What a Strata Corporation needs to know about:

REPLACING PODIUM WATERPROOFING

This bulletin was prepared by Morrison Hershfield Ltd in collaboration with the Condominium Home Owners Association of BC (CHOA), the Homeowner Protection Office (HPO), a branch of BC Housing and other review contributors, including Alpha-Duron Roofing and Lesperance Mendes.

We would also like to acknowledge the numerous building owners, co-ops and stratas contacted for this bulletin for providing their invaluable experience with renewal projects.
Replacing Podium Waterproofing

Many multi-unit residential buildings (MURBs), Co-operative housing and other large buildings have some form of below-grade parking, storage areas or even living space underneath. When these areas extend out beyond the building foot print, the area above is often referred to as a podium or plaza. Commonly, these podiums are covered with landscaping or walkways but can also contain ponds or other features.

Due to their exposure to water, either directly from rain or from drainage through landscaping, these podiums need to be waterproofed to prevent damage to the structure, interior finishes or property below. In this regard podiums are, in essence, the same as a roof and are treated similarly in construction for water protection (See note on green roofs below). Failures of the podium waterproofing will and do occur and water leaks into a parking garage or other areas beneath a podium are not uncommon. With all the overburden (landscaping, gravel, pavers), it can often be very difficult to trace the source of the leaks and fix the waterproofing.

Initially, the easiest and lowest cost approach for building owners to address a leak is through spot repairs like crack injection or sealing. However, at some point these may not be enough to solve the problem. Inevitably there will come a time when the podium waterproofing will need to be fully replaced.

Landscaping over podiums can be extensive and features, such as gardens, playgrounds and ponds, can be elaborate. Unfortunately, when the waterproofing fails, building owners may not appreciate of how big an undertaking a podium waterproofing renewal can be, especially with the realization that all of these features have to be removed to access, repair and replace the waterproofing underneath.

Building owners may not appreciate how big an undertaking a podium waterproofing renewal can be.

This bulletin is intended to inform Stratas, Co-operative Boards and other types of building owners about when to consider renewing podium waterproofing and what to expect during the replacement process. It provides guidance on each step of the way: from the evaluation process, to design decisions to construction considerations, all of which have cost and durability implications. A typical action plan for owners has been provided at the end of this bulletin.

Note: while this bulletin may refer to below or at-grade podium structures, many of the considerations, steps and advice also apply interchangeably to green roof terraces and elevated greenspaces. These elevated landscaped areas are also quite common and can carry the same, if not greater, risk and liability of damage to living spaces below.
How does a Podium Deal with Water?
Podiums will be exposed to water from rain, irrigation and numerous other sources. Podiums manage this water mainly through two methods:

**Drainage** directs bulk water above to mechanical drains throughout the podium or to the perimeter and away from the structure. This is done by sloping the podium’s structure or components, and creating unobstructed paths, such as using gravel or drainage mats, for water to flow towards the drains.

**Waterproofing** resists water that’s pushed onto the podium structure from hydrostatic pressure while the bulk of the water drains. This waterproofing is typically a membrane applied to the podium structure.

What are the Components of a Podium?
How best to achieve sufficient drainage and waterproofing on a podium depends on the project. In general the podium assembly consists of the following:

i. **Structure**—Concrete, Sheathed Metal Decking
ii. **Membrane**—Sheet Applied, Hot Rubber
iii. **Insulation**—Where required over conditioned space
iv. **Root barrier**—Where required for vegetation
v. **Drainage Layer**—Loose Gravel, Drainage mat
vi. **Overburden**—Landscaping, Pavers, Decking

The arrangement of the layers above and/or use of additional layers will vary, depending on the construction approach.
Why Maintain Podium Waterproofing?
Annual maintenance and inspection of the podium and perimeter drainage are important obligations for building owners to prevent significant water leakage through a podium, which can lead to damage to electrical/mechanical services, property or eventually structural deterioration. The inspection of the overburden and underside of the slab can be undertaken by a landscaping service, building staff or owners themselves if they are comfortable with that responsibility. Drains should be kept clear and exposed should be protected by replacing worn flashings or topping up dirt fill in planters to cover it. In general any issues related to drainage or waterproofing on the podium should be monitored. This includes ponding water or significant efflorescence on the slab. Efflorescence is white powdery salt residue left over from migrating water in the concrete. While this water may be able to evaporate off the concrete without causing any dripping or damage, new or growing efflorescence on a slab and is a good place to start monitoring for the beginnings of an active leak.

