

VANCOUVER INTERLOCK

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# Permeable Pavers

Permeable interlocking concrete pavement systems  
for stormwater management — increasingly  
required by Metro Vancouver municipalities for  
environmental compliance

20 Expert Answers from Interlock IQ

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## How much do permeable pavers cost in Vancouver?

**Permeable pavers in Metro Vancouver typically cost \$20-\$40 per square foot installed, making them about 25-40% more expensive than standard concrete pavers.** The higher cost reflects the specialized materials and installation requirements, but permeable paving offers significant benefits in Vancouver's high-rainfall climate and may qualify for municipal stormwater incentives.

### Material and Installation Breakdown

The total cost includes several specialized components that differ from standard paver installations. Permeable pavers themselves cost \$8-\$15 per square foot for materials — similar to premium concrete pavers. However, the installation requires an open-graded aggregate base (no fines) that allows water to infiltrate rather than shed as runoff. This specialized base material costs 15-20% more than standard road base and requires precise installation by ICPI-certified contractors familiar with permeable paving systems.

A typical 500 square foot permeable paver driveway in Metro Vancouver runs \$10,000-\$20,000 installed, compared to \$8,000-\$15,000 for standard concrete pavers. The additional cost covers the open-graded base, specialized jointing material (permeable sand or small aggregate), geotextile fabric, and often an underdrain system with perforated pipe connected to the municipal storm drain or a dry well.

### Metro Vancouver Climate Advantages

Permeable pavers are exceptionally well-suited to Metro Vancouver's marine climate, which receives over 1,200mm of annual rainfall. Unlike standard pavers that shed water as runoff, permeable systems capture rainwater in the joints and store it in the aggregate base before gradually releasing it into the subsoil. This reduces stormwater runoff by 80-90%, which is increasingly important as municipalities implement green infrastructure requirements.

The City of Vancouver, Surrey, and other Metro Vancouver municipalities offer stormwater fee reductions or rebates for properties that reduce impervious surface area through permeable paving. These incentives can offset \$500-\$2,000 of the installation cost over time. Richmond and Delta have particularly aggressive stormwater management programs due to their low elevation and drainage challenges.

### Installation Requirements and Maintenance

Permeable paver installation requires contractors experienced with the specialized base preparation and drainage design. The open-graded aggregate base must be installed in precise lifts with controlled compaction to maintain void space for water storage. Standard road base cannot be substituted — it contains fines that clog the system and destroy permeability within 1-2 years.

Maintenance involves annual or bi-annual vacuum sweeping to remove debris and sediment that can clog the joints over time. This specialized cleaning costs \$1-\$2 per square foot annually but is essential to maintain infiltration capacity. Properly maintained permeable pavers in Metro Vancouver maintain 70-80% of their original infiltration rate after 10+ years.

### **When to Choose Permeable Pavers**

Permeable pavers make the most sense for driveways, parking areas, and large patios where stormwater management is a priority. They're particularly valuable on sloped lots in North Vancouver, West Vancouver, and Burnaby where runoff control prevents erosion and reduces strain on municipal storm systems. Properties with clay-heavy soils in Surrey, Richmond, and Delta benefit from the improved drainage that permeable systems provide.

### **Professional Installation Required**

Permeable paver systems require professional installation by contractors certified in ICPI permeable paving practices. The specialized base design, precise compaction requirements, and connection to drainage infrastructure make this unsuitable for DIY installation. Improper installation destroys the permeability and creates expensive drainage problems that are difficult to correct.

Find local permeable paving specialists through the Vancouver Construction Network who understand Metro Vancouver's drainage requirements and municipal incentive programs.

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Q2

## **Are permeable pavers worth the extra cost over regular pavers?**

**Permeable pavers are worth the extra cost (\$20-40/sq ft vs \$15-30/sq ft for regular pavers) in Metro Vancouver if you're dealing with drainage issues, want to reduce stormwater fees, or are required by municipal regulations.** The 25-35% cost premium pays for itself through reduced runoff problems and potential municipal incentives, plus they handle our 1,200mm+ annual rainfall better than any other paving option.

### **Why Permeable Pavers Excel in Metro Vancouver's Climate**

Metro Vancouver's marine climate makes permeable pavers particularly valuable. With over 70% of our annual rainfall occurring between October and March, traditional impervious paving creates significant runoff that overwhelms storm drains and causes pooling on properties. Permeable interlocking concrete pavement (PICP) allows rainwater to infiltrate through specially designed joints into an open-graded aggregate base, where it's stored

and gradually released into the subsoil. This eliminates surface runoff entirely when properly installed.

The engineering difference is substantial. Regular pavers shed 100% of rainfall as runoff, requiring gutters, drains, and slope management to direct water away from the installation. Permeable pavers absorb rainfall at rates of 600-1,000mm per hour — far exceeding even Vancouver's heaviest downpours. This means no standing water, no ice formation in winter, and no erosion of surrounding landscaping from concentrated runoff.

### **Municipal Incentives and Requirements**

Several Metro Vancouver municipalities actively promote permeable paving through financial incentives. The City of Vancouver offers stormwater fee reductions for properties that reduce impervious surface area. Surrey, Richmond, and Burnaby have similar programs. Some new developments are required to incorporate permeable paving as part of their stormwater management plans. These incentives can offset \$500-2,000 of the installation premium over time.

More importantly, some municipalities now require stormwater management for large new paved areas (typically over 500 sq ft). A permeable paver driveway automatically satisfies these requirements, while a regular paver driveway might require additional drainage infrastructure, detention ponds, or connection fees to the municipal storm system.

### **Installation and Performance Differences**

Permeable pavers require specialized installation knowledge. The base uses open-graded aggregate (no fines) instead of standard road base, and joints are filled with permeable material rather than polymeric sand. The base acts as a reservoir, typically 12-18 inches deep for driveways. This specialized base costs more and requires contractors experienced with ICPI permeable paving standards.

However, permeable pavers perform exceptionally well in our climate. They don't suffer from the joint sand washout that plagues regular pavers during heavy rains. The open joints actually help with thermal expansion and contraction. Maintenance involves periodic vacuum cleaning of the joints (every 2-3 years) to prevent clogging from organic debris — less frequent than polymeric sand replacement on regular pavers.

### **When Permeable Pavers Make Financial Sense**

Choose permeable pavers if you're replacing a large driveway or patio where runoff currently causes problems — water pooling against your foundation, erosion of landscaping, or flooding of lower areas. They're particularly valuable on sloped properties in North Vancouver, West Vancouver, or Burnaby where runoff velocity creates erosion issues.

For a typical 600 sq ft driveway, expect to pay \$12,000-24,000 for permeable pavers versus \$10,000-18,000 for regular pavers. The \$2,000-6,000 premium is justified if you're avoiding the cost of additional drainage

infrastructure, benefiting from municipal incentives, or solving existing water management problems.

### **When Regular Pavers Are Sufficient**

Stick with regular pavers for smaller installations (under 300 sq ft), areas with existing adequate drainage, or projects where the permeable base depth isn't feasible due to utilities or site constraints. Regular pavers with proper slope and drainage design handle Metro Vancouver's rainfall perfectly well for most residential applications.

Need help finding a contractor experienced with both permeable and regular paver installations? Vancouver Interlock can match you with qualified professionals who understand the engineering requirements for both systems in our unique climate.

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Q3

### **How much more expensive are permeable pavers compared to standard interlock?**

**Permeable pavers typically cost \$5-15 more per square foot installed compared to standard concrete pavers in Metro Vancouver.** While standard concrete pavers run \$15-30 per sq ft installed, permeable interlocking concrete pavement (PICP) ranges from \$20-40 per sq ft installed — representing roughly a 25-50% premium for most residential projects.

The higher cost stems from several factors beyond just the pavers themselves. **Permeable pavers require a completely different base system** using open-graded aggregate (clean stone with no fines) instead of standard road base or crusher dust. This specialty aggregate costs more and requires precise installation to maintain its drainage capacity. The base must also be deeper — typically 12-18 inches for driveways compared to 10-12 inches for standard pavers — to provide adequate water storage and infiltration.

