GRAMS ENGINEERING CONSULTANTS

ROOF INSPECTION REPORT

Prepared for:	**Realty Management, Inc.** **P.O. Box 061098** **Staten Island, NY 10306** **Tel: (718) 477-9300** **Fax: (718) 698-8200**
Property:	**Villas at Riverview Condominiums** **120-01/120-30 Riviera Court** **Queens, NY**
Inspection Date:	**July 30 - August 7, 1999**
Report Number:	**QU-073099-1**

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Contents

Engineer's Certification

We certify that the roof-tops and all appurtenances constituting part of the roof structure of buildings located at the address identified on the cover of this report, and listed and evaluated in this report, were inspected by a Licensed Professional Engineer.

Further, we certify that we invested reasonable effort in conducting this limited access visual inspection and in preparation of this report.

Further, we certify that this report does not omit any material fact and does not contain any untrue statement.

This certification is not valid without Professional Engineer's original inked signature and raised seal.

Gary Shed, P.E.

_____

Date: _____

Limited Warranty

Although reasonable care has been taken in the preparation of this report, Grams Engineering extends no warranty and makes no representation as to the suitability of the information contained herein for the user's intended purpose or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

This report is not a guarantee or warrantee nor is it the implication that the inspected premises construction comply with all applicable federal, state and local building codes, regulations and ordinances.

Grams Engineering warrants to the original Purchaser of this report that we will re-inspect a home, building or structure, or a part thereof as listed on the cover of this report, and revise and reissue the report for a period of one (1) year after the original report has been issued, at no cost to the Purchaser upon notification and verification of typographical errors or omissions. A re-inspection will be made if requested by original Purchaser and a new report issued, at any time at a fee not to exceed half the fee charged for the original inspection.

Grams Engineering agrees to defend original Purchaser of this report in any action against Purchaser to the extent that such action is based on a charge or allegation that the findings listed in this report are incorrect, and further agrees to indemnify Purchaser for any final damages award, or actual damages or costs that may be entered against Purchaser in any such action, but in no event shall Grams Engineering financial obligations hereunder exceed the inspection fee paid to Grams Engineering by the Purchaser.

Introduction

The engineering inspection was conducted by a qualified and experienced registered professional engineer and was intended to provide Inter-Borough Management, Inc., as managing agent for Villas at Riverview Condominiums, Queens, NY with a non-biased engineering evaluation of the condition of roofs at three buildings comprising all 26 units of the condominium complex.

This was a limited access visual inspection requiring access to the roof.

The inspection included examination of the condition of roofing and evaluation of the integrity of the underlying structure. Specifically, the inspection included for each condominium unit:

- Visual identification of all degraded roof areas and the nature and extent of the problems.
- Visual inspection of leaders and gutters.
- Review of files and drawings at Queens Department of Buildings.

NOTE

Generally, leaks begin at a roof's most vulnerable spots - at flashings, where shingles are damaged or missing, in valleys, or at eaves. Often, the water shows up far from its point of origin after working its way through layers of roofing materials and down rafters. Therefore, this inspection included not only the condition of roofs' coverings, but also of upper siding, as well as gutters and downspouts.

This inspection did not include chemical composition testing of roofing materials or sampling and analytical testing of building materials affected by moisture, heat, and sun elements.

The nature of the inspection limited engineer from inspecting many items which are hidden inside inaccessible areas, or are obstructed in any manner. These items include but are not limited to structural members. Inspecting these items can often result in minor damage to the premises and requires obtaining the condominium unit's owner permission and indemnification well in advance and in writing.

This inspection did not include direct observation and evaluation of inaccessible areas. The inaccessible areas included: edges of steep-sloped roof tops, upper siding, and areas obstructed by debris and personal property. Where easy access to areas of interest was physically not possible, a reasonable effort was made to conduct the inspection by other means.

About This Report

The purpose of the Inspection Report is to present specific findings to Inter-Borough Management, Inc. step-by-step in clear and simple language and to provide Inter-Borough Management, Inc. with a concise, practical advice based on the knowledge and sound engineering judgment of experienced engineer. Having all the facts enables Inter-Borough Management, Inc. and its client to make an informed decision. Specifically, the inspection report covers for each condominium unit:

- The extent and the location of any degraded areas.
- The specific location of any potential water leaks.
- Specific recommendations to repair or replace.