What Causes Water Leaks?
Leaks through the podium are typically caused by material issues, poor detailing or from problems with drainage, all of which can lead to a failure in the waterproofing. The following are common causes for this failure:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
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<tbody>
<tr>
<td>Damaged or failed membrane</td>
<td>Podium waterproofing is intended to handle small amounts of movement or bridge small cracks that occur in the structure. Excessive cracking can tear the membrane. Damage can also occur from heavy gardening or new construction on the podium that punctures the membrane. This can lead to water getting beneath the membrane, delaminating it and leaking through cracks.</td>
</tr>
<tr>
<td>Membrane past its service life</td>
<td>Podium membrane materials have improved greatly over the past decade and many materials currently being used are expected to last over 30 years. Older membranes, however, could have lifespans as short as 15 years. Overtime the membrane will deteriorate and break down making it more susceptible to leaks and more difficult to repair.</td>
</tr>
<tr>
<td>Premature Failure</td>
<td>Poor building practices, such as improper drainage or unprotected membrane, can reduce the durability of the membrane and may cause it to fail sooner than expected. The type of membrane and assembly materials used may also contribute to premature failure.</td>
</tr>
<tr>
<td>Poor Installation or Detailing</td>
<td>Sometimes it comes down to how the waterproofing was designed to work and how well it was installed. Even with the most durable membrane, if the design was poor or the membrane was installed improperly, leaks can result.</td>
</tr>
<tr>
<td>Absence of Waterproofing</td>
<td>For older buildings (pre-1980) it is possible that waterproofing was never installed. Although less common and usually small in footprint, these podiums may be in a greater state of structural deterioration than buildings with even an inferior membrane for the simple fact that the entire slab has been exposed to moisture for its entire life span.</td>
</tr>
<tr>
<td>Drainage issue</td>
<td>Blocked drains or plumbing system can lead to flooding in the landscaping and put additional stress on the membrane. The build-up of hydrostatic pressure, caused by a head of water, can break weak seals; the greater the water the more pressure on the membrane there is.</td>
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<tr>
<td>Split Slab</td>
<td>Where buildings have a split slab, water that may have become trapped in the system can push its way up through the slab and delaminate the membrane or traffic coating on top.</td>
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What to Do First When Water Leaks Start?

When water leaks appear beneath the podium, contact your warranty provider to see what repairs are covered. The first response is typically to conduct targeted repairs. Although the best approach is to trace the leak and repair the waterproofing from above, most often initial targeted repairs are done from the underside to avoid having to remove the overburden. Targeted repairs can often be undertaken by a contractor or service that specializes in concrete repair or roofing. Refer *Maintenance Matters 10 - At-grade and Below Grade Assemblies* for a more detailed overview of this topic. In some cases, targeted repairs may solve the problem, but often this is only a temporary solution.

**Targeted Repair Options**

<table>
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<tr>
<th>Isolated Membrane Repairs</th>
<th>Where water issues arise from a single damaged or poorly installed membrane location, the local landscaping can be removed and the membrane can be repaired in isolation. This is more easily done when the podium membrane is accessible underneath pavers.</th>
</tr>
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<tbody>
<tr>
<td>Drip Pans</td>
<td>Hanging drip pans can be installed along the ceiling beneath a leak to help direct water towards drains. This can mitigate damage to property below, but not water damage to the concrete itself.</td>
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<tr>
<td>Injection</td>
<td>Cracks that appear on the underside of the podium can be injected with epoxy or sealant in order to block the water pathways to the interior. Since this does not repair the membrane, injection can often take several applications as sealing one crack may lead water to another location.</td>
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<tr>
<td>Water Runoff</td>
<td>Proper drainage is needed so the membrane is not overloaded. If regular maintenance does not prevent flooding, then further investigation or additional drains may be needed.</td>
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<tr>
<td>Driveways</td>
<td>Some areas of podiums may have exposed driving surfaces above, which typically have the membrane beneath a concrete topping or a heavy duty traffic coating on top. If water leakage occurs under these driving surfaces, either the traffic coating would need to be replaced, or the concrete topping would need to be removed to repair the membrane beneath.</td>
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**Spalling Concrete — Why it’s a Big Deal**