**Installation labour is more expensive** because permeable paving follows strict ICPI (Interlocking Concrete Pavement Institute) protocols that many standard interlock contractors haven't mastered. The jointing material is also specialty — permeable aggregate or sand that allows water flow rather than standard polymeric sand that's designed to harden and seal joints. Every step requires more precision to maintain the system's permeability.

However, **Metro Vancouver's heavy rainfall makes permeable pavers increasingly attractive** from both environmental and regulatory perspectives. Vancouver receives over 1,200mm of annual rainfall, with North Shore communities exceeding 2,000mm, creating significant stormwater management challenges. Several Metro Vancouver municipalities now offer rebates or reduced stormwater fees for properties that install permeable paving, which can offset some of the premium cost over time.

**A typical 500 sq ft permeable paver driveway runs \$10,000-20,000 installed** compared to \$8,000-15,000 for standard pavers. For a 400 sq ft patio, expect \$8,000-16,000 for permeable versus \$6,000-12,000 for standard installation. The investment pays dividends in Metro Vancouver's wet climate by eliminating surface water runoff, reducing puddling, and often qualifying for municipal incentives.

**Consider permeable pavers if** you're dealing with drainage issues, want to reduce your property's stormwater impact, or live in a municipality offering green infrastructure incentives. The premium cost is justified by superior water management — especially valuable given Vancouver's persistent rainfall and increasingly strict stormwater regulations.

Need help finding a contractor experienced with permeable paver installation? Vancouver Interlock can match you with PICP-certified professionals who understand Metro Vancouver's unique drainage requirements.

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## Do permeable pavers qualify for any stormwater rebates in Metro Vancouver?

**Yes, permeable pavers can qualify for stormwater rebates and incentives in several Metro Vancouver municipalities, with the City of Vancouver offering the most comprehensive program and other municipalities developing similar initiatives.**

The **City of Vancouver's Rain Rewards Program** provides rebates up to \$2,000 for residential properties that install permeable paving to replace impervious surfaces like concrete driveways or patios. Permeable interlocking concrete pavement (PICP) qualifies as an eligible green infrastructure practice because it reduces stormwater runoff by allowing rainwater to infiltrate through the joints into a specially designed aggregate base system. The rebate covers 50% of eligible costs up to the maximum, making it a significant financial incentive for homeowners considering permeable paver driveways or patios.

**Surrey offers stormwater utility fee reductions** for properties that implement on-site rainwater management, including permeable paving systems. While not a direct cash rebate, qualifying properties can receive ongoing annual reductions to their stormwater utility fees based on the percentage of impervious surface area reduced. For a typical residential property, this can result in \$50-\$200 annual savings. **Richmond has similar stormwater fee reduction programs** for properties that manage rainwater on-site rather than sending it directly to the municipal storm system.

**Metro Vancouver's regional government strongly encourages** permeable paving through its Integrated Stormwater Management Planning guidelines, and several municipalities are developing or expanding rebate programs as part of their climate adaptation strategies. **North Vancouver District, Burnaby, and Coquitlam** are piloting or considering stormwater rebate programs that would include permeable paving, though specific details and funding amounts vary by municipality.

The rebates recognize that **permeable pavers provide genuine environmental benefits in Metro Vancouver's wet climate**. A properly installed permeable paver system can infiltrate 300-600mm of rainfall per hour — far exceeding even Vancouver's heaviest rainfall events. This reduces the burden on municipal storm drains, decreases urban flooding risk, filters pollutants from runoff, and recharges groundwater. With Metro Vancouver receiving 1,200-2,000mm of annual rainfall, managing stormwater at the source through permeable paving is increasingly viewed as essential green infrastructure.

**To qualify for rebates, permeable paver installations must meet specific technical requirements** including proper aggregate base design (typically 12-18 inches of open-graded stone), appropriate soil infiltration rates, and professional installation following ICPI (Interlocking Concrete Pavement Institute) standards. Most programs require pre-approval before installation and post-installation verification. The permeable paver system must be designed to

handle the site's specific drainage conditions — properties with clay soils or high water tables may need additional engineering like underdrain systems connected to the municipal storm drain.

**Typical permeable paver costs run \$20-\$40 per square foot installed** in Metro Vancouver, compared to \$15-\$30 for standard concrete pavers. A 500 square foot permeable driveway might cost \$10,000-\$20,000 installed, but with Vancouver's \$2,000 rebate and ongoing stormwater fee reductions in other municipalities, the premium for permeable paving becomes much more manageable. The long-term benefits include reduced surface ponding, better drainage performance, and compliance with increasingly strict municipal stormwater management requirements.

**Check with your specific municipality** before planning a permeable paver project, as rebate programs, eligibility requirements, and application processes vary. Some municipalities require soil percolation testing, engineering drawings, or specific contractor certifications. The Vancouver Construction Network can connect you with contractors experienced in permeable paver installation and familiar with local rebate program requirements.

Need help finding a contractor experienced with permeable pavers and stormwater rebate applications? Vancouver Interlock can match you with qualified professionals who understand both the technical requirements and the municipal approval process.

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Q5

## What's the price difference between permeable pavers and gravel for a driveway?

**Permeable pavers cost significantly more upfront than gravel — typically \$10,000-\$20,000 for a 500 sq ft driveway versus \$1,500-\$4,000 for gravel — but they offer superior durability, aesthetics, and long-term value.**

The price difference reflects fundamentally different products. Gravel driveways are loose stone (typically 3/4" crushed rock or pea gravel) spread over a compacted base, while permeable pavers are engineered interlocking concrete units installed on a specialized drainage system designed to manage Metro Vancouver's heavy rainfall.

**Gravel Driveway Costs in Metro Vancouver:** A standard gravel driveway runs \$3-\$8 per square foot installed, depending on the type of gravel, base preparation, and site access. For a typical 500 sq ft driveway, expect \$1,500-\$4,000 total. This includes minimal excavation (2-4 inches), a thin compacted base, landscape fabric, and 2-3 inches of finish gravel. Higher-end options like decomposed granite or decorative crushed stone can reach \$6-\$10 per sq ft.

**Permeable Paver Costs:** Permeable interlocking concrete pavement (PICP) runs \$20-\$40 per sq ft installed in Metro Vancouver — \$10,000-\$20,000 for that same 500 sq ft driveway. The higher cost reflects the engineered base system: 12+ inches of open-graded aggregate (no fines), geotextile fabric, precise grading for drainage, the pavers themselves, and specialized permeable jointing material. Installation requires ICPI-certified techniques and professional equipment.

**Why the Cost Difference Matters:** Gravel driveways require ongoing maintenance — regrading every 1-2 years, adding fresh gravel to replace material lost to traffic and weather, and controlling weeds and potholes. In Metro Vancouver's wet climate, gravel driveways develop ruts, washouts, and mud issues during the October-March rainy season. Permeable pavers, once properly installed, require minimal maintenance beyond occasional joint material replenishment every 5-7 years.

**Metro Vancouver Considerations:** Many municipalities now offer stormwater fee reductions for permeable paving installations, which can offset some of the higher upfront cost over time. The City of Vancouver, Surrey, and other communities are increasingly encouraging permeable surfaces as part of green infrastructure initiatives. Permeable pavers also add significantly more property value than gravel — real estate appraisers typically value quality hardscaping at 50-80% of installation cost.

**When Each Makes Sense:** Choose gravel for rural properties, workshop access areas, or temporary solutions where budget is the primary concern. Choose permeable pavers for residential driveways where you want the appearance and durability of traditional pavers with superior stormwater management — especially important given Metro Vancouver's 1,200mm+ annual rainfall.

Need help finding a contractor to evaluate permeable paving options for your specific site? Vancouver Interlock can match you with experienced installers who understand Metro Vancouver's drainage requirements and municipal incentive programs.

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Q6

## Can permeable pavers help me avoid a stormwater management fee in Vancouver?

**Yes, permeable pavers can potentially reduce or eliminate stormwater management fees in Vancouver and several other Metro Vancouver municipalities.** The City of Vancouver's Rainwater Management Credit Program offers up to 50% reduction in stormwater utility fees for properties that manage rainwater on-site through green infrastructure like permeable paving.

