



JRS ENGINEERING
BUILDING ENVELOPE CONSULTANTS

BALCONY REVIEW REPORT

CYPRESS WEST
1425 CYPRESS STREET
VANCOUVER, BC

JRS Project No. 09835

May 27, 2009

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BALCONY REVIEW CHECKLIST SUMMARY



1.0 INTRODUCTION

1.1 TERMS OF REFERENCE

JRS Engineering Ltd. (JRS) was retained by Assertive Property Management on behalf of Strata Plan VR 464 to complete a balcony review of Cypress West, located at 1425 Cypress Street, Vancouver, BC. The purpose of the assessment was to assist the Strata in prioritizing balcony repairs and / or replacements. The scope of work is outlined in our Engineering Services Agreement dated February 18, 2009.

1.2 BUILDING OVERVIEW

The building consists of a 3-storey wood-framed building. It is situated in a residential neighbourhood, among similar low-rise residential buildings. The architectural drawings indicate that the building was constructed in or around 1977. The building is primarily clad with lapped wood siding. There are balconies on the 2nd and 3rd floors, and patios at the ground-level. The balconies are covered with a liquid applied trafficable waterproofing membrane and surrounded by full height metal railings with "frosted" glass infill panels. There are also portions of full height wood clad upstand walls at the corner balconies. Generally, the windows and sliding doors are single glazed aluminum framed on the west elevation balconies and double glazed aluminium framed on the east elevation balconies. The main roof consists of a pitched roof covered with asphalt shingles.

1.3 DOCUMENTS REVIEWED

Architectural drawings dated February 1976, Issued by T.A. Hale Architects located at 1070 West Broadway, Vancouver, BC.

1.4 SITE VISIT

JRS attended the site on May 9, 2009, to undertake a visual review of the balconies. The field work was performed by Dave André, P.Eng. Access was provided to all balconies with the exception of Units 211 & 202.

2.0 REVIEW OF BALCONY CONDITIONS

2.1 VISUAL OBSERVATIONS

1. Based on the visual observations and the architectural drawings, the balcony assembly appears to be constructed as follows:

Trafficable Membrane
Wood-Deck Sheathing
Tapered Purlins*
2x10 Joists*
2x4 Furring*
Lapped Wood Siding Soffit

*Not confirmed

2. The balconies are cantilevered and finished with a liquid applied waterproofing membrane that also acts as a walking surface commonly referred to as a traffic membrane, with the exception of unit 209, which is finished with a more recently installed PVC (polyvinyl chloride) sheet applied membrane. The liquid applied waterproofing membrane appears to be from



original construction, although there has likely been some maintenance to these membranes such as re-coating.

3. The main field of the traffic membrane is generally clean and in fair condition considering the age of the assembly. However, there was some ponding water other spotted staining on the traffic membrane at various balconies (refer to photo 1). The balcony assembly is designed to drain off the front edge where there are metal railings and through scuppers where there are upstand walls. The traffic membrane at the balcony front edges was generally in poor condition on the east elevation and ranged from fair to poor on the west elevation. The traffic membrane generally exhibited blistering, bubbling and debonding (refer to photo 2), and at various locations the wood decking was soft and / or visibly deteriorated (refer to photo 3).
4. The balconies are surrounded by full height metal railings with "frosted" glass infill panels. The metal railings are top mounted to the deck surface. The metal railings' frames and panels are in fair condition; however, several of the attachments to the deck surface appears loose as the wood deck sheathing is water damaged (soft, deteriorated, etc.) (refer to photo 4).
5. There are also portions of the balconies at corner units that are surrounded by full height wood clad upstand walls. The upstand walls are finished with a wood cap. At several locations, the wood cap is splitting and / or crumbling due to exposure to wind driven rain (refer to photo 5). This will likely result in water damage to the upstand wall framing below.
6. The windows and sliding doors at balconies are generally single glazed aluminum framed on the west elevation and double glazed aluminium framed on the east elevation. The markings on the spacer between the panes of glass on the double glazed unit suggest that the glazed unit was fabricated in 1977. Therefore, this would suggest that the double glazed aluminium framed windows and sliding doors on the east elevation are from original construction. The single glazed aluminum framed windows and sliding doors on the west elevation also appear to be from original construction. It is unclear why there are two different window and sliding door types on the building. Also, we could not visually determine if the traffic membrane is simply installed below the sliding doors or transitions into the rough openings. However, based on our conversation with Unit 305 where the sliding door has been replaced, the traffic membrane does not transition into the rough openings.
7. At several units, the sliding doors (refer to photo 6) did not slide properly on the track within the frame. Given the age of the sliding doors, this may be a systematic problem. This was not reviewed at every unit as this only came to our attention after several balconies had already been reviewed. The extent of this problem could be better determined by the Strata by distributing a questionnaire to the occupants.
8. The balcony framing is vented through a soffit strip vent (refer to photo 7) located near the outside edge of the balcony.

