

Maintenance Matters

BUILDING MAINTENANCE BULLETIN



The Impact of Delayed Maintenance and Renewals on Buildings

Over the life of a building, various components, materials and assemblies require maintenance and replacement. Having a planned and coordinated approach to maintenance and renewals reduces the likelihood of premature failures, damage to other assets and the associated emergency costs to repair or restore.



Keeping up with maintenance and renewals will help ensure that you can live comfortably in your home without undue stress or unexpected expenses for many years to come. In addition, having a building that has been well maintained with assets renewed periodically helps protect your investment when it comes time to sell.

Deciding what work is required, when and how it will be implemented, who will implement it, and how it will be paid for is all part of the renewals planning process. This information bulletin outlines principles to help owners understand this process, and discusses possible consequences of not following a plan.

Building Asset Inventory

Building assets are a combination of physical components, which require periodic maintenance, repair and eventual renewal. An asset inventory is an organized list of assets in a building. Some examples of assets are shown on the next page in Figure 1. For more information on maintenance and renewals of assets, please refer to the bulletins and guides recommended on page 6.



Maintenance Matters is a series of bulletins and companion videos designed to provide practical information on the maintenance of residential buildings.

Produced by the Technical Research & Education branch of BC Housing. RDH Building Engineering Ltd. in collaboration with the Condominium Home Owners' Association (CHOA) prepared this bulletin.



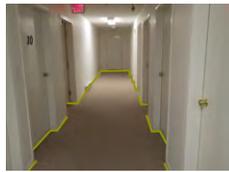
Having a building that has been well maintained with assets renewed periodically helps protect your investment when it comes time to sell.



Roofs



Boilers



Floor finishes



Pumps



Windows



Balcony waterproofing

Building assets do not last forever and it can be difficult to predict when an asset will reach the end of its service life. Owners should make plans to replace or renew assets well in advance, or risk facing the increased cost of repairs resulting from delayed action. Commissioning a depreciation report is an essential step to assist with the planning process as discussed later in this bulletin.

Figure 1 – Examples of typical building assets.

Consequences of Delayed Maintenance and Renewals

The consequences of failing to maintain and replace assets at the appropriate time can be divided into three categories: Disruption to Property Use and Structural Consequences; Increased Costs; and Unexpected Liabilities.

Disruption to Property Use and Structural Consequences

These relate to the structure of the building. Examples include:

- Increased outages associated with power supply, water supply, gas, and other utilities
- Disruptions of essential services such as increased downtime of elevators or heat
- Structural damage
- Collateral damage to finishes and substrates from water leaks
- Accelerated deterioration of some assets requiring earlier renewal and unforeseen costs



Figure 2 – Pipes not replaced when scheduled, resulting in a major water leak.

- Nuisance caused by noise, smells, and vibrations
- Visible deterioration that impacts the aesthetics of the building

Increased Costs

These impact the owner's pocketbook. Examples include:

- Increased costs due to lack of coordinated planning, crisis response, accumulation of deferred maintenance, unnecessary repairs and shortened service lives
- More unexpected changes during project implementation as a result of rushed design packages
- Greater financial hardship through unexpected special levies
- Increased insurance deductibles due to failure to mitigate
- Lower resale value of the property
- Potential for fines and penalties due to non-compliant condition(s)

Unexpected Liabilities

These expose the owners to increased risks of damages and legal actions. Examples include:

- Potential for accidents and injuries to owners and guests due to unsafe slip, trip, and fall conditions
- Jeopardizing of warranties due to failure to meet a duty of care
- Failure to approve repairs resulting in court actions

Examples of Delayed Maintenance and Renewals

Without adequate planning, the replacement of a building asset often represents a major expenditure that will significantly disrupt the strata corporation's annual cash flow and may impose a financial hardship on owners.

The following examples show the impact of delaying maintenance and renewals on roof membranes, balcony membranes and plumbing.