This report is organized into three sections and an appendix. Each of the sections contains information relevant to condition of the inspected roofs. The paragraphs below present each of the sections and a brief comment on its contents.

Section 1: Brief Summary of Findings
This section provides inspection summary at a glance.

Section 2: Specific Observations
This section provides the summary of detailed findings regarding the condition of roof and appurtenances and lists recommendations to repair or replace by each Unit.

Section 3: Miscellaneous Observations
This section provides the summary of miscellaneous and general findings regarding the condition of roof and appurtenances.

Appendix A: Glossary
This section contains explanation for the terms used in this report.

Appendix B: Photographs
This section contains photographs taken in the course of inspection.

Appendix C: Drawings
This section contains copies of relevant construction drawings.
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What is Not Covered in this Report
This report does not cover: condition of interiors of walls, ceilings and roofing, inaccessible structural members; chemical analysis of building materials and finishes.

Brief Summary of Findings

NOTE

This limited access visual inspection was conducted in all directly accessible and observable areas. This limits the ability of the engineer to detect certain structural problems. It should be expected that there are leaks, cracks, and possibly rot which were not observed during this inspection, that exist in inaccessible areas of roof deck and structural members.

- The three buildings at 120-01 through 120-30 Riviera Court, Queens, NY comprising the Villas at Riverview Condominiums are 9 to 11 years old, two story, split level, attached, frame-construction, multi-family residential dwellings.

- The final building plans were developed by a registered architect Herbert H. Warman in 1986, approved by Queens Department of Buildings on May 12, 1988 and are on file.

- The Certificate of Occupancy (C of O) is on file with Queens Department of buildings, and confirms that the building was constructed in accordance with the building code and zoning regulations in force at the time of construction and that it is up to date.

- All 26 units of a condominium complex feature a combination of traditional sloping roof consisting of solid plywood sheathing, underlayment and overlapping layers (typically 2) of asphalt shingles (asphalt impregnated shingles with embedded mineral granules) or thermoset single-ply roof coverings , and built-up roof consisting of solid plywood sheathing and alternating layers of roofing felt and asphalt. Typically, these types of roof can last 15 to 20 years depending on the climate. None of the asphalt shingles show typical signs of aging such as: bald spots, loose granules, and cracking. However, many shingles are poorly laid with too much or too little overlap and exposure, and many were damaged in the process of installation or maintenance since they were installed.

Unit No.	Sheathing	Underlayment	Sloped Roof Roofing Material	Flat Roof Roofing Material
120-01, 120-03, 120-29	5/8” plywood	Single-ply asphalt impregnated roofing felt	Single-ply thermoset roll roofing	Built-up tar and felt
120-04 through 120-28, 120-30	5/8” plywood	Single-ply asphalt impregnated roofing felt	2-ply asphalt shingles with colored mineral surface finish	Built-up tar and felt

- All roofs have a single layer underlayment (roofing felt). The BOCA National Building Code Sec. 1507.4.3 states: "Double layer underlayment shall be required on roof slopes below 4 units vertical in 12 units horizontal (4:12)". The review of construction drawings indicates roof slope of 3'-11" vertical to 12' horizontal. Strictly speaking, as constructed, this is not in compliance with the stipulation of the BOCA code referenced above. However, the BOCA code is not binding, and as constructed, this is a common practice in the industry, and is acceptable to local building inspectors.

- The section of the BOCA code referenced above also states: "Asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle, and not less than two fasteners per individual shingle". Due to the nature of the inspection, i.e. not destructive, it was impossible to verify if this requirement was complied with.

- While the grading of all sloped roofs is adequate for drainage, the grading of all built-up roofs is insufficient and results in standing water. This is probably due to settling of buildings' structure with time, but could also have been a result of omissions in design and construction, as construction drawings clearly show the sloping of built up roofs graphically, but do not specify it numerically.