**Vancouver's Rainwater Management Credit Program** specifically recognizes permeable interlocking concrete pavement (PICP) as an eligible green infrastructure practice. Properties that replace impervious surfaces (like concrete driveways or asphalt) with permeable pavers can qualify for significant fee reductions. The credit is calculated based on the percentage of your property's impervious area that you convert to permeable surfaces. A typical residential property converting a 500 sq ft concrete driveway to permeable pavers could see annual stormwater fee reductions of \$100-300, depending on the property's total impervious area.

**How Permeable Pavers Work for Stormwater Management** in Metro Vancouver's high-rainfall climate is particularly effective. Unlike traditional pavers that shed rainwater as runoff into the municipal storm system, permeable pavers allow water to infiltrate through the joints and into a specially engineered open-graded aggregate base. This base acts as a temporary storage reservoir, slowly releasing water into the subsoil over 24-48 hours after a rainfall event. During Metro Vancouver's heavy winter storms, this dramatically reduces peak runoff rates and volumes entering the municipal system.

**The installation requirements for credit eligibility are specific.** The permeable paver system must be designed to capture and infiltrate the first 24mm (approximately 1 inch) of rainfall from the contributing drainage area. This requires a minimum 300mm (12 inches) of open-graded aggregate base beneath the pavers, proper edge restraints to prevent base migration, and adequate subsoil infiltration capacity. The system must also include overflow provisions to the municipal storm drain for rainfall events that exceed the design capacity.

**Other Metro Vancouver municipalities are following Vancouver's lead.** Surrey offers stormwater fee reductions through their Integrated Stormwater Management Plan, and Richmond provides incentives for green infrastructure including permeable paving. Burnaby and North Vancouver are developing similar programs. Each municipality has different application processes and credit calculations, so check with your local engineering department for specific requirements and potential savings.

**The financial benefits extend beyond fee reductions.** Permeable pavers typically cost \$20-40 per sq ft installed compared to \$15-30 for standard pavers, but the 10-15 year payback through stormwater fee savings, combined with increased property value and reduced runoff liability, makes them financially attractive. A 500 sq ft permeable driveway installation runs \$10,000-20,000, but annual fee savings of \$200-400 plus the environmental benefits create compelling long-term value.

**Installation must meet municipal standards** to qualify for credits. This includes proper soil infiltration testing, engineered base design, connection to overflow drainage, and often requires a professional engineer's stamp on the design drawings. The application process typically involves submitting as-built drawings, infiltration test results, and maintenance agreements to the municipal engineering department.

**When to Hire a Pro:** Permeable paver installations require specialized knowledge of open-graded aggregate specifications, infiltration rates, and municipal approval processes. This is not a DIY project. Find experienced

contractors through the Vancouver Construction Network who understand both the technical installation requirements and the municipal approval process for stormwater credits.

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## How do permeable pavers actually handle Vancouver's heavy rainfall?

**Permeable pavers are exceptionally well-suited to Metro Vancouver's heavy rainfall because they're specifically engineered to absorb and manage stormwater rather than shed it as runoff.** Unlike traditional pavers that create impervious surfaces, permeable interlocking concrete pavement (PICP) allows water to infiltrate through the joints and into a specially designed aggregate base where it's temporarily stored and gradually released.

### How the System Works in Vancouver's Climate

Permeable paver systems consist of three critical layers that work together to handle Vancouver's 1,200mm+ annual rainfall. The pavers themselves have slightly wider joints (typically 3-6mm instead of 2-3mm) filled with permeable jointing material — usually small aggregate or specialized permeable sand that allows water to pass through. Beneath the pavers, a 1-2 inch bedding layer of small, clean aggregate (typically 3-6mm) provides a smooth surface for the pavers while maintaining permeability.

The foundation of the system is an open-graded aggregate base — typically 6-12 inches of clean, angular stone (19-25mm) with no fine particles that would clog the voids. This base acts like an underground reservoir, storing water during heavy rainfall events and slowly releasing it into the subsoil. In Metro Vancouver's clay-heavy soils (common in Surrey, Richmond, Delta, and Langley), an underdrain system with perforated pipe is often installed to carry excess water to the storm drain when the clay subgrade can't absorb water fast enough.

### Performance in Vancouver's Wet Conditions

Properly installed permeable pavers can handle rainfall intensities of 15-20mm per hour — well above Vancouver's typical storm events. During the region's heaviest downpours (which rarely exceed 10-12mm per hour), the aggregate base provides temporary storage while the water gradually infiltrates or drains away. This prevents the surface flooding and ponding that occurs with traditional impervious paving during Vancouver's intense November-through-March rain events.

The system's performance actually improves over time as the aggregate base develops a biofilm layer that helps filter pollutants while maintaining permeability. However, the joints require periodic maintenance — typically vacuum cleaning every 2-3 years to remove accumulated organic debris, leaves, and fine sediment that can reduce infiltration rates. This maintenance is more critical in Vancouver than drier climates because our persistent moisture and mild temperatures encourage organic growth that can gradually clog the system.

### Municipal Benefits and Incentives

Metro Vancouver municipalities increasingly favour permeable paving as part of their stormwater management strategies. The City of Vancouver offers reduced stormwater utility fees for properties that install permeable surfaces, and Surrey provides similar incentives through their stormwater management programs. By reducing runoff, permeable pavers help municipalities manage peak flows in storm drains, reduce combined sewer overflows into local waterways, and meet provincial requirements for green infrastructure.

Richmond has been particularly aggressive in promoting permeable paving because the municipality's high water table and flat topography create drainage challenges during heavy rainfall. New Westminster and Burnaby also encourage permeable surfaces in their updated development guidelines, especially for driveways and parking areas.

### **Installation Considerations for Vancouver**

Permeable paver installation in Metro Vancouver requires careful attention to the subgrade conditions. In areas with clay soil, the system often needs an underdrain connected to the municipal storm system because clay doesn't absorb water quickly enough during heavy rain events. The aggregate base must be completely free of fines — even small amounts of sand or clay particles will eventually clog the system and destroy its permeability.

Winter installation is possible but challenging because the open-graded base materials must be kept dry during construction. Professional installers often tent the work area during Vancouver's rainy season to prevent the base from becoming saturated before the pavers are installed.

### **Cost and Long-term Value**

Permeable pavers typically cost \$20-40 per square foot installed — about 25-50% more than traditional pavers due to the specialized base materials and more complex installation requirements. However, this premium is often offset by municipal stormwater fee reductions, potential development cost charge credits, and the environmental benefits of reduced runoff. A 500 square foot permeable driveway in Metro Vancouver typically runs \$10,000-20,000 installed, compared to \$8,000-16,000 for traditional pavers.

### **When to Choose Permeable Pavers**

Permeable pavers are ideal for driveways, parking areas, and patios where stormwater management is a priority. They're particularly valuable on sloped lots where runoff control is critical, and in areas where municipal regulations encourage or require reduced impervious surfaces. However, they're not suitable for areas with heavy sediment loads (like gravel driveways that drain onto them) or where snow plowing with metal blades might damage the surface.

Need help finding a contractor experienced with permeable paver installation? Vancouver Interlock can match you with professionals who understand the specialized requirements for Metro Vancouver's climate and soil conditions.

## Do permeable pavers clog over time in Vancouver's wet environment?

**Yes, permeable pavers can clog over time in Metro Vancouver, but proper design and maintenance significantly reduce this risk.** The region's heavy rainfall (1,200mm+ annually) and organic debris from trees actually help flush the system naturally, making Vancouver's climate more favorable for permeable paving than drier regions where sediment accumulates without regular flushing.

### How Clogging Occurs in Metro Vancouver

The primary clogging mechanism is fine sediment and organic matter accumulating in the open joints and upper aggregate layers. Leaves, moss, algae, and dirt gradually build up on the surface and work into the permeable jointing material. Unlike traditional pavers that shed water, permeable systems are designed to capture and infiltrate runoff — which means they also capture whatever particles that water carries.

Clay-heavy soils common in Surrey, Richmond, Delta, and Langley pose an additional challenge. If clay migrates upward from the subgrade into the open-graded aggregate base, it can severely compromise drainage capacity. This is why geotextile fabric between the clay subgrade and the permeable base is absolutely critical in Metro Vancouver installations.

