BUILDING SOLUTIONS FOR AEC PROFESSIONALS

CONSTRUCTION CANADA

JULY 2025 VOL. 67 NO. 5
www.constructioncanada.net

LOOKING UP WITH METAL

Sustainability Overhead

CSC Rock That Spec
2025 CONFERENCE ST. JOHN'S • NF
May 21-25, 2025
WRAP-UP p.42

Air Barriers: Look Beyond Products

Enter the Era of 3D-printed Concrete

Weather the Storm with Rainscreens

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

JULY 2025, VOL. 67, NO. 5

On the Cover

Edmonton's Royal Alberta Museum pairs striking metal and acoustic stone wool ceiling panels to create a modern, sustainable design that enhances both form and function. These materials shape a bright, welcoming space that reflects Alberta's rich heritage while meeting LEED Gold standards.

PHOTO BY TOM ARBAN

SEE ARTICLE ON PAGE 36.

Features

Departments

FOLLOW US ON SOCIAL MEDIA

ConstructionCAN ConstructCanMag

JULY 2025, VOL. 67, NO. 5

CONSTRUCTION CANADA

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

EDITORIAL
Editorial Director
Blair Adams
Executive Editor
Jason Cramp
Managing Editor
Farheen Sikandar
Online Editor
Tanya Martins

DESIGN
Senior Graphic Designer
Catherine Howlett
Graphic Designers
Alfi Ichwanditio
Lisa Greco
Steve Maver
Elaina Adams

PRODUCTION
Director of Digital Operations
Matthew Buckstein
Senior Production Co-ordinator
Melissa Vukicevic
Production Co-ordinators
Falon Folkes
Heather Donnelly
Justin Chan
Digital and Marketing Specialist
Alvan Au
Administrative Assistant
Bess Cheung

CONSTRUCTIONCANADA.NET
Andrei Kurpatov
Hon Mun Mak
Lillian Hu
Sanjeev Deshar
Boyang Qian
Krina Li

ADVERTISING SALES
(800) 409-8688
sales@kenilworth.com
Vice-president of Sales
Joseph Galea
Sales
Dianne Mahoney
Heidi AlBarbary
Sales Operations Manager
Tim Broderick
Sales Co-ordinator
Ines Abbey

AUDIENCE DEVELOPMENT
Mei Hong
Camille Garcia
Catherine Ho
CheukWai Chan
Frances Li
Irene Yu
Sonam Bhardwaj

KENILWORTH MEDIA INC.
CEO
Erik Tolles
Chief Financial Officer
Philip Hartung
Senior Director of Operations
Krista Taylor
Director of Business Development
John MacPherson
Accounting Manager
Bochao Shi
Accounting Assistant
Audrey Tang
Administrative Assistant
Helen McAuley