- All cap and step flashings, gutters and downspouts are made of aluminum. Most cap flashings are in poor condition and need repair or replacement. Many cap flashings are just missing. All gutters and downspouts are in good condition with only minor exceptions listed in Specific Observations section.

- The roof of each unit features up to seven vents and up to two skylights. Many vent flashings are deformed, most are lifting up away from the roof, many are improperly nailed to the sheathing or are inadequately covered by shingles. A large number of flashings show signs of extensive repairs (caulking and roof cement).

- The siding is a combination of cedar boards in the front and the back of the buildings, and brick and mortar for the end walls. Most siding is in good condition with some notable exceptions listed in the Specific Observations section.

- The units' air conditioning systems drainage is discharging directly onto built up roofs. This contributes to water collecting on the roof. Also, the Uniform Building Code (UBC) Section 310.1 states that air conditioning condensate shall not drain directly to public way. It is also a good practice to drain the condensate to a nearby gutter or downspout.

- Roof tops are littered with debris: loose tiles, pieces of lumber, metal and wire, and roofing nails. The debris can get swept by the wind and fall to the ground or get thrown into a nearby window. Therefore, this presents safety and liability implications.

Specific Observations

Unit No.	Observations	Implication	Recommendation
120-01	• Transition from end-wall cap flashing to gable-end cedar siding in the back of the building is not weather-proofed.	Opens path for water penetration inside siding and underlying structure.	Weather-proof with good quality caulking.
	• Soffit and trim in the back of the building buckled and moved out of place.	Opens path for water to penetrate underneath soffit.	Repair.
120-03	• No deficiencies noted		
120-04	• Missing drip edge or capping (flashing over cornice fascia) facing front and rear of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing in the front and the back of the building.
	• Many shingles are not appropriately overlapped and exposed and many have edges lifted up.	Opens path for water penetration underneath shingles.	Replace shingles where appropriate for proper overlap/exposure. Apply roofing cement under curled shingles. Resurface the entire roof if there are current complaints of water leaks.

Unit No.	Observations	Implication	Recommendation
	• Roof ridge is slightly curved. This could be due to a substandard grade of lumber used in roof trusses or the ridge board, improperly spaced rafters, or poor workmanship.		No further settling of roof support structure is expected. No action required.
120-05	• Missing drip edge or capping (flashing over cornice fascia) facing front of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing.
	• Edges of skylight flashing not flush with roof.	Opens path for water penetration.	Apply roofing cement to seal any gaps.
	• Front gutter spike-and-ferrule hangers loose.		Tighten gutter hangers.
120-06	• Missing drip edge or capping (flashing over cornice fascia) facing front and rear of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing in the front and the back of the building.
	• Many ridge shingles are poorly aligned, range anywhere from 2 to 4 ply, and are mixed color. This appears to be the result of poor workmanship. Many shingles have edges broken off.		Replace any damaged shingles.
	• Missing section of siding near the built-up roof (towards the front of the building). The area has been patched up extensively with	Indicates past and possibly present path for water penetration behind siding and into underlying	Install missing piece of siding.

Unit No.	Observations	Implication	Recommendation
	roof cement.	structure. Exposes underlying structure to weather elements which will cause it to deteriorate if not corrected.	
	• Roof top is littered with debris.	Liability	Clean out roof top of all debris
120-07	• Missing drip edge or capping (flashing over cornice fascia) facing front of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing.
	• Approximately 12” long section of shingles overlapping cap/step flashing where roof transitions down to a lower elevation roof of Unit 120-09 (towards the back of the building) is damaged (edges broken off). Similarly, some shingles at the roof edge in the front of the building have edges broken off.	Opens path for water penetration between roof shingles and cap flashing due to insufficient overlap.	Replace damaged shingles.
120-08	• Missing drip edge or capping (flashing over cornice fascia) facing front and rear of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing in the front and the back of the building.
	• Edges of some shingles lifted/curled up away from the sheathing. Some shingles moved out of place.	Shingles with curled up edges open path for water penetration inside the underlying structure.	Replace damaged shingles.

