BUILDING SOLUTIONS FOR AEC PROFESSIONALS

# CONSTRUCTION CANADA

JANUARY 2026 VOL. 68 NO. 1
www.constructioncanada.net

# TEXTURED SPACES

## Walls That Work

**How Thin Brick Meets High Efficiency**

**Beyond Embodied Carbon Calculations**

**Exterior Walls Fortified with Insect Screens**

IF UNDELIVERABLE, RETURN TO:
KENILWORTH MEDIA INC.
201-30 LEEK CRESCENT,
RICHMOND HILL ON L4B 4N4

CSC The official magazine of Construction Specifications Canada

Publications Mail Agreement No. 40663030 $7.95

# Contents

JANUARY 2026, VOL. 68, NO. 1

## On the Cover

Centre SANAAQ anchors Montreal's evolving cultural core with a materially expressive interior that balances openness, performance, and adaptability. Polished concrete surfaces and exposed sprayed cellulose play dual roles—shaping spatial character while supporting durability and acoustic comfort. Set within the podium of a residential development, the project demonstrates how thoughtful material choices can elevate civic spaces, aligning architectural expression with long-term resilience and everyday use.

PHOTO BY JAMES BRITTAIN/COURTESY V2COM

## FOLLOW US ON SOCIAL MEDIA

ConstructionCAN ConstructCanMag

## Features



## Departments

JANUARY 2026, VOL. 68, NO. 1

# CONSTRUCTION CANADA

www.constructioncanada.net
The Official Publication of Construction Specifications Canada
La publication officielle de Devis de Construction Canada



**HOW TO REACH US**
30 Leek Crescent, Suite 201, Richmond Hill, ON, Canada L4B 4N4, (905) 771-7333

**SPEAK TO THE EDITOR**
We want to hear from you! Please email editorial inquiries, story pitches, press releases, and letters to the editor to: jcramp@constructioncanada.net

**SUBSCRIPTION**
To subscribe to Construction Canada, call: (800) 409-8688; Email: circulation@constructioncanada.net

**Rates**
Canada 1 year: $56.00 (incl. taxes)
U.S. 1 year: $88.00 US
Foreign 1 year: $120.00 US

Publications Mail Agreement #40663030

**Postmaster:** Return undeliverable Canadian addresses to: Kenilworth Media Inc. 30 Leek Crescent, Suite 201, Richmond Hill, ON, L4B 4N4 Tel: (905) 771-7333; Fax: (905) 771-7336

*Construction Canada* (ISSN 0228-8788) is published eight times a year for Construction Specifications Canada by Kenilworth Media Inc., 30 Leek Crescent, Suite 201, Richmond Hill, ON, L4B 4N4



Printed in Canada

**Construction Specifications Canada**
120 Carlton St., Suite 312
Toronto, ON M5A 4K2
Tel: (416) 777-2198 • Fax: (416) 777-2197
Email: info@csc-dcc.ca • www.csc-dcc.ca



*CSC is a multidisciplinary, non-profit association committed to the ongoing development, and delivery of quality education programs, publications, and services for the betterment of the construction community.*

# BILCO Smoke Vents Help Reduce Fire Risk at New Utah Theater

Fire risk is inherent in every commercial space, but theaters are especially vulnerable to blazes that can cause massive property loss and death.

Flammable materials, such as curtain fabric, scenery and props can easily ignite and spread fires quickly. Sets and props made out of wood, cardboard and other flammable materials can contribute to a higher fire load, as do highly flammable costumes and fabrics.

Ignition sources abound, including stage lighting and faulty or outdated electrical systems. Many performances also include pyrotechnics and special effects, such as fog machines, which can also be fire hazards. Add high occupancy loads and panicky patrons, and it's easy to understand how any performance can be a disaster waiting in the wings.

A theater in Pleasant Grove, Utah opened in January 2025 that includes BILCO smoke vents as an important component of its fire protection plan.

The Ruth and Nathan Hale Theater at dōTERRA includes two theaters with seating for 1,074 guests and spans a whopping 77,950 square feet. The $65 million facility replaces the 7,000 square-foot Hale Center Theater in nearby Orem, which opened in 1990 and had a seating capacity of 305.

Workers completed the project in just two years, and it features the latest advancements in theater technology. The structure includes a club lounge and ballroom that can accommodate up to 200 guests, an education wing tailored to arts instruction with eight private studios, and a spacious lobby.

The BILCO smoke vents, which measure 6 feet x 8 feet, 6.5 inches, are motorized and equipped with push button stations for fast opening. Cannon Sales, BILCO's manufacturer's representative in Utah, procured the vents for Alder's Building Specialties. Layton Construction served as the general contractor for the project.

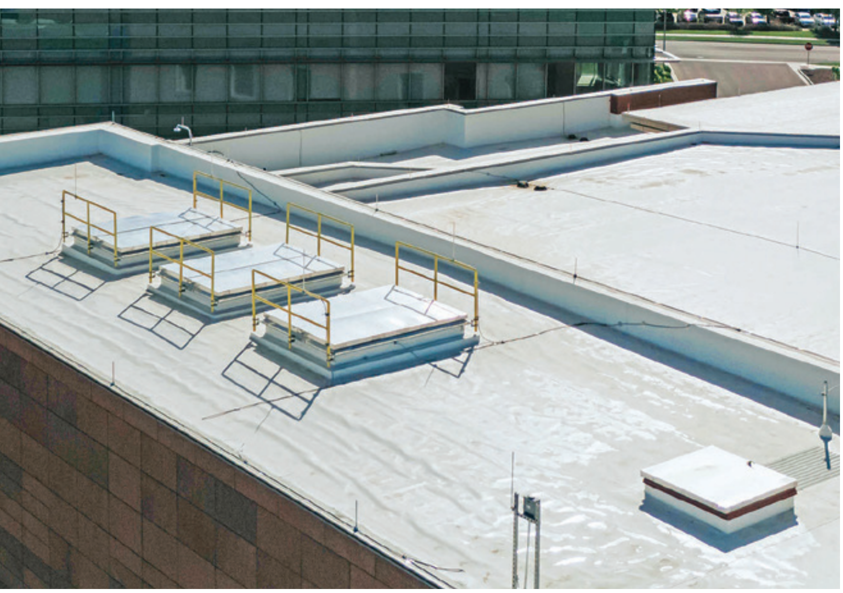
Smoke vents assist firefighting efforts and promote safe building evacuation by removing smoke, heat and toxic fumes from a burning building. The motorized operation allows the smoke vents to open and close with the push of a button, an important feature for the theater and its vast technological capabilities.

"Code prescribes the required total area, and we are tasked with coordinating the most efficient layout and overall approach to meet the life safety needs," said Todd Kelsey, the lead architect from Method Studio. "There are several options that meet the code requirements of smoke venting in these scenarios, but BILCO also provided an opportunity for enhanced operability and safety for the smoke vents."

Many theater projects include BILCO's acoustical smoke vents, which include the added feature of limiting noise intrusion. The Ruth is largely isolated from unwelcome exterior noise.

"We have utilized acoustical vents on other projects to mitigate noise from flight paths, light rail and transit, and adjacent sound sources but the site conditions for this project allowed us to comfortably select non-acoustical smoke vents," Kelsey said. "This afforded some cost savings to the project with some of the other upgraded features that were a priority for the selection of smoke vents."


## Smoke vents assist firefighting efforts and promote safe building evacuation by removing smoke, heat and toxic fumes from a burning building.



### Protecting Property & Saving Lives

BILCO's automatic smoke vents protect property and assist firefighters in bringing a fire under control by removing smoke, heat and gases from a burning building. Smoke vents are effective in large, open spaces like factories, warehouses, auditoriums and retail facilities. Smoke vents are effective in large, open spaces like factories, warehouses, auditoriums and retail facilities. Mechanical smoke vents are activated when a fusible link melts, which opens the vent.

Quanex

*A Part of Something Bigger* SM

# Why PMR Roofs Need Slope: A Field Perspective


By way of introduction, I graduated as an architect in 1970 when the protected membrane roof (PMR) was very new, and my employer told me they always used a minimum roof slope of two per cent, but otherwise it was a good system.

Over the following years, when doing a reroof job, the crew would mention the insulation was very heavy, but this was not a concern since it was going to the landfill. Several times, I weighed samples of this heavy insulation, which weighed approximately 96 kg/m³ (6 lb/cf). I asked insulation salespeople how this affected the value of insulation and received no clear answer. Certainly, it added to the dead load on the roof with no return.

Around 2010, we had a reroofing project where the insulation manufacturer's representative indicated they would warrant the new roof using the original, dry insulation that was being reused. We knew from the original insulation that the concrete deck was designed with a slope of 1.5 per cent. We conducted moisture probes at 10 locations, and seven of them were found to be dry.

As the reroof project proceeded, we weighed insulation samples at approximately 308 kg/m³ (19.2 lb/cf). The wet insulation was taking up all the dead load of the roof design.

As the project progressed, we noticed a few shallow puddles on the roof, and in our opinion, these were the source of the wet insulation.

In our opinion, there is no place for zero-slope roof decks in PMR roofs.

**Harvey Freeman**
*Halifax, Nova Scotia*

# Response

## XPSA on PMR/PMRA Roofs: Slope, moisture, and dead load

We appreciate the letter writer's long experience with protected membrane roofs. Two clarifications may be helpful for readers evaluating protected membrane roof assemblies (PMR/PMRA) today.

First, drainage is a design requirement, not an afterthought. Contemporary PMRAs are detailed to slope towards the drain and to maintain drainage pathways above the membrane (*e.g.* drainage mats/channels and protection layers). In some Canadian jurisdictions, engineered "blue roofs" are permitted; these intentionally detain water for a short, defined period with controlled-flow drains and are designed accordingly by the professional of record and accepted by the authority having jurisdiction (AHJ).

Second, dead load and buoyancy are explicit design inputs. While extruded polystyrene (XPS) is closed-cell and exhibits very low water absorption, designers still account for the weight of any temporary water and for uplift/floatation forces by selecting the appropriate XPS classification (CAN/ULC-S701; ASTM C578), cover/ballast strategy, and wind-uplift provisions consistent with code and local standards. Where zero-slope decks are allowed, they are used only within engineered detention systems; otherwise, positive drainage is required.

When heavy boards are encountered at reroof, the usual root causes are long-term ponding or blocked drains. Good PMRA installation practice emphasizes drainage, inspection, and, in many cases, the reuse of serviceable XPS verified during reroofing.

For Canada, practitioners should follow the *National Building Code of Canada* (*NBC*) and applicable provincial/municipal requirements. Material selection and assembly performance are verified against CAN/ULC-S701 (XPS) and relevant roofing standards. U.S. references (*e.g.* ASTM C578, ANSI/SPRI guidance) may be consulted, provided the AHJ accepts them.

**Michael Fischer**, *director of regulatory affairs for Extruded Polystyrene Foam Association (XPSA)*

# Ensuring Concrete Quality in North America's Infrastructure

**By Amir Azhari**

PHOTOS COURTESY BRICKEYE

Infrastructure and civil engineering projects play a crucial role in the growth and stability of North America, with the region's current construction market size estimated at $2.46 trillion U.S. dollars.[1] Infrastructure is the backbone of economic development, facilitating trade, transportation, communication, and energy distribution. This importance is further underscored by the $1.2 trillion for transportation and infrastructure spending, including $550 billion dedicated to "new" investments and programs aimed at revitalizing and expanding key infrastructure initiatives, according to recent findings by the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA).[2] Quality infrastructure drives economic stability and urban development, attracts investments, supports business growth, and improves the quality of life for residents.