ROOF MEMBRANE	BALCONY MEMBRANE	PLUMBING
		
STRUCTURAL CONSEQUENCES		
<ul style="list-style-type: none"> Water damage to: <ul style="list-style-type: none"> Roof framing under the membrane The building structure Light fixtures and fire alarm equipment Interior finishes in suites under the roof – floors, walls, and furniture Potential for mould growth in carpets and other areas affected by water Loss of use or access 	<ul style="list-style-type: none"> Water damage to: <ul style="list-style-type: none"> The building structure Suites beside the balconies including floors, walls, and furniture Exterior deterioration visible to the general public Decay at railing attachments Unightly scaffolding around the exterior of the building, necessitated by having to carry out structural repairs Potential for mould growth in carpets and other areas affected by water Restricted access to balconies 	<ul style="list-style-type: none"> Water damage to: <ul style="list-style-type: none"> Interior electrical and fire alarm equipment in common areas and inside suites Drywall, wallpaper, and carpets in common areas Interior finishes in suites under the roof – floors, walls, and furniture Water migration into elevator shaft and damage to elevators Shutdown of elevator due to water damage Potential for mould growth in carpets and other areas affected by water
INCREASED COSTS		
<ul style="list-style-type: none"> Repair the collateral damage to the structure Repair interior finishes Repair electrical and fire alarm components After-hours emergencies Financial loss due to inability to occupy 	<ul style="list-style-type: none"> Fix the collateral damage to the building structure Repair safety guardrails around the balconies Setup scaffolding access Repair interior finishes 	<ul style="list-style-type: none"> Repair interior finishes Increased water damage insurance deductibles
INCREASED RISK		
<ul style="list-style-type: none"> Failing to comply with <i>Strata Property Act</i> Regulations and Bylaws Liability for damages in strata lots for failing to maintain and renew the roof 	<ul style="list-style-type: none"> Liability arising from safety hazards on the balconies Restricted access to prevent accidents and injuries Liability for damages in strata lots for failing to maintain and renew the balcony membrane 	<ul style="list-style-type: none"> Liability arising from business interruption for buildings with commercial strata lots Liability for damages in strata lots for failing to maintain and renew the plumbing

Figure 3 – Consequences of delayed maintenance for three typical assets.

What Does a Delay Cost?

The following shows how the delay of a routine balcony membrane renewal turned into an expensive repair of the balcony and adjacent wall assemblies. It is important to understand how the different components of a balcony are interrelated to illustrate how delaying the renewal of just one relatively inexpensive element (Figure 4) resulted in escalating costs.

The balcony membrane is used to protect the underlying wood structure. Renewal of this membrane is normally carried out every 10-15 years, and neglecting to replace the membrane before it fails can result in the deterioration of the structure underneath. The resulting costs can vary dramatically depending on the amount of damage to the wood decking beneath the membrane, the adjacent walls and ultimately, the structure of the building.

Figure 5 outlines the components that need to be considered as a result of deferred maintenance, or the postponed replacement of a balcony membrane. For additional information on balcony membranes, consult Maintenance Matters No. 6 (www.hpo.bc.ca).



Figure 4 – Failure of the balcony membrane.

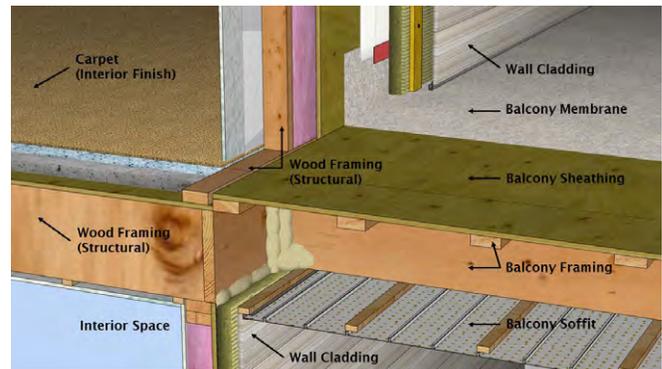


Figure 5 – Typical balcony assembly.

COMPONENTS IN A BALCONY ASSEMBLY

1. Balcony membrane
2. Flashing and wood trim around the base of the wall adjacent to the balcony
3. Plywood sheathing supporting the membrane
4. Wood framing supporting the sheathing
5. Railing, attached to the wood framing of the balcony structure
6. Drip flashing and wood trim around the edge of the balcony
7. Gutters

If the decay extends to the structural framing that affects the interior space then the following additional repairs will also need to be considered:

1. Interior drywall
2. Interior framing and related structural repairs
3. Stipple ceiling finish
4. Paint
5. Wood flooring

In the example illustrated in Figure 6, a balcony renewal which should have cost \$40,000, ultimately cost the strata nearly \$875,000 by delaying the work for several years.

Why Did the Costs Increase?

The initial project in year one was focused on the balcony membrane only. The membrane is the only layer visible on the balcony surface and deterioration of the assembly beneath can go unnoticed without periodic inspection and maintenance. An inspection plan is especially important as the membrane nears the end of its service life. In the case illustrated in Figure 6, the owners knew about the possible issues with the membrane, but still delayed the renewal for several years. The condition eventually deteriorated to the extent that they had to restore the entire balcony assembly for all the balconies.

The magnitude of the construction costs can also be impacted greatly by the configuration (size and shape) of the balcony.