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

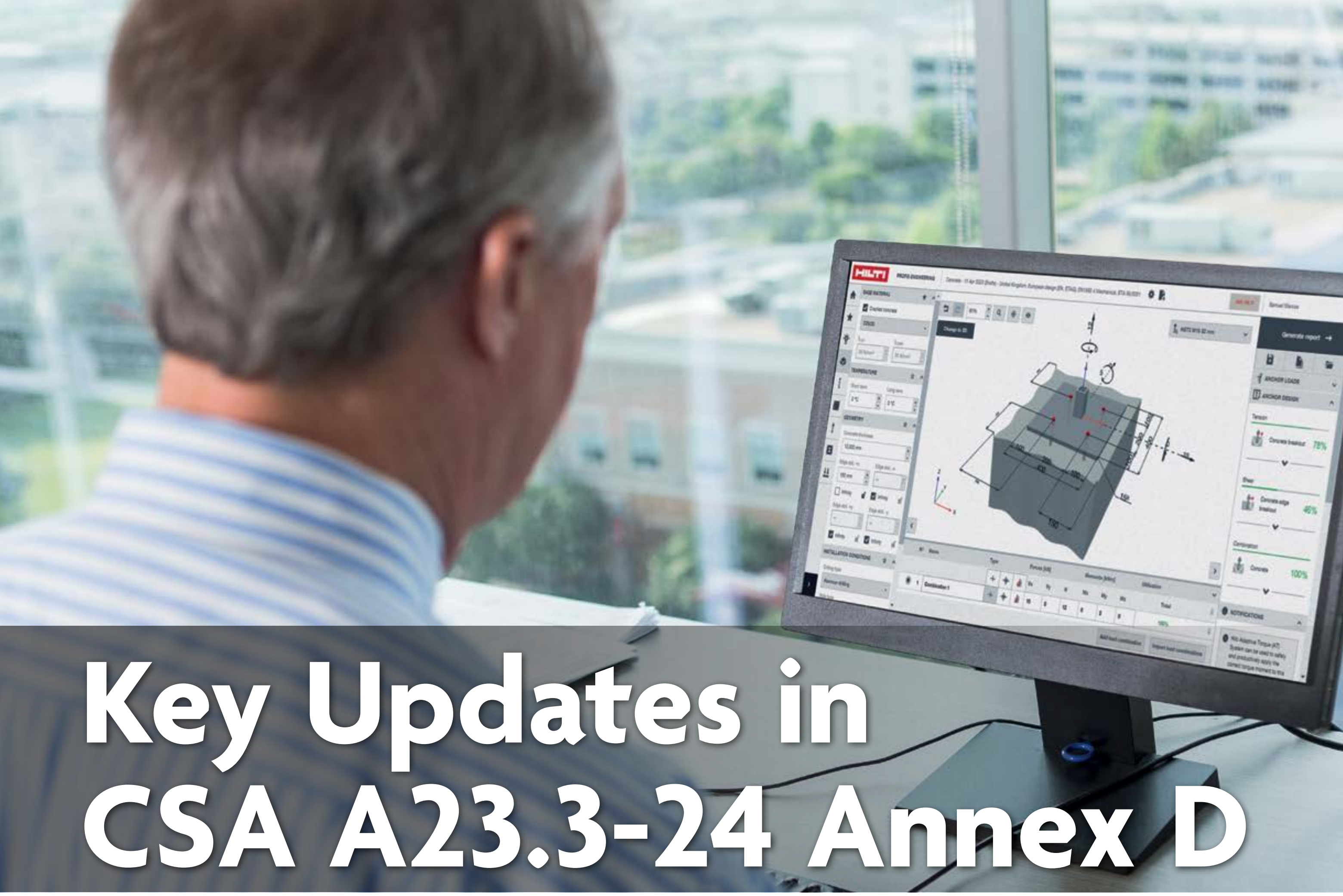
Publications Mail Agreement #40663030

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 nine times a year for Construction Specifications Canada by Kenilworth Media Inc., 30 Leek Crescent, Suite 201, Richmond Hill, ON, L4B 4N4

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.



Key Updates in CSA A23.3-24 Annex D

Advancements in Concrete Anchorage Design and Installation

By Ali Ahrabi

PHOTO COURTESY HILTI

The Canadian Standards Association (CSA Group) CSA A23.3 standard governs the design of concrete buildings in Canada. It is referenced by both the *National Building Code* (*NBC*) and provincial or territorial building codes. *NBC* 2020 refers to the 2019 edition of CSA A23.3 (CSA A23.3-19) for designing concrete structures. Annex D of CSA A23.3 is dedicated to the design, installation, and quality assurance requirements for cast-in and post-installed mechanical and adhesive anchors in concrete. This annex became normative (*i.e.* mandatory) in the 2019 edition of CSA A23.3, whereas it was informative (non-mandatory) in the 2014 edition. As a result, the requirements outlined in Annex D (2019) are now enforceable under *NBC* 2020 and any provincial or territorial codes that have adopted CSA A23.3-19.

The latest version of CSA A23.3 was published in June 2024 and includes several updates to Annex D to further refine and enhance anchorage design requirements. Given that CSA A23.3-19 was referenced by *NBC* 2020, it is expected that CSA A23.3-24 will be referenced by *NBC* 2025 once adopted. The revisions in the 2024 edition build upon the foundation set in CSA A23.3-19 by incorporating new research, improving design consistency with international standards, and addressing identified challenges in anchorage design. These changes ensure Canadian anchorage provisions remain aligned with best practices and evolving industry needs. Additionally, the 2024 version of Annex D serves as a reference design anchor standard for other Canadian design standards, including CSA S16, *Design and Construction of Steel Structures*, and CSA N287.3-25, *Design Requirements for Concrete Containment Structures for Nuclear Power Plants.*