Unit No.	Observations	Implication	Recommendation
	• Missing section of siding near the built-up roof (towards the front of the building). The area has been covered up with aluminum sheet and patched up with roof cement.	Indicates past and possibly present path for water penetration behind siding and into underlying structure. Exposes underlying structure to weather elements which will cause it to deteriorate if not corrected.	Install missing piece of siding.
120-09	• Missing drip edge or capping (flashing over cornice fascia) facing front and rear of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing in the front and the back of the building.
	• Approximately 12” long section of shingle along the edge of the roof in the corner adjacent to Unit 129-11 towards the rear of the building is severely damaged with edges broken off and the rest of the shingle lifted away from the roof. Many shingles at the front edge of the roof also have broken edges.	Approximately 1/2”x12” area of sheathing top is exposed to weather elements which will cause the sheathing to deteriorate rapidly if not corrected. Opens path for water to penetrate under shingles.	Replace damaged shingles.
	• Edges of most flashings are not flush with roof.	Opens path for water penetration.	Apply roofing cement to seal any gaps.
	• Soffit trim buckled and moved out of place.	Opens path for water to penetrate underneath soffit.	Repair
120-10	• Missing drip edge or capping (flashing over cornice fascia) facing front and rear of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a	Install drip edge or cornice fascia flashing in the front and the back of the building.

Unit No.	Observations	Implication	Recommendation
		path for water penetration inside siding and underneath roof deck.	
	• Shingles overlap/exposure is inconsistent with good practice. Many shingles towards the front of the building have edges broken off.	Opens path for water penetration between roof shingles due to insufficient overlap. If has not already, very likely to develop leaks in the near future.	Resurface the entire roof if there are current complaints of water leaks.
	• Roof ridge is slightly curved. This could be due to a substandard grade of lumber used in roof trusses or the ridge board, improperly spaced rafters, or poor workmanship.		No further settling of roof support structure is expected. No action required.
	• Roof top is littered with debris.	Liability	Clean out roof top of all debris
120-11	• Missing drip edge or capping (flashing over cornice fascia) facing front and rear of the building. This exposed plywood edge to weather elements and caused it to lift significantly at the corner adjacent to Unit 120-15 (in the rear of the building).	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Screw-down sheathing where lifted. Install drip edge or cornice fascia flashing in the front and the back of the building. Replace any shingles damaged as a result of repairs listed above.
120-12	• Missing drip edge or capping (flashing over cornice fascia) facing front and rear of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing in the front and the back of the building.
	• Shingles overlap cap flashing where roof transitions down to a lower elevation of roof of Unit 120-10 by as much as 4”. This is	Edges of shingles overlapping cap flashing will tend to lift in heavy winds. This opens path for	See below for repairs. Resurface the entire roof if there are current complaints of water leaks.

Unit No.	Observations	Implication	Recommendation
	inconsistent with good practice. Some shingles have lifted and many exhibit signs of past repairs.	water penetration between roof shingles and the flashing.	
	• Cap flashing where roof transitions down to a lower elevation of roof of Unit 120-10 in the front of the building is significantly deformed. This may be a result of poor workmanship, but is also likely that it has been removed and than reinstalled again some time in the past..	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration.	Install new cap flashing and edge shingles.
	• Edges of skylight flashing not flush with roof and are not adequately covered with shingles.	Opens path for water penetration.	Apply roofing cement to seal any gaps.
	• Roof top is littered with debris.	Liability	Clean out roof top of all debris.
120-14	• Missing drip edge or capping (flashing over cornice fascia) facing front and rear of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing in the front and the back of the building.
	• Shingles overlap cap flashing where roof transitions down to a lower elevation of roof of Unit 120-12 by as much as 2-3”. This is inconsistent with good practice. Many shingles are poorly aligned, range anywhere from 2 to 4 ply, and are mixed color. Many shingles have edges broken off. There are also extensive signs of patching.	Edges of shingles overlapping cap flashing will tend to lift in heavy winds. This opens path for water penetration between roof shingles and the flashing. Patching indicates past and possibly even current water leaks.	Trim and/or replace edge shingles as required. Resurface the entire roof if there are current complaints of water leaks.

