated at 5000 amps (120/208 volts) feeds various loads including the emergency distribution and the 'house' distribution. The main ground bus is installed within the main electrical room and all ground conductors are identified with labels as required. Electrical riser closets are installed throughout the tower as required, complete with meter stacks with feeds to tenant's panels **(Photo E-2)**. Based upon the revenue meter readings taken during the site visit it estimated that the present electrical system is

approximately 25% loaded at this time. The equipment should be cleaned, tested and infrared scanning should be completed on a four year cycle. This should be part of an on-going maintenance program.

4.3 Convenience outlets are installed in common areas such as the parkade, elevator lobbies, corridors etc. Receptacles are not typically labeled within the common spaces. GFCI type receptacles are installed in some washrooms within the suites. It was noted that not all of the receptacles installed in the washrooms that were checked on site had GFCI types installed. Arc fault breakers are typically installed in the tenant panels for receptacles within the bedrooms as required by the Electrical Code. Exterior receptacles on typical floor decks and on the roof top decks are complete with weatherproof cover plates, but not the GFCI type. **The Canadian Electrical Code requires that ground fault circuit interrupter type receptacles (Class A type) be installed for all receptacles installed outdoors and for all receptacles installed within 1.5 metres of sinks (ie. washrooms). This work should be completed as part of the base building contract (Photos E-4, E-5, E-6, E-7).**

4.4 A 120/208volt, 350kW "Detroit Diesel", diesel generator is installed in the generator room located at grade level. A separate fuel storage day tank is installed within the room and is complete with a secondary leak containment tank. An 800 amp manual by-pass automatic transfer switch (Thomson Technology TSC-80) is located on 'P1" level with an 800 amp emergency distribution board installed adjacent. The emergency power generator provides power for all the life safety systems such as emergency lighting, fire alarm system, elevators, and fire/booster pump. **The generator appears to be bolted directly to the concrete slab, with no seismic snubbers installed. Some form of seismic restraint should be installed. There is evidence of corrosion appearing on the tops of the batteries. The batteries should be kept clean at all times to ensure long life and to avoid a short across the terminals (Photos E-8, E-9).**

4.5 Emergency lighting is provided via base building light fixtures connected to the emergency distribution throughout the common areas of the building. Stairwells, parking levels, corridors, elevator lobbies and selected lighting throughout each floor plate are connected to the emergency distribution system. Polycarbonate exit signage is installed throughout the building complete with LED sources and connected to the emergency distribution system. The coverage provided by the emergency lighting could not be confirmed on site without running the generator. Exit signs are generally installed where required and the coverage in common base building areas appears to meet code requirements **(Photos E-10, E-11)**.

4.6 Low voltage landscape lighting is installed in planters with step lighting installed on decks and walkways. Decorative surface mount area lighting is installed on the back side of the building with surface wall mount cylinders installed at both the front and back entrances. All exterior lighting is generally controlled through the use of time clock/photocell controls.

4.7 The parkade levels have surface fluorescent strip lighting installed with T8 lamps/ electronic ballasts and wire guards installed on lighting in the drive aisles. Typical floor common spaces/corridors have decorative wall mounted wall sconces with compact fluorescent sources installed. Typical suites have recessed incandescent lighting installed throughout with decorative wall sconces installed in washrooms. Generally all lighting within the building is controlled via local line voltage switching.

4.8 A Mircom FX-2000 fire alarm control panel is installed in the main electrical room on parking level 'P1'. The "FX-2000" is an intelligent, addressable, single stage system. A graphic annunciator and command center is located in the main entrance lobby of the facility. Devices are typically installed throughout the building as required. Tamper and flow switches are installed on the sprinkler valves and the main valves in the water entry room, as required. The fire pump/booster pump and the generator status are monitored by the fire alarm system. The heat tracing installed on the wet sprinkler system on the parkade levels is monitored on the fire alarm system **(Photos E-12, E-13)**.

4.9 A base building security/access control system is installed. The sub penthouse, penthouse and townhouse units are covered under the base building system via motion sensors. The building has electric strikes installed, door contacts, CCTV, and card readers. The fire alarm is interconnected to ensure the magnetic door locks release upon an alarm condition. It was noted on site that there have been issues with the automatic door release system installed on the doors at the back of the building. **The security devices should be serviced/replaced as necessary on the back doors.**

4.10 Incoming underground communication ducts (2- 4") stub out into the communication room on parking level "P3". The telephone service and fibre service terminates at the backboards located within the room. CATV service runs underground into a separate room on the parking level 'P3' via one 4" conduit. A communication closet, shared with the electrical closets, is located on each typical floor. Riser conduits are installed from the main telephone room up through these closets on each floor. Horizontal distribution for communication cabling is available from the riser closet into each tenant space **(Photo E-14)**.