### Vancouver's Climate Actually Helps

Metro Vancouver's frequent rainfall provides natural flushing that keeps permeable systems cleaner than in drier climates. The 70% of annual precipitation that falls between October and March creates regular high-flow events that wash accumulated sediment through the system. This is why properly installed permeable pavers in Vancouver often maintain good infiltration rates for 8-15 years with minimal maintenance, compared to 3-8 years in areas with less consistent rainfall.

The mild temperatures also mean less freeze-thaw damage to the aggregate structure and fewer issues with ice blocking infiltration during winter months.

### Maintenance Requirements

**Annual surface cleaning** is the most important maintenance task. Sweep or blow leaves and debris off the surface regularly, especially in fall. Power washing once per year removes moss, algae, and fine sediment from the surface and upper joint material.

**Joint material replenishment** every 3-5 years maintains optimal infiltration. The permeable jointing material (typically 2-5mm crushed aggregate or specialized permeable joint sand) gradually migrates downward and needs periodic top-up to maintain surface infiltration rates.

**Vacuum extraction cleaning** every 8-12 years provides deep restoration. Specialized equipment removes accumulated sediment from the joints and upper aggregate layers, then replaces the jointing material. This service costs \$2-4 per square foot but can restore infiltration rates to near-original capacity.

### **Design Factors That Prevent Clogging**

**Proper aggregate gradation** in the base and joints is critical. The open-graded aggregate must have minimal fines (particles smaller than 2mm) to maintain void space for water storage and infiltration. Using standard road base or crusher run instead of clean, open-graded aggregate guarantees clogging within 2-3 years.

**Adequate base depth** — typically 12-18 inches for driveways and 8-12 inches for patios — provides storage capacity during heavy rainfall events and allows sediment to settle in the lower layers rather than clogging the surface.

**Slope management** ensures water moves through the system efficiently. Even permeable surfaces need 1-2% slope to prevent ponding and encourage lateral drainage when infiltration capacity is temporarily exceeded during extreme rainfall events.

### **When Permeable Pavers Work Best in Vancouver**

Permeable paving performs exceptionally well for **residential driveways** where the primary sediment source is atmospheric dust and organic debris. These installations typically maintain good function for 10-15 years with basic maintenance.

**Pool decks and patios** also perform well because foot traffic is lighter and sediment loading is minimal. The natural flushing from Vancouver's rainfall keeps these surfaces clean.

**Areas to avoid** include locations that receive runoff from landscaped areas carrying soil and mulch, or driveways serving construction vehicles that track mud and debris.

### **Municipal Incentives Make Maintenance Worthwhile**

Several Metro Vancouver municipalities offer stormwater fee reductions or rebates for permeable paving installations. The City of Vancouver, Surrey, and others recognize permeable pavers as green infrastructure that reduces strain on storm sewers. These financial incentives often offset the modest maintenance costs over the system's 20-30 year lifespan.

### **When to Hire a Professional**

Permeable paver installation requires specialized knowledge of aggregate gradation, base design, and drainage integration. The open-graded materials and precise compaction requirements make this a professional project. Maintenance like surface cleaning and joint replenishment can be DIY, but vacuum extraction cleaning requires

specialized equipment available only through professional restoration services.

Find experienced permeable paving contractors through the Vancouver Construction Network who understand Metro Vancouver's specific climate challenges and municipal requirements for stormwater management systems.

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Q9

## What maintenance do permeable pavers need in the Lower Mainland?

**Permeable pavers in Metro Vancouver require more frequent maintenance than standard pavers due to our heavy rainfall and the specialized drainage system that makes them work.** The key is keeping the joints and base layer free of sediment that would clog the infiltration system.

**Joint Cleaning and Restoration** is the most critical maintenance task for permeable pavers. The open joints that allow water infiltration gradually fill with organic debris, fine sediment, moss, and leaves — especially during Metro Vancouver's October-to-March rainy season. When joints become clogged, the pavers lose their permeability and water pools on the surface instead of draining through. Clean the joints annually using a pressure washer with a narrow nozzle or specialized vacuum equipment. After cleaning, refill joints with fresh open-graded aggregate (typically 2-8mm clear stone) rather than polymeric sand. Never use standard jointing sand in permeable pavers as it defeats the drainage purpose.

**Surface Cleaning** should be done 2-3 times per year in Metro Vancouver's climate. Sweep or blow off leaves, organic debris, and sediment regularly — especially after storms. Pressure wash the surface annually with a rotating surface cleaner to remove moss, algae, and embedded dirt that can reduce surface infiltration. Use moderate pressure (1,500-2,000 PSI) to avoid displacing the jointing aggregate. The combination of persistent moisture and mild temperatures in Metro Vancouver creates ideal conditions for moss and algae growth on permeable paver surfaces, making regular cleaning essential for both function and safety.

**Infiltration Rate Testing** should be performed every 2-3 years to ensure the system is still functioning properly. Pour water on a small test area and observe how quickly it drains through. Properly functioning permeable pavement should infiltrate water within seconds to minutes. If water pools for more than 10-15 minutes, the system needs restoration. In Metro Vancouver's high-rainfall environment, maintaining proper infiltration rates is critical — a clogged permeable paver system becomes a standard impervious surface that contributes to stormwater runoff rather than managing it.

**Base Layer Maintenance** may be required every 10-15 years depending on sediment loading and tree coverage. Over time, fine particles work their way down through the open joints and can clog the aggregate base layer. This

requires professional restoration — lifting the pavers, cleaning or replacing the upper base material, and reinstalling. Properties with significant tree coverage or exposed to construction dust may need base restoration more frequently.

**Winter Considerations** in Metro Vancouver are minimal compared to freeze-thaw climates, but ice formation can still occur during cold snaps. Never use rock salt or ice melter on permeable pavers as it can damage the concrete and contaminate groundwater. Sand provides traction without chemical damage. The open joint structure actually helps with ice melting as subsurface temperatures tend to be more stable than surface temperatures.

**Weed and Moss Control** requires different approaches than standard pavers. Since you cannot use polymeric sand to suppress growth, regular application of moss killer (iron sulfate-based products work well) and manual removal of weeds is necessary. The moist conditions in Metro Vancouver make this an ongoing maintenance requirement rather than an occasional task.

**Professional Restoration** is typically needed every 8-12 years for heavily used permeable paver installations. This involves lifting pavers, pressure washing them individually, cleaning or replacing the bedding layer and upper base material, and reinstalling with fresh jointing aggregate. A 500 sq ft permeable driveway restoration typically costs \$3,000-\$6,000 — significantly more than standard paver maintenance but necessary to maintain the environmental benefits.

**When to Hire a Professional:** Annual joint cleaning and surface maintenance can be DIY projects, but infiltration testing, base layer issues, and full system restoration require professional expertise. Permeable paver systems are engineered stormwater management infrastructure, and improper maintenance can compromise both function and municipal stormwater credits.

Need help finding a contractor experienced with permeable paver maintenance? Vancouver Interlock can match you with professionals who understand these specialized systems.

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## Are permeable pavers strong enough for a driveway with heavy vehicles?

**Yes, permeable pavers are absolutely strong enough for driveways with heavy vehicles when properly installed with the correct specifications.** Permeable interlocking concrete pavement (PICP) is engineered to handle the same traffic loads as conventional concrete pavers — including delivery trucks, RVs, and commercial vehicles — while providing superior stormwater management that's increasingly valued in Metro Vancouver's wet climate.

### **Load-bearing capacity depends on proper specification and installation, not the permeable design itself.**

For driveways with heavy vehicle traffic, specify 80mm (3-1/8 inch) thick permeable pavers with a minimum compressive strength of 8,000 PSI — the same thickness and strength used for conventional paver driveways. The key difference is in the base construction: permeable installations use an open-graded aggregate base (typically 3/4-inch clear crushed rock with no fines) instead of conventional road base. This open-graded material actually provides excellent load distribution when properly compacted in controlled lifts.

**The base depth for heavy-duty permeable driveways is typically 12-16 inches in Metro Vancouver** — deeper than conventional paver driveways — to accommodate both structural requirements and stormwater storage. The base consists of multiple lifts of open-graded aggregate, each compacted to 95%+ density using a plate compactor. A geotextile separation fabric between the subgrade and base prevents soil migration while allowing water infiltration. The bedding layer uses ASTM No. 8 or No. 9 stone (2-4mm) instead of sand, maintaining permeability while providing a stable setting bed.