Unit No.	Observations	Implication	Recommendation
120-15	• Missing drip edge or capping (flashing over cornice fascia) facing front of the building. (Ref. Photo 10)	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing in the front of the building.
	• Signs of extensive patching of overlapping sections of cap/step flashing where roof transitions up to a higher elevation roof of Unit 120-11 in the back of the building.	Possible past and even current path for water penetration.	Check with owners of Units 120-15 and 120-11 for any signs of current water leaks along common wall. Replace entire length of flashing if there are any signs of current leaks.
	• Roof top is littered with debris	Liability	Clean out roof top of all debris
120-17	• Missing drip edge or capping (flashing over cornice fascia) facing front of the building. This exposed plywood edge to weather elements and caused it to warp slightly.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Screw-down sheathing edge where lifted. Install drip edge or cornice fascia flashing. Replace any shingles damaged as a result of repairs listed above.
	• Approximately 3’ long section of shingles bunched-up and lifted away from the roof slightly.	Opens path for water to penetrate under bunched-up shingles.	Apply roofing cement to affected shingles. Resurface the entire roof if there are current complaints of water leaks.
	• The sections of flashing over cornice fascia facing the back of the building are not properly overlapping.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Replace cornice fascia flashing. At the minimum, add overlapping sections.

Unit No.	Observations	Implication	Recommendation
120-19	• Missing drip edge or capping (flashing over cornice fascia) facing front of the building. This exposed plywood edge to weather elements and caused it to lift significantly at the corner adjacent to Unit 120-17.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Screw-down sheathing where lifted. Install drip edge or cornice fascia flashing in the front of the building. Replace any shingles damaged as a result of repairs listed above.
	• Missing three sections of overlapping flashing over cornice fascia facing the back of the building. Note: it is a poor practice to use narrow-sectioned overlapping-type flashing over cornice fascia because rain water can be forced behind the flashing by the wind.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Replace cornice fascia flashing. At the minimum, replace missing sections.
	• Missing piece of cap flashing in the front of the building where roof transitions between Units 120-19 and 120-17.	Exposes underlying structure to weather elements and allows water penetration. Will deteriorate if not corrected.	Reinstall missing piece of flashing.
120-20	• Underneath of sheathing in the corner adjacent to end wall facing the front of the building is exposed to weather elements.	Sheathing will deteriorate if not adequately supported and protected.	Install frieze board and cap with aluminum flashing.
	• Many shingles are over-exposed.	Opens path for water penetration underneath shingles.	Replace shingles where appropriate for proper overlap/exposure.
	• Significant loss of mortar and brick at the top of end-wall brick-and-mortar to gable-end cedar siding interface (towards the back of the building)	Opens path for water penetration inside siding and underlying structure.	Repair masonry siding.

Unit No.	Observations	Implication	Recommendation
	• Soffit in the front of the building buckled and moved out of place.	Opens path for water to penetrate underneath soffit.	Repair
	• Front gutter spike-and-ferrule hangers loose		Tighten gutter hangers
120-21	• Missing drip edge or capping (flashing over cornice fascia) facing front of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing in the front of the building.
	• Many shingles at the front edge of the roof have broken edges.	Opens path for water to penetrate under shingles.	Replace damaged shingles.
	• Missing piece of cap flashing where roof transitions down to a lower elevation roof of Unit 120-23 (towards the back of the building).	Opens path for water penetration behind fascia and into underlying structure of Units 120-21 and 120-23. Exposes underlying structure to weather elements which will cause it to deteriorate if not corrected.	Reinstall missing piece of flashing.
	• Shingles adjacent to the skylight are not flush with skylight flushing.	Opens path for water to penetrate under bunched-up shingles.	Replace bunched-up shingles adjacent to the skylight or apply roof cement under loose shingles.
120-22	• Missing drip edge or capping along the edge of sheathing facing front of the building.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath sheathing.	Install drip edge or cornice fascia flashing in the front of the building.