One critical component of modern infrastructure is concrete, a material whose strength and durability are central to the safety and longevity of many structures. However, the integrity of the concrete is not guaranteed by default. Monitoring concrete is essential in ensuring structures meet the highest durability and safety standards. This is also crucial to ensure the quality of concrete, including its strength and integrity, is as specified in the engineering documents and to avoid structural defects, such as delayed ettringite formation (DEF) and honeycombing, during the curation process. Digital solutions are essential for monitoring concrete quality because this technology provides greater project visibility, leading to smarter decision-making and more resilient infrastructure systems. By leveraging digital tools, such as innovative concrete monitoring technologies and platforms, project managers can achieve real-time insights, enabling swift decisions that safeguard the integrity of the built environment for years to come.

## The central role of concrete in infrastructure

Concrete is the most widely used building material in infrastructure projects,[3] and it plays a crucial role in shaping North America—from the Interstate Highway System to the Hoover Dam. However, the material also presents significant and common challenges, such as cracking, erosion, and curing problems.

Central to the success of these projects is the emphasis on quality, particularly in the construction of concrete structures. Reliable and accurate monitoring of concrete is essential in ensuring these structures meet the highest durability and safety standards. In this context, the digitalization of monitoring processes plays a transformative role, offering enhanced precision and efficiency, and digital tools provide real-time insights throughout the construction process.

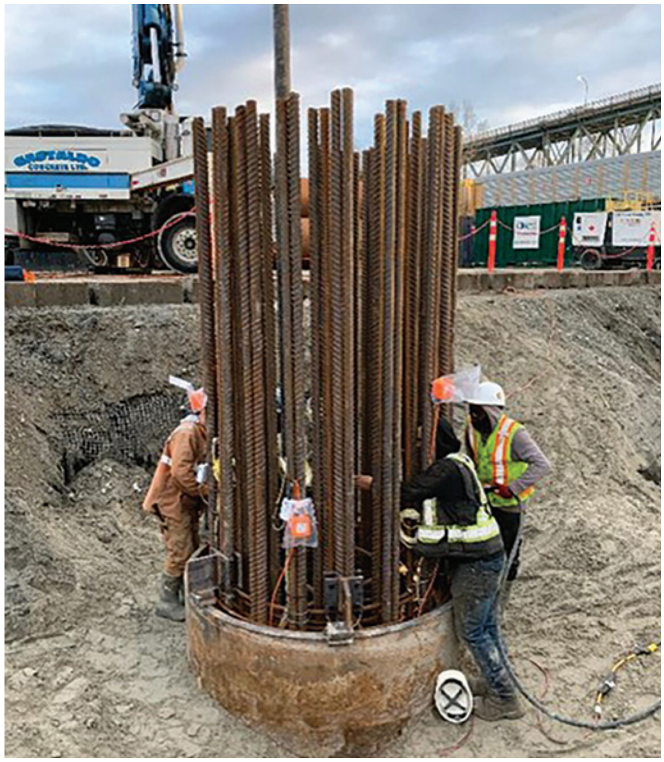
## Sustainability's role in concrete infrastructure projects

Sustainability is an increasingly critical factor in modern infrastructure projects. Concrete production is associated with high carbon emissions due to the energy-intensive process of manufacturing cement, a key ingredient in concrete. On the other hand, concrete's durability makes it a desirable and sustainable material for long-term projects. Internet of Things (IoT) solutions are vital in promoting sustainable infrastructure by ensuring concrete is used efficiently and its lifespan is maximized.

Inadequate monitoring and quality control in concrete structures have economic and human costs. Advanced monitoring technologies contribute to the quality and longevity of concrete structures and support safety and sustainable practices. By optimizing the use of materials and minimizing waste, these technologies help reduce the environmental footprint of construction projects.

## Digital IoT solutions in concrete quality monitoring

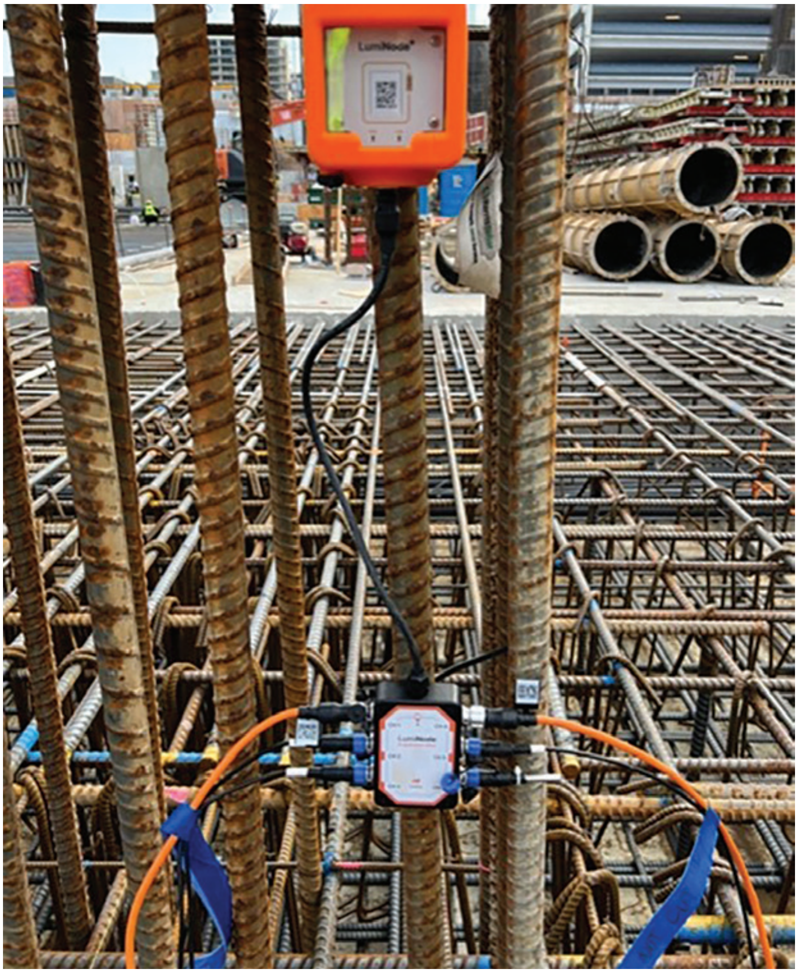
Traditionally, thermocouples and data loggers were the primary tools for concrete monitoring, focusing on quality control (QC) during the curing process. However, technological advancements, particularly IoT systems, have revolutionized concrete monitoring. Modern IoT-based solutions enable remote and continuous monitoring of concrete through cloud-based platforms, providing real-time analytics and insights. This advanced approach ensures precise tracking of curing conditions, allowing for proactive adjustments to prevent structural defects and optimize concrete quality long after the curing process is complete.



A typical mass concrete structure—drilled shaft on Patullo Bridge project in British Columbia.

IoT sensors for industrial applications provide visibility into the structure's lifecycle, from concrete temperature and maturity to concrete strength and long-term structural integrity. These advanced solutions offer remote and reliable access to real-time data and are vital in preventing potential issues. Using IoT sensors, contractors and asset owners can monitor their concrete structures, both during and after curing, in real time, over the entire asset lifecycle. Moreover, IoT solutions enable greater transparency and accountability in construction. With real-time data, project managers, engineers, and stakeholders can make informed decisions, ensuring concrete meets the necessary quality standards.

The sensors are ruggedized and robust, providing valuable data that can benefit structures far into the future. IoT sensors are easily installed and can be surface mounted on structures, depending on the type of infrastructure, and have capabilities to withstand



Concrete monitoring technology installation on rebar before the concrete pour.

Footings are typical mass concrete structures that require concrete monitoring to ensure compliance with thermal control plans.

and monitor severe temperatures, pressure, strain, vibrations, and extreme weather conditions. Concrete monitoring systems are typically installed during or just before the concrete pour. IoT sensors can be embedded directly into the concrete or attached to structural elements (*e.g.* rebar). This timing ensures the sensors begin capturing data from the earliest stages of curing, providing a comprehensive view of the material's performance throughout the curing process and its operational lifecycle. Monitoring can be both temporary and permanent, depending on the project requirements. In most cases, sensors are temporary and sacrificial for curing and early-stage quality assurance.

Concrete monitoring systems are typically specified in engineering design documents or thermal control plans (TCPs) based on project needs, environmental conditions, and structural performance goals. Specifications include sensor type, placement, monitoring duration, and tracking data parameters (*e.g.* temperature, temperature differentials, and maturity). Engineers ensure the selected system aligns with the project's durability and safety requirements while meeting regulatory and sustainability standards.

## The consequences of poor concrete quality in infrastructure

With an uptick in extreme weather, there is an increasing demand for resilient infrastructure that can withstand natural disasters and climate change. Poor concrete quality leads to higher maintenance costs, shortened lifespans, and potential safety hazards.

Several high-profile infrastructure failures have been linked to poor concrete quality. For example, the Surfside condo collapse that killed 98 people in Surfside, Florida, in 2021.[4] As one of the largest building failures in U.S. history, this incident highlights the importance of constructing and maintaining buildings to withstand a host of weather conditions. While the investigation is ongoing, installing IoT sensors can help prevent these types of incidents and allow contractors to understand the conditions of their structures from the start, ensuring safe and reliable foundations are laid.

Reinforced wind turbine foundation before mass concrete pour at Punta Lima Wind Farm, Naguabo in Puerto Rico.

Mass concrete works on Kentucky Locks Addition project, located in Grand Rivers, Kentucky.

## Conclusion

As cities expand and demands on infrastructure increase, the quality and durability of construction materials, particularly concrete, become more critical than ever as infrastructure serves as a key pillar in the foundation of North America's growth and stability. Prevention and early detection will lead to cost savings since proper preventive maintenance can be performed before problems worsen.

IoT solutions allow for early repair management, as contractors and asset owners use data to glean precise information from the structure. Digital IoT solutions represent a transformative force in the construction industry by enabling real-time monitoring, predictive analytics, and proactive maintenance. IoT technology acts as a powerful tool to prevent issues related to concrete quality and ensure the integrity of infrastructure projects, enhancing safety, reducing long-term costs, and supporting sustainable development by optimizing resources and minimizing environmental impact.

## Notes

[1] Refer to www.mordorintelligence.com/industry-reports/north-america-construction-market

[2] See the findings at www.phmsa.dot.gov/legislative-mandates/bipartisan-infrastructure-law-bil-infrastructure-investment-and-jobs-act-iija#:~:text=The%20Infrastructure%20Investment%20and%20Jobs,%22new%22%20-investments%20and%20programs

[3] Learn more at www.rsc.org/images/Construction_tcm18-114530.pdf

[4] Read more about it at www.cbsnews.com/miami/news/surfside-condo-collapse-third-largest-building-failure-us-history/

Amir Azhari is the co-founder and chief commercial officer of Brickeye. He received his BSc and MSc in materials engineering, holds an MBA, and completed his PhD in mechanical engineering at the University of Waterloo. Azhari has a broad range of expertise in industrial IoT, fibre optic sensing technologies, additive manufacturing, advanced materials, and nanotechnology. He has a strong passion for developing advanced technologies and solutions that assist with enhancing productivity and reducing risk in the construction industry. Azhari has co-authored more than 20 papers in peer-reviewed scientific journals and international conferences, book chapters, and patents.