5. ELEVATOR

5.1 The building is served by 2 Richmond medium speed geared basement traction elevators that appear to meet the vertical transportation demands of the building **(Photo ELEV-1)**. The elevators were installed within the last 2 years and are still in new condition except as noted. They use a non-proprietary control system, AC motors, solid state motor drives, door operators **(Photo ELEV-4)** and other components. The equipment was found to be in good operating condition aside from some maintenance issues as noted.

5.2 The elevators were installed in compliance with the B44-00 elevator safety code in use at that time. The equipment would meet most new safety code requirements other than the most recent changes. The use of a separate firefighter's cabinet in the #1 Fire Fighter Elevator is not provided. If major changes to the building or elevators were made then this may need to be brought into compliance with the latest code requirements. The elevator machine room does not fully comply with the B44 elevator safety code which requires a minimum 7'-0" (2135 mm) clear headroom **(Photo ELEV-15)**. It would be very difficult to upgrade this now.

5.3 The control and drive systems for the elevators is a Motion Control Engineering (MCE) IMC-AC system with Torqmax AC Variable Speed drives. This system is considered non-proprietary and was provided by MCE in California who will provide training and technical support to any qualified elevator contractor. This equipment is considered reliable and is of a common and sound design. This equipment should be able to serve the building for the next 15 to 20 years without significant capital expense provided it is properly maintained and repaired as necessary.

5.4 The contract fee at the effective date was $708.00/month. This fee is subject to annual price adjustment based on changes in the contractor's labour rates. **The labour rate that the annual price adjustments would be based on has not been included in the contract and should be provided to substantiate future price adjustments.**

5.5 In general the maintenance of the equipment appears to be good in terms of housekeeping and cleanliness, however, maintenance records indicate that certain mandatory maintenance tasks have not been completed. Trouble call records were not available or reviewed and therefore we could not make an assessment on the reliability of the equipment. **Some improvements to the maintenance are required and essential tests and tasks that are required by the provincial mandatory maintenance regulations have not been recorded as being performed at this site for some time. These essential tests and maintenance tasks are outstanding and are critical as they are required to meet minimum safety standards. This work should be part of the annual maintenance contract.**

5.6 Repairs and improvements in the maintenance practices of the elevator maintenance contractor are required. The items noted are part of the annual maintenance contract. **These include repairs to the car roller guides**

(Photo ELEV-5), incomplete brake data tags (Photo ELEV-12), missing door gibs, seismic motion switch (Photo ELEV-13) in error state and a trouble indicator on the elevator lobby telephone (Photo ELEV-7). These items should be addressed by the elevator maintenance contractor and/or telecommunications contractor.

5.7 The elevators meet most but not all current requirements for Barrier Free Access requirements. Audible voice announcements are not present but overall the height of the buttons and other features provide good accessibility for all persons.

5.8 **The seismic rope retainer guards on the elevator machines are not code compliant and should be replaced with compliant guards to retain the ropes in position in the event of an earthquake (Photo ELEV-16).** We believe this was issued as a BC Safety Authority directive against the equipment at the time of construction completion and in our opinion this has not been completed satisfactorily by the elevator contractor.

5.9 The machine room **(Photo ELEV-18)** lighting was inadequate. Some spot lights appear to have been added on the walls to improve the illumination in the area of the elevator controls, however, these were not working at the time of review. **The inoperable lighting should be corrected and improved to ensure adequate lighting at the elevator control systems is provided to maintain safe working conditions in this area.**

PHOTO A-1

General view of the north (right) and east elevations.

PHOTO A-2

Cracked concrete paver.

PHOTO A-3

Exposed membrane at saddle flashing.