If there are continual water leaks through the podium concrete, this may cause the reinforcing steel in the concrete to corrode and expand. In turn, this can cause the concrete to break off the structure and *spall*. This exposes the reinforcing steel to greater corrosion and further spalling. Spalling of concrete can cause serious damage to people, property and piping/fire safety equipment beneath. Immediate action needs to be taken if the degree of spalling is significant (large amounts or in multiple locations).
Using a Reserve Fund Study for Timelines

A capital depreciation report or reserve fund study (RFS) is required by the province of British Columbia for multi-unit buildings. Conducting an RFS, through an engineering consultant, will identify a waterproofing renewal timeline for the building, which is a balance between the life expectancy of the waterproofing and the likelihood of when the replacement will become critical for the structure. This timeline can be a helpful tool for building owners to plan ahead, especially when it comes to funding a podium waterproofing replacement. As the incidence of water leaks increases, this timeline may need to be updated. If the RFS flags potential issues with the podium, a more detailed investigation may be warranted (see Conducting a Waterproofing Assessment below).

When Is It Time to Re-Waterproof the Podium?

Most podiums will need repairs at some point during its service life and building owners are encouraged to be proactive in dealing with waterproofing matters. When the issues with the waterproofing are more than localized, even with targeted repairs water leaks will continue to appear and often at an accelerated pace. At some point, the costs of chasing leaks and repairing the concrete may be disproportionate to the costs of a podium waterproofing replacement. The figure below shows a typical progression for repairs vs cost an effort for a building.

Conducting a Podium Waterproofing Assessment

At this stage, an engineering consultant should be brought in to conduct a podium waterproofing assessment. This will more thoroughly evaluate the membrane and the overall podium condition, including damage from interior leaks. This may involve removal of small portions of the landscaping, removal of interior finishes for test openings in ceilings, and generally gaining access to where the podium membrane can be reviewed at multiple locations.

This investigation will often provide the information necessary for laying the groundwork of a podium waterproofing replacement. As such, when initiating this assessment, building owners should go in with an expectation that it will definitely lead to a replacement project.
Using a Professional

A professional will provide the expertise, experience and guidance to help owners undertake a large scale project such as this. Once it has been determined that a waterproofing replacement is necessary, there are many ways the project can be organized in terms of responsibility for the design and administration of the work. It is highly recommended that a professional, such as an engineer or architect who has experience with podium waterproofing, be responsible for the design. A professional will provide the expertise, experience and guidance to help owners undertake a large scale project such as this. Furthermore a professional will provide review of the work during construction to ensure it follows the design intent, building code and prudent industry practice. This is critical to help avoid issues down the road from inadequate design work or construction. As such, building owners should perform their due diligence with the selection of a consultant, including asking for past renewal project history and references.

Using a Prime Consultant

As there are many aspects to a waterproofing renewal that can be performed by many different trades and consultants, organization is key to keeping a project on budget and on track. Designating a prime consultant with experience in waterproofing renewals can greatly help building owners carry out the project with fewer logistical headaches, especially when the prime consultant is familiar with the various aspects of the design and construction for podiums. The prime consultant will oversee the coordination of the design (envelope, mechanical, landscaping), tendering of the work and contract administration.

As the podium waterproofing renewal is the most critical portion of the work, the prime consultant for the project should have expertise and previous experience with podium renewals. Typically this is a building envelope engineer, however; for larger projects, owners may choose to bring on a Construction Management consultant to take on the tendering and contract administration aspects, while the prime consultant would still be responsible for the design work and field review for quality assurance. It is up to building owners to decide what approach works best for them.

Other Prime Consultants

A waterproofing renewal may not always be initiated by leaks through the podium, but rather due to opportunities brought on by other podium work. This could be from upgrades to existing buried equipment, landscaping renewals or major at-grade alterations. If the membrane is approaching the end of its service life, the owners may wish to be proactive and perform the waterproofing renewal at the same time to save costs later. Who would be the prime consultant would then likely depend on what the main focus of the project will be:

<table>
<thead>
<tr>
<th>Initial Work To Which a Podium Renewal Could be Added</th>
<th>Possible Alternate Prime Consultant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscaping additions or renewals</td>
<td>Landscape Architect or Technologist</td>
</tr>
<tr>
<td>Piping upgrades or repairs, drainage repair, electrical system upgrades, new lines, vaults, generators</td>
<td>Mechanical/Electrical Engineer</td>
</tr>
<tr>
<td>Major concrete repairs, foundation repairs</td>
<td>Structural Engineer</td>
</tr>
<tr>
<td>Building Additions on Podium, New below or at-grade insulation</td>
<td>Contractor</td>
</tr>
</tbody>
</table>
Determining the Scope of Work for Podium Waterproofing Replacements

The first and perhaps the most daunting task for a podium waterproofing replacement is to determine the extent of work. As stated previously, the initial assessment through an engineering consultant can set the preliminary framework for the scope of the waterproofing renewal. As there can be much more to a podium waterproofing renewal than just the waterproofing, additional consultants may be needed to assist in determining the overall scope, such as a landscape architect, mechanical, electrical or structural engineer. Who is involved with the design work will depend on the requirements of the project, which may change over the course of the project.

Owners should be aware that, when determining the scope of work, what governs the time, effort and ultimately the costs of the project are the three A’s:

<table>
<thead>
<tr>
<th>Area</th>
<th>Access</th>
<th>Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>The larger the area, the larger the scope of the project.</td>
<td>Access to the podium area is critical for specialized equipment.</td>
<td>The amount and type of material currently on the podium will determine the effort required for removal.</td>
</tr>
<tr>
<td>More labour and material costs as well as coordination.</td>
<td>Ease of removal and reinstatement of materials.</td>
<td>What material is chosen to go back overtop once the waterproofing is complete will be the most critical decision.</td>
</tr>
<tr>
<td>Larger equipment needs, including cranes and backhoes.</td>
<td>Adds to the complexity and coordination of projects.</td>
<td></td>
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Decision Making for the Building Owners

Further to determining the scope of work, the prime consultant should provide the building owners with an initial design brief. Contained within this brief will be a very general layout of the work and will include several critical anticipated aspects that the building owners will have to decide upon before further design work can be completed. The following sections highlight these key decisions and considerations of a podium waterproofing replacement. While the professional consultants will provide guidance, when it comes to these decisions, ultimately it falls onto the owners to provide their input and the go ahead to proceed.

Major Considerations: Material Removals

There is no doubt that the overburden will need to be removed which can be a disruptive task. The first decision that needs to be made is what amount of current overburden (i.e., landscaping over the waterproofing) will be removed? Unfortunately, this will mean that key landscaping features such as gazebos, playgrounds or other landscaping items will need to be taken out or relocated.

A large consideration for removals concern trees. Some jurisdictions may have additional requirements for obtaining a construction permit if it involves work around trees. In some cases, it may be sufficient to provide the trees protection from construction and work around them. More often than not, however, trees will need to be removed completely from the waterproofing replacement area, even if they are not directly on top of the podium.

Depending on the new landscaping plan, another major feature that may need to be removed are planter walls or concrete toppings, like walkways. In some designs, the planter walls are floating (not attached to the podium slab) and can be more easily removed. However, often they are cast into the podium slab and may need to be chipped out, with the concrete being repaired at those locations for the waterproofing.

Walkway removal
Major Considerations: Material Removals (Continued)

If the amount of overburden is small or easily handled, such as pavers on pedestals, its removal may be straightforward. However with large, deep areas of dirt fill, vegetation or concrete toppings, specialized equipment may be required to be able to efficiently remove this material. Where this can be most evident is with water features. Artificial ponds, reflecting pools or fountains over the podium replacement space will have to be removed. Where the water feature is loose laid with stones and liner over top of fill, the removal can be simple once drained. However where the water feature is cast in place concrete with a sandwiched membrane, the concrete will have to be broken up by additional equipment and removed to access the membrane.

Access for specialized equipment and for large scale movement of materials in and out of the replacement areas is key. Equipment for removals can range in size from shovels and jackhammers to backhoes. For elevated podium areas this may even include cranes. For podium spaces accessible directly off the street, this may not be an issue. However, where this specialized equipment is necessary in isolated areas, such as inner courtyards, the removal of podium materials can be incredibly difficult and significantly increase time and effort.

Building owners will have to decide if any of the removed overburden, such as dirt or gravel, will be put back. If so, that material will have to be stored appropriately. Depending on the amount of material to be stored, this may limit on site space and how much of the podium can be dug up and re-waterproofed at one time. If this will be a significant impact on scheduling and effort, offsite material storage may have to be considered. As with all of these decisions, there are associated costs with the amount of removal, preservation, relocation of materials and site safety.