**Permeable pavers offer significant advantages for Metro Vancouver driveways beyond environmental benefits.** The open-graded base provides superior drainage compared to conventional installations, which is critical given our 1,200mm+ annual rainfall. Water drains through the pavers and base rather than running off, eliminating ice formation in winter and reducing puddling during heavy rains. Many Metro Vancouver municipalities — including Vancouver, Surrey, and Burnaby — offer stormwater fee reductions or development incentives for permeable paving installations that reduce impervious surface area.

**Joint maintenance is the primary consideration for heavy vehicle use.** Permeable pavers use open-graded aggregate (typically 2-4mm stone chips) in the joints instead of polymeric sand. Heavy vehicles can gradually displace this jointing material, requiring periodic replenishment every 2-3 years compared to 3-5 years for lighter residential traffic. The jointing aggregate is inexpensive and easy to sweep in, making this routine maintenance rather than a significant concern.

**Installation costs run \$15-25 per square foot for heavy-duty permeable driveways** — approximately 20-30% more than conventional paver driveways due to the deeper excavation, specialized aggregate materials, and more

complex base construction. A typical 600 square foot permeable driveway designed for heavy vehicles runs \$12,000-18,000 installed in Metro Vancouver, including proper drainage connections and municipal permits if required.

**Professional installation is essential for heavy-duty permeable applications.** The open-graded base requires precise compaction techniques, proper slope design (1-2% minimum for surface drainage while maintaining infiltration capacity), and often connection to municipal storm systems or engineered infiltration areas. ICPI-certified installers understand the specific requirements for permeable paving that differ significantly from conventional interlock installation.

**Consider soil conditions and drainage requirements carefully.** Richmond's high water table and clay-heavy soils in Surrey, Delta, and Langley may require additional engineering for permeable installations. In areas with poor soil infiltration, the system may need an underdrain connected to the municipal storm system, essentially creating a temporary storage and controlled release system rather than full ground infiltration.

Need help finding an interlock contractor experienced with heavy-duty permeable installations? Vancouver Interlock can match you with PICP-certified professionals who understand both the structural and environmental engineering requirements for your project.

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Q11

## Can permeable pavers be used on a sloped driveway in North Vancouver?

**Yes, permeable pavers can absolutely be used on sloped driveways in North Vancouver, but the installation requires specialized engineering to manage both drainage and slope stability.** The key is designing the subsurface drainage system to capture and control water flow rather than allowing it to rush downhill and cause erosion.

Permeable pavers are actually well-suited to North Vancouver's steep terrain and heavy rainfall (often exceeding 2,000mm annually on the North Shore). The challenge isn't the pavers themselves, but engineering the underlying drainage system to handle the combination of infiltrated rainwater and natural slope runoff. On a sloped driveway, water doesn't just infiltrate straight down through the pavers — it also flows laterally downhill through the open-graded aggregate base.

**The critical engineering requirement is installing subsurface drainage collection systems at regular intervals down the slope.** This typically involves perforated drain pipes installed perpendicular to the slope direction every 20-30 feet, depending on the grade. These "intercept drains" capture water flowing through the

permeable base before it can saturate the lower sections or cause erosion at the bottom of the driveway. The collected water is then directed to the municipal storm system, a dry well, or daylight discharge.

**Base design becomes more complex on slopes exceeding 8-10%.** The open-graded aggregate base (typically 12-18 inches deep for a permeable driveway) must be installed in terraced sections with check dams or geogrid reinforcement to prevent the base material from migrating downhill over time. Some installations require a combination of permeable pavers in flatter sections and conventional pavers with surface drainage in the steepest areas.

**North Vancouver's clay-heavy soils in many areas add another engineering consideration.** Clay doesn't absorb water quickly, so the permeable system must be designed with adequate storage capacity in the aggregate base to hold water until the clay can slowly accept it. This often means increasing the base depth to 18-24 inches and including an underdrain system even on slopes where gravity drainage seems adequate.

**Municipal approval is often required for sloped permeable installations** in North Vancouver, particularly if the driveway connects to the municipal storm system or if the slope exceeds certain thresholds. The District of North Vancouver's engineering department typically wants to see drainage calculations and may require professional engineering drawings for steep driveways over 400-500 square feet.

**Cost for a sloped permeable driveway in North Vancouver typically runs \$25-\$45 per square foot installed** — significantly higher than flat installations due to the additional drainage engineering, terraced base construction, and specialized labour. A typical 600 square foot sloped driveway runs \$15,000-\$27,000 installed, compared to \$12,000-\$20,000 for the same size on flat ground.

**Maintenance is more intensive on sloped installations.** The intercept drains require periodic inspection and cleaning to prevent clogging with sediment. Joint material may wash out more quickly on steep sections during heavy rainfall events, requiring more frequent replenishment.

**When to hire a professional:** Any sloped permeable driveway installation requires professional design and installation. The drainage engineering, municipal approvals, and specialized construction techniques are well beyond DIY capabilities. Look for contractors with specific experience in permeable paving systems and slope stabilization — this isn't standard interlock work.

Need help finding an experienced permeable paving contractor familiar with North Vancouver's challenging terrain? Vancouver Interlock can match you with professionals who specialize in engineered drainage solutions for steep lots.

## What base system is required under permeable pavers in Vancouver soil?

**Permeable pavers in Metro Vancouver require a specialized open-graded aggregate base system that's completely different from standard interlock installations — the base must allow water infiltration while providing structural support, which is critical given our 1,200mm+ annual rainfall.**

The **permeable base system** consists of multiple engineered layers working together to manage Vancouver's heavy precipitation. Starting from the bottom: the existing subgrade soil must be evaluated for infiltration capacity — Metro Vancouver's clay-heavy soils in Surrey, Richmond, Delta, and Langley often require subgrade amendments or underdrain systems because clay doesn't allow adequate water infiltration. A **geotextile separation fabric** goes directly on the prepared subgrade to prevent soil migration into the aggregate while allowing water passage.

The **aggregate base itself must be open-graded** — meaning it contains no fine particles that would clog the voids where water flows through. The base typically consists of 6-12 inches of clean, angular aggregate (usually 3/4-inch minus with less than 2% fines passing the #200 sieve). This is completely different from standard interlock base material, which includes fines for compaction and stability. The open-graded base is installed and compacted in 2-inch lifts, but compaction is lighter than standard interlock work to preserve the void structure that allows water infiltration.

**Bedding and joint materials are also specialized** for permeable systems. The bedding layer uses 1/8-inch to 3/8-inch clean aggregate instead of sand, and the joints are filled with the same open-graded aggregate rather than polymeric sand. This creates continuous pathways for water to flow from the surface through the joints, through the bedding layer, and into the base reservoir where it's stored temporarily before infiltrating into the subsoil.

**Drainage design is critical** in Metro Vancouver's wet climate. Many permeable installations include perforated underdrain pipes at the base of the aggregate reservoir, connected to the municipal storm system or a dry well. This provides overflow capacity during extreme rainfall events and ensures the system continues functioning even when the subgrade infiltration rate is exceeded. The **surface must still be graded with minimum 1% slope** to direct overflow runoff away from buildings during extreme weather events.

**Installation costs run \$20-40 per square foot** in Metro Vancouver — significantly higher than standard interlock due to the specialized materials, precise grading requirements, and additional drainage infrastructure. However, many municipalities offer stormwater fee reductions or green infrastructure incentives that help offset the premium cost.

**This is definitely professional-only work** — the infiltration calculations, aggregate specifications, underdrain design, and municipal approvals require ICPI-certified installers with permeable paving experience. Improperly installed permeable pavers either don't drain (defeating the purpose) or fail structurally under load.

Need help finding a permeable paving specialist? Vancouver Interlock can match you with contractors experienced in sustainable stormwater management systems.

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## Does the City of Vancouver require permeable surfaces for new driveways?