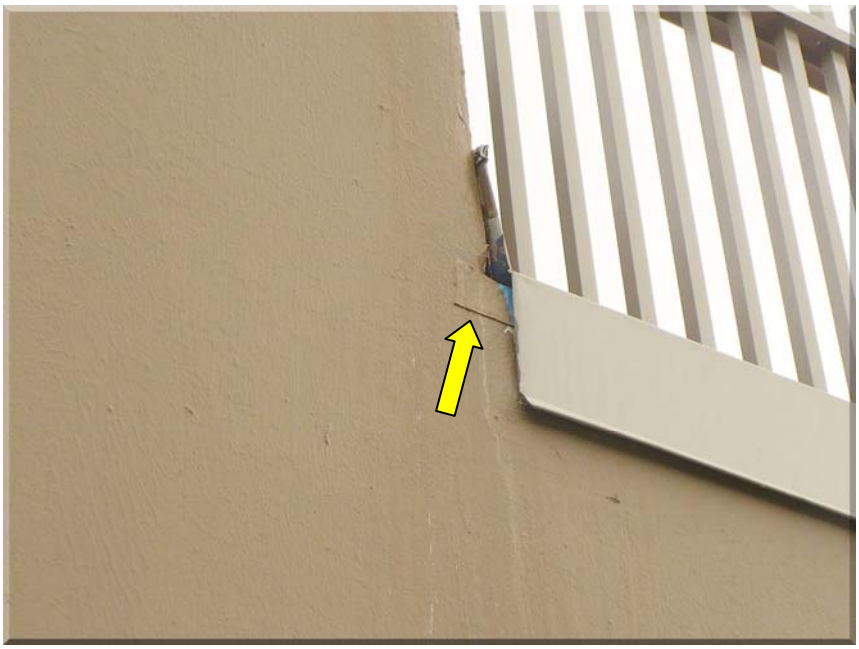

PHOTO A-4

Typical open edge at prefinished metal saddle flashing.

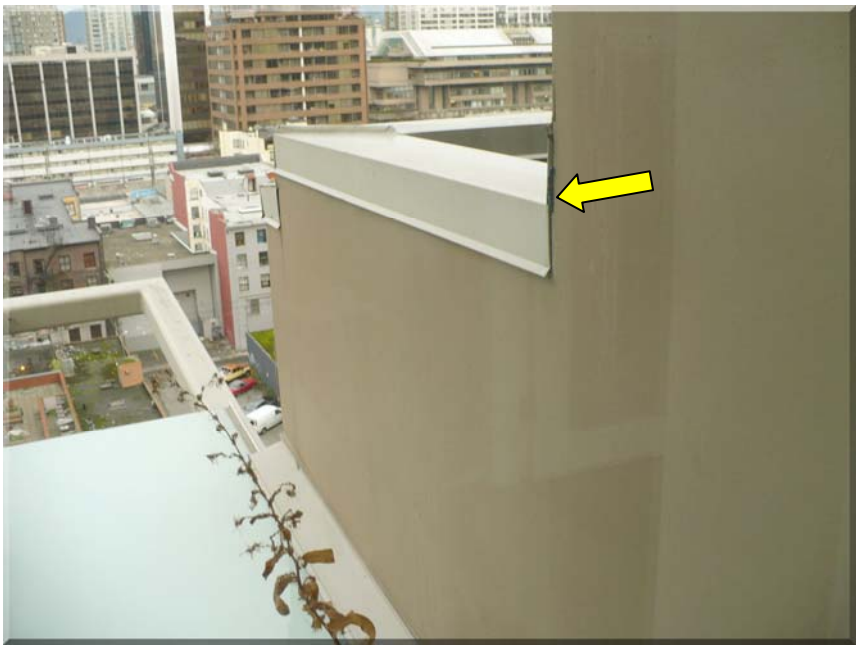

PHOTO A-5

Guardrail installed through cap flashing.

PHOTO A-6

Typical staining on slab edges.

PHOTO A-7

Typical corrosion on canopy frame.

PHOTO A-8

Gap between concrete wall and canopy. Signs of corrosion were noted at some attachments.

PHOTO A-9

Gap between canopy and wall at building entrance.

PHOTO A-10

Failed sealant joint at unit 1063 entrance door.

PHOTO A-11

Gap between canopy of window frame on level 25 roof deck south door.

PHOTO A-12

Typical efflorescence on concrete wall.

PHOTO A-13

Water seepage at cold joint on penthouse portico.

PHOTO A-14

Poor blending of paint finish.

PHOTO A-15

Efflorescence on underside of penthouse stair landing.

PHOTO A-16

Caulked joint at transition of threshold to stair landing.

PHOTO A-17

Location of bubbling paint finish on level L5 north roof deck.

PHOTO A-18

Unpainted repair on level L5 north roof deck.

PHOTO A-19

Water ingress into parkade through vent shaft concrete block wall.

PHOTO A-20

Water staining on gypsum board bulkhead above parking stalls 131 & 132.

