Roof Evaluation Meeting Summary

Over the last year, it has come to the Strata Council's attention that the roof has been deteriorating to a point that is requiring replacement. In the spring of this year (2015), a large soft patch between units 313 and 314 was repaired and there are other soft patches developing around the roof structure.

On October 6, 2015 the Strata held an informational meeting regarding replacement of the roof. Previously, a Roof Evaluation document was given to each owner for review. To summarize this document, there are three strategies to consider. Strategy 1 details replacement of all the roofing over interior liveable space and would include replacement of the flat roof, the sloped loft area roofs and the skylights. Strategy 2 would include all of Strategy 1 plus the addition of the sloped roofs overhanging all the exterior patios on the north and south sides of the building, and Strategy 3 includes Strategy 2 plus additional membrane added to patios that connect to the sloping exterior roofs. The engineering firm has stated in the Roof Evaluation document that Strategy 2 and 3 could wait for 3-5 years to be done and cost difference is small by comparison. Strategy 1 is the priority. The pricing included in the Roof Evaluation document is a very rough estimate and does not include pricing for the removal and rebuild of the rooftop decks which are considered a part of the common property.

During the project all items currently on the rooftop decks would need to be moved. There are unused parking spaces in the parkade and Council is thinking that these available parking spots could be used for temporary storage. There are limited spaces and so owners would need to share the available space.

Design, Specification and Tendering

WSP (Halsall) is the engineering firm that we have been working with. They have done the Depreciation Report and the Roof Evaluation report for us and so have experience working with our building. The discrepancy in price estimates between the Depreciation Report and the Roof Evaluation includes several factors. The Depreciation Report is based on a quick site visit with a quick visual inspection and the price is an average of other flat topped roofs. Other flat topped roofs don't necessarily have the sloped loft area structures to consider. Also on the Depreciation Report some factors such as the skylights are separate line items. The Roof Evaluation was a site visit lasting a few hours and was a very in depth inspection of the roof and any problems requiring further types of remediation.

WSP (Halsall) will design and create the specifications for the project and then put it out to tender for us. The cost for the design, specification and tendering process is already accounted for by a special resolution approved at our 2014 AGM.

The project management, construction review and contract administration is an additional cost that is included in the Strategies. It is recommended that this occur as they will ensure that proper sloping for drainage, engineering to support decks, workmanship, etc. will take place throughout the project and give us the best possible outcome.

By March 31, 2016 = $122,746.59
April 1, 2016 to March 31, 2017 = $53,000 (borrowed from the CRF until we pay ourselves back)
Total to put into the project for 2016 = $175, 746.59

If we delay until 2017, the amount in the Special Projects fund will be $175,746.59 by March 31, 2017. From April 1, 2017 to March 31, 2018 we would be collecting $53,000 to the SPCRF which we could utilize by borrowing the amount from the CRF until we completely pay it back by the end of the year with our maintenance fees. In total, we could utilize $228,746.59 from the SPCRF, $175,746.59 in actual assets plus the $53,000 we advance ourselves from our CRF until the end of the fiscal year when we've paid it back through maintenance fees.

By March 31, 2017 = $175,746.59
April 1, 2017 to March 31, 2018 = $53,000 (borrowed from the CRF until we pay ourselves back)
Total to put into the project for 2017 = $228,746.59

Because we would be borrowing money from the CRF to make up for the monies we are collecting anyway, Council does not recommend taking any more than the advanced amount of $53,000 to supplement the special assessment. By March 31, 2016 our CRF will be $134,876.76 and advancing ourselves the $53,000 for the year would drop the available amount for use in an emergency to $81,876.76. By March 31, 2017 the amount in the CRF would be $142,876.76 and advancing ourselves $53,000 would leave the available amount to $89,876.76 for emergencies. We have to consider that our building has an old elevator that may need rebuilding in the near future and we would like to avoid another special assessment on top of the roofing one so leaving money in the CRF to manage this potential situation is advisable. We need to also consider the fact that there may be owners not able to meet the financial demands of this project and that our CRF may be supporting some of this until all monies can be collected.

An option might be to collect monies in 2016 but do the project in 2017. This way, the monies could be in place by the start of the project and it allows for more options in payment plans for owners.

If we delay the project until 2017, the engineering firm has assured us that the roof will not collapse, however, there may be additional costs associated with leaks that may occur while we wait another year. Material and labour costs will also likely increase during this time. Would the extra $53,000 accumulated in the Special Projects fund be worth waiting for or would they only offset these additional costs in which case there is not much monetary gain in this aspect?

We, as a Strata Council, understand that this project is a huge financial output for the owners of Britannia Place and so waiting might be necessary for some owners to access financing for this. We are including with this summary the different pricing options that were explained to give you a better idea of what it will cost in terms of special assessment and be better able to make decisions. Keep in mind that these numbers are **estimates** not actual pricing. We have tried to err on the high side but they are estimates regardless.