Major Considerations: Waterproofing system

The next area the building owners will have to consider is the replacement waterproofing design. This will cover the detailing of the waterproofing while accounting for the podium features, such as planters, walls, upstands, piping etc. The best approach for waterproofing materials are project dependent and guidance should be provided by the envelope consultant.

The type of landscaping and overburden that is put back over top of the waterproofing does not, for the most part, impact the waterproofing design as the typical podium waterproofing system (described earlier) can accommodate most types of overburden. However, some specific areas of detailing, such as landscaping additions that will interrupt the waterproofing or areas where the waterproofing comes up to grade, will require confirmation of the landscape design from the building owners before proceeding.

Waterproofing that comes above grade needs protection from UV, weathering and traffic. There are many options on how best to achieve this, such as flashings, cladding, or concrete upstands, but these all have aesthetic and cost impacts that owners will need to decide upon.

Where necessary, transitions from below to above grade waterproofing are critical for the durability of the overall waterproofing system. However, the tie-ins of the podium waterproofing to the adjacent assembly moisture barrier may be difficult to achieve. In some cases, assemblies such as windows and doors may need to be replaced or removed and reinstalled in order correctly maintain continuous waterproofing. The owners may have to decide to proceed with this additional work (and cost) or go with a detail that may not be as effective to achieve a balance of cost versus risk. Warranty considerations may also influence the extent of the work.
**Major Considerations: Site Upgrades**

Since the landscaping will be removed, the owners may find this to be an opportune time to upgrade or install other items for the building which may be too costly or impractical to upgrade later on. This may include:

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<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Generators</td>
<td>A new generator system can help maintain building functions during power outages. A waterproofing renewal provides opportunity to install a support pad on the podium and run connection lines to the building.</td>
</tr>
<tr>
<td>Gas Lines</td>
<td>Removing landscaping can allow a new or replacement of older natural gas line hookups to the building.</td>
</tr>
<tr>
<td>Plumbing or Irrigation Lines</td>
<td>As with aging membranes, plumbing lines can also deteriorate, though typically this is expected to be 40+ years. Premature failure can lead to burst pipes and flooding. Exposing the plumbing and irrigation lines can allow them to be reviewed and upgraded if necessary.</td>
</tr>
<tr>
<td>Irrigation</td>
<td>New landscaping can provide opportunity for new or upgraded irrigation systems. If the landscaping design includes raised garden beds, or this may be something the building owners may install at a later time, additional hosebibs or connections for automatic watering can be installed.</td>
</tr>
<tr>
<td>Insulation</td>
<td>Older buildings may not have had below-grade insulation installed where there is conditioned space below the podium, or older insulating materials may have degraded. Along with renewing waterproofing, additional insulation can be installed to help reduce energy costs.</td>
</tr>
<tr>
<td>Modernization of Electrical Systems</td>
<td>Buried electrical lines, outdated exterior podium lighting and utility vaults can all be more easily upgraded during the removal of landscaping for a waterproofing renewal. BC Hydro may even provide incentives for specific upgrade work undertaken by a building. Refer to BC Hydro Powersmart for more information.</td>
</tr>
<tr>
<td>Additional Drainage</td>
<td>In some cases, the failure of the waterproofing membrane may be due to inadequate drainage. If that’s the case, additional drains should be installed or additional slope added to address the drainage issues, otherwise the new membrane will likely become overloaded and fail again.</td>
</tr>
</tbody>
</table>

Some of these items may require specialized consultants and/or coordination with the city or utilities companies. For instance, new features that weigh more than the original overburden may require reinforcement to support additional loads and design work from a structural engineer.

**Major Considerations: Code Upgrades**

Non-conforming features will be required to be upgraded to current codes and standards if they are affected by the construction.

For some buildings, older buildings especially, it may be discovered that some features, such as stairs, piping or electrical systems, may no longer conform to current codes. Non-conforming features will need to be upgraded to current codes and standards if they are affected by the construction. These upgrades can add significantly to the scope and costs of a project. This aspect should not be missed in the pre-planning and design stages.
Major Considerations: Landscaping

The largest and most impactful decisions the owners must make on the scope of the project will be related to the replacement landscaping. The project costs will be predominately driven by the amount of material and level of complexity of the new landscaping design. The new landscaping or overburden can affect the amount of detailing for the waterproofing, site storage, required access, specialized installation or equipment etc. More so than anything related to the waterproofing, the main question for building owners to answer for a design to proceed is what do the owners want to put back on top of the podium?