**The City of Vancouver does not currently mandate permeable surfaces for new residential driveways, but they strongly encourage them through incentives and may require them in specific situations.**

The City of Vancouver has been moving toward stricter stormwater management requirements as part of their Rain City Strategy and climate adaptation planning. While there's no blanket requirement for permeable driveways on single-family residential properties, several factors make permeable paving increasingly attractive or necessary:

**Current Vancouver Requirements:** New driveway installations require a **driveway crossing permit** from the City's engineering department, but this focuses on safe access to the street rather than surface permeability. However, if your driveway expansion significantly increases impervious surface area on your property, you may trigger requirements for on-site stormwater management. Properties that create more than 200 square metres of new impervious surface may need to demonstrate how they'll manage the additional runoff.

**Incentives for Permeable Surfaces:** Vancouver offers a **rainwater management credit** on utility bills for properties that reduce stormwater runoff through green infrastructure, including permeable paving. The credit can reduce your combined water and sewer bill by up to 50% for qualifying installations. Given Vancouver's high utility rates, this can save \$300-800 annually for typical residential properties.

**When Permeable May Be Required:** Certain situations trigger stricter requirements: properties in **environmentally sensitive areas** near creeks or shorelines, new construction or major renovations requiring development permits, and strata developments where the strata council has adopted green building requirements. Some newer strata developments in Vancouver specifically require permeable surfaces for parking areas and driveways.

**Metro Vancouver Context:** Permeable interlocking concrete pavement (PICP) performs exceptionally well in Vancouver's climate. With over 1,200mm of annual rainfall, traditional impervious driveways contribute significantly to stormwater runoff that overwhelms the city's aging combined sewer system. Permeable pavers allow rainwater to infiltrate through the joints into a specially engineered open-graded aggregate base, where it's stored and gradually released into the subsoil.

**Practical Considerations:** A typical **500 square foot permeable paver driveway costs \$10,000-20,000 installed** in Vancouver — about 15-25% more than conventional pavers due to the specialized base materials and installation requirements. However, the utility bill savings, reduced environmental impact, and compliance with future regulations make it an increasingly popular choice. Permeable pavers also eliminate ice formation better than solid surfaces because water drains through rather than pooling and freezing.

**Future Outlook:** Vancouver is likely to strengthen stormwater management requirements in coming years, following the lead of cities like Seattle and Portland. Installing permeable paving now positions your property ahead of potential future mandates while capturing current incentives.

Need help finding a contractor experienced with permeable paver installations? Vancouver Interlock can match you with professionals who understand both the technical requirements and the City's permit process.

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Q14

## How do permeable pavers compare to a rain garden for stormwater management?

**Permeable pavers and rain gardens serve different but complementary roles in stormwater management — permeable pavers replace impervious surfaces like driveways and patios while still providing functional hardscaping, whereas rain gardens are dedicated landscaped depressions that capture and infiltrate runoff from roofs, driveways, and other surfaces.**

### Permeable Pavers for Stormwater Management

Permeable interlocking concrete pavement (PICP) allows rainwater to infiltrate through the joints and into a specially engineered aggregate base where it's stored and gradually released into the subsoil. In Metro Vancouver's climate with over 1,200mm of annual rainfall, permeable pavers excel at managing the water that falls directly on hardscaped areas. A typical permeable paver system can infiltrate 3-8 inches of rainfall per hour — far exceeding even Vancouver's heaviest downpours.

The key advantage is that permeable pavers provide full functionality as a driveway, patio, or walkway while eliminating stormwater runoff from that surface. Instead of shedding water to the storm drain system, the paved area becomes part of the solution. This is particularly valuable in Metro Vancouver where municipalities like Vancouver, Surrey, and Richmond offer stormwater fee reductions for properties that reduce impervious surface area.

### Rain Gardens for Stormwater Management

Rain gardens are shallow, landscaped depressions (typically 6-8 inches deep) planted with native vegetation that can tolerate both wet and dry conditions. They're designed to capture runoff from roofs, driveways, and other impervious surfaces, allowing it to infiltrate slowly rather than rushing to storm drains. A properly sized rain garden should be approximately 20-30% the size of the drainage area feeding it.

Rain gardens excel at treating water quality — the soil and plants filter pollutants, sediments, and nutrients from stormwater runoff. They also provide habitat for birds and beneficial insects while adding attractive landscaping to your property. In Metro Vancouver's marine climate, rain gardens work exceptionally well because the mild winters allow year-round plant growth and water processing.

### **Performance Comparison in Metro Vancouver**

For **volume management**, permeable pavers handle higher flow rates and can manage more intense rainfall events. The engineered aggregate base in a permeable paver system typically stores 30-40% of its volume in void space, providing significant temporary storage during heavy downpours. Rain gardens rely on surface ponding and slower soil infiltration, so they can overflow during extreme events.

For **water quality treatment**, rain gardens provide superior pollutant removal through biological and chemical processes in the soil and plant root zones. Permeable pavers provide some filtration through the aggregate base but primarily focus on volume reduction rather than treatment.

### **Cost and Maintenance Considerations**

Permeable pavers cost \$20-40 per square foot installed in Metro Vancouver — significantly more than conventional pavers but providing stormwater benefits that may qualify for municipal rebates. Annual maintenance involves vacuum sweeping to prevent joint clogging and occasional joint material replenishment.

Rain gardens cost \$15-25 per square foot to install but require ongoing landscape maintenance — weeding, pruning, mulching, and plant replacement. However, they provide long-term cost savings by reducing stormwater fees and preventing erosion or flooding issues.

### **Soil Suitability in Metro Vancouver**

Metro Vancouver's clay-heavy soils in Surrey, Richmond, Delta, and Langley present challenges for both systems. Permeable pavers can work on clay soils with proper underdrain systems that collect infiltrated water and direct it to storm drains or dry wells. Rain gardens on clay soils require soil amendments or engineered soil mixes to achieve adequate infiltration rates.

### **Regulatory Considerations**

Both systems may qualify for reduced stormwater fees from Metro Vancouver municipalities. Some municipalities require engineered designs for larger installations, and connecting underdrains to municipal storm systems requires permits. Check with your local engineering department about incentive programs — the City of Vancouver's Rain City Strategy actively promotes both green infrastructure approaches.

### **When to Choose Each System**

Choose permeable pavers when you need functional hardscaping (driveways, patios, walkways) and want to eliminate runoff from those surfaces. They're ideal for replacing existing impervious paving while maintaining full functionality.

Choose rain gardens when you have roof downspouts or other runoff sources that need treatment and you have suitable space for landscaping. They're particularly effective for managing runoff from large roof areas or conventional driveways.

### **Combined Approach**

The most effective stormwater management combines both systems — permeable pavers for hardscaped areas and rain gardens to capture runoff from roofs and any remaining impervious surfaces. This integrated approach maximizes both volume reduction and water quality treatment while creating an attractive, functional outdoor space.

Need help designing a comprehensive stormwater management system? Vancouver Interlock can connect you with contractors experienced in both permeable paving and integrated green infrastructure approaches.

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Q15

## **Do permeable pavers get more moss than regular pavers in Vancouver?**

**Permeable pavers typically experience less moss growth than regular pavers in Metro Vancouver, despite the counterintuitive assumption that more moisture would mean more moss.** The key difference is that permeable pavers are designed to drain water quickly through the joints and base, preventing the standing moisture that moss needs to establish and thrive.

**Traditional concrete pavers with polymeric sand joints create ideal moss conditions** because water pools on the surface and in the joints during Vancouver's frequent rainfall. The polymeric sand, while essential for joint stability, retains moisture longer than the open-graded materials used in permeable installations. This creates the perfect environment for moss spores to germinate and establish, especially in shaded areas or north-facing installations that don't get direct sun to dry out between rain events.

**Permeable pavers use open-graded jointing material** (typically crushed granite or specialized permeable joint aggregate) instead of polymeric sand. Water drains through these joints immediately rather than pooling, and the constant drainage action helps flush away organic matter and moss spores before they can establish. The specialized aggregate base beneath permeable pavers (clean crushed rock with no fines) also drains rapidly, preventing the saturated conditions that promote moss growth from below.