2.2 DISCUSSION

1. Traffic membranes of this type can be expected to provide 10 - 15 years of serviceable life depending on the conditions to which they are exposed and level of maintenance they receive. At Cypress West, the traffic membranes which appear to date back to original construction, have provided serviceable life well beyond the expected range. This is likely due to the low exposure to wind driven rain since most balconies are sheltered by the balcony above or by pitched roof lines. However, since water is managed by the balconies by



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5





draining off the front edge, the higher concentration of moisture at the edge has resulted in localized failure of the waterproofing membrane and corresponding deterioration of the wood deck sheathing and railing attachment.

2. The localized failure of the waterproofing membrane and corresponding deterioration of the wood deck sheathing and railing attachment is more severe on the east elevation. This likely due to higher exposure to wind driven rain on the east elevation, since prevailing winds in the lower mainland are typically from the southeast direction.
3. During our visual review we identified several details that did not conform to current best practices standards. These details should be modified as balconies are renewed. These include the following:
 - The balcony railings are top mounted to the deck surface. Best practice is to vertically mount railings to eliminate horizontal penetrations which are more likely to permit moisture ingress to the balcony framing.
 - The traffic membrane does not appear to transition into the rough openings. Best practice is to install the traffic membrane into the door rough opening to prevent eventual leakage from the sliding door frame resulting in failure of the traffic membrane or leakage to the interior.
 - The balconies drain water off the front edge and onto the siding and / or balconies below. Best practice is to install a small gutter to direct the discharge of water away from the cladding and / or other assemblies by channelling it through downspouts. If gutter installation is impractical, then improved drip edge detail will reduce wetting of the fascia and walls below.
 - The framing is vented using a soffit strip vent at the outside edge of the soffit. Best practice is to install a strip vent at both the outside edge and adjacent to the building wall to promote cross ventilation in order to increase drying potential.



Photo 7

3.0 RECOMMENDATIONS

3.1 GENERAL

1. We recommend renewal of all the balconies. During balcony renewals, we recommend detailing be modified to current best practice standards. This includes the installation of fascia mounted aluminum railings, traffic membranes into the rough openings, balcony gutters and cross ventilation at soffits.
2. Since sliding doors will have to be removed to allow the traffic membrane to carry into the door opening, we recommend sliding door replacement as they have reached the end of their expected service life.
3. The highest priority for balcony renewals are balconies where the traffic membrane at the edge is exhibiting blisters and de-bonding and the deck wood sheathing is water damaged (soft and / or deteriorated) and railing attachment is loose (refer to Appendix A). This condition is widespread on the east elevation.