The main question for building owners to answer for a design to proceed is what do the owners want to put back on top of the podium?

There are limitless options for replacement landscaping and overburden, but many considerations to take into account.

Return of Previous Overburden—For many building owners, this may seem like the default and easiest approach to take. Depending on what the original material was, putting it back may not necessarily be cheaper or even feasible if it requires large amounts of material storage or has large sequencing or equipment access implications.

Accessibility of Membrane—Considering all the effort and cost it took to remove the overburden the first time, building owners may want to consider new soft or hard landscape assemblies that allow for easier access for future maintenance of the waterproofing assembly. This may include a raised wooden deck, using void fill or pavers on pedestals instead of dirt or backfill. This consideration may also warrant a discussion amongst building owners with regards to reinstating or adding a new water feature to the podium. Water features in particular can be difficult to locate future membrane issues.

Improved Podium Functionality—As with the below-grade podium upgrades, this is also an opportunity to upgrade the use of the podium space itself. These upgrades could be used to encourage greater community involvement, such as common barbeques, shared gardens, or play areas to provide safe locations for individuals, families and pets to interact.
**Additional Upgrades**—Besides space usage, other podium landscaping upgrades can help increase safety, and decrease operational costs. This includes renewal of podium lighting more energy efficient fixtures, as well as increasing lighting in previously dark spaces on the property. Increased accessibility ramps, guardrails etc can be installed for better safety and mobility around the building.

**Aesthetics**—The impact of a renewed landscaping appearance should not be overlooked. The influence of a new and modern look to a building space can significantly improve property values.

**Strata Buildings**—For stratas, significant changes in use or appearance of common property or common assets require a ¾ vote resolution at a general meeting. Developing a preliminary landscape plan with the landscape architect for approval by owners may be prudent before proceeding too far with any design work. For podium renewals, typically the envelope consultant will not proceed with any design work drawings without an approved landscaping plan by the strata.

**Major Considerations: Plant Selection**

The selection of plant materials for the renewed podium area may have a significant impact on the use and enjoyment of the property. Varieties of vegetation grow at varying rates both above and below ground. Plants and trees, such as bamboo or hardwoods with invasive root or penetrating root systems should be avoided overtop of the podium. A high rate of growth and dimensions of plant materials or trees may impose adverse conditions on the buildings, resident safety or unanticipated wear and erosion of the membrane. Proper membrane root barrier protection should be included in the waterproofing design.

Trees that grow at high rate or that are too large for the space will require more maintenance and may pose a risk to property or resident safety under severe wind conditions. The may also add significant cost for building maintenance and landscape servicing. For reduced costs and environmental impact, building owners should consider low maintenance plants, such as drought resistant or native plants, that will thrive with minimal care and may reduce the requirements for irrigation and pest control. This may be an important consideration in the face of municipal garden and lawn water bans. Example native plants for the Lower Mainland and the Okanagan region in British Columbia are shown below. See references at the end of this document for additional native plant resources for B.C.
Permits, Scheduling and Contractors

After the design work has been completed, the project can go to tender where the contractor and subcontractors will be selected for the project. As with the prime consultant, it is recommended that the contractors also have previous experience with podium waterproofing and even better with podium renewals. However, before work can begin, the owners may need a building permit depending on the extent of the work and the jurisdiction. It can be expected to take at least 90 days to obtain one and in some jurisdictions more conditions could be applied to the design (such as removal and replacement of trees), that have to be included before a permit will be granted. The costs of a building permit can vary and is often dependent as a percentage of the contract value. This can be anywhere from $2,000 to $10,000. In many cases, consultants do not include the costs of the building permit process in their fee proposals but rather proceed on a time and expense basis for liaison with the authority having jurisdiction. To avoid delays, it is preferred to have the building permit application done within 2 months of project tender. Typically, a contractor will not begin work without a permit to avoid the risk of stop work orders and major fines for both the contractor and the owner.