PHOTO A-21

Signs of water ingress at base of elevator machine room stairs on parking level P4.

PHOTO A-22

Gap between the sidewalk slab and concrete wall at building entrance.

PHOTO A-23

Efflorescence on concrete wall below canopy of Unit 1809.

PHOTO A-24

Spalled concrete on curb of TH Unit 1057.

PHOTO M-1

Ground source heat pump heat exchanger with circulating pump.

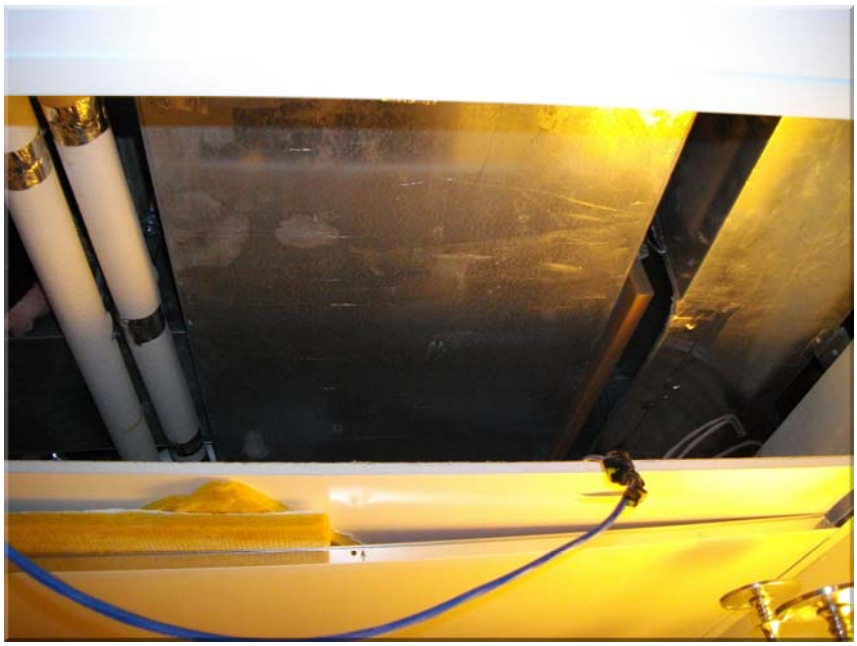

PHOTO M-2

Suite heat pump located in “confined space.” Note gap between return air duct & filter connection.

PHOTO M-3

Electrical room heat pump.

PHOTO M-4

Heating water boiler and recirculation pumps.

PHOTO M-5

Cooling tower.

PHOTO M-6

Condenser water loop pumps.

PHOTO M-7

100% outdoor air corridor pressurization rooftop unit.

PHOTO M-8

Parkade exhaust fan.

PHOTO M-9

Typical inline fan.

PHOTO M-10

Water entry station.

PHOTO M-11

Domestic water booster pump.

PHOTO M-12

Boiler backflow preventor.

PHOTO M-13

Domestic hot water heat pump.

PHOTO M-14

Domestic hot water storage tanks.

PHOTO M-15

Typical sump with control panel.

PHOTO M-16

Sprinkler tree.

PHOTO M-17

Sprinkler double check valve.

PHOTO M-18

Fire pump with control panel.

PHOTO M-19

Standpipe c/w 2 ½" hose valve and floor sprinkler zone valve.

PHOTO M-20

6" domestic water service leaking in parkade.

PHOTO M-21

Steam generator.

PHOTO M-22

Leak in parkade drywall bulkhead.

PHOTO E-1

High voltage dual radial service load break and isolating switches.

PHOTO E-2

Main secondary switchboard in main electrical room.

PHOTO E-3

Typical electrical closet with metered tenant feeds and risers.

PHOTO E-4

Typical panel board located within tenant suite.

PHOTO E-5

Standard duplex receptacle on the end of barbeque island on Penthouse roof.

PHOTO E-6

Receptacle adjacent sink in washroom within tenant unit.

PHOTO E-7

Typical duplex receptacle installed on exterior deck of unit in tower.

PHOTO E-8

Emergency diesel-fired generator located at grade level in generator room.

PHOTO E-9

Emergency transfer switch and distribution board – no label on board.

PHOTO E-10

Typical tower floor exit c/w exit signage, pull station and firephone.

PHOTO E-11

Exit stair from typical roof top deck. Weatherproof pullstation and damp location rated exit sign.