Don't just weatherproof.
Futureproof.
With the lowest U-factors available, window systems with Azon will meet thermal regulations for years to come.
U-FACTOR
0.22 AzoCore™ thermal barrier
PVC 1.18
POLYAMIDE 2.08
0.0 0.5 1.0 1.5 2.0
Material thermal conductivity – Btu-in/(hr-°F-ft²)
AzoCore is now available for high-performance damper systems.
azonintl.com | 800.788.5942
AzoCore™ BY AZON

# Beyond the Kiln

## Reinventing Brick

**By Karine Galla**

PHOTOS COURTESY STO CORP.

Brick has been a staple in construction for thousands of years, celebrated for its durability, character, and timeless esthetic.

First used around 7000 BC near Jericho, bricks were made by hand and heated in the sun to harden. But around 3500 BC, fired brick was invented, and its popularity spread quickly, even into cooler climates. Romans then introduced mobile kilns, allowing them to use their inventive round, square, oblong, triangular, and rectangular-shaped bricks throughout the empire. And in 1925, a brickmaking machine increased production from 36,000 handmade bricks per week to 12,000 machine-made bricks per day.[1] A benefit of well-constructed brick masonry is its durability, as it can last for centuries if properly maintained.

While the fundamental appearance of brick has remained iconic, its construction and application methods have evolved significantly over time. The introduction of thin brick veneers in the 1950s offered a lighter-weight solution for renovation and retrofit projects, preserving the esthetic of full-depth masonry without the structural demands. More recently, resin-


A lightweight, energy-efficient prefabricated exterior wall panels were used on this hospital expansion, combining the warmth of a brick esthetic with faster installation, reduced on-site labour, and consistent quality control.

cast brick has emerged as a next-generation alternative, gaining popularity in Europe since the '80s and now expanding in use across North America. As design priorities increasingly focus on performance, sustainability, and constructability, these innovations, alongside other engineered solutions, are helping to overcome the limitations of traditional masonry. This article explores those challenges and the modern systems now enabling specifiers and designers to achieve a brick esthetic without compromising on performance, budget, or environmental considerations.

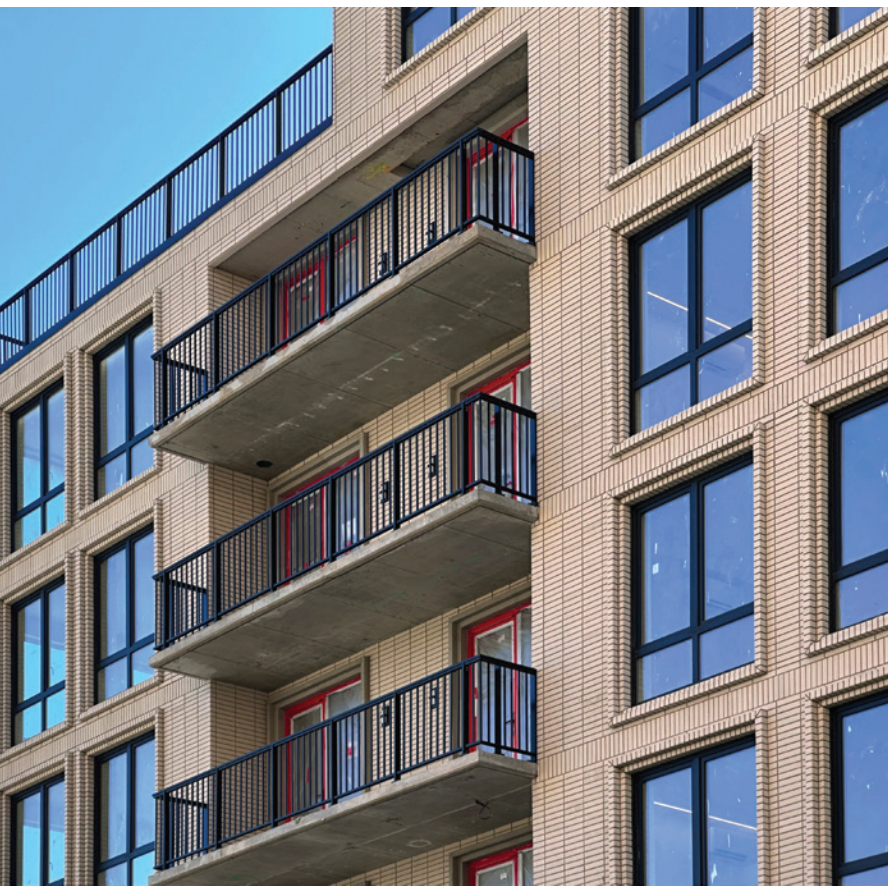
## Understanding the constraints of traditional brick

Despite its visual appeal and durability, traditional brick presents notable challenges on modern job sites, particularly when project requirements include high-performance enclosures, energy efficiency, or accelerated construction timelines. Traditional masonry bricks function as a reservoir cladding due to their porous nature, absorbing and retaining water that must be managed through proper drainage and ventilation within the wall assembly to avoid issues such as rot, mould, or condensation. While external insulation can be added to improve thermal performance, it typically must be mechanically attached to the sheathing, followed by additional anchors to secure the brick. These penetrations not only increase the risk of moisture intrusion but also create thermal bridges that reduce the overall effectiveness of the insulation.

Bricks are heavy and bulky, making them labour-intensive to work with, and they require skilled masons for proper installation. However, beyond those obvious drawbacks, traditional brick masonry presents additional complexities. It typically involves full-depth bricks laid with mortar, either as load-bearing construction or as a veneer over a structural backup wall. These assemblies demand not only experienced labour but also extensive material handling and detailed support systems, which can increase cost, extend timelines, and complicate co-ordination on modern job sites. Key limitations include:

*Limited structural flexibility*

Brick is well-suited for low-rise and modular construction. However, recent trends have shifted toward more open spaces with fewer walls. Unfortunately, traditional brick masonry makes it challenging to achieve openings with wide spans without the use of support beams or columns.



Lightweight brick integrated into a complete, warrantied wall system—delivering thermal performance, moisture control, and the look of traditional masonry.

*Moisture management challenges*

Bricks are porous and therefore retain moisture, which often leads to cracking, spalling, and efflorescence. Bricks are porous and naturally absorb water, which can lead to problems such as cracking, spalling, and efflorescence, especially in climates with repeated freeze-thaw cycles. To manage this moisture in traditional masonry design, brick walls are typically built as part of a cavity wall system, where a gap between the brick veneer and the structural backup wall allows water to drain away. This drainage cavity includes weep holes, mortar collection devices (usually mortar nets) to prevent mortar droppings from clogging the weep holes and flashing membranes to direct water out of the cavity through the weep holes.

*Environmental impact*

Clay is a finite resource that must be mined and transported. Additionally, bricks are fired in fossil fuel-powered kilns that are major contributors to climate change and a significant source of CO2 emissions, greenhouse gas (GHG) emissions, and short-lived climate pollutants (SCLPs).[2]

According to The Climate and Clean Air Coalition (CCAC), "Brick kilns are recognized as one of the largest stationary sources of black carbon, which, along with iron and steel production, contribute 20% of total black carbon emissions." In addition to emissions from the firing process, the heavy weight of traditional brick increases fuel consumption during transportation and often leads to greater material waste on job sites due to breakage or overage.

Now that the need for modern alternatives is understood, let's discuss some of the options that have emerged over the past few years.

## Meeting performance goals with brick alternatives

Unlike traditional masonry that is assembled on-site brick by brick with mortar joints, modern alternatives prioritize ease of installation, thermal performance, and weight reduction. These options span from lightweight veneers and resin-

A thin brick cladding installed over continuous insulation (c.i.) in a rainscreen assembly, offering design flexibility without compromising energy efficiency.

cast finishes to prefabricated panel systems, all designed to replicate the look of brick without the structural, labour, and energy drawbacks.

Growing concerns about sustainability have further accelerated demand for these alternatives. In a survey conducted by Talker Research on behalf of Glen-Gery, 78 per cent of architects and 58 per cent of homeowners expressed concern about sustainability in new project designs or renovations, with 60 per cent of architects stating that sustainability has a major influence on their choice of brand or product.

As a result, manufacturers have made a concerted effort to reduce the construction industry's "embodied carbon," which refers to the greenhouse gas emissions associated with every stage of a building's construction, from manufacturing to demolition. Brick alternatives have been created from virtually every imaginable material, such as expanded cork, construction waste, and mineral fibres.

MIT engineers are also helping to solve the problem. They are developing a new kind of reconfigurable masonry made from 3D-printed, recycled glass. These strong, multi-layered glass bricks, each in the shape of a figure eight, are designed to interlock, much like LEGO bricks.[3]

Here is a roundup of some of the most popular brick alternatives on the market today.[4]

*Thin brick*

Thin brick is a lightweight, decorative brick veneer that resembles traditional brick, but with reduced structural weight and cost. Thin bricks can be made from clay or concrete and are typically applied to both interior and exterior surfaces. On the exterior, thin brick can be adhered to a wide variety of substrates, including exterior insulation and finish system (EIFS), stucco assemblies, fibre cement board, cement plaster, rainscreen systems, and prefabricated panelized systems.

Unlike full-depth masonry, thin brick is applied using adhesives or mechanical systems over a backup wall, reducing structural demands and installation time. Many modern rainscreen systems are now designed to integrate thin brick, further streamlining installation and reducing dead load on the structure.

When installed over approved substrates, thin brick adhesives—typically polymer-modified mortars or epoxy-based systems—provide long-term bond strength and durability. These adhesives are engineered to meet ASTM standards for shear and tensile strength, and to withstand thermal movement, freeze-thaw cycles, and moisture exposure. Some systems also incorporate mechanical attachments or mesh-backing for enhanced security. Properly specified and installed, these adhesives are designed to last the lifetime of the building. The Environmental Product Declaration (EPD) for one proprietary integrally colored organic mortar, for example, lists a 75-year Reference Service Life (RSL).

These versatile applications make thin brick a practical solution for cladding on multi-family housing, commercial buildings, institutional projects, and retrofit work where full-depth masonry is not feasible. Interior uses range from feature walls and reception areas to retail environments, offering a traditional esthetic with minimal impact on structural design or wall depth.

*Faux brick panels*

Faux brick panels are typically made from lightweight materials, such as polyurethane or composite materials, and are designed to replicate the appearance of brick. They can be easily installed over existing surfaces, offering a DIY-friendly option for adding a brick-like esthetic. However, due to the materials used in their composition, faux brick panels may be limited to combustible construction types. Specifiers should review fire performance data, such as ASTM E84, surface burning characteristics, and verify code compliance for use in exterior or noncombustible assemblies.

*Engineered brick*

Some companies have developed engineered brick products that offer a combination of brick esthetics and performance benefits. These include lightweight, insulated brick veneers and even brick-like materials made from reclaimed or recycled materials, such as waste-based bricks. These products are commonly used in sustainable construction project applications where reducing embodied carbon or structural load is a priority.