Unit No.	Observations	Implication	Recommendation
	• Missing cap flashing above cedar siding adjacent to Unit 120-24 (towards the front of the building).	Exposes approximately 3.5" length of sheathing edge. Opens path for water penetration behind fascia and into underlying structure of Units 120-22 and 120-24. Exposes underlying structure to weather elements which will cause it to deteriorate if not corrected.	Install cap flashing.
	• Vent flashing is severely deformed. Shingles in the proximity of flashing are damaged (Ref. Photo 2)	Opens path for water to penetrate underneath flashing	Repair or replace flashing. Replace affected shingles.
	• Roof top is littered with debris (Ref. Photo 1)	Liability	Clean out roof top of all debris
120-23	• Missing drip edge or capping (flashing over cornice fascia) facing front and rear of the building. This exposed plywood edge to weather elements and caused it to warp slightly.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Screw-down sheathing edge where lifted. Install drip edge or cornice fascia flashing in the front and rear of the building. Replace any shingles damaged as a result of repairs listed above.
	• Edges of some shingles lifted/curled up. Some shingles moved out of place.	Shingles with curled up edges open path for water penetration inside the underlying structure.	Apply roofing cement to affected shingles.
	• Edge of skylight flashing not flush with roof.	Opens path for water penetration.	Apply roofing cement to seal any gaps.
120-24	• Missing drip edge or capping along the edge	Exposes edge of sheathing and	Install drip edge or cornice fascia

Unit No.	Observations	Implication	Recommendation
	of sheathing facing front of the building.	the underlying structure to weather elements and opens a path for water penetration inside siding and underneath sheathing.	flashing in the front of the building.
	• Hole in cap flashing where roof transitions down to a lower elevation roof of Unit 120-26 (towards the front of the building).	Opens path for water penetration behind fascia and into underlying structure of Units 120-24 and 120-26. Exposes underlying structure to weather elements which will cause it to deteriorate if not corrected.	Repair or replace cap flashing.
	• Ridge shingle nailed through (Ref. Photo 1)	Opens path for water penetration along nail shank	Replace affected shingle. If necessary, secure with blind nails. At the minimum, cover nails haed with roofing cement.
120-25	• Missing drip edge or capping along the edge of sheathing facing front and rear of the building. This exposed plywood edge to weather elements and caused it to warp slightly in the rear.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Screw-down sheathing edge where lifted in the rear of the building. Install drip edge or cornice fascia flashing in the front and the rear of the building. Replace any shingles damaged as a result of repairs listed above.
	• Edges of some shingles lifted/curled up. Some shingles moved out of place.	Shingles with curled up edges open path for water penetration inside the underlying structure.	Replace damaged shingles.
	• Roof ridge board is slightly curved. This could be due to a substandard grade of lumber used in roof trusses or the ridge board,		No further settling of roof support structure is expected. No action required.

Unit No.	Observations	Implication	Recommendation
	improperly spaced rafters, or poor workmanship.		
	• Edge of skylight flashing not flush with roof.	Opens path for water penetration.	Apply roofing cement to seal any gaps.
	• Missing piece of cedar siding adjacent to Unit 120-23 (towards the front of the building).	Opens path for water penetration behind siding and into underlying structure. Exposes underlying structure to weather elements which will cause it to deteriorate if not corrected.	Install missing piece of siding.
	• Missing cap flashing where roof transitions down to a lower elevation roof of Unit 120-23 (towards the front of the building).	Opens path for water penetration behind fascia and into underlying structure of Units 120-25 and 120-23. Exposes underlying structure to weather elements which will cause it to deteriorate if not corrected.	Reinstall missing piece of flashing.
120-26	• Missing drip edge or capping along the edge of sheathing facing front of the building. This exposed plywood edge to weather elements and caused it to lift severely at the splice line directly above the window.	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath sheathing.	Screw-down sheathing edge where lifted. Install drip edge or cornice fascia flashing in the front of the building. Replace any shingles damaged as a result of repairs listed above.
	• Vent flashing is severely deformed. Shingles in the proximity of flashing are severely damaged with underlayment exposed (Ref. Photo 6)	Opens path for water to penetrate underneath flashing into underlying structure	Replace flashing and damaged shingles.