PHOTO E-12

Firealarm control panel located on 'P1' parking level.

PHOTO E-13

Remote fire alarm annunciators located within the main entrance lobby of building.

PHOTO E-14

Incoming telephone and fibre optic service into main telephone room.

PHOTO ELEV-1

Main floor elevator lobby.

PHOTO ELEV-2

Designated fire fighter elevator signage.

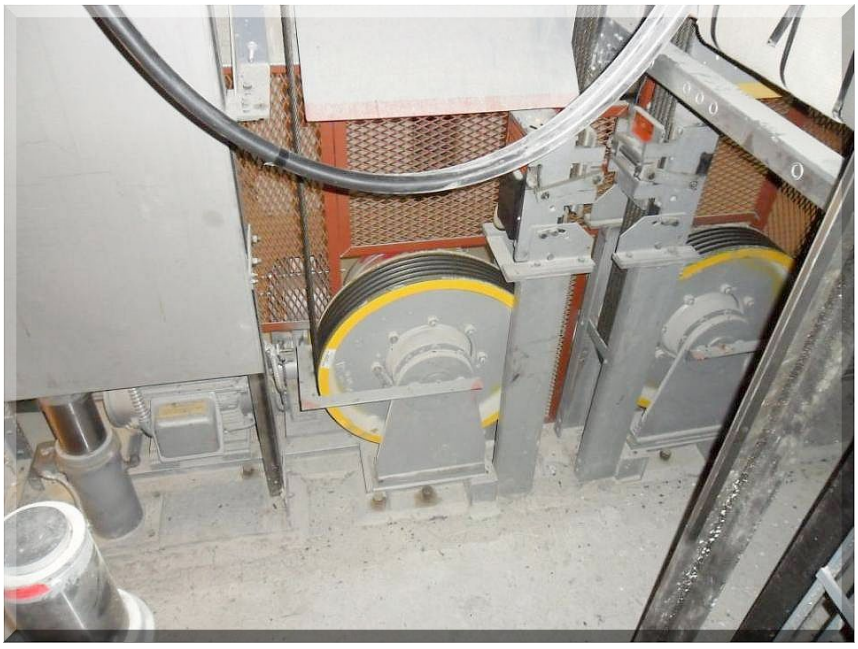

PHOTO ELEV-3

Basement machine and rope brake viewed from pit.

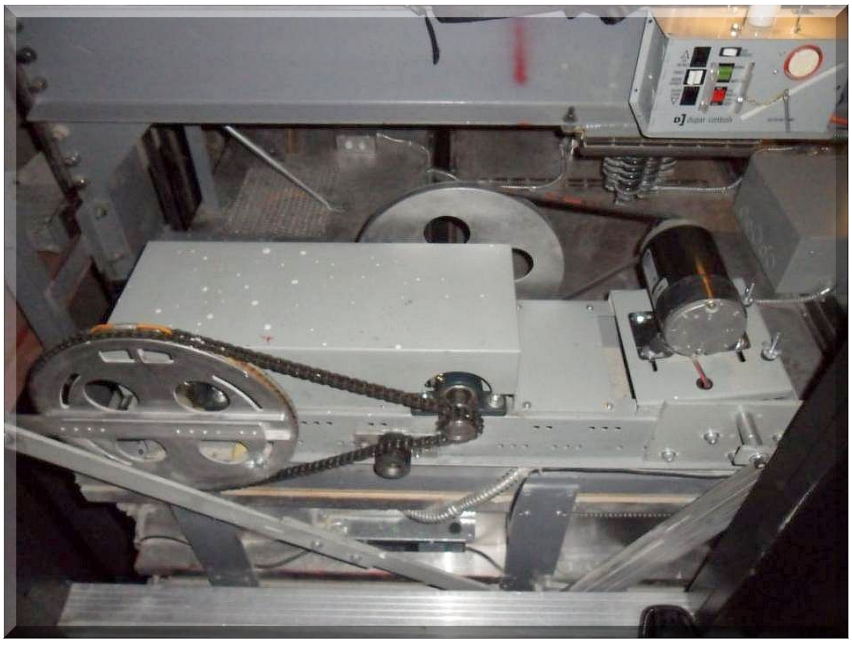

PHOTO ELEV-4

ECI 1010 door operator.

PHOTO ELEV-5

Carr roller guides.

PHOTO ELEV-6

Car operating panel.

PHOTO ELEV-7

Lobby telephone
(with error message).

PHOTO ELEV-8

Cab finishes.