Installation methods vary by product. Some engineered bricks are adhered directly to prepared substrates using specialized mortars or panelized mounting systems, similar to the installation of thin brick. Others are factory-applied to prefabricated wall panels and installed as part of a complete exterior assembly. Unlike conventional brick masonry, these solutions typically eliminate the need for on-site bricklaying or mortar joints, enabling faster installation and less labour-intensive execution.

It is worth noting that "engineered brick" may also refer to engineering bricks, a traditional product known for high compressive strength, low water absorption, and durability. These dense, kiln-fired bricks are typically used in structural applications such as foundations, retaining walls, and damp-proof courses. However, they are distinct from the modern cladding systems described above, which are designed for esthetic flexibility and envelope performance rather than structural load-bearing.

*3D printed glass bricks*

Engineers have also developed a new kind of reconfigurable masonry using 3D-printed, recycled glass, offering a sustainable and reusable option for building facades and internal walls.

*Brick sheets*

Thin bricks are adhered to a webbing/mesh layer to form a small brick panel, with the bricks already laid out in specific patterns. This allows for quicker installation and is ideal for DIY applications.

*Resin-cast bricks*

These are precision-moulded bricks made from high-performance resin materials. They offer exceptional consistency, low weight, and design versatility—including the ability to match legacy brick profiles, textures, and colours. Resin-cast bricks are ideal for both interior and exterior applications where weight or substrate constraints make traditional brick or even thin brick impractical. They can also be integrated into exterior cladding systems when installed over compatible substrates. Many resin-cast brick solutions are fully tested to meet fire safety standards, making them suitable for use in code-compliant wall assemblies across various construction types.

## A brick esthetic that integrates seamlessly across systems

Modern brick-alternative finishes are no longer limited to standalone cladding products—they can now be fully integrated into complete, warrantied wall systems that address both performance and design objectives. Whether used in rainscreen assemblies, stucco applications, continuous insulation (c.i.) systems, cement board installations, or direct-applied finishes, these solutions allow specifiers to achieve a realistic brick esthetic without compromising on thermal performance, moisture management, or constructability.

These systems typically consist of multiple co-ordinated layers that function together as a high-performing building envelope. Common components include a liquid-applied or sheet-based air and water-resistive barrier (AWRB), c.i. for thermal control, drainage, or ventilation cavities, and a lightweight cladding finish such as resin-cast or thin brick. Unlike assemblies where individual components are selected and installed separately, integrated systems are tested and warranted as a whole, ensuring compatibility across layers, streamlining specifications, and reducing risk for the design and construction team.

These integrated systems provide a range of benefits:

- Lightweight construction that reduces structural load and eases transportation
- Lower embodied carbon compared to traditional masonry assemblies
- Improved jobsite safety, especially when working at height
- Enhanced design flexibility, supporting custom bond patterns, textures, and colour matching
- Energy-efficient retrofits, enabling upgrades to existing facades without major structural modification
- Single-source warranties, offering assurance of system compatibility across air/moisture barriers, insulation, and finish layers

By embedding the esthetic within a complete wall assembly, these solutions support holistic building envelope performance, meeting evolving code requirements while delivering the timeless look of brick.

## Specification guidance for brick esthetic systems

To ensure constructability and performance, specifications for brick-alternative systems should clearly define system scope and performance requirements under Divisions 04 or 07, depending on classification. Key elements to include:

- Mockups—Require field-constructed mockups for visual approval, joint layout, and finish confirmation.
- Substrate requirements—Clarify acceptable backup materials, fastener types, and surface prep conditions.
- Thermal and moisture performance—Specify c.i. values (*e.g.* RSI–2.3 + c.i.), compatibility with air and water-resistive barriers (AWRBs), and flashing integration.
- Finish requirements—Define acceptable texture, joint pattern, colour range, and dimensional tolerances.
- Installer qualifications—Require installers to be trained or certified by the system manufacturer, when applicable, to ensure quality assurance.
- Warranties and compliance documentation—Request documentation, including third-party test reports, EPDs, Health Product Declarations (HPDs), and installation guidelines.

Co-ordination between specifications for cladding, insulation, and waterproofing is critical, especially at transition details such as parapets, windows, and expansion joints. A well-written spec can reduce RFIs, streamline bidding, and promote long-term performance.

## Case study

A 13-storey affordable housing project presented a unique challenge: deliver high energy

Field application showing brick panelling, joint layout, and colour range—an essential step for visual approval and quality control.

performance, maintain a classic brick esthetic, and stay on a compressed timeline—all within the constraints of a modular construction approach. The design team, collaborating with the developer and architect, pivoted from a traditional site-built process to a volumetric modular strategy to streamline scheduling and minimize neighbourhood disruption.

To meet Passive House standards, the project required a highly insulated, airtight facade system that could adapt to imperfections in the modular substrate. To meet thermal goals while honouring the surrounding area's traditional architectural character, a c.i. wall system with a thin, resin-cast brick esthetic was selected.

The exterior cladding, integrated as part of a full system that included air and moisture control layers, was chosen for its lightweight properties. This made it easier to transport and install across 18 pre-built modules per floor. The consistent, factory-applied insulation provided a level substrate, allowing installers to overcome irregularities between modules on-site.

The thin brick finish offered the tactile realism of traditional brick without the structural weight or emissions tied to kiln-fired masonry. Its moulded, lightweight composition made it easier to apply around architectural features such as columns and returns, while supporting faster installation and long-term durability.

This project highlights how integrated wall systems can bridge the gap between traditional esthetics and next-generation performance. It illustrates how today's brick alternatives can meet energy codes, project budgets, and visual goals, especially in high-density, urban multi-family construction.

## Designing for the next generation

The desire for brick is not fading; it is evolving. Today's specifiers are balancing historical context and visual intent with performance demands and climate goals. By embracing modern brick alternatives, design teams can maintain architectural continuity while advancing toward energy-efficient, low-carbon building envelopes.

With systems that offer greater control, customization, and compatibility, the next era of brick esthetic is not only more adaptable—it is smarter.

## Notes

[1] See "The History of Bricks and Brickmaking" at brickarchitecture.com

[2] Refer to "The Environmental Impact of Brick Kilns" by visiting hablakilns.com

[3] Read more at "Engineers 3D print sturdy glass bricks for building structures" at MIT News

[4] See "Seven Alternative Bricks Made of Reclaimed Waste and Biomaterials" on dezeen.com

Karine Galla is the director, product management for Sto Corp. She has more than 20 years of experience in product marketing in exterior insulation and finish systems (EIFS), stucco, air and moisture barriers, and other materials. Galla has a master's degree from the University of Lyon, France. She is multilingual and holds the Association of the Wall and Ceiling Industry's (AWCI's) EIFS Doing it Right and Building Envelope Doing it Right certifications, as well as the ISO internal lead auditor certification from Georgia Tech.

CSC

Rock that Spec

2025

CONFERENCE

ST. JOHN'S • NF

May 21-25, 2025

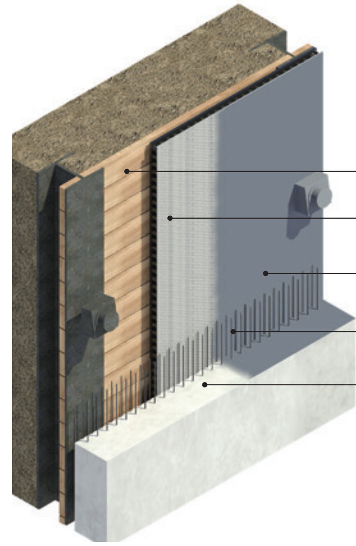

PROUDLY CANADIAN EST. 1987
Keep projects moving through cold weather
Discover spray-applied polyurea waterproofing that keeps projects on track, even when temperatures fall below zero.
SwiftProof™
Core component of SwiftSeries Systems
SwiftProof™ M 200 delivers a rapid curing, seamless polyurea waterproofing membrane with exceptional adhesion, flexibility, and durability.
elastochem.com/swiftseries
learn more
ELASTOCHEM®
Canadian-made and owned
1-877-787-2436
elastochem.com

# SwiftSeries™

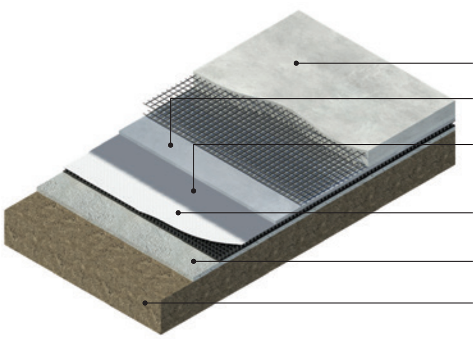
Built on advanced spray-applied polyurea technology, SwiftSeries systems deliver seamless, high-performance waterproofing for below and above grade applications. Designed for speed, strength, and lasting performance, these systems support demanding construction schedules and help minimize weather-related downtime.

**elastochem.com/swiftseries** ↩

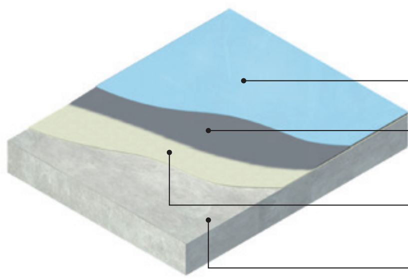
## SwiftBase 1000BSV
Below-Grade Blind Side Waterproofing



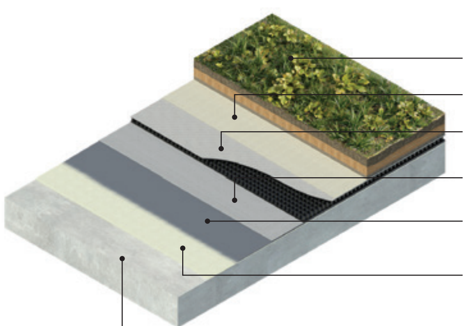

## SwiftBase 1100BSH
Below-Grade Under-Slab Waterproofing



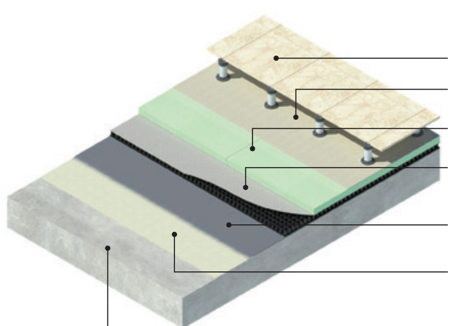

## SwiftDeck 2200
Exposed Deck Waterproofing




## SwiftDeck 2000 | Podium Garden
Covered Deck Waterproofing




## SwiftDeck 2000 | Paver
Covered Deck Waterproofing




ICI CONSTRUCTION | INFRASTRUCTURE | MINING | AGRICULTURE | WASTE MANAGEMENT | OIL & GAS

*Canadian-made and owned* info@elastochem.com elastochem.com

ELASTOCHEM®


# PVC Roofing

## A Case Study in Sustainability

**By Bill Bellico**

PHOTOS COURTESY
CUNNINGHAM BARON

The construction industry is equipped with many tools to further its mission of fostering sustainable building practices. Assessing a building's carbon footprint is a crucial tool for addressing concerns about climate change. Embodied carbon has emerged as a critical consideration in measuring the carbon footprint of building materials. However, this is only a part of a material's total carbon footprint. The material's contribution to reducing operational carbon must also be considered.