309	60	$7,105.84	$8,086.61	$8,490.46
310	64	$7,579.56	$8,625.72	$9,056.49
311	67	$7,934.86	$9,030.05	$9,481.01
312	85	$10,066.61	$11,456.03	$12,028.15
313	65	$7,698.00	$8,760.50	$9,198.00
314	75	$8,882.30	$10,108.26	$10,613.07
315	53	$6,276.83	$7,143.17	$7,499.90
Total	2808	$332,553.41	$378,453.41	$397,353.41

Roof Replacement 2017 completion

Project Estimate Including Decks (Approx $40,000)	$518,466.00	$565,284.00	$584,562.00
Special Projects at 03/31/17	-$175,746.59	-$175,746.59	-$175,746.59
Borrow from CRF	-$53,000.00	-$53,000.00	-$53,000.00
Special Assessment Amount	$289,719.41	$336,537.41	$355,815.41

Unit	Entitlement	Strategy 1	Strategy 2	Strategy 3
101	71	$7,325.53	$8,509.31	$8,996.76
102	73	$7,531.88	$8,749.01	$9,250.19
103	61	$6,293.76	$7,310.82	$7,729.61
104	58	$5,984.23	$6,951.27	$7,349.46
105	58	$5,984.23	$6,951.27	$7,349.46
106	58	$5,984.23	$6,951.27	$7,349.46
107	58	$5,984.23	$6,951.27	$7,349.46
108	58	$5,984.23	$6,951.27	$7,349.46
109	58	$5,984.23	$6,951.27	$7,349.46
110	58	$5,984.23	$6,951.27	$7,349.46
111	61	$6,293.76	$7,310.82	$7,729.61
112	72	$7,428.70	$8,629.16	$9,123.47
113	58	$5,984.23	$6,951.27	$7,349.46
114	71	$7,325.53	$8,509.31	$8,996.76
201	71	$7,325.53	$8,509.31	$8,996.76
202	73	$7,531.88	$8,749.01	$9,250.19
203	61	$6,293.76	$7,310.82	$7,729.61
204	58	$5,984.23	$6,951.27	$7,349.46
205	58	$5,984.23	$6,951.27	$7,349.46
206	58	$5,984.23	$6,951.27	$7,349.46
207	58	$5,984.23	$6,951.27	$7,349.46
208	58	$5,984.23	$6,951.27	$7,349.46
209	58	$5,984.23	$6,951.27	$7,349.46
210	58	$5,984.23	$6,951.27	$7,349.46
211	61	$6,293.76	$7,310.82	$7,729.61

assessed and a recommendation made in time for a ¾ Vote Resolution at our AGM in March 2016.

If necessary, we can schedule another meeting at the end of November so that further discussion on this topic can take place.

Questions and Answers

What if my rooftop deck is larger than the drawings and I want to return it to the original size?

This is fine. There is no additional cost for returning to the smaller size.

Can I enlarge my deck?

As long as the other owners agree, yes. However, any costs and building permits associated with that enlargement are the responsibility of the suite owner. Those costs would include engineering, permits, material and labour costs. As well the suite owner will be required to sign indemnity agreements ensuring that any insurance and future repairs to the deck are the responsibility of that suite owner and any future owners of that suite.

I don't presently have a deck but I would like one. Can this be done?

This needs to be agreed upon by ¾ Vote Resolution by all the building owners and is dependent on engineering reports, access from the loft, building envelop continuity, and building permits. All costs associated with this would be the suite owner's responsibility. Separate insurance would need to be attained and indemnity agreements need to be signed.

How long will the project take?

Typically 6-8 weeks based on other similar buildings of our size but this will depend on the complexity of the project, weather and concealed deterioration can increase the length of time.

What is the lifespan of the new roof?

Typically 20-25 years. The materials used are cost effective, easy to install, and have redundancy. The life depends on roof exposure, traffic, maintenance, and tolerance for leakage.

Can vents coming up through the roof decks be relocated?

This will depend on the vent location, the roof structure/configuration and the vent function. Some may be able to be relocated but some may not be able to be relocated.

Would the roofing company be responsible for rebuilding of the roof decks or would this be a separate contractor?

In the project specifications, the roof decks would be included and, therefore, the contractor would be responsible for the construction of the decks to the engineering specs.

Please complete this page and place in the Strata Council mailbox in the lobby by **October 31, 2015**

Which Strategy do you prefer?

Strategy 1 ☐

Strategy 2 ☐

Strategy 3 ☐

When do you want this project to take place?

2016 ☐

2017 ☐

Would you be interested in the option to collect funds through 2016 and do the project in 2017?