PHOTO ELEV-9

Overspeed governor.

PHOTO ELEV-10

Basement machine room.

PHOTO ELEV-11

Incomplete maintenance log (annual tests incomplete).

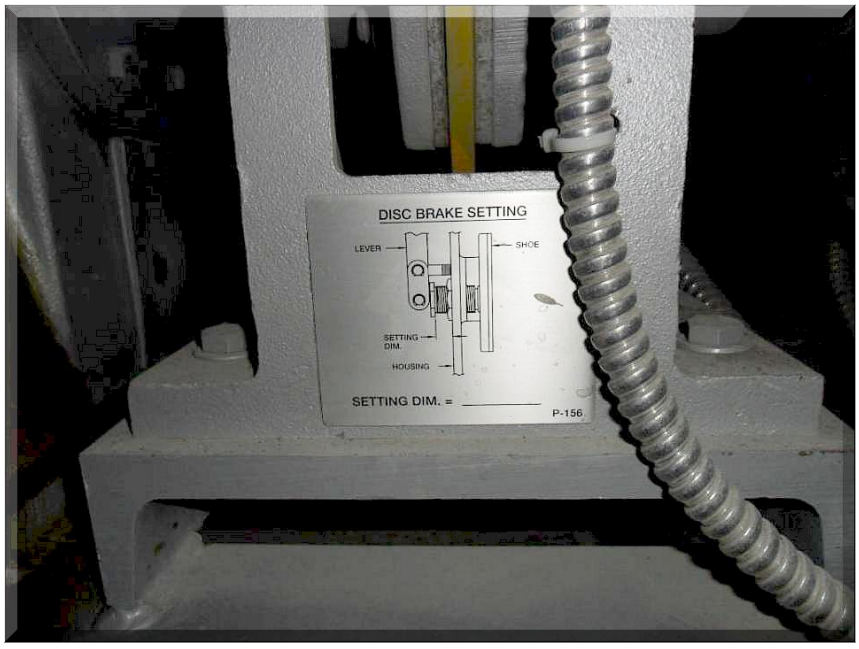

PHOTO ELEV-12

Incomplete brake data tag.

PHOTO ELEV-13

Seismic motion switch (in alarm state).

PHOTO ELEV-14

Paint on elevator #2 18th floor door lock pickup assembly.

PHOTO ELEV-15

Low head room warning sign at elevator machine room.

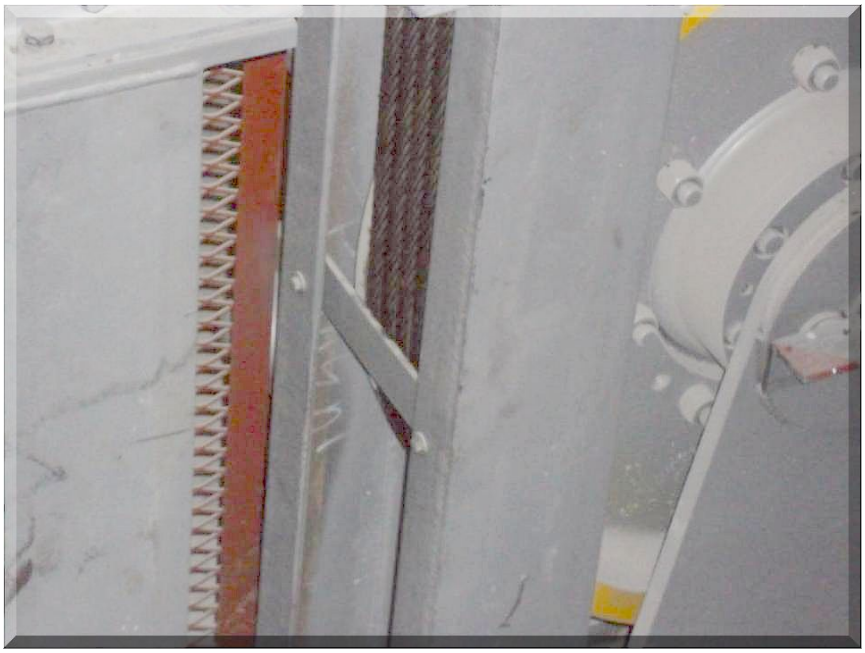

PHOTO ELEV-16

Non compliant seismic rope guards.

PHOTO ELEV-17

Seepage at base of stairs in elevator machine room.

PHOTO ELEV-18

Wall mounted light fixtures (not working).