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For overall project scheduling, it is typically cheaper to undergo a complete renewal all at once. However, due to potentially large upfront costs, or the lack of need to undergo a full renewal, some owners may consider phasing the work in stages. This may be anywhere from a few months to multiple years. This could mean digging up portions of the podium, replacing the membrane, putting back landscaping, then coming back the next year and doing it again on an adjacent portion. This can allow owners to spread the costs over an extended period. Note that this will generally prolong construction and the disruptions it can bring, as well as increase the overall costs.

Warranties, Claims in Negligence and Other Causes of Action

Owners faced with waterproofing repairs or renewals should be aware of the various warranties that may be applicable to cover costs related to the work itself or to provide additional coverage and peace of mind for podium waterproofing renewals. They include:

Homeowner Protection Office (HPO) 2-5-10 warranties are in place for newly constructed residential buildings throughout the province of BC. The 2-5-10 warranties require the warranty provider to repair, arrange for the repair, or cover the cost of repairing warrantable defects. They also provide that repairs must be undertaken in a reasonable and prudent manner having regard to the Building Code and industry standards. The 2-5-10 Warranties provide the following levels of coverage: 15 months for defects in common property; 2 years for defects in major systems such as electrical, plumbing, HVAC, cladding and windows; 5 years for defects in the building envelope; and 10 years for structural defects. Owners should have their podium waterproofing systems inspected as part of their warranty reporting. Any problems should be reported to the warranty provider and builder prior to undertaking repairs. Typically, if there are leakage issues into the parkade within the 5 year period, the warranty provider/residential builder will cover localized repairs and these repairs will be subject to a further 1 year repair warranty. The warranty provider/residential builder may also provide a full podium replacement if the localized repairs prove ineffective or if there are extenuating circumstances. The 2-5-10 warranties will likely exclude coverage for landscaping unless required by the building code. The building code contains provisions which address site grading and drainage. Owners should seek legal advice if they have questions about whether or not repairs are covered under the 2-5-10 warranties.

Roofing Contractors Association of BC offers 5 year warranties for waterproofing installations. In order to be eligible for this warranty, installations must follow strict RCABC guidelines including using approved materials, specific detailing of systems, RCABC certified installers and 3rd Party inspectors. As such, pursing this warranty coverage should be considered early on before the waterproofing detail design work begins. The additional premium cost for the warranty is based on a percentage of the waterproofing contract. For more information, please refer to the RCABC website.

Individual Contractors may also provide their own warranty for parts and labour after work has been completed. The length and costs for this warranty will vary by contractor, however building owners may be able to negotiate this term.
Manufacturers may also provide a material warranty for their products. The term lengths vary by product and manufacturer but are meant to cover the expected life span of the material under typical “approved” installation conditions set out by the manufacturers guidelines. This is usually included within the purchase price of the material. Some manufacturers may offer supplemental warranties, but will likely escalate in costs for increasing term lengths.

Beyond the warranties discussed above, numerous other claims may be available to owners who believe the cost of podium waterproofing repairs should be borne by others. The causes of action are too numerous to discuss in detail but may include, amongst other things, negligence, breach of duty to warn, breach of contracts of purchase and sale, breach of implied warranties, misrepresentation and breach of fiduciary duties.

All legal claims are subject to limitation periods (deadlines for suing). Owners should seek early legal advice if they discover problems with their podium waterproofing systems and believe they may be entitled to compensation.

What to expect during Construction

Occupant Access to the Area

As a podium waterproofing renewal requires removal of the landscape and often covers large areas around the perimeter of the building, there will likely be limited or restricted access for occupants. While contractors typically account for this, any specific special needs, such as for assisted mobility devices, should be brought to their attention.

Storage of Material During Construction

Waterproofing renewal involves a lot of materials, equipment and coordination on site. As a result, the contractor will most likely need storage, access to power as well as room for an office on site. Owners will need to consider where this can be done safely and securely on the property. Otherwise additional coordination with the city may be required if the office and storage will need to be on the street. Depending on if the owners decides to return the original overburden, this material would also need to be stored securely after it has been removed. The amount of material can be quite extensive, and this storage issue alone may be a justifiable reason to phase a project.