Yes ☐

No ☐

THE OWNERS, STRATA PLAN VR 788

ROOF EVALUATION

BRITANNIA PLACE – 251 WEST 4TH STREET, NORTH VANCOUVER

JUNE 24, 2015

WSP

1. INTRODUCTION

1.1 Authorization

This report was prepared at the request of Jean Sammel of Strata Plan VR 788, in accordance with our proposal, dated January 30, 2015.

1.2 Purpose

The purpose of our evaluation was to complete a comprehensive roof evaluation to determine the current condition and performance of the roofing systems, including remaining life expectancy and replacement cost estimates.

1.3 Methodology

Work completed for this evaluation included:

- Review of available past reporting, related to the roof;
- Interview with a Strata Council Representative on the history of past leaks and current condition of the roof;
- Visual review of the various roof components to assess condition, including documentation of leakage and deterioration; and
- Review of two roof openings to determine the composition and condition of the roof assembly.

Further discussion of the various evaluation techniques has been included under Appendix C.

Information made available for our review as part of our evaluation was as follows:

Date	Description/Title	Author
February 13, 2014	2014 Depreciation Report for Britannia Place	Halsall Associates Ltd.
March 21, 1994	Britannia Place – Survey of Roof System	Inter-Provincial Inspectors (1982) Ltd.

Limitations that apply to this evaluation and report are included in Appendix E.

1.4 General Description

Britannia Place is a three-storey building with 44 residential suites, constructed over a single-storey underground parking garage. The building was constructed in approximately 1979. The roofing systems include flat roofs in a conventional configuration, and sloped roofs protected by asphalt shingles. There are acrylic dome skylights above loft spaces and the third floor corridor.

2. KEY FINDINGS

Photographs from our evaluation are included in Appendix B. Roof sections are defined in the roof plan (Drawing No. 1) included in Appendix D. Our key findings are as follows:

2.1 Main Flat Roof Area

2.1.1 Localized Deterioration of Built-up Roof Membrane at Transitions

The asphaltic membrane is generally protected from UV damage by the gravel surfacing; however, the gravel protection is missing/disturbed at some transitions to building walls (refer to Photo 1) and drains. This is resulting in localized deterioration of the roof membrane (i.e. alligatoring, blistering, etc), which reduces its serviceable life, and increases the potential for leakage into the building.

2.1.2 Primary Waterproofing System has Failed and is at the End of its Serviceable Life

A test cut opening was performed at one location, on the main flat roof area shown on Drawing No. 1. The opening at this location (refer to Photo 2) revealed that the primary waterproofing membrane installed in 1995 was installed on plywood decking. Initially, the roof area in which the test opening was performed felt soft underfoot, as indicated on Drawing No. 1. The opening revealed that the membrane is completely debonded from the sheathing at this location, and that the plywood sheathing itself is completely deteriorated (refer to Photo 3), resulting in the tapered blocking telegraphing through the roof membrane.

We noted several additional areas which felt soft underfoot, indicating that water has likely resulted in deterioration of the decking at these locations. This increases the potential for leakage into the building and further concealed deterioration. Given the age of the membrane and concealed deterioration observed, the flat roof membrane has reached the end of its serviceable life and requires replacement.

2.1.3 Ponding Water Noted on One Location of Main Flat Roof Area

Although the roof is general well sloped by the tapered blocking, ponding was noted at one location shown on Drawing No. 1, on the flat roof area (refer to Photo 4). Water ponding accelerates aging of the membrane, and increases the potential of bulk water entering the building, should membrane failure occur.

2.3.2 Metal Flashings are Nearing the End of Their Remaining Useful Service Life

Corroded fasteners were noted at multiple locations, along with debonded sealants, and detached, loose counter flashings (refer to Photos 11, 12, 13, 14 and 15). Although flashings are in serviceable condition, they will require replacement as part of the membrane renewal project. Loose flashings should be re-secured to prevent blow-off, and reduce the risk of injury or damage to pedestrians or property, respectively.

2.3.3 Metal Penetration Flashings are Corroded and Require Replacement

Doghouse-style vent covers and Metal B-vent flashings located on flat and sloped roof areas are generally corroded and require replacement (refer to Photos 16 and 17).

2.3.4 Deteriorated Condition of Balcony Membrane May Impact Roofing Tie-in

At two locations on the south elevation, the low sloped roof sections tie in to adjacent balconies (refer to Photo 18 and Drawing No. 1). The new roof membrane would have to tie in to these balconies in order to provide a continuous waterproof layer. These balconies are currently waterproofed with a fiberglass membrane, which appears to be brittle and past its serviceable life. This would make it challenging to transition the two membranes.