This article provides an overview of the major technical and editorial changes introduced in Annex D of CSA A23.3-24. These updates

reflect advancements in anchorage design methodologies, improved safety considerations, and a more structured approach to anchor quality assurance and installation procedures. By incorporating the latest research and industry best practices, the revisions aim to align Canadian standards more closely with international codes such as ACI 318. Additionally, the modifications address gaps identified in previous editions, ensuring greater clarity, consistency, and applicability in real-world construction scenarios. These changes impact anchor capacity, expand the scope of Annex D, introduce enhancements to installation and quality assurance requirements, and include minor editorial updates to improve clarity and consistency. Below is a comprehensive list of all major changes introduced in Annex D:

- Inclusion of screw anchors
- Incorporation of post-installed reinforcing bar systems using development and splice length provisions
- Revision of interaction checks for anchors under tension and shear
- Incorporation of an overturning compression factor for breakout strength
- Updates to installation and quality assurance requirements for post-installed anchors and reinforcing bars
- Recalibration of resistance factors (R factors) for consistency with ACI 318
- Inclusion of shear lug design in Annex D
- Editorial updates and clarifications

Each of these changes is explained in detail in this article, along with relevant figures and tables from CSA A23.3-24 to illustrate the updates.

Inclusion of screw anchors

The 2024 edition of Annex D introduces screw anchors as a recognized type of post-installed mechanical anchor. In general, screw anchors as shown in Figure 1 offer a simpler installation process compared to expansion anchors and adhesive anchors. According to CSA A23.3-24, a screw anchor is defined as 'a post-installed threaded, mechanical anchor inserted into hardened concrete that transfers loads to the concrete by engagement of the hardened threads of the screw with the grooves that cut into the sidewall of a predrilled hole during anchor installation' (Clause D.2 CSA A23.3-24).

FIGURE 1

Post-installed screw anchor installation.