To fully understand the CO2 emissions associated with a particular material, it is necessary to consider the CO2 generated during the material's entire life cycle, as outlined below. It is essential to understand the distinctions between cradle-to-gate and cradle-to-grave life-cycle calculations. Some might be surprised to hear that the more commonly used cradle-to-gate assessment only gives a partial picture of a material's true carbon footprint. Whereas embodied carbon accounts for the CO2 emissions during only the cradle-to-gate portion of the material's life cycle, operational carbon measures a material's effect on reducing CO2 emissions during the operation of the building, which coincides with the use stage of a full cradle-to-grave life-cycle assessment (LCA).

Reducing the carbon footprint of construction should focus on building products that are long-lasting and resilient, can reduce CO2 emissions during the building's operation, and are made or partially made from recycled content. A case in point is roofing. By understanding all the contributions to the total carbon footprint of



Operational carbon refers to the energy used by a building after it is constructed.

various roofing material choices, construction specifiers are equipped with valuable knowledge to make informed decisions that align with carbon reduction goals while ensuring optimal roofing performance and longevity.

Here is information that can help specifiers navigate the complex landscape of sustainable building and foster a greener built environment through conscious material selection and design decision-making.

## What is embodied carbon?

Embodied carbon refers to the total amount of CO2 emitted during the cradle-to-gate portion of the life-cycle of tangible goods of a particular building material. It encompasses the CO2 created from gathering raw materials, transporting them to the manufacturing site, as well as the manufacturing process itself. CO2 is generated in all manufacturing processes, including all roofing materials such as polyvinyl chloride (PVC) membranes.

However, the energy used by a building after it is constructed also contributes to carbon emissions. This is called operational carbon. Taking into account embodied carbon, the material's contribution to reducing operational carbon, and the end-of-life stage is the most accurate way to get a full picture of a building product's complete carbon footprint.

## EPDs: An incomplete picture

To manage carbon, most building and construction experts make decisions based on disclosures made through LCAs and related International Organization for Standardization (ISO) Type III ecolabels such as Environmental Product Declarations (EPDs). These documents use international standards (*e.g.* ISO 14040 and ISO 14044, *Environmental management—Life cycle assessment—Principles and framework*) developed by ISO Technical Committee 207 on environmental management. LCAs collect environmental information throughout a product's life-cycle—from raw material extraction to its final use and ultimately to its disposal. Since these documents are often lengthy, they usually


Embodied carbon refers to the total amount of CO2 emissions released during a portion of the life-cycle of tangible goods.

For roofing, informed decisions on product specifications should be made in the context of the application.

PHOTO COURTESY CHEMICAL FABRICS AND FILM ASSOCIATION (CFFA)

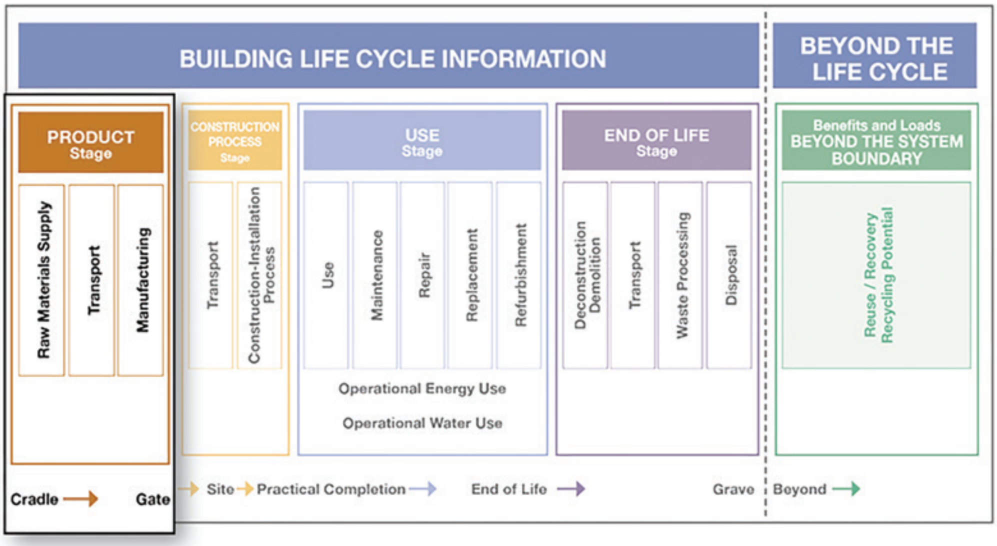
include a summary page of the results. EPDs are one such standardized summary of an LCA.

An EPD for a given material is created within boundaries described in a product category rule (PCR), as defined by ASTM. The PCR for single-ply roofing membranes, such as PVC, permits the use of information from either extraction, transport to the factory, and manufacture, referred to as a declared unit ("cradle-to-gate"), or all of that plus service life and recyclability, referred to as a functional unit ("cradle-to-grave").

Since there is no requirement in the PCR to include the functional unit in their EPDs, many manufacturers elect to use the declared unit, the cradle-to-gate method, to derive content for their EPDs. When tools in the marketplace extract portions of the cradle-to-gate modules, it is essential for users to recognize the limitations on comparability when key product attributes, such as durability and recyclability, are not taken into account. The absence of these factors may result in fewer sustainable product selections. Purchasers should consider this when making purchasing decisions.

Most, if not all, PCRs for construction materials are based on ISO 21930:2017, *Sustainability in buildings and civil engineering works—Core rules for environmental product declarations of construction products and services*. For example, the PCR for single ply roofing membranes notes in section 5.5, comparability of EPDs for construction products:

- "...It shall be stated in EPDs created using this PCR that only EPDs prepared from cradle-to-grave life-cycle results...can be used to assist purchasers and users in making informed comparisons between products."
- "EPDs based on 'cradle-to-gate' and 'cradle-to-gate with options' information modules shall




These calculators have been limited to what are referred to as the A1-A3 impacts (*i.e.* cradle-to-gate) for a single purchase of a product. A more accurate way to measure embodied carbon is through cradle-to-grave calculations, which account for the entire product life-cycle.

PHOTO ©2020 THE INSTITUTE OF STRUCTURAL ENGINEERS (ISTRUCTE)

not be used for comparisons. EPDs based on a declared unit shall not be used for comparisons."

While cradle-to-gate values are accurate to a certain extent, they can also be misleading and fail to paint the full picture. Design professionals must exercise due diligence by selecting materials that are suited to the specific requirements of individual buildings and applications.

## Calculations and comparisons

From the perspective of the Chemical Fabrics and Film Association's (CFFA's) vinyl roofing division, there are shortcomings with the way carbon data is reported. To date, these calculators have been limited to what are referred to as the A1-A3 impacts (*i.e.* cradle-to-gate) for a single product purchase; therefore, they should not be used for direct comparisons of products. What these calculations do not consider are the longevity of the finished product, the embodied carbon that would result from multiple installations with an overall building's service life, as well as its contributions to reductions in energy and waste consumption over decades.

This paints an inaccurate picture of the overall CO2 emissions associated with a product such as PVC roofing because factors such as the "use" and "end-of-life" stages are not being considered. Further, CO2 emissions are either reduced or never generated when using PVC roofing as a building material, as these roofs significantly reduce a building's energy consumption.[1] These results outweigh and offset any CO2 emitted during its creation.

The energy-saving benefits of PVC roofing are well-documented. It is a product that deserves a more accurate method of conveying embodied carbon to end-users. Therefore, a more accurate way to measure embodied carbon is through cradle-to-grave calculations, which account for the entire product life-cycle. This provides a more comprehensive measurement of a product's environmental impact.

In the U.S., post-consumer recycling of polyvinyl chloride (PVC) roofing began in 1999, and the industry continues to make strides in increasing this recycled content in its products.

PHOTO COURTESY CUNNINGHAM BARON/ COURTESY THE INSTITUTE OF STRUCTURAL ENGINEERS

## Reducing the carbon footprint of construction

Limiting carbon in construction focuses on building products that are long-lasting and resilient, can reduce operational carbon emissions, and are made or partially made from recycled content. PVC roofing checks all three boxes. PVC roofing that has reached the end of its use phase is recyclable and can be repurposed into new roofing material or other vinyl-based products.

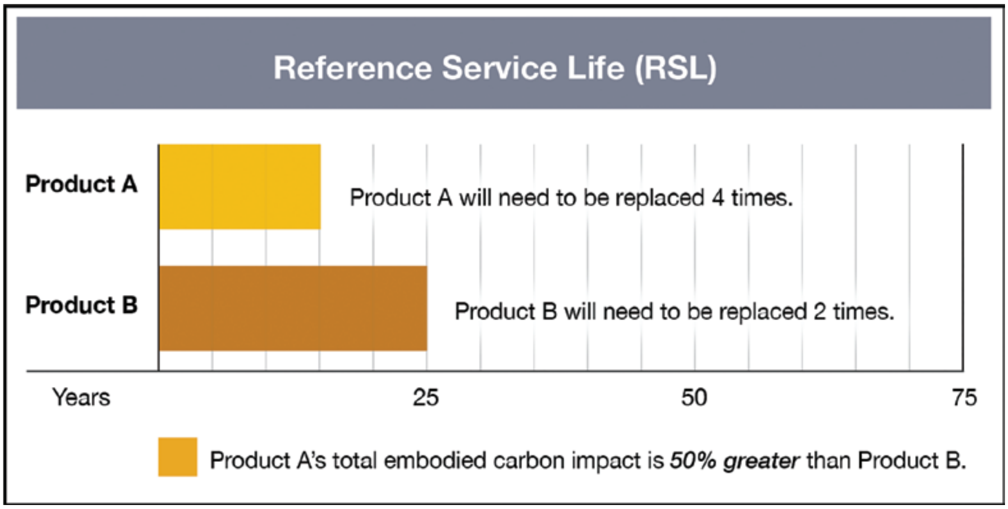
Post-consumer recycling of PVC roofing began in the U.S. in 1999, and the industry continues to make strides in increasing the recycled content in its products. Currently, roughly 453,592 kg (1 million lb) are recycled each year at the end of a PVC roof's life. Estimates indicate that approximately 8 million kg (19 million lb) of PVC roofing membranes are currently available for recycling, based on historical volumes of installed roofs and the average lifespan of the material. The CFFA's goal is to increase the number of PVC roof membrane recovery projects annually, resulting in a greater amount of material being diverted from landfills.

## Beyond embodied carbon

Embodied carbon is merely one attribute to consider in the product evaluation process. For roofing, informed decisions on product specifications should be made in the context of the application. Using a multi-attribute approach and considering aspects such as performance, durability, and reference service life (RSL) provides a more comprehensive measure of a product's sustainability and impact.

The longer a roof lasts—and the more resilient it is in standing up to weather, fire, and other environmental conditions—the longer it stays out of landfills and the less likely it will need to be replaced with new materials. This durability and longevity of PVC roofing material contribute greatly to its reputation as a green building material choice.

Many building envelope systems will be replaced several times throughout the baseline RSL of 75 years for long-life buildings. The RSL of such systems and products is often the largest driver of their embodied carbon impact over the life of the building. For example, if product A has




Reference Service Life (RSL) helps provide a more comprehensive measurement of the sustainability and impact of a product.