**However, permeable pavers face different maintenance challenges in Metro Vancouver's climate.** The open joints that prevent moss can become clogged with organic debris — fallen leaves, pine needles, dirt, and fine sediment that washes off adjacent surfaces during heavy rains. When the joints clog, the permeable system loses its drainage capacity and can actually become more prone to moss than regular pavers. This makes regular maintenance critical — typically power washing or vacuuming the joints 1-2 times per year to maintain permeability.

**Shaded permeable installations may still develop surface moss** on the paver faces themselves, particularly textured or porous paver surfaces that retain moisture. The drainage through the joints helps, but doesn't eliminate surface moisture entirely. North-facing permeable patios under tree cover will still require periodic moss treatment with iron sulfate-based moss killer, just like regular pavers.

**For moss prevention on any paver type in Metro Vancouver,** focus on improving drainage and reducing shade. Trim overhanging branches to increase sunlight and air circulation, ensure proper surface slope away from buildings (minimum 2% grade), and keep joints clean and functional. Regular cleaning with a pressure washer and annual moss treatment will keep both permeable and regular pavers looking their best through Vancouver's challenging wet season.

Need help finding an interlock installer experienced with permeable paving systems? Vancouver Interlock can match you with contractors who understand both the drainage benefits and maintenance requirements of permeable pavers in Metro Vancouver's climate.

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## Can you seal permeable pavers or does that defeat the purpose?

**You should not seal permeable pavers with standard paver sealer because it defeats the entire purpose of permeable paving — allowing water to infiltrate through the surface.** Standard acrylic or polyurethane paver sealers create a film that blocks water penetration, turning your permeable installation into an impermeable surface that sheds water as runoff.

However, there are **specialized permeable paver sealers** designed specifically for permeable interlocking concrete pavement (PICP) that protect the surface while maintaining infiltration capacity. These products penetrate into the paver surface rather than forming a surface film, providing stain resistance and color enhancement without blocking water flow through the joints and paver structure.

### Permeable Paver Maintenance in Metro Vancouver

In Metro Vancouver's wet climate, permeable pavers face unique maintenance challenges. The **open-graded aggregate joints** (typically 2-8mm crushed stone instead of polymeric sand) can become clogged with organic debris — leaves, moss, algae, and fine sediment. When the joints clog, water cannot infiltrate properly, and you lose the stormwater management benefits that make permeable paving attractive to Metro Vancouver municipalities.

**Regular maintenance is essential** for permeable pavers to function properly. This includes quarterly removal of leaves and debris, annual power washing or vacuum sweeping of the joints to remove accumulated sediment, and periodic replacement of the jointing aggregate when it becomes too contaminated to drain effectively. Many homeowners underestimate this maintenance requirement when choosing permeable paving.

The **specialized permeable sealers** available include products from manufacturers like SureBond, Techniseal, and Alliance that are formulated to penetrate concrete without blocking porosity. These sealers can reduce staining from organic matter (common in Vancouver's moist climate), enhance color consistency, and make routine cleaning easier. They typically cost \$3-6 per square foot to apply professionally and need reapplication every 3-5 years.

### When Permeable Sealing Makes Sense

**Consider permeable sealer if your installation experiences heavy organic staining** — areas under large deciduous trees, near compost areas, or where vehicles may leak fluids. The sealer makes it easier to clean tannin stains from leaves, moss growth, and algae without scrubbing that could dislodge the jointing aggregate.

**Skip sealing if your permeable pavers are functioning well** and you're committed to regular maintenance. Many permeable installations in Metro Vancouver perform excellently for 10-15 years without any sealer, provided the

joints are kept clean and the aggregate is refreshed periodically.

## Professional Application Required

**Permeable paver sealing requires professional application** because the installer must verify that the sealer maintains adequate infiltration rates after application. ICPI (Interlocking Concrete Pavement Institute) standards require permeable pavement to maintain minimum infiltration rates of 100 inches per hour. A contractor experienced with permeable systems will test infiltration before and after sealing to ensure performance standards are met.

**Never use standard paver sealer on permeable pavers** — this is a costly mistake that requires complete joint aggregate removal and replacement to restore permeability. If you're unsure whether your pavers are permeable, pour water on the surface — permeable pavers absorb water quickly through the joints, while standard pavers shed water to the edges.

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Q17

## What types of permeable pavers are available in the Vancouver market?

**Permeable pavers available in Metro Vancouver include permeable interlocking concrete pavement (PICP), porous concrete pavers, plastic grid systems, and natural stone with open joints.** These systems are increasingly popular due to municipal stormwater incentives and Vancouver's heavy rainfall that makes traditional impervious surfaces problematic for drainage management.

**Permeable Interlocking Concrete Pavement (PICP)** is the most common and effective option in Metro Vancouver. These look similar to standard concrete pavers but are specifically designed with wider joints (6-10mm) filled with permeable aggregate instead of sand. Popular PICP products include Belgard's Aqua series, Techo-Bloc's Permea series, and Barkman's Eco-Stone line. The pavers themselves are solid concrete, but water infiltrates through the aggregate-filled joints into an open-graded stone base below. PICP systems can handle Metro Vancouver's heavy rainfall while providing the same durability and aesthetic options as standard pavers. Installation costs run \$20-\$35 per square foot.

**Porous concrete pavers** have tiny holes throughout the paver surface that allow water to pass directly through the concrete. Manufacturers like Mutual Materials and Expocrete offer porous options, though they're less common than PICP in the Vancouver market. While effective for drainage, porous pavers can clog with organic debris over time — a particular concern in Metro Vancouver where falling leaves, moss, and algae are persistent issues. They require more frequent maintenance than PICP systems.

**Plastic grid systems** like Invisible Structures' Grasspave2 or similar products create a permeable surface by supporting gravel or grass in a plastic honeycomb structure. These are popular for overflow parking areas, fire lanes, and low-traffic driveways where a fully paved appearance isn't required. The plastic grids cost \$8-\$15 per square foot installed but provide excellent drainage performance.

**Natural stone with open joints** uses flagstone, granite, or basalt with 10-20mm gaps between stones filled with permeable aggregate. This creates a rustic, natural appearance while managing stormwater. BC's local basalt and granite work particularly well for this application. Natural stone permeable installations run \$25-\$45 per square foot due to the labour-intensive cutting and fitting process.

**Metro Vancouver's climate makes permeable paving especially valuable** because the region receives over 1,200mm of annual rainfall, with North Shore communities exceeding 2,000mm. Many municipalities offer stormwater fee reductions or green infrastructure incentives for properties that reduce impervious surface area. The City of Vancouver, Surrey, and Richmond have programs that make permeable paving financially attractive beyond its environmental benefits.

**The key to permeable paver performance in Metro Vancouver is the specialized base system.** Unlike standard paver installations that use dense-graded gravel, permeable systems require open-graded aggregate (no fines) that allows water to pass through freely. The base typically consists of 12-18 inches of clear drain rock, often with an underdrain system connecting to the municipal storm system or a dry well. This base acts as a temporary storage reservoir during heavy rainfall events.

**Maintenance requirements are higher than standard pavers** in Metro Vancouver's organic-rich environment. Permeable joints can clog with leaves, moss, and organic debris, reducing infiltration capacity. Annual vacuum cleaning of the joints is recommended, and joint aggregate may need replenishment every 3-5 years. However, when properly maintained, permeable pavers significantly reduce surface runoff and help prevent the basement flooding and drainage issues common in Metro Vancouver during heavy winter rains.

**Professional installation is essential for permeable paving systems** because the specialized base design, proper slope calculations, and connection to drainage infrastructure require expertise that goes beyond standard paver installation. The investment in proper permeable paving pays dividends in reduced stormwater management issues and potential municipal incentives.

Need help finding a permeable paving specialist? Vancouver Interlock can match you with contractors experienced in stormwater management systems through the Vancouver Construction Network.

## How do permeable pavers perform in Vancouver's occasional frost?

Permeable pavers perform exceptionally well during Vancouver's occasional frost events because the region experiences minimal freeze-thaw cycles (only 5-15 per year) compared to Eastern Canada, and the open-graded base system actually provides superior drainage that prevents the water accumulation responsible for most frost damage.