PHOTO COURTESY HILTI

FIGURE 2

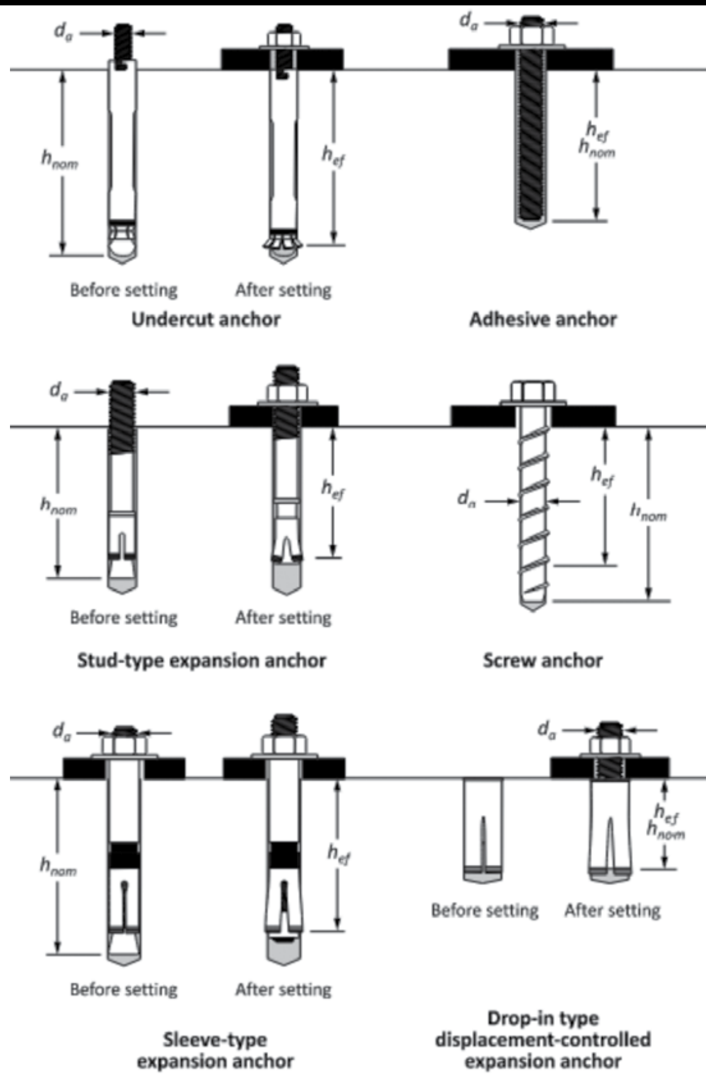


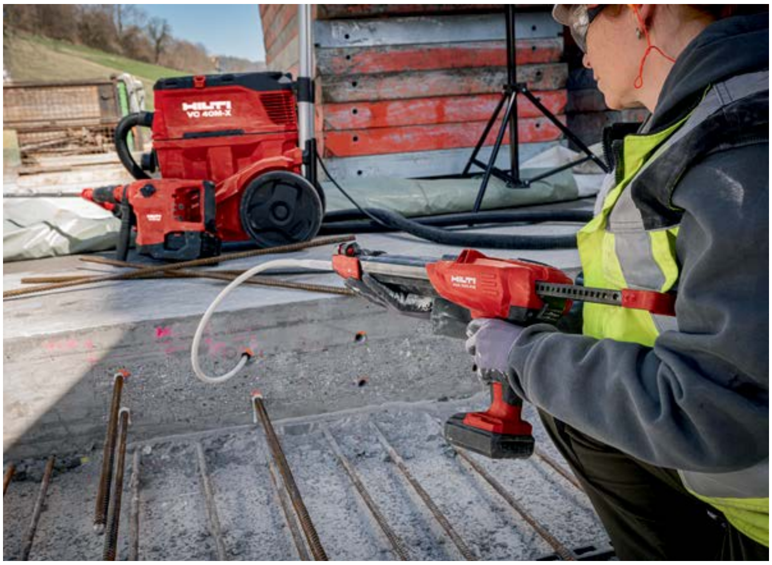
Figure D.1(b) from CSA A23.3-24, illustrating various types of post-installed anchors.

ILLUSTRATION COURTESY CSA A23.3-24

Key updates about this change include:

- Testing requirements for screw anchors are based on ACI 355.2-22, as specified in Clause D.1.3(e) of CSA A23.3-24. ACI 355.2 outlines the testing and evaluation criteria for post-

FIGURE 3



Post-Installed reinforcing bars installation.
PHOTO COURTESY HILTI

installed mechanical anchors intended for use in concrete. It is important to note that prior to the 2024 edition of CSA A23.3, ACI 355.2 was used exclusively for qualifying expansion and undercut anchors. The 2024 revision extends its application to screw anchors, ensuring consistent performance evaluation across different types of mechanical anchors.

- Design equations in Annex D continue to apply the existing mechanical anchor equations from CSA A23.3-19 for both tension and shear in Clause D.6 and D.7, ensuring consistency across anchor types and simplifying the design process. No new equations were introduced specifically for screw anchors.
- New installation requirements for screw anchors, including a provision in Clause D.1.6 that explicitly states: "The removal and resetting of post-installed mechanical anchors shall not be permitted." This requirement reinforces proper installation practices and prevents re-use, which could compromise anchor performance and structural integrity.
- Minimum edge distances and spacing requirements for screw anchors are specified in Clause D.9. The minimum centre-to-centre spacing for post-installed screw anchors is the greater of 0.6hef and 6da, as specified in D.9.2(c). The minimum edge distance for screw anchors is 6da, similar to adhesive and undercut anchors, as stated in Clause D.9.4. The critical edge distance for screw anchors is 4hef, similar to expansion anchors, as specified in Clause D.9.7. It should be noted that all minimum spacing, minimum edge distance, and critical edge distance requirements in Clause D.9 apply in the absence of product-specific ACI 355.2 test information.

Figure 2 (page 7) in CSA A23.3-24 is completely re-drawn showing the various types of cast-in and post-installed anchors, including screw anchors.

Post-installed rebar: Development and splice length provisions

CSA A23.3-24 recognizes post-installed reinforcing bars (PI rebars) using development and splice length provisions as a new addition in both Annex D and Clause 12 (Development and Splices of Reinforcement). This change establishes a standardized qualification and design process to ensure consistent design and testing criteria for PI rebar systems.