IMAGE BY CUNNINGHAM BARON/ COURTESY THE INSTITUTE OF STRUCTURAL ENGINEERS (ISTRUCTE)

an RSL of 15 years and product B has an RSL of 25 years, the products will be replaced four and two times, respectively, after the original installation.

Even if product A's embodied carbon is 10 per cent less than product B's, during the building's RSL, product A's total embodied carbon impact will be 50 per cent greater than product B's because product A needs to be replaced more often. Even with a 15 per cent differential, product A's total impact will be 41 per cent greater than product B's over the building's RSL.

This example illustrates the importance of considering multiple performance attributes when selecting materials. Since reliance on a cradle-to-gate method for embodied carbon may lead to unintended consequences, considering more than one metric in assessing a material's carbon impact, such as its RSL and replacement cycles, provides a truer estimate of the product's impacts over the life of a building.

## Notes

[1] See newscenter.lbl.gov/2010/07/19/cool-roofs-offset-carbon-dioxide-emissions/

Bill Bellico is vice-president, marketing and inside sales, Sika Corporation. Bellico has worked in the commercial construction industry for 20 years in Sika's roofing and flooring divisions. He began his career in sales and evolved into roles in sales and marketing management, as well as leading digital transformation projects for the company. He is a LEED-accredited professional with a strong background in sustainability. Bellico is the current acting marketing chair for the Chemical Fabrics & Film Association (CFFA)—vinyl roofing division, as well as the Vinyl Sustainability Council, and is also a participating member of the Roofing Technology Think Tank (RT3). He has bachelor's degrees in English and psychology from the Bridgewater State University and completed the business strategy certificate program from Cornell University.


BP Canada
SAINT-GOBAIN
A SIGNATURE TO BE PROUD OF
When trust is on the line, every detail matters. Signature shingles are engineered for durability, performance, and style, even in Canada's toughest conditions. With proven technology and premium colour blends, you deliver more than a roof — you give your clients peace of mind.
Signature. Because peace of mind starts at the top.
BPCAN.COM

# Guardians of the Gap

## The Crucial Role of Insect Screens

By Guillaume Vadeboncoeur, P.Eng, LEED AP, WSP, and Masoud Attar, P.Eng, M.Eng., WSP

PHOTOS BY MASOUD ATTAR

The concept of rainscreen cladding boasts an impressive historical lineage, originating from traditional building practices in Scandinavia and Europe. In ancient times, builders intentionally left a gap between the cladding material and the structural wall to allow air circulation and moisture management. This ingenious design prevented decay and upheld the building's structural integrity.

Fast forward to modern times, and there has been a significant transformation in rainscreen cladding systems. Advances in construction materials and technologies have ushered in a new era of rainscreen principles. Today, lightweight materials such as fibre cement, vinyl, metal, and others have made it possible to incorporate rainscreen cladding into an array of architectural designs and building types.

The core concept of rainscreen cladding remains the same and revolves around creating an airspace or cavity between the exterior cladding material and the structural wall, moisture barrier, or insulation layer. The cavity acts as a secondary defence against moisture infiltration. It guides water away from the structural wall or insulation, preventing deterioration and damage to wall components. Also, the gap permits natural airflow within the cavity, increasing the drying potential, which

minimizes moisture buildup and reduces the risk of rot or mould.

In "drained" or "screened" wall types, a minimum 9.5 mm (0.375 in.) gap serves as both drainage and capillary break. This value aligns with Section 9.27.2.2 of the *British Columbia Building Code* (*BCBC*), which specifies a minimum rainscreen cavity thickness of 9.5 mm to ensure an effective capillary break and limit precipitation ingress. In several instances, the drainage cavity will be larger depending on the material or components used; it can range from 9.5 mm (0.375 in.) to 38 mm (1.5 in.) depending on the wall assembly. These walls require openings at the top and bottom to allow airflow

Rodent-induced breaches in the insect screen, allowing rodents to establish nests within the wall cavity. The fibreglass insect screen proved insufficient in terms of durability and strength.

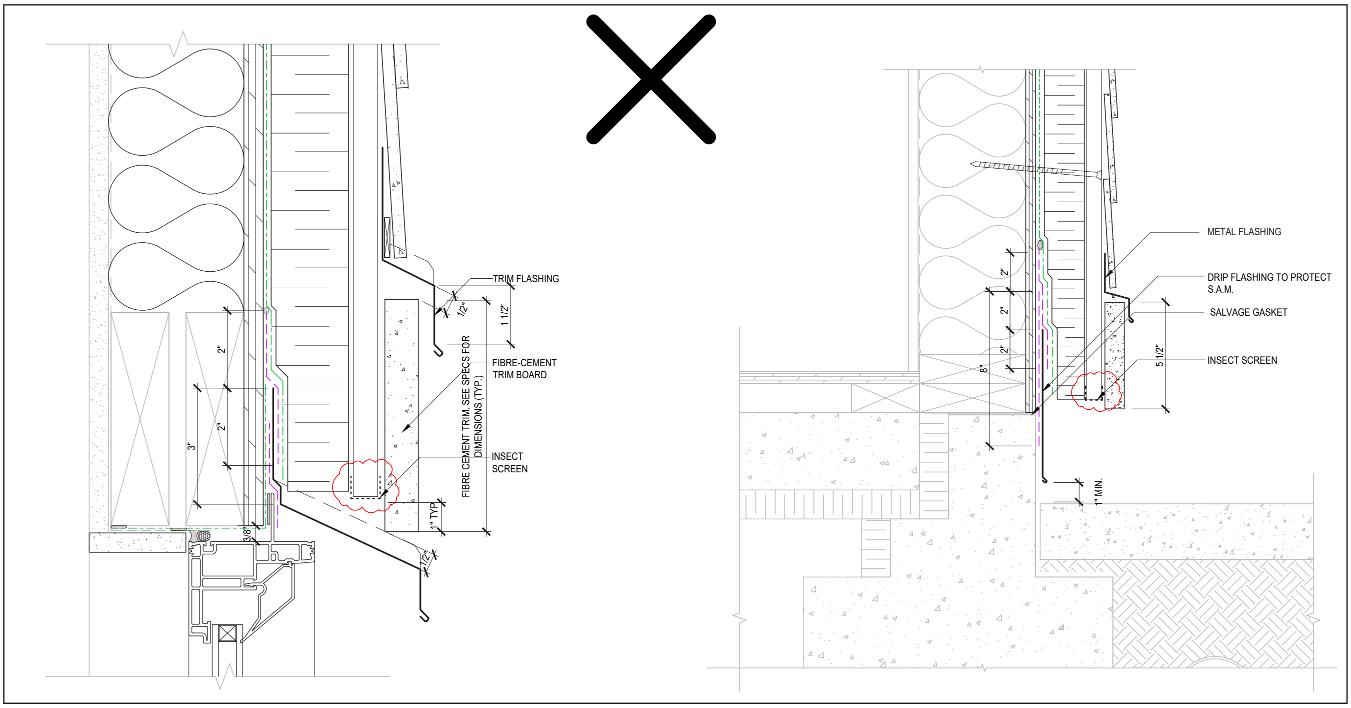
Compromised insulation, damaged by rodents, found within the cladding sections near the window jamb and head.

and drainage. This will allow evaporative drying of the inside face of the cladding and outside face of the inner cavity wall, and improve outward diffusion by bypassing the diffusion resistance of the cladding.

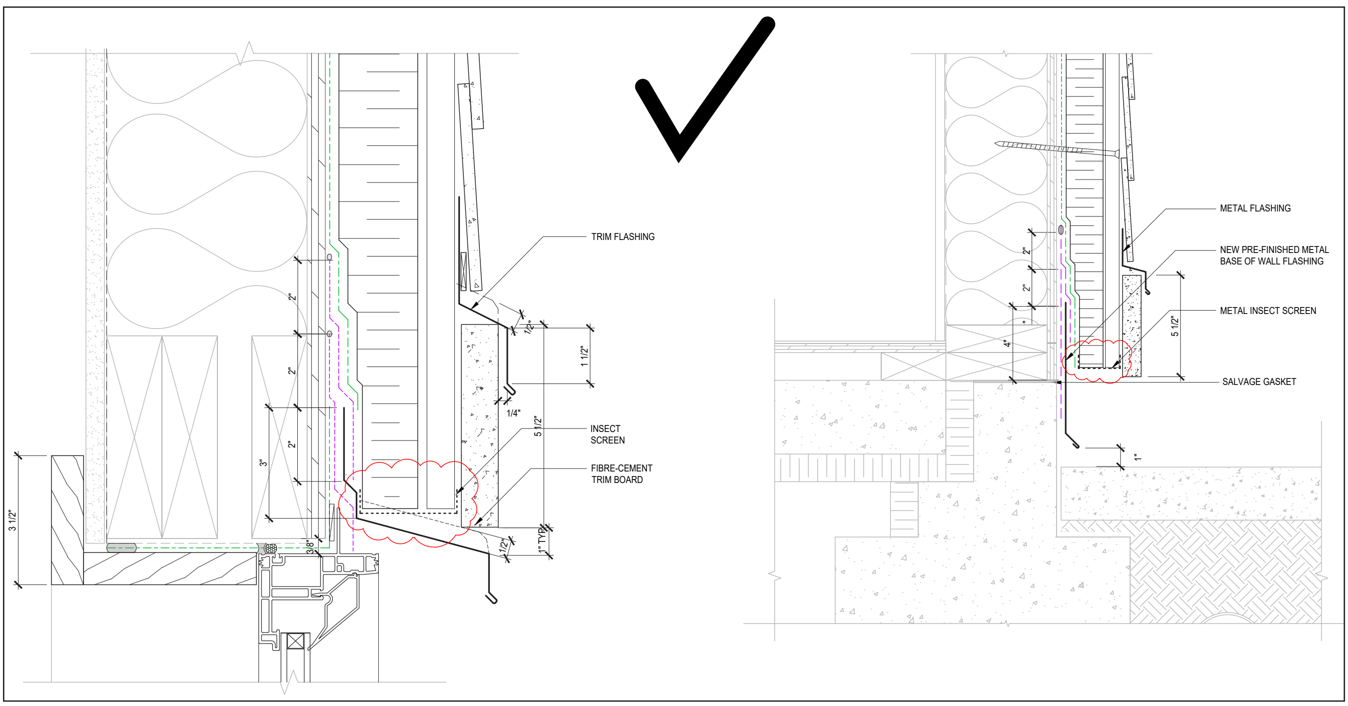
### Insect screens in rainscreen cladding

Insects and pests can exploit the open gap in rainscreen cladding systems, making their way into the wall assembly and, potentially even worse, inside buildings. To counter this, insect screens are incorporated wherever the cavity is exposed to the outside, creating a gap between the cladding materials. These screens act as barriers, keeping pests at bay while ensuring proper airflow and drainage. Insect screens are integral to rainscreen cladding systems, which are pivotal in safeguarding the building envelope from insects and pests. The selection, installation, and upkeep of these screens are important for the overall performance of a building.