3. MANAGEMENT STRATEGIES

It is our understanding that the decks currently installed on the main flat area roof do not penetrate the roof membrane, and therefore are not part of the roof assembly. Removal and disposal of the rooftop decks will be required should a roof membrane replacement be completed. Replacement of the rooftop decks will not be included in the below management strategies as it is our understanding that the owners will be responsible for such replacement on a suite by suite basis.

STRATEGY 2 – FULL ROOF REPLACEMENT (INCLUDING ALL SLOPED ROOFS)	$514,200

This management strategy includes everything outlined in Strategy 1, but also includes replacement of lower sloped roofs (refer to Drawing No. 1). As mentioned in Key Finding 2.2.1, the sloped roofing does have a remaining useful service life. However, as upper sloped roof sections are being replaced, the additional costs associated with replacing the remaining sloped roof sections would be lower than if they were replaced as a separate project due to economies of scale. This addition also results in all sloped roof areas having the same renewed service life.

This budget estimate includes taxes, engineering and a construction contingency (refer to Appendix A).

TIMELINES	
Recommended Project Timing:	2016
Predicted Time Before Next General Renewal or Replacement:	20-25 years

Benefits & Advantages	Risks & Disadvantages
▸ High performance with low risk as it is a completely new roof system at all roof areas; ▸ Sloped awning roofs over balconies included in the Scope of Work. ▸ System and material warranty; ▸ Reduced maintenance; and ▸ Takes advantage of economies of scale.	▸ Disruption to interior building occupants as skylights replaced; and ▸ Higher upfront cost.

We trust this is the information that you require at this time. If you have any questions, please do not hesitate to contact us.

Respectfully submitted,
WSP CANADA INC.

Ravinder Hans, B. Arch.Sc.
Project Manager

Torsten Ball, P.Eng., RRO, GRP, LEED AP
Project Principal

APPENDIX A
OPINION OF COST

The following costs are our opinion of value of the remedial work described in this report. They are calculated using quantities obtained during our evaluation and information we have obtained from similar projects. Actual costs will vary depending upon the time of tender, schedule of work and conditions under which the work must be carried out. Halsall has not investigated the presence of pollutants, contaminants and hazardous materials that may be encountered during the work. Depending on the materials present, additional funds may be required for remediation measures.

As every project has its own peculiarities, actual costs can only be established by obtaining bids, preferably on the basis of competitive tenders, from specialized contractors. The costs provided herein should only be used for comparison of options and general budgeting purposes.

To escalate the cost of future repairs, we have used an annual inflation rate of 2%. This number is highly variable and could fluctuate in any given year.

1. Strategy 1 - Flat Roofs and Upper Sloped Roof Replacement

No.	Description	Opinion of Cost
1.0	Access and Site Protection	$ 34,000
1.1	Roof Replacement	
a)	Flat Roof Areas	$ 180,000
c)	Replace Plywood Sheathing	$ 21,000
b)	Sloped Roof Areas (only at main roof)	$ 22,000
c)	Replace Fascias	$ 20,000
d)	Replace Gutters	$ 4,500
1.2	Install New Drains	
a)	Lower Flat Roof Area	$ 9,000
1.3	Replace Skylights	
a)	52" x 105" (3 lites)	$ 6,000
b)	52" x 134" (2 lites)	$ 46,000
c)	50"x130" (2 lites)	$ 7,000
1.4	Miscellaneous Repairs	
a)	Allowance to Install 2 New Area Drains	$ 5,000
b)	Allowance for B-vent and Doghouse Style Vent Cap Replacement	$ 7,500
c)	Allowance to Add Additional Blocking for Sloping Lower Flat Roof Deck	$ 5,000
1.5	Bonding	$ 3,500
1.6	Construction Contingency (10%)	$ 34,000
	Sub-Total - Estimated Construction Cost	**$ 404,500**

2. Strategy 2 - Full Replacement (Including All Sloped Roofs)

No.	Description	Opinion of Cost
1.0	Access and Site Protection	$ 37,000
1.1	Roof Replacement	
a)	Flat Roof Areas	$ 180,000
c)	Replace Plywood Sheathing	$ 21,000
b)	All Sloped Roof Areas	$ 58,000
c)	Replace Fascias	$ 20,000
d)	Replace Gutters	$ 4,500
1.2	Install New Drains	
a)	Lower Flat Roof Area	$ 9,000
1.3	Replace Skylights	
a)	52" x 105" (3 lites)	$ 6,000
b)	52" x 134" (2 lites)	$ 46,000
c)	50"x130" (2 lites)	$ 7,000
1.5	Miscellaneous Repairs	
a)	Allowance to Install 2 New Area Drains	$ 5,000
b)	Allowance for B-vent and Doghouse Style Vent Cap Replacement	$ 7,500
c)	Allowance to Add Additional Blocking for Sloping Lower Flat Roof Deck	$ 5,000
1.6	Bonding	$ 4,000
1.7	Construction Contingency (10%)	$ 37,000
	Sub-Total - Estimated Construction Cost	**$ 447,000**
1.8	Design, Specifications and Tendering	$ 8,200
1.9	Project Management, Construction Review and Contract Administration	$ 24,000
	Pre-Tax Subtotal	$ 479,200
1.10	GST - 5%	$ 24,000
	Total Estimated Project Budget (Current Dollar Value)	$ 503,200
1.11	Escalation to Year 2016	
a)	Yearly Inflation (2%)	$ 11,000
	Total Estimated Project Budget (2016 Dollar Value)	$ 514,200