Key updates about this change include:

- A new provision in Clause D.1.4 explicitly states: "Where development and splice length provisions in accordance with Clause 12.2 and 12.3 are used for post-installed reinforcing bar systems, those systems shall be qualified in accordance with an applicable standard."
- Post-installed reinforcing bars can generally be designed using two different approaches:
    - Treating them as anchor elements and applying anchorage equations from Annex D to determine capacity.
    - Following development and splice length provisions, similar to cast-in reinforcing bars.
- Historically, post-installed reinforcing bars using development and splice length provisions were not explicitly covered in CSA standards. Prior to CSA A23.3-24, some adhesive anchor manufacturers provided evaluation reports referencing the test program outlined in ICC-ES Acceptance Criteria (AC) 308; however, this test program for post-installed rebar systems using development and splice lengths was never required by CSA A23.3. CSA A23.3-24 addresses this gap by defining post-installed reinforcing bars in Clause D.2, establishing their qualification program in Clause D.1.4, and linking them to Clauses 12.2 and 12.3 for development and splice length calculations.
- To establish qualification and evaluation requirements for post-installed reinforcing bar systems, the American Concrete Institute (ACI) published a new standard in

FIGURE 4

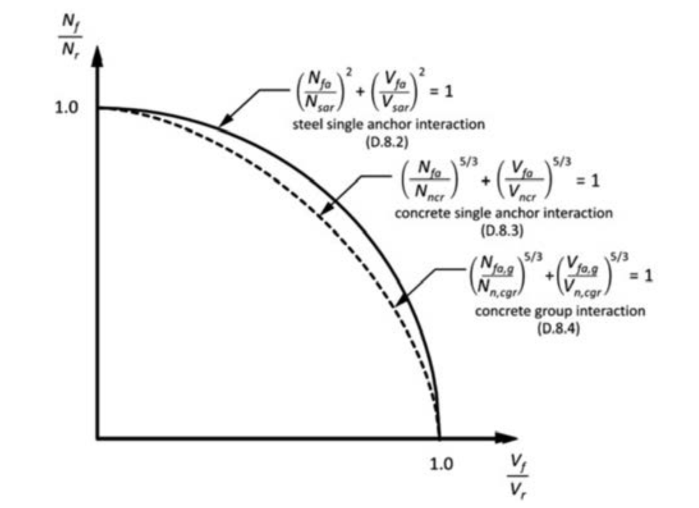
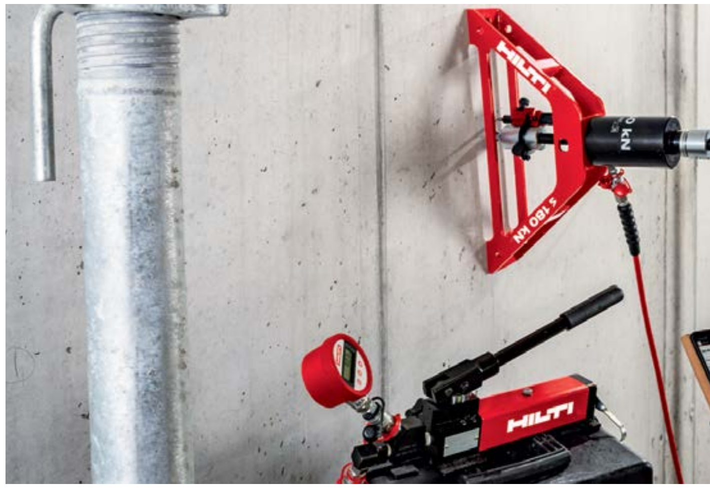


FIGURE 5



ABOVE: Figure 4 D.19 from CSA A23.3-24, illustrating new shear and tensile load interaction.