Metro Vancouver's marine climate creates ideal conditions for permeable paver performance during winter months. Unlike Toronto or Calgary where freeze-thaw cycles occur 40-80 times per year, Vancouver's mild winters mean that when frost does occur, it's typically brief and shallow. The **permeable paver system's greatest advantage during frost is its engineered drainage capacity** — water drains through the joints and into the open-graded aggregate base rather than pooling on the surface or saturating the subgrade where it could freeze and cause heaving.

The **open-graded aggregate base used in permeable installations** (typically 3/4-inch clear crush with no fines) provides excellent drainage and prevents the water saturation that causes frost damage in conventional paving systems. When water freezes in the small void spaces of this aggregate, there's room for expansion without creating destructive pressure. This is fundamentally different from a conventional paver base where trapped water can freeze solid and heave the entire surface.

**Surface ice formation is actually less problematic on permeable pavers** than on conventional interlock because water drains through rather than pooling and freezing on top. However, during Vancouver's occasional hard freezes (typically 2-5 nights per winter below -5°C), the surface can become slippery. The textured surface of most permeable pavers provides better traction than smooth concrete pavers, but ice is still ice — apply sand or ice melt as needed during freeze events.

**Joint material performance during frost** is where permeable systems show their engineering advantage. Conventional polymeric sand can crack during freeze-thaw cycles, but permeable jointing material (typically angular stone chips or specialized permeable polymeric sand) is designed to handle thermal movement. The open joint structure allows for expansion and contraction without the rigid locking that can cause surface cracking in conventional installations.

**Long-term frost performance in Metro Vancouver** is excellent because permeable pavers eliminate the two main causes of frost damage: water accumulation beneath the pavers and hydrostatic pressure in a saturated base. The system's ability to drain water away from the subgrade means that even during Vancouver's wettest periods (October through March), the base remains relatively dry and stable. This drainage capacity becomes even more valuable during the occasional freeze because there's simply less water present to freeze and expand.

**Maintenance during winter months** is minimal compared to conventional paving. The primary concern is ensuring that the permeable joints don't become clogged with organic debris (leaves, moss, dirt) that could impede drainage. A quarterly inspection and cleaning of the joints with a stiff brush or pressure washer maintains optimal performance. Unlike conventional interlock where winter damage often requires spring repairs, properly installed permeable pavers in Vancouver typically emerge from winter in excellent condition.

**Installation timing considerations** are important for optimal frost performance. Permeable pavers installed during Vancouver's dry season (May through October) allow the base to achieve proper compaction and the joints to be filled correctly before winter rains begin. Installing during the wet season is possible but requires additional care to keep the open-graded base from becoming contaminated with fines that would compromise its drainage capacity.

The bottom line: **permeable pavers are actually better suited to Vancouver's climate than conventional interlock** because they're engineered specifically for water management — the region's primary hardscaping challenge. The occasional frost is a minor consideration compared to the year-round benefits of superior drainage performance.

**When to hire a professional:** Permeable paver installation requires ICPI-certified knowledge of open-graded aggregate specifications, proper joint material selection, and precise drainage design. This is not a DIY project — the specialized base system and drainage connections require professional installation to achieve the frost resistance and long-term performance that make permeable paving worthwhile.

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## Can you install permeable pavers in just part of a driveway?

**Yes, you can absolutely install permeable pavers in just part of a driveway** — this is actually a smart approach that many Metro Vancouver homeowners use to manage stormwater runoff while controlling costs. Partial permeable installations are particularly effective when strategically placed in areas where water naturally collects or flows.

**The most effective partial permeable design is installing permeable pavers in the lower third or collection area of your driveway** where water naturally flows and pools. This captures the majority of runoff from both the permeable section and the upper impervious portion. The key is ensuring proper drainage design so water from the standard paver area flows toward and infiltrates through the permeable section rather than running off your property entirely.

**Common partial permeable configurations include permeable strips along the edges of the driveway** (like permeable gutters), permeable sections at the bottom where the driveway meets the street, or alternating permeable and standard paver bands across the width. The permeable sections need the same specialized open-graded aggregate base as a full permeable installation — typically 12-18 inches of clear angular gravel with no fines that allows water to infiltrate and be stored temporarily before gradually releasing into the subsoil.

**Metro Vancouver's heavy rainfall makes partial permeable installations particularly valuable for stormwater management.** With over 1,200mm of annual rainfall and increasingly strict municipal stormwater regulations, reducing impervious surface area can qualify you for reduced stormwater fees in Vancouver, Surrey, and other municipalities. The City of Vancouver's Rain City Strategy actively encourages permeable paving as green infrastructure.

**The transition between standard and permeable pavers requires careful detailing** to prevent water from flowing underneath the edge and undermining the base. Your contractor will typically install a concrete or compacted aggregate beam between the two sections, or use a gradual transition zone with modified joint spacing. The permeable sections still need proper edge restraint along unconfined edges.

**Cost considerations make partial installations attractive** — permeable pavers cost \$20-40 per square foot installed compared to \$15-30 for standard pavers. Installing permeable pavers in 30-40% of your driveway area captures most of the stormwater benefit while keeping costs reasonable. A 600 square foot driveway might use 200 square feet of permeable pavers in strategic locations, adding \$2,000-4,000 to the project cost versus \$6,000-12,000 for full permeable coverage.

**Maintenance requirements are the same whether you install permeable pavers in the entire driveway or just sections** — annual inspection and cleaning of the permeable joints to prevent clogging from organic debris, and periodic vacuum cleaning every 3-5 years to restore infiltration capacity. The permeable sections will require more frequent joint maintenance than standard paver areas.

**This is definitely a professional installation** requiring proper engineering of the drainage system, coordination between the two paver types, and expertise with the specialized open-graded aggregate base that permeable pavers require. The base preparation, compaction requirements, and drainage design are critical to long-term performance in Metro Vancouver's wet climate.

Need help finding a contractor experienced with permeable paver installations? Vancouver Interlock can match you with professionals who understand the technical requirements and municipal incentives for partial permeable driveway designs.

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Q20

## **Do permeable pavers work with underground parking garages in strata buildings?**

**Permeable pavers are generally not suitable for underground parking garages in strata buildings.** The fundamental drainage mechanism that makes permeable pavers effective — allowing water to infiltrate through joints into an open-graded aggregate base and then into the subsoil — cannot function when there's a concrete parking structure below.

### **Why Permeable Pavers Don't Work Over Underground Parking**

Underground parking garages have waterproof membrane systems and concrete slabs that completely block water infiltration. Permeable pavers rely on water passing through the paver joints, through an open-graded aggregate base (typically 12-18 inches deep), and then infiltrating into the natural subsoil below. When there's an underground structure, water has nowhere to go and will simply pool in the aggregate base, eventually backing up and creating drainage problems.

In Metro Vancouver's high-rainfall climate (over 1,200mm annually), this trapped water would quickly saturate the base material and potentially cause water infiltration issues into the parkade below, even with proper waterproofing. The weight of saturated aggregate base material also creates additional structural loads that the parkade roof may not be designed to handle.

## What Works Instead for Strata Surface Parking

For strata buildings with surface parking areas over underground garages, **conventional concrete pavers with proper drainage design** are the appropriate solution. This means using standard interlocking concrete pavers (80mm thickness for vehicular traffic) on a well-compacted granular base, but designing the surface with adequate slope (minimum 2%) to direct water to catch basins, storm drains, or other approved drainage outlets.

The key is creating a drainage system that collects and directs water away from the paved surface rather than allowing it to infiltrate. This typically involves perimeter drains, catch basins at low points, and connection to the building's storm water management system.

## Strata Approval Requirements

Any paving work over underground parking requires strata council approval and often engineering review. The strata's engineer needs to verify that the proposed paving system, base depth, and drainage design are compatible with the parkade's waterproof membrane and structural capacity. Most strata corporations also require that any surface work maintains or improves drainage away from the building.

## Alternative Green Solutions

If the strata is interested in sustainable stormwater management, consider **permeable pavers in other areas** of the property where they can drain to natural subsoil — such as walkways, courtyards, or surface parking areas that aren't over underground structures. Many Metro Vancouver stratas are also exploring green roofs, rain gardens, and bioswales in landscaped areas as alternatives to permeable paving over parkades.

For underground parking garage applications, focus on high-quality conventional pavers with excellent drainage design rather than trying to make permeable systems work where they're not suitable.

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