Insect screens are located at each top and bottom gap of the wall assembly. For example, the top insect screen is typically positioned near the roofline, below balconies or below through-wall flashings (between levels), acting as the first line of defence against insects and pests. Its primary function is to maintain the integrity of the cladding system and the insulation material behind it by preventing pests from entering the cavity. The bottom insect screen is typically situated above the ground level, at the base of a wall on a balcony, or above a through-wall




Demonstrates the insect screen solely around the vertical strapping.




Demonstrates the insect screen around the vertical strapping and exterior insulation.

flashing (between levels), playing a similar role to the top screen. It also acts as a drainage plane, allowing water to exit while keeping insects and pests out.

Insect screens are not limited to the top and bottom of rainscreen walls. They are also crucial above and below windows and door flashings within the wall system, providing proper ventilation while keeping insects/pests out.

## Materials matter

When selecting insect screen materials, prioritize durability. Common options include stainless steel, aluminum, and synthetic materials such as fibreglass. The material choice hinges on factors such as climate, maintenance requirements, and budget constraints. Nevertheless, it is crucial to emphasize that stainless steel and aluminum insect screens stand out as resilient materials for integration into insect screen systems. This preference arises from their robustness, as fibreglass insect screens have been reported to present vulnerabilities, with instances of rodents gnawing through them, thereby facilitating access to the interior of conventional rainscreen cladding systems.

Another crucial consideration is the mesh opening size. It should be small enough to deter insects but not so fine that it hampers airflow or water drainage. The ideal mesh size depends on the building's specific needs and location.

Proper installation ensures that screens function effectively. They should be securely attached to the rainscreen cladding structure, leaving no openings for insects. Moreover, the screens should not disrupt the ventilation and drainage functions of the rainscreen system.

In several milder climates, insulation outboard of the sheathing was not common until recent years. In most rainscreen wall assemblies, fibreglass mesh was typically used as the insect screen material of choice due to its cost efficiency, availability, and ease of installation.

With an increased focus on energy efficiency, installing a layer of insulation outboard of the sheathing is becoming more common, even in milder climates. Rodents and pests often seek refuge within the insulation layer outboard of the wall sheathing, making the selection and installation of the insect screen much more important. Nevertheless, it remains crucial to emphasize that the insect screen retains its significance even without the exterior insulation layer. Rodents tend to create openings in the screen, finding shelter or nesting between the vertical strapping sections. Hence, using more durable materials, such as aluminum and stainless-steel insect screens, may be preferred in some projects.

Returning attention to the insulation layer situated outside of the sheathing, it is crucial to recognize that safeguarding the insulation necessitates the application of an insect screen. This involves enveloping the insect screen around the vertical strapping and extending it to the rear of the exterior insulation, providing protection against rodent intrusion. While the thermal bridging effect of a conductive insect screen passing through the exterior insulation is generally minimal, it may still lead designers

Demonstrates the proper installation of insect screens around pressure-treated strapping and exterior insulation.

to prefer lower-conductivity materials, such as stainless steel, to help further mitigate any impact. Once they breach the insect screen, pests, insects, and rodents may establish nests within the wall cavity, specifically within the insulation layer. This circumstance has prompted a shift toward using sturdier materials, such as perforated aluminum or stainless steel insect screens. These screens provide durability and strength and entail low maintenance and heightened security, particularly in the design and construction of exterior insulated rainscreen wall assemblies.

Although perforated aluminum or steel screens are more expensive and labour-intensive to install than their fibreglass mesh counterparts, they prevent rodents from entering wall assemblies more effectively.

A common practice in the construction of masonry or concrete block-clad walls is incorporating weep holes strategically placed at the base of walls or floor lines. These weep holes manifest as intentional gaps between bricks or blocks at the mortar joints. While these openings facilitate drainage and prevent moisture buildup within the walls, they inadvertently create pathways for pests and insects to infiltrate the exterior structure.

Various solutions are employed to counteract the potential intrusion of pests, with plastic or metal inserts being a prevalent choice. These inserts are strategically positioned within the weep holes, acting as barriers to minimize the entry of unwanted organisms into the building envelope.

In a parallel effort to address insect intrusion, some window manufacturers have taken additional precautions. They have integrated flaps into the design of window weep holes to create a more effective deterrent against pests. These flaps impede the entry of insects, preventing them from nesting within the window frames and assemblies.

Despite the collective preference to avoid encounters with pests, rodents, and insects, these organisms/creatures will persist in environments. This inevitability underscores the responsibility of designers, engineers, manufacturers, and homeowners to conscientiously use the materials, concepts, and methods at their disposal. By doing so, they can effectively minimize the entry and mitigate the adverse impact of these pests on the integrity of exterior wall assemblies and components.

## Conclusion

In general, the role of insect screens in rainscreen cladding systems cannot be ignored, and they are pivotal in protecting the building envelope from insects, pests, and/or rodents. Historical roots have taught the significance of creating a protective airspace, while modern demands require more durable materials such as perforated aluminum insect screens. These screens are essential for maintaining the long-term functionality and integrity of exterior wall assemblies and rainscreen cladding systems. As exterior walls evolve due to the increased focus on energy efficiency, sustainability, air tightness, and other factors, the selection of materials and wall components should also evolve. The selection of the insect screen is no different. Guard buildings against pests with these silent heroes of the construction world.


Guillaume Vadeboncoeur, P.Eng, LEED AP, WSP, is a professional engineer with approximately 20 years of experience in building science. He has a mechanical engineering degree with a major in material properties at Laval University. Vadeboncoeur is the building sciences group leader for the Fraser Valley and Southern Interior. He is also a project manager and an engineer who has managed several building sciences projects, including building envelope remediations, building envelope condition assessments, roofing assessments, roofing replacement projects and wall monitoring. His expertise lies in knowledge of building envelope components, building science theories, and ways to incorporate new technologies in construction. Vadeboncoeur is the past president of the Western Canada IIBEC Chapter.

Masoud Attar, P.Eng, M.Eng., WSP, is a professional engineer with a decade of experience in the building envelope field. His academic prowess is highlighted by a master's degree in building science from the British Columbia Institute of Technology. Attar's expertise encompasses a wide range of building science consulting, including testing, assessment, project management, and contract administration. His diverse experience in various construction methodologies equips him with a unique problem-solving approach, enabling him to effectively solve intricate challenges during the design and construction phases. His attention to detail ensures comprehensive project requirement analysis, proactive risk management, and efficient stakeholder communication.

# Manufacturers' Profiles*

**JANUARY 2026**

**The manufacturers included on the following pages have supplied information that is designed to help you do your job better.**

SPECIAL ADVERTISING SECTION

*Companies that appear in the Manufacturers' Profiles section prepare and submit their own information. Kenilworth Media Inc. does not assume any responsibility for the content of the Profiles.

## MiMO—Minimal input Maximum Output

Statslog is a Canadian company (originating in Ontario), with some of the most stringent design professional requirements—specifically for architects. FIVE focuses on guiding you through data collection, for best practice for your contract administration.

Tempered by the ever-changing construction industry environment, FIVE is constantly evolving to maintain its technological advancement. It functions as a hybrid word processor + spreadsheet in one app! With a myriad of additional features, FIVE is a versatile, powerful contract administration software solution—making it easy and more efficient than using multiple apps, to get the same work done.

FIVE users can apply FIVE to a variety of CCDC contract types. This includes administering agreements for the general contractor, project manager / construction manager, from Fixed Price to Guaranteed Maximum Price (GMP), or Cost Plus contracts and more.


statslog

**Statslog Software Corporation, 800 266-4068, www.statslog.com**

# Advanced Systems.
# Expert Training. Lasting Results.

Built on a 45-year legacy of innovation and quality, Elevate continues to push the standard for high-performance commercial roofing systems in Canada. Now a premier brand of Amrize, a North American leader in advanced building solutions, Elevate is uniquely positioned to serve Canadian specifiers with a strong product offering and a commitment to education and training.

Elevate offers a comprehensive portfolio of roofing solutions. The brand's flagship RubberGard™ EPDM remains renowned for durability and flexibility, while UltraPly™ TPO offers a reflective, energy-efficient thermoplastic membrane.

An ongoing focus is addressing labour shortages and job site efficiency through Secure Bond™ Technology. Available in both RubberGard EPDM SA and UltraPly TPO SA (Self-Adhered) membranes, this factory-applied adhesive technology allows for faster installation in wider temperature windows compared to traditional adhered systems, enabling crews to install more per day while reducing Volatile Organic Compounds (VOCs) on site.

Complementing these membrane solutions is the ISOGARD™ polyiso insulation family. Designed to deliver the highest thermal performance per inch in colder mean temperatures, ISOGARD contributes to meeting stringent Canadian energy codes.

In additional to a comprehensive product offering, we believe a better-informed industry builds better buildings. Therefore, we are committed to advancing roofing knowledge by bringing the classroom to you to bridge the gap between design theory and on-site reality.

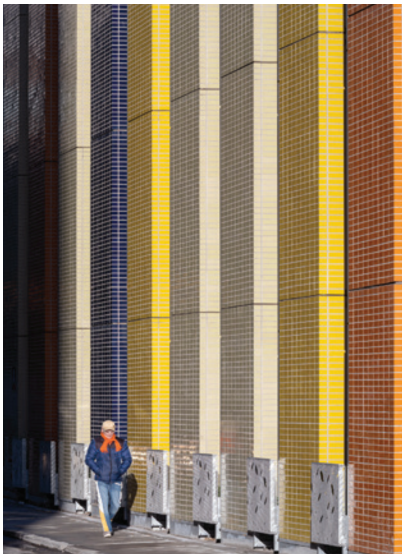
- Mobile Training: We bring the roof to you. Our mobile training units offer hands-on, on-site demonstrations, allowing specifiers to examine critical details and application techniques up close.
- Lunch & Learns: Stay current with our accredited continuing education sessions. We offer deep dives into system selection, wind uplift design, and product innovations to help you earn credits and specify with precision.

With Elevate, you have a partner dedicated to your professional development and the long-term resilience of your projects. Contact us to request mobile training or a lunch and learn today!

ELEVATE

**Elevate Commercial Roofing Systems • 6509 Airport Road, Mississauga, ON L4V 1S7**
**www.elevatecommercialbp.com/ca-en • 1-888-292-6265**

# Built on Craft. Driven by Innovation.



For over 140 years, brick has been the trusted material for architects and builders, offering permanence, performance, and timeless appeal. At The Belden Brick Company—North America's largest family-owned brick manufacturer—this legacy still forms our foundation. Today, we combine that legacy with a forward-looking approach to manufacturing, design versatility, and technical support tailored to the needs of modern construction in Canada and beyond.

**Quality That Begins at the Source**

Exceptional brick starts with exceptional raw materials. Our plants are located in a region rich in premium shales and clays, providing us with direct access to consistent, high-performance resources necessary to produce architectural brick with uncompromised structural integrity. These natural advantages, combined with rigorous quality standards, result in products renowned for their durability, color stability, and aesthetic refinement.

**Innovation That Expands Possibility**

Belden Brick has invested more than a decade in advanced manufacturing technologies and information systems to enhance precision, efficiency, and design flexibility. We now produce over 20 sizes of face brick and pavers, more than 500 colors, 13 textures, and a vast catalogue of special shapes, along with fully customized solutions for projects with unique design or performance requirements. This diversity empowers architects and builders to push their creativity further while maintaining the inherent strengths that make brick a reliable building material—longevity, resilience, and lasting beauty.