Of course, the balcony membrane example is just one of many assets on a building. It is evident that neglecting to perform maintenance and renewal on any or all the assets in a building on a timely basis can result in extra and unnecessary costs.

Depreciation Reports

It is essential to have an inventory of building assets identifying inspection and maintenance requirements and estimated time of renewal for each. Completing a depreciation report is the first step to identifying the list of assets that need to be maintained, approximately when maintenance and/or renewal might occur and the magnitude of associated costs. The depreciation report provides the strata corporation with a 30-year planning tool that assembles an inventory of the common property and assets of a building, it enables the strata to anticipate maintenance and renewal schedules and can be used to focus attention on the most pressing asset renewals. By including the depreciation report information in both annual and long-term planning, the strata corporation has the ability to control and manage the cycle of renewals on building components that, if left to failure, result in unnecessary and increased costs that could have been avoided.

In 2013, depreciation reports became a mandatory planning requirement in British Columbia for strata corporations of five units or more who have not exempted by 3/4 vote annually.

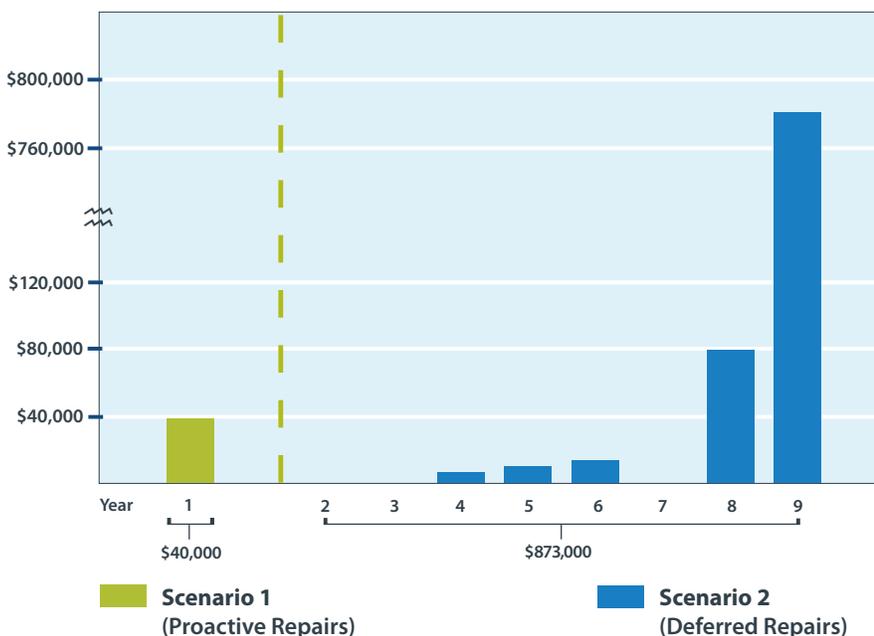


Figure 6 – Example of the impact of not replacing the balcony membrane at the end of service life versus postponing repairs until the damage affects the building structure.



Action Plan Tips

- ❑ Avoid delaying maintenance and renewals.
- ❑ Look at the warranties of the different building assets to determine what maintenance and associated documentation is required in order to keep the warranty in effect.
- ❑ Develop an inventory of building assets.
- ❑ Hire qualified consultants and contractors.
- ❑ Develop budget plans.
- ❑ Schedule routine inspections, maintenance, and renewals.

For More Information

1. Maintenance Matters Bulletin No. 7 – *Building Envelope Maintenance and Renewals Planning*, available at www.hpo.bc.ca.
2. Maintenance Matters Bulletin No. 11 – *Creating and Implementing a Building Envelope Maintenance and Renewals Program*, available at www.hpo.bc.ca.
3. *Guide to Managing Renewals Projects in Multi-Unit Residential Buildings*, available at www.hpo.bc.ca.
4. CHOA Building Asset Management Bulletins
 - Bulletin No. 1: *What is asset management?*
 - Bulletin No. 2: *What are the different types of assets that we own?*
 - Bulletin No. 3: *What is an asset inventory?*
 - Bulletin No. 4: *What happens over the life of a building?*
 - Bulletin No. 5: *What is maintenance?*
5. Refer to your building's maintenance manual.



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The regulations under the *Homeowner Protection Act* contain specific provisions requiring owners to mitigate and restrict damage to their homes and permitting warranty providers to exclude coverage for damage caused or made worse by negligent or improper maintenance. These apply to both new and building envelope renovated homes covered by home warranty insurance. Failure to carry out proper maintenance or carrying out improper maintenance either yourself or through qualified or unqualified personnel may negatively affect your warranty coverage. Refer to your home warranty insurance documentation or contact your warranty insurance provider for more information.



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