Unit No.	Observations	Implication	Recommendation
120-27	• Missing drip edge or capping (flashing over cornice fascia) facing front of the building. This exposed plywood edge to weather elements and caused it to warp slightly. (Ref. Photo 8)	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Screw-down sheathing edge where lifted. Install drip edge or cornice fascia flashing. Replace any shingles damaged as a result of repairs listed above.
	• Rafter facing the rear of building and the roof ridge are excessively curved. This could be due to a substandard grade of lumber used in roof trusses or the ridge board, improperly spaced rafters, or poor workmanship.		No further settling of roof support structure is expected. No action required.
	• Missing piece of cedar siding adjacent to Unit 120-25 (towards the front of the building). (Ref. Photo 8)	Opens path for water penetration behind siding and into underlying structure. Exposes underlying structure to weather elements which will cause it to deteriorate if not corrected.	Install missing piece of siding.
	• Missing cap flashing where roof transitions down to a lower elevation roof of Unit 120-25 (towards the front of the building). (Ref. Photo 8)	Opens path for water penetration behind fascia and into underlying structure of Units 120-27 and 120-25. Exposes underlying structure to weather elements which will cause it to deteriorate if not corrected.	Reinstall missing piece of flashing.
120-28	• Missing drip edge or capping along the edge of sheathing facing front of the building. This	Exposes edge of sheathing and the underlying structure to	Screw-down sheathing edge where lifted. Install drip edge or

Unit No.	Observations	Implication	Recommendation
	exposed plywood edge to weather elements and caused it to lift severely at the splice line directly above the window.	weather elements and opens a path for water penetration inside siding and underneath sheathing.	cornice fascia flashing in the front of the building. Replace any shingles damaged as a result of repairs listed above.
	• Roof deck sags excessively. This could be due to a substandard grade of lumber used in roof trusses and joists, improperly spaced rafters and joists, or poor workmanship.		No further settling of roof support structure is expected. However, although no immediate action is required, this condition must be monitored regularly.
	• End rafter adjacent to Unit 120-26 has warped severely and caused cap flashing to lift up. This could be due to a substandard grade of lumber used in rafters, improperly spaced rafters, or poor workmanship. (Ref. Photo 7)	Opens path for water penetration into underlying structure.	Repair or replace rafter(s) as necessary. Replace aluminum capping.
	• Piece of lumber nailed to the ridge (towards rear of the building)		Remove and properly secure or replace affected shingles.
120-29	• Missing drip edge or capping (flashing over cornice fascia) facing front of the building. (Ref. Photo 9)	Exposes edge of sheathing and the underlying structure to weather elements and opens a path for water penetration inside siding and underneath roof deck.	Install drip edge or cornice fascia flashing.
	• Rake frieze board is made of untreated wood and is not weather protected.	Will deteriorate if not weather protected.	Cap with corrosion resistant metal (typically aluminum). Alternatively, prime with exterior grade, oil-based primer then finish with two coats of exterior alkyd, oil or latex paint.

Unit No.	Observations	Implication	Recommendation
	• Portion of frieze board is missing.	Brick-face siding at the top of the side wall is exposed to weather elements and water penetration.	Reinstall missing portion of frieze board.
	• Transition from end wall brick-and-mortar to gable-end cedar siding (towards the back of the building) has a 1/2” gap.	Opens path for water penetration inside siding and underlying structure.	Weather-proof with good quality caulking.
	• End rafter facing the rear of building and the roof ridge board are excessively curved. This could be due to a substandard grade of lumber used in roof trusses or the ridge board, improperly spaced rafters, or poor workmanship. This caused aluminum capping along the edge of the roll roofing to buckle and the roll roofing itself to bubble in several places	Buckled aluminum capping opens path for water penetration inside siding, roll roofing and underlying structure.	Straighten all aluminum edging to reduce any gaps. Seal any remaining gaps with good quality caulking or roofing cement.
	• Cracked skylight glass	Possible path for water penetration. May shatter under heavy snow.	Replace.
120-30	• Underneath of sheathing corners overhanging the end wall (3 places) are exposed to weather elements.	Sheathing will deteriorate if not adequately supported and protected.	Install frieze board and cap with aluminum flashing.
	• The roof ridge is curved excessively. This could be due to a substandard grade of lumber used in roof trusses or the ridge board, improperly spaced rafters, or poor workmanship.		No further settling of roof support structure is expected. No action required.