Noise and Dust

Noise and dust during removal of hard landscape features, especially when concrete removal is involved, can be quite bothersome. While work schedules for this type of work can be contained to some period during the day, people working from home or working nightshift may have to find alternative arrangements during the demolition period.
Disclaimer

This bulletin is intended to provide readers with general information only. Issues and problems related to buildings and construction are complicated and can have a variety of causes. Readers are urged not to rely simply on this bulletin and to consult with appropriate and reputable professionals and construction specialists before undertaking any specific actions. The authors, contributors, funders and publishers assume no liability for the accuracy of the statements made or for any damage, loss, injury or expense that may be incurred or suffered as a result of the use of or reliance on the contents of this bulletin.

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Costs

The costs for a podium waterproofing renewal can vary greatly and will be impacted by all the items outlined in this bulletin. Depending on the size of the renewal, access for removal and installation and the complexity of the detailing of the replacement assemblies (the 3A’s), costs can range anywhere from $50K for a small building with minimal podium footprint to into the millions of dollars for extensive landscaped podiums and terraces. A building reserve fund study may provide an initial budget for a podium renewal for your building, but until the design process ends, it’s difficult to provide anything more than general estimates for a particular building. Owners should be aware that a podium waterproofing renewal, along with glazing replacement and a building re-pipe, is one of the largest expenditures a building can undertake.

As long as building owners are prepared with the proper expectations and considerations for a podium waterproofing renewal, they can undertake a large project like this without significant surprises and complications during construction.

Provisional Fund for Unexpected Construction Costs

As much as preplanning can help, there could be other issues that can only be discovered after excavation has begun. This can add to the scope and costs. Some owners may not have complete As-Built drawings and even then there may be a case of drawings not matching as-built conditions. Some unanticipated issues that may arise include:

- Unmarked irrigation, electrical or gas lines that need to be moved or protected
- Poor condition of podium concrete slab, requiring repairs before waterproofing can be installed
- Electrical system that is found to be in bad condition
- Unexpected podium layout and waterproofing areas different than available drawings

It is recommended that at least 10% of the total project costs be set aside in case these unexpected issues arise. A larger provisional fund may be needed depending on the project size (the smaller the project, the larger the proportional fund) and/or if the building has a previous history of major water leakage issues.

For More Information (Links as of 2016)

1. Maintenance Matters Bulletin No.10—At-Grade and Below-Grade Assemblies, published by HPO, available at hpo.bc.ca/maintenance-matters
Replacing Podium Waterproofing

Action Plan Tips

- Conduct regular maintenance on membrane and landscaping drains around site.
- Monitor podium for flooding and underside of podium slab for active leaks and excessive efflorescence.
- Conduct an Reserve Fund Study or Capital Depreciation Report for the building. Update as needed or as required.
- Once active leaks appear, contact warranty provider prior to undertaking repairs.
- Seek early legal advice if there are anticipated issues regarding coverage and responsibility for repairs.
- Conduct targeted repairs as needed.
- If target repairs become too costly, the repairs are ineffective, or there is spalling concrete, conduct an envelope investigation through a Professional Engineer.
- Once the need for a podium waterproofing replacement is confirmed, engage a Professional Consultant as prime consultant for coordination of renewal.
- Review credentials and past project work of potential Professional Consultants before selecting one for your project. Prior extensive history with podium renewals is strongly recommended.
- Consider Supplementary Construction Management for large scale projects.
- Gather all previous construction documentation (as built drawings, previous site upgrades etc). Work with prime consultants and sub-consultants to determine scope and design of new waterproofing, landscaping and site upgrades.
- Develop a landscaping plan and decide on replacement podium assemblies.
- Gain owner (strata) approval for significant landscaping or site use changes.
- Consider additional warranty coverage for new podium waterproofing.
- Develop Waterproofing details in conjunction with landscaping plan.
- Modify design as needed to accommodate site upgrades.
- Determine preliminary costs for project with assistance from consultant, including a provisional fund of at least 10%.
- Determine how to fund project.
- Apply for building permit.
- Issue design for tender for contractors and sub-contractors to perform the work, with assistance and guidance from prime consultant or construction management. It is strongly recommended contractors have previous podium repair experience.
- Provide input for site logistics, including safety measures, material storage
- Once excavation work begins, provide construction updates or relay other important information to other building owners as needed.
- Expect delays in excavation and renewals based on project timing. Rainy fall and winter months can delay work, summer months can reduce availability of contractors.
- Prepare to make additional decisions based on unforeseen issues during excavation. Discovery of unmarked utility lines, poor condition of concrete or other items will require direction for contractors by the owners.