Appendix B

PHOTOGRAPHS

Photo 3: Deteriorated Sheathing at Test Cut Opening 1

Photo 4: Water Ponding on Flat Roof

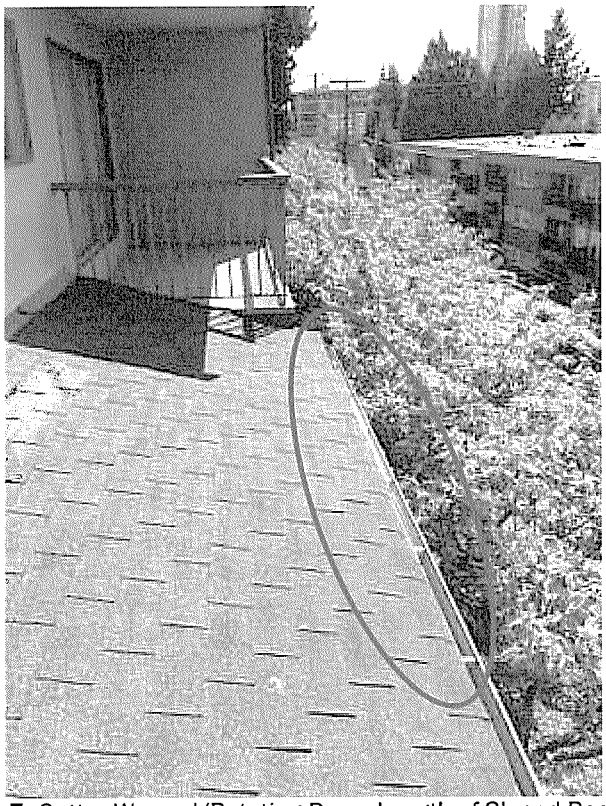


Photo 7: Gutter Warped/Rotating Down Length of Sloped Roof

Photo 8: Downspout from Upper Gutters Draining onto Lower Roof Instead of into Eaves Trough