ILLUSTRATION COURTESY CSA A23.3-24

RIGHT: Table D.3 from CSA A23.3-24, *Minimum Special Inspection Requirements for Anchors and Post-Installed Reinforcing Bars.*

TABLE COURTESY CSA A23.3-24

Table D.3 (CSA A23.3-24)

Type	Continuous special inspection and proof loading	Periodic special inspection
a) Adhesive anchors and post-installed reinforcing bars installed in horizontally or upwardly inclined orientations to resist sustained tensile loads	X	-
b) Adhesive anchors and post-installed reinforcing bars not defined in a)	-	X
c) Mechanical anchors	-	X

November 2024 titled: ACI CODE 355.5-24, *Post-Installed Reinforcing Bar Systems in Concrete—Qualification Requirements and Commentary*. This document provides a standardized framework for testing and evaluating PI rebars using both organic (polymer) binders and hydraulically activated binders (cements). These tests are designed to directly compare the behaviour of cast-in versus post-installed bars when splitting governs the failure mode. A very stiff adhesive can cause high shear lag, potentially resulting in a zipper-type failure for bars placed near an edge. Conversely, if the bond is too flexible, the post-installed bar may experience relaxation, which could allow excessive joint opening between the existing and new concrete, compromising shear transfer or increasing the risk of reinforcing bar corrosion.

- Since ACI CODE 355.5-24 had not yet been published at the time of CSA A23.3-24 development cycle, it could not be explicitly referenced in Annex D. Instead, the term "applicable standard" was used to allow for future alignment with ACI 355.5 once officially released.
- Additionally, Clause D.1.4 includes a note referencing the Cement Association of Canada's *Concrete Design Handbook*, where it is expected that ACI 355.5-24 will be included to provide further guidance on the qualification of post-installed reinforcing bars.

Revised interaction checks for anchors in tension and shear

The 2024 edition of Annex D provides a revised approach to reduce conservatism for anchors subjected to combined tension and shear forces by separating steel and concrete failure modes.

Key updates about this change include:

- Removal of the trilinear interaction equation, which was previously applied to all anchors regardless of their failure modes.
- Introduction of a less conservative interaction check for steel strength of a single anchor or an individual anchor within a group (Clause D.8.2).
- Introduction of a less conservative interaction check for concrete strength of a single anchor (Clause D.8.3) and an anchor group (Clause D.8.4).
- Updates to Table D.1 and Figure 4 with revised interaction checks.

ABOVE: On-site anchor pull test on concrete.
PHOTO COURTESY NIIK STEEL

R factor revisions in Clause D.5.3

For an anchor steel strength using a ductile steel element:

	CSA A23.3-19	CSA A23.3-24
Tension loads	0.80	0.85

For an anchor steel strength using a brittle steel element:

	CSA A23.3-19	CSA A23.3-24
Tension loads	0.70	0.75
Shear loads	0.65	0.70

For an anchor in concrete breakout, side face blowout, pullout, or pryout strength:

	Condition B*	
	CSA A23.3-19	CSA A23.3-24
Shear loads	1.00	1.05
Tension loads		
Cast-in headed studs, headed bolts, or hooked bolts	1.00	1.05
Post-installed anchors (category determined in accordance with ACI 355.2 or ACI 355.4)		
Category 3 (high sensitivity to installation and lower reliability)	0.75	0.70

*Condition B applies where such supplementary reinforcement is not provided or where pullout or pryout strength governs.

Overturning compression factor for breakout resistance

This change introduces a new factor ($\psi_{cm,N}$) to account for the effects of compressive forces acting on the anchor baseplate in the calculation of breakout resistance for anchors in tension.

Key updates about this change include:

- Ensures the $\psi_{cm,N}$ factor is always greater than or equal to 1.0 in the breakout calculation equation, which can either increase breakout resistance or leave it unchanged.
- Reduces the level of conservatism associated with the breakout calculation in tension for cases where the compression field under the baseplate influences the fracture process of the tension-loaded anchors.

Updates to installation and quality assurance requirements

Significant updates were made to the installation and quality assurance requirements in Clause D.10 to enhance clarity and strengthen provisions, ensuring the proper installation of post-installed anchors and reinforcing bars.

Key updates about this change include:

- Includes post-installed reinforcing bars under the installation and quality assurance requirements in Clause D.10.
- Specifies the minimum level of inspection requirements for post-installed adhesive and mechanical anchors, as well as post-installed reinforcing bars, including periodic and continuous special inspections, as outlined in Table D.3 (CSA A23.3-24) (page 10).
- Introduces new proof load testing requirements, enhancing verification procedures for installed anchor capacity.