3.2 REPAIR STRATEGIES

1. There are two renewal options available to the Owners. The Owners can perform all the work at one time or phase the work on a priority basis (i.e. east elevation). However, the Owners must consider a number of issues when



evaluating potential options, including existing damage and potential for additional damage, risk of future performance problems and economics. The following considerations should be weighed by the Owners:

- The advantage of phasing the work is that the cost can be spread out over time. However, the overall cost is typically more as infrastructure, access, overhead and other costs are incurred multiple times, as opposed to a large project where these costs can be shared and thereby become less overall.
- The new balconies will appear different than the existing balconies since they will have fascia mounted metal railings and front edge drain gutters. The extent of these difference will depend on the Owners' choice of colours for the railings and sliding doors and type of "frosted" panels. If all the work is performed at one time or over an entire elevation at one time, there is more flexibility in selecting different colours and materials than currently existing on the building as old and new work are not in view of each other.
- Performing the work all at one time allows for better continuity of the work as the Strata representatives, consultants and contractor are likely to remain the same and employ the same personnel.

3.3 CONCEPTUAL SCOPE OF WORK

1. Remove and dispose of existing liquid applied membrane, wood-deck sheathing and metal railings.
2. Remove and dispose of an approximately 12" section of cladding at the base of wall surrounding the balcony and retain existing wall sheathing membrane to allow integration with new balcony membrane.
3. Undertake any required repairs to the wood framing.
4. Install new sloped tapers, plywood sheathing, and miscellaneous blocking and reinforcement.
5. Remove and dispose of existing sliding doors to allow integration of new balcony membrane into rough opening.
6. Install new traffic membrane (liquid or polyvinyl chloride sheet), fascia mounted aluminum guardrail with Infill glass panels, balcony gutter, vent strips, sliding door and base of wall cladding.

3.4 OPINION OF PROBABLE COSTS

1. The budgets are based on rough take-offs with unit rates. Unit rates are based on information provided by contractors currently undertaking this type of repair work with similar projects. These unit rates do not include engineering fees and applicable taxes.
2. The budgets outlined below should be considered "order of magnitude" cost estimates only, and used to assist the Strata in making preliminary decisions. More accurate estimates can be obtained once the scope of work is more defined and construction drawings are produced.



Recommendations	Quantity	Unit	Cost Per Unit	Total Cost
All Balconies				
Balcony Membrane	4000	Square Feet	60	\$ 240,000.00
Railings	600	Lineal Foot	50	\$ 30,000.00
Upstand Walls	350	Lineal Foot	100	\$ 35,000.00
Sliding Doors	1400	Square Feet	60	\$ 84,000.00
Total				\$ 389,000.00
East Elevation				
Balcony Membrane	2300	Square Feet	60	\$ 138,000.00
Railings	300	Lineal Foot	50	\$ 15,000.00
Upstand Walls	200	Lineal Foot	100	\$ 20,000.00
Doors	700	Square Feet	60	\$ 42,000.00
Total				\$ 215,000.00

3.5 PROJECT PLANNING AND NEXT STEPS

1. We recommend the Strata review our report and consider the recommendations. JRS would be pleased to meet with the Strata to discuss the report and conceptual renewal options. Once the Strata has decided on the scope and timing of the work, the next step would be to develop the detailed design including aesthetics (railing type, colours) and choosing specific materials and assemblies (door types, membrane types). Once these decisions are made, detailed drawings can be produced, first for review by the Strata to confirm intent, then later used for obtaining pricing, obtaining permits and to form the basis of the construction contract.

4.0 CLOSURE

1. This report was prepared by JRS Engineering Ltd. for Strata Plan VR 464 - "Cypress West". Any use that a third party makes of this report, or any reliance or decisions made based on it, are the sole responsibility of such third parties.
2. The findings herein are based on a visual review of the surface conditions. Deficiencies that may exist but were not recorded in this report were not apparent, given the level of study undertaken.
3. This assessment is in part based on information provided by others. Unless specifically noted, we have assumed this information to be correct and have relied upon it in reaching our conclusions and recommendations.
4. The material in this report reflects the best judgment of JRS Engineering Ltd. in light of the information available at the time of preparation.

Please contact the undersigned if you should require any additional information.

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cc

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