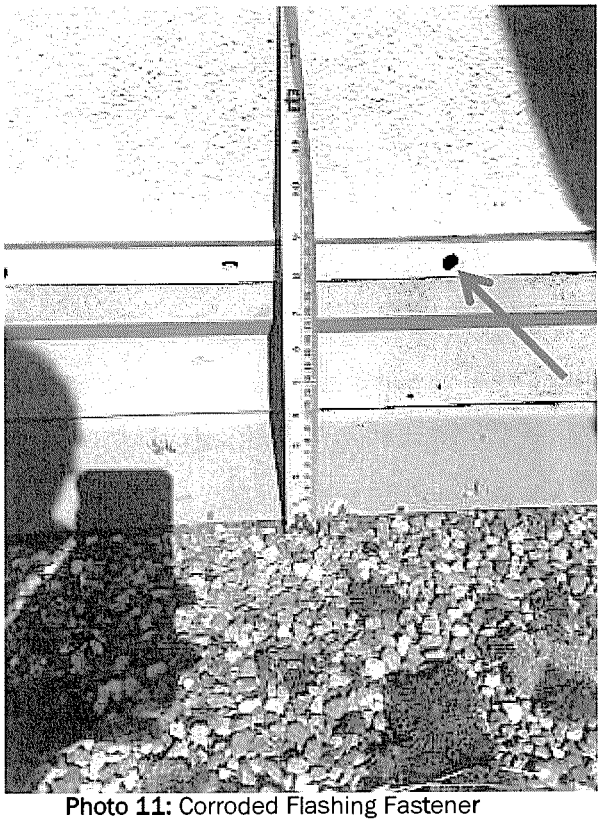


Photo 11: Corroded Flashing Fastener

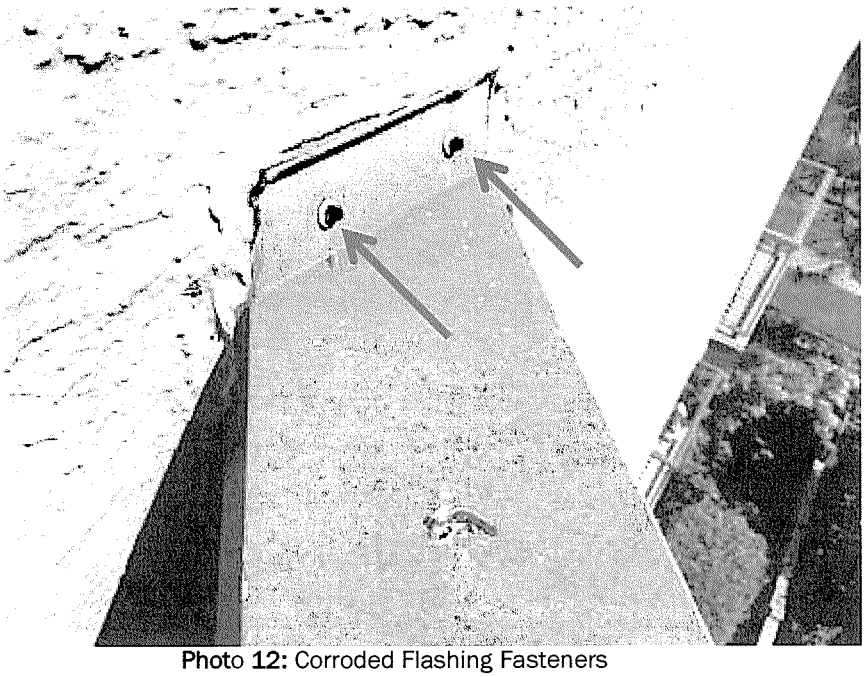


Photo 12: Corroded Flashing Fasteners

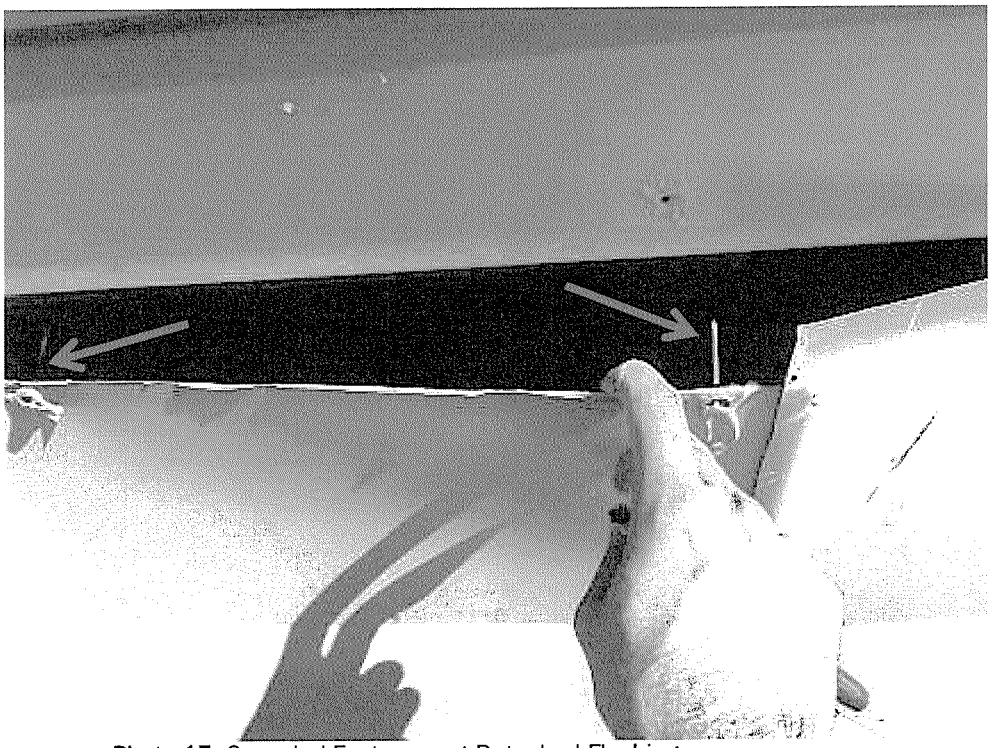


Photo 15: Corroded Fasteners at Detached Flashing

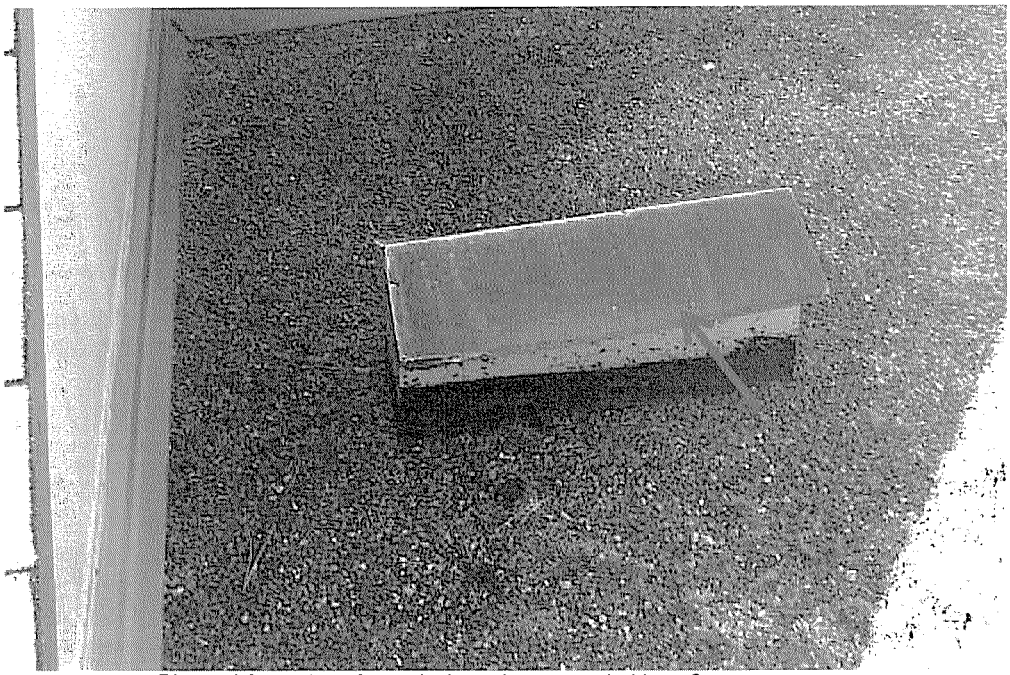


Photo 16: Typical Corroded Doghouse-style Vent Cover

Appendix C

ROOFING EVALUATION TECHNIQUES

Photo 1: Example Conventional Roof Assembly –Built-up roof system with exposed felts readily accessible for review.

Photo 2: Example Targeted Removals – Protected Membrane Assembly with ballast, fabric, and insulation removed to exposed membrane for visual inspection.

1.3 Metal Flashing

Metal flashing can be visually reviewed to check the securement of the flashing, drip edges, unsupported metal, corrosion, chalking, and fading. This qualitative means of evaluation is quick, but requires understanding of the system in order for the evaluation to be effective.

Photo 5: Example Metal Flashing – Metal flashing visually observed to have acceptable drip edge and fastener spacing.

3. DRAINAGE REVIEW

Drainage is the process by which water is removed from the surface of a roof and deposited on grade or directly into the storm sewer system. Excess water is typically removed via area drains and overflow scuppers on flat roofs and by eaves troughs and gutters on sloped roofs. Typical evaluation techniques include comparison of the drainage to code requirements, and visual review.

A comparison of the drainage system of the roof to the regulating provincial code is used in order to determine the compliance of the drainage with the provincial or national plumbing codes. The amount of drainage for a roof depends on a variety of elements that influence drainage, including the number of drains, the size of the drains, the adjacent wall area, presence of overflow scuppers, and edge distance. These elements are used to determine whether the drainage is acceptable or requires remediation.

3.1 Number of Drains

The plumbing code regulates the number of drains per section of roof area. The number of drains is visually counted and combined with the other drainage information to determine if the drainage is acceptable.

3.1.1 Size of Drains

The plumbing code regulates the size of the drains, as dependent on the number of drains per section of roof area. The size of the drains is recorded with a tape measure, and is included in the drainage calculations to determine if the drainage is acceptable.

3.1.2 Adjacent Wall Area

The plumbing code requires that drainage of the roof system include an allowance for the volume of water that will be direct toward the roof via the adjacent walls. The area of the adjacent walls, if applicable, is included into the drainage calculations to determine if drainage is acceptable.