For a more detailed discussion on the installation and quality assurance requirements of post-installed anchors and reinforcing bars, including key updates from the 2019 to the 2024 edition of CSA A23.3, refer to the author's article "Advancing Concrete Anchor Installation Standards," published in the January 2025 issue of *Construction Canada.*

Recalibration of resistance modification factors (R factors)

CSA A23.3-24 revises certain resistance modification factors (R factors) in Clause D.5.3 to align with the corresponding factors in ACI 318-14, improving consistency and reliability. R factors are used to determine anchor resistances in both tension and shear.

R factors are calibrated such that for the equivalent failure mode and condition, $R^*\phi c$ and $R^*\phi s$ are equivalent to the analogous ϕ factor in ACI 318-14.

The table titled, "R factor revisions in Clause D.5.3" (above) is a summary of R factor revisions

FIGURE 6

Column baseplates with shear lugs.
PHOTO COURTESY NIIK STEEL

Changes in Annex D of CSA A23.3-24 reflect advancements in anchorage design methodologies, improved safety considerations, and a more structured approach to anchor quality assurance and installation procedures.

in Clause D.5.3, showing only the values that have changed in CSA A23.3-24 compared to CSA A23.3-19.

Inclusion of shear lug design

Shear lugs, as shown in Figure 6, are in common use in concrete structures, particularly where the shear capacities of anchors are insufficient due to steel strength or edge breakout limitations. Shear lug concrete design provisions are now formally included in Annex D (Clause D.11), providing an alternative design methodology for shear load transfer in baseplate connections where anchors alone may be insufficient.

Key updates about this change include:

- Introduction of a new equation (Eq. D.50) for the bearing resistance of shear lugs in shear.
- Incorporation of an implicit interaction between bearing resistance in shear and axial forces through the modification factor $\psi_{brg,sl}$ (Eq. D.51–D.53).
- Reference to the concrete breakout equations for anchors (Eq. D.33) to calculate the concrete breakout resistance of shear lugs.
- Provisions for multiple shear lugs on a common plate.
- The steel design of shear lugs is beyond the scope of Annex D and should be addressed using other applicable standards, such as CSA S16-24.

Editorial updates and clarifications

CSA A23.3-24 includes several editorial refinements to improve clarity, usability, and alignment with other standards. These updates do not change the fundamental design requirements but ensure that the document is more user-friendly and consistent across different clauses.

Key editorial updates include:

- Terminology standardization—Terms such as “anchor bolt” and “anchor rod” have been clarified and standardized to reduce ambiguity in design and installation documents.
- Reorganization of figures—All figures have been relocated closer to the relevant clauses to enhance readability and improve reference efficiency.

- Alignment with *NBC* 2020 seismic category classification—Clause D.4.3.3 now uses the seismic category (SC) terminology introduced in *NBC* 2020 to classify the seismic hazard level of a building site. The SC system considers factors such as spectral acceleration and building importance to determine appropriate seismic design requirements. This update enhances consistency between CSA A23.3-24 and *NBC* 2020's seismic provisions.
- Correction of variable nomenclature—Some variables and symbols have been revised to maintain consistency with CSA A23.3-24 and align with ACI 318.
- Updated cross-references—Internal cross-references between clauses have been corrected to ensure accurate navigation within the document.

These refinements improve the document's usability for engineers, contractors, and inspectors, ensuring anchorage design and installation practices remain well-understood and effectively implemented in the field.

Conclusion

The updates in CSA A23.3-24 Annex D represent a meaningful advancement in concrete anchorage design and construction practices across Canada. With clearer guidance, expanded scope, and improved alignment with related standards, these changes support safer, more consistent, and more efficient implementation. The revisions ensure anchorage systems meet the evolving demands of modern construction.

Ali Ahrabi graduated with a bachelor's degree in civil engineering in 2006 and obtained his master of science in civil engineering from Concordia University in 2012. He has been a professional engineer in the province of Quebec (Ing.) since 2013 and has experience in various engineering settings. Ahrabi currently serves as the manager of codes and approvals at Hilti Canada. He contributes to developing fastening-related provisions within the *National Building Code* (*NBC*) and Canadian Standards Association (CSA) with heavy emphasis on anchors, including contributions to CSA technical committees A23.3, S6, S16, and S304. He can be reached at ali.ahrabi@hilti.com.