**Service That Builds Confidence**

Our approach has always been rooted in partnership. Rather than limiting our production to a narrow set of offerings, we collaborate on a job-by-job basis to meet each project's exact specifications. From the initial design phase to final delivery, our experienced technical and production teams assist customers in navigating material options, managing complexity, and realizing their vision without compromise.

At Belden Brick, we don't just supply building materials. We support the construction of enduring, distinctive, and high-performing structures. With unmatched product choices, deep technical expertise, and the capability to design and manufacture custom solutions, we remain committed to being the industry's Standard of Comparison for generations to come.

BELDEN
THE BELDEN BRICK COMPANY

**1-330-456-0031 | info@beldenbrick.com | www.beldenbrick.com**
**The Standard of Comparison Since 1885**

# Celebrating 100 Years of Construction Innovation

W. R. MEADOWS delivers one of the broadest lines of premium-grade construction products available to architects, engineers, contractors, and building owners to meet a multitude of construction application needs. Our extensive line of high-performance, premium-grade construction products has been developed for use in, on, around, and under concrete.

W. R. MEADOWS was founded in 1926 in Elgin, Illinois, USA, by W. R. "Bob" Meadows and Edna Meadows. As we celebrate our 100th anniversary in 2026, the company has grown to include nine branch locations and three warehouses throughout North America. This includes two Canadian locations—Milton, Ontario, and Sherwood Park, Alberta—which allow W. R. MEADOWS to service the entire Canadian market efficiently and effectively. To this day, W. R. MEADOWS remains family-owned, with several family members actively involved in the day-to-day operations of the company.

In 1926, W. R. MEADOWS pioneered expansion joint technology with the ASPHALT EXPANSION JOINT. Since then, the company has expanded into several facets of the construction industry and is known not only for the breadth of its product line, but also for consistent quality and performance.

Our extensive line includes a wide variety of hot- and cold-applied joint sealants, each designed to meet specific construction needs. Our concrete products line includes a comprehensive range of solutions for every aspect of concrete construction—from curing and sealing compounds, set accelerators, evaporation retardants, and bonding agents, to form release agents, expansion joints,


concrete sealers, and an extensive line of restoration mortars. W. R. MEADOWS provides complete solutions for concrete construction, restoration, and protection.

Our thermal and moisture protection product lines offer a wide selection of systems designed to protect structures from water and moisture intrusion, including drainage systems, bituminous dampproofing, waterproofing accessories, waterproofing membranes, vapor barriers, vapor retarders, air/vapor barriers, and more. In addition, DECK-O-SEAL®, a division of W. R. MEADOWS, provides a complete line of pool deck construction products, including high-performance polysulfide joint sealants and an easy-to-install drainage system.

From highway construction and restoration to waterproofing, vaporproofing, air barrier systems, and more, W. R. MEADOWS has been serving the public and private sectors of the building construction industry for an entire century. As we celebrate 100 years in 2026, we remain committed to delivering high-quality construction materials backed by technical expertise and dependable service. All W. R. MEADOWS products are available worldwide through an authorized distributor network.

QUALITY | SERVICE | INTEGRITY
W. R. MEADOWS®
A Family Company Since 1926

**(847) 214-2100 • info@wrmeadows.com • www.wrmeadows.ca**


## Missed this Product Spotlight opportunity?

*Construction Canada*'s Product Spotlight is your opportunity to tell our invested audience about the benefits of specifying your products into their projects.

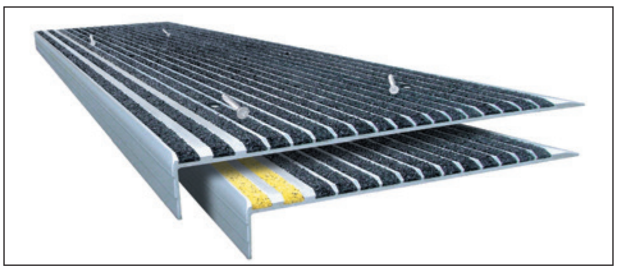
Advertisers receive both a product spotlight in-print and on an email broadcast to our entire circulation! To find out how you can be part of the next Product Spotlight issue, call 1-800-409-8688 or email sales@constructioncanada.net

**www.constructioncanada.net**

## What's Inside Matters

For over 65 years Griffolyn® reinforced vapor retarders have protected against moisture infiltration into the building envelope. The patented, high strength cord reinforcement grid provides superior puncture and tear resistance to hold up under challenging conditions of installation while continuing to be flexible and lightweight. Griffolyn® reinforced vapor retarders are a cost-effective way to satisfy your unique requirements. Reef Industries' Griffolyn® vapor barriers and vapor retarders can prevent water vapor from moisture-related problems. The main reason for retarding the transmission of water vapor through the building envelope is to prevent water vapor from condensing within the building structure cavities.

**www.reefindustries.com/vapor-retarders.php**



## Make Every Step a Safe One

Wooster Products is the industry leader in anti-slip stair treads and walkway products. They have been manufacturing anti-slip products for new construction, renovation and OEM applications since 1921 from their Wooster, OH facility. Long respected for quality and innovation, their products include cast aluminum (Alumogrit®), extruded aluminum (Spectra, Supergrit®, Stairmaster®, and Flexmaster®), pressure sensitive adhesive tape (Flex-Tred®), and coatings (WP-70, Walk-A-Sured®, and Safe-Stride®), as well as photoluminescent nosings and treads (NITEGLOW®). Their work is featured in commercial, industrial, and residential settings worldwide. Wooster Products can provide anti-slip solutions for any project; stadiums, office buildings, apartments, restaurants, sidewalks, transit stations, trucks, trailers, boats, planes, and more. Contact Wooster Products today to "Make Every Step a Safe One."

**http://www.woosterproducts.com/**

## LIQUISTONE®
## The Ultimate Exterior Coating!

Our Liquistone product is the ultimate exterior textured wall coating, designed to transform any surface into a stunning masterpiece. This innovative product offers an unparalleled combination of strength, durability, and aesthetic appeal. Its unique formula creates a textured, long lasting finish adding a touch of luxury to any building facade. Liquistone is weather-resistant, UV-stable, and long-lasting, making it perfect for both residential and commercial applications. With a wide range of colours and textures available, Liquistone is the ideal choice for enhancing the beauty and durability of any exterior wall.

**www.niacoat.com**

Kelly Sawatzky, CSP, RSW

## Designing Projects for Success and Collaboration

Construction Specifications Canada's (CSC) involvement in the Canadian Construction Documents Committee (CCDC) dates back over five decades. CCDC 2 has been a staple in our country since the mid-1970s. In collaboration with our partners, including the Association of Consulting Engineering Companies (ACEC), the Canadian Construction Association (CCA), the Royal Architectural Institute of Canada (RAIC), and owner representatives, we develop and maintain a suite of contracts and guidelines that inform bidding and agreements in Canada. Currently, there are 12 documents either under development or review by volunteers associated with CCDC.

I recently attended a seminar that covered updates to CCDC 5A, 5B (Construction Management contracts), as well as CCDC 30 (Integrated Project Delivery). It reminded me of something two CSC members—Grace Bergen, chair of the Certified Construction Contract Administrator (CCCA) subcommittee, and Abigail MacEachern, CSC's first vice president—raised at the board of directors meetings a few years ago. They questioned how we can better communicate roles through our CSC courses to eliminate some of the inadvertently prejudicial language that could set parties up to compete before the projects even begin.

The path to reducing conflict is complex. One aspect involves eliminating the prejudice that people will behave in a certain way. Another approach is to design projects that are successful for everyone, including the environment and society as a whole. The contracts mentioned above can help us collaborate for a win-win outcome that I hope we all aim for.

While contracts vary based on the parties involved and the project's requirements, each can include services that enable contractors to guide the design process. Owners can allocate time for clear communication of the work. Designers (including specification writers) can listen and incorporate suggestions alongside their own ideas. Contract administrators can provide a fair, unbiased assessment when conflicts arise.

Our contracts define our responsibilities, and it is really up to each of us to fulfil them. If someone falters, we can gently remind them. I believe that when we support one another's success, our relationships with each other and with society as a whole are strengthened.

Our contracts can serve as a foundation for success at every level. It is a fitting parallel that this is also how CCDC approaches creating contracts and guides.

---

## Concevoir des projets pour le succès et la collaboration

La participation de Devis de construction Canada (DCC) au Comité canadien des documents de construction (CCDC) remonte à plus de cinq décennies. CCDC 2 a été un élément de base dans notre pays depuis le milieu des années 1970. En collaboration avec nos partenaires, dont l'Association des firmes d'ingénieurs-conseils (AFIC), l'Association canadienne de la construction (ACC), l'Institut royal d'architecture du Canada (IRAC) et les représentants des propriétaires, nous élaborons et maintenons une série de contrats et de lignes directrices qui éclairent les appels d'offres et les accords au Canada. Actuellement, il y a 12 documents en cours d'élaboration ou d'examen par des bénévoles associés au CCDC.

J'ai récemment assisté à un séminaire qui couvrait les mises à jour des CCDC 5A, 5B (contrats de gestion de la construction), ainsi que CCDC 30 (livraison intégrée du projet). Cela m'a rappelé quelque chose que deux membres de DCC — Grace Bergen, présidente du sous-comité de l'administrateur certifié des contrats de construction (ACC), et Abigail MacEachern, première vice-présidente de DCC — ont mentionné lors des réunions du conseil d'administration il y a quelques années. Ils se sont demandé comment nous pouvions mieux communiquer les rôles grâce à nos cours de DCC afin d'éliminer certains des termes préjudiciables involontaires qui pourraient inciter les parties à se faire concurrence avant même que les projets ne commencent.

Le chemin vers la réduction des conflits est complexe. Un aspect consiste à éliminer le préjugé selon lequel les gens se comporteront d'une certaine manière. Une autre approche consiste à concevoir des projets qui sont fructueux pour tous, y compris l'environnement et la société dans son ensemble. Les contrats mentionnés ci-dessus peuvent nous aider à collaborer pour un résultat gagnant-gagnant que j'espère que nous visons tous.

Bien que les contrats varient en fonction des parties impliquées et des exigences du projet, chacun peut inclure des services qui permettent aux entrepreneurs de guider le processus de conception. Les propriétaires peuvent allouer du temps pour une communication claire du travail. Les concepteurs (y compris les rédacteurs de spécifications) peuvent écouter et intégrer des suggestions en plus de leurs propres idées. Les administrateurs de contrats peuvent fournir une évaluation équitable et impartiale lorsque des conflits surviennent.

Nos contrats définissent nos responsabilités, et c'est vraiment à chacun d'entre nous de les remplir. Si quelqu'un échoue, nous pouvons gentiment le lui rappeler. Je crois que lorsque nous soutenons le succès de chacun, nos relations les uns avec les autres et avec la société dans son ensemble sont renforcées.

Nos contrats peuvent servir de fondement au succès à tous les niveaux. C'est un parallèle approprié et c'est ainsi que le CCDC approche la création de contrats et de guides.




WHERE
CONCRETE
FAILS,
SOLUTIONS
RISE.
AFTER
RESTORATION
Planitop 23
From minor surface repairs to major structural fixes, trust our proven systems to bring lasting strength and performance back to your concrete.
SCAN THE QR CODE TO LEARN MORE
MAPEI®
www.mapei.ca