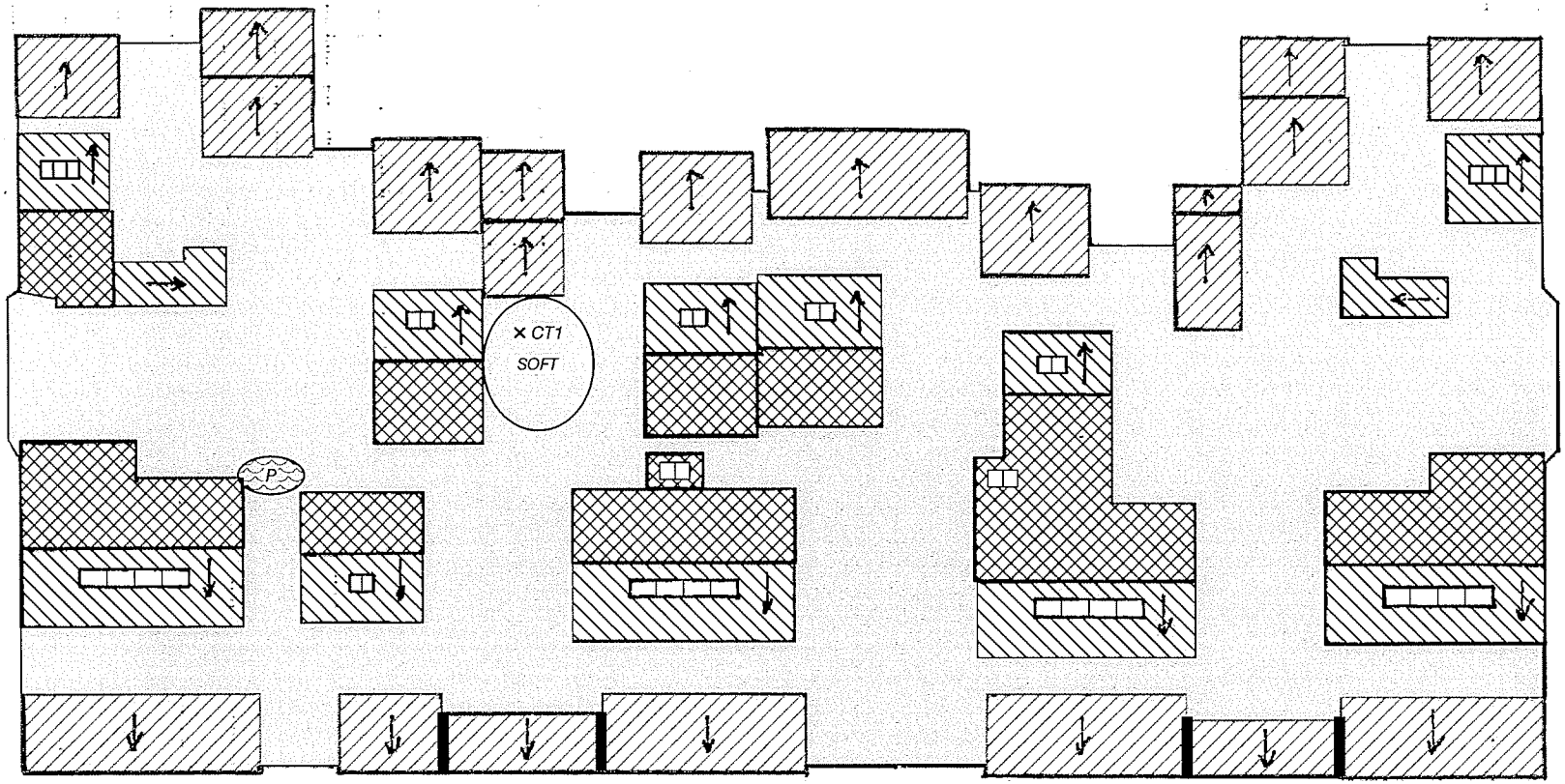
3.1.3 Overflow Scuppers

Overflow scuppers are outlets in the parapet wall for drainage of overflow water from the roof directly to the outside.

3.1.4 Ponding

Ponding occurs in low areas of the roof system that are either not drained, or where the membrane is sloped away from the adjacent drains. Ponding is best observed after precipitation in order to get a sense of the magnitude of the problem, however, if ponding has been occurring in the same area over a long period of time, slight staining will be present.

PLOTTED BY: HCS • PLOT DATE & TIME: 2015-06-17 3:04:44 PM • PLOT: AT ANSI expand A (11.00 x 8.50 Inches) SHEET SIZE. READ DRAWING ACCORDINGLY
FILE: P:\Y214\2015\15Y214-025 - BRITANNIA PLACE - 251 WEST 4TH ST, NV (ROOF REPL.)\15Y214-025A - ROOF EVALUATION\15Y214-025A - DRAWINGS\15Y214-025A.DWGS.DWG



LEGEND:

- MAIN FLAT ROOF AREAS
- UPPER FLAT ROOF AREAS
- LOWER SLOPED ROOF AREAS
- UPPER SLOPED ROOF AREAS
- × CT# CUT TEST
- (P) PONDING
- (SOFT) SOFT AREA
- ← SLOPE DIRECTION
- BALCONY MEMBRANE/SLOPED ROOF INTERFACE

WSP

BRITANNIA PLACE - 251 WEST 4TH ST., NORTH VANCOUVER
ROOF CONSULTING SERVICES

ROOF PLAN

Date: 17-Jun-15	Scale: NTS
Drawn by: HCS	Checked by: RSH
Project No. **15Y214-025A**	
Drawing No. 1	

112 - 930 WEST 1ST STREET, NORTH VANCOUVER, BC CANADA V7P 3N4
PHONE: 604.924.5575 wspgroup.com FAX: 604.924.5573

Appendix E

LIMITATIONS