Unit No.	Observations	Implication	Recommendation
	• Shingles adjacent to the skylight are not flush with skylight flushing. Extensive signs of caulking around skylight flashing.	Opens path for water to penetrate under lifted shingles.	Replace lifted shingles adjacent to the skylight or apply roof cement under loose shingles.
	• Section of unwrapped aluminum gutter is used as cap flashing (end wall towards the back of the building)	Cannot provide adequate protection against weather elements	Replace with proper cap flashing.
	• Roof top is littered with debris and loose tiles	Liability	Clean out roof top of all debris

Miscellaneous Observations

Unit No.	Observations	Implication	Recommendation
120-04	• As a result of building settling, the end-wall brick siding split apart along the vertical seam with the resultant gap in the upper siding as much as 2.5” wide. This exposed the underlayment originally protected by mortar in the seam.	Opens path for water penetration inside siding and underlying structure.	Repair siding
All	• Flashings are nailed to sheathing with nails heads exposed. (Ref. Photo 3)	Unprotected nail head subjected to corrosion. Opens path for water penetration along nail shank.	Cover all exposed nail heads with roofing cement.
All	• Due to settling of the structures, the built-up roofs have inadequate grade.	Tendency for water paddles to collect	It is not practical to re-grade all built-up roofs at this time. However, the grade should be corrected when roofs are resurfaced.
All	• Air conditioning drainage is discharging directly onto the built-up roof. (Ref. Photo 4)	Contributes to water collecting on the roof top.	Pipe air conditioning drainage into the downspout.

Unit No.	Observations	Implication	Recommendation
All	• Roof tops are littered with debris: loose tiles, pieces of lumber, roofing nails, screws, pieces of metal, pieces of wire. (Ref. Photo 5)	Liability	Clean out roof tops of all debris.
All	• Antenna cables clutter gutters and penetrate through upper siding	Antenna cables not properly routed and supported. Wall penetrations are not adequately sleeved , shielded or sealed - allows water penetrating inside siding along cable wire.	Caulk all antenna cable penetrations.

Appendix A: Glossary

The following definitions are applicable to terms used in this report:

Asphalt	Petroleum based material widely used in many building materials
Caulking	A flexible silicone-based compound used to fill gaps between two connecting surfaces
Certificate of Occupancy	Blower. Motor-driven fan that moves air through the ducts of a heating or cooling system
Cornice	The cornice is formed where the eave of the roof meet the side walls
Downspout	A channel made out of aluminum or plastic material designed to carry rainwater away from the building
Eave	Lower end of a rafter that extend beyond the building line
Flashing	Sheet metal used to protect windows, doors, etc. from water penetration
Flue	The passage in the chimney through which smoke and fumes are vented outside
Freeze	Part of siding trim
Gutter	A channel made out of aluminum or plastic material designed to collect and carry rainwater away from the building
Joist	Evenly spaced horizontal length of lumber that provide structural support for floors and ceilings
Load bearing wall	A wall that supports the floor or roof of a building
Mortar	Mixture of cement, sand, water, and some times lime used as an adhesive for laying brick, stone, ceramic tile and concrete blocks.
Plumb	To determine if vertical surface is exactly perpendicular to a horizontal plane.
Rake	Extension of gable roof beyond the end wall of the house.
Roof	The flat slab or sloped deck of a structure including its supporting members, not including vertical supports.
Roof covering	The covering applied to the roof for weather resistance, fire resistance or appearance.

Roof rafter	Evenly spaced length of lumber that provide structural support for roof
Studs	Vertical pieces of lumber forming the structural core of interior and exterior walls of the building.
Sheathing	Plywood or fiberboard material that provides the nailing base for the roof surface material
Truss	A rigid framework of triangular shapes.
Underlayment	A heavy, fibrous black paper saturated with asphalt.

Appendix B: Photographs

Appendix C: Drawings