The Hidden Hero

Why Air Barriers Matter More Than Ever

By Rockford Boyer, B. Arch. Sc., MBSc, BSS, and Betsy Cosper

IMAGE GENERATED BY CHATGPT/DALL-E, OPENAI

Today's construction industry faces a growing list of expectations. Building enclosures must be more than just weather-tight; they are expected to be energy-efficient, moisture-resilient, durable, and comfortable across a wide range of seasonal extremes. This challenge is even greater in Canada, where buildings must endure freezing winters, humid summers, and frequent freeze-thaw cycles.

To meet these demands, architects and builders must understand the "four control layers" that govern building enclosure performance: thermal, vapour, air, and moisture. While each layer is essential, the air barrier often plays a disproportionately important role; yet it remains one of the most misunderstood components in enclosure design.

This article explores air barriers' vital role in Canadian construction, how they interact with other systems, and why innovations like spray-applied polyurea are changing the game for commercial enclosures.

What is an air barrier and why does it matter?

An air barrier is a system of interconnected materials that controls the unintended flow of air in and out of a building. Its primary role is to restrict air leakage through gaps, joints, penetrations, and porous materials—not to be confused with insulation, which slows heat transfer. By stopping air movement, an air barrier reduces the transport of heat, moisture vapour, and pollutants.

Air leakage is more than a nuisance—it significantly impacts energy efficiency, durability, and indoor air quality (IAQ). According to Natural Resources Canada (NRCan), uncontrolled air leakage can account for up to 40 per cent of a building's total energy loss. That translates to wasted energy, higher costs, increased emissions, and reduced occupant comfort.

Beyond energy performance, uncontrolled airflow moves moisture-laden air into building assemblies, where it can condense and cause mould, rot, and material degradation. This is especially problematic in Canadian climates, where large indoor-outdoor temperature differences drive strong pressure differentials, pushing moist indoor air into cold wall cavities. To be effective, an air barrier must be:

- Continuous, with no gaps or unsealed joints across the building enclosure
- Durable, able to withstand jobsite handling and the thermal and structural movement that occurs over the life of the building
- Compatible with adjacent components, including insulation, vapour retarders, and flashing materials

Ultimately, the air barrier is a critical piece of the building performance puzzle, essential for meeting building codes, improving occupant comfort, and delivering long-term value in residential and commercial construction.

Where air barriers belong

In commercial construction, the most effective location for an air barrier is typically on the exterior side of the structural wall. Applied to substrates such as exterior gypsum board, oriented strand board (OSB), or concrete, this placement provides a continuous, uninterrupted surface, essential for airtightness across the enclosure.

Exterior installation offers key advantages. It minimizes interruptions, simplifying detailing around penetrations and transitions. It also allows the barrier to be supported by the wall structure, helping it resist wind loads, pressure differentials, and building movement. Additionally, placing the air barrier externally simplifies integration with insulation and flashing, ensuring continuity across complex assemblies.

While interior air barriers are still used in some residential or retrofit situations, they can be harder to detail around partitions, services, and framing. Exterior air barriers, especially when paired with continuous exterior insulation, offer superior durability, moisture control, and long-term energy performance, making them the preferred choice for modern commercial projects targeting stringent energy codes and sustainability goals.

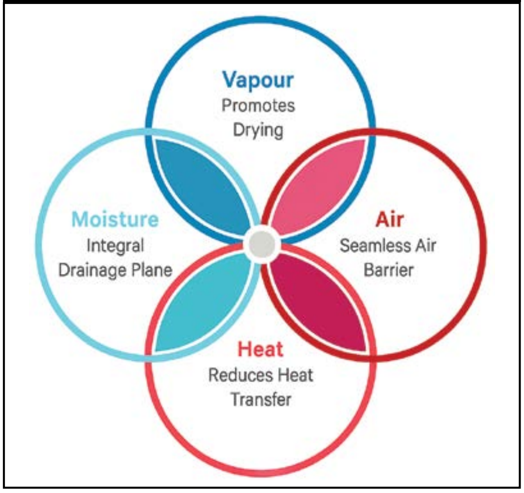
Types of air barriers in Canadian construction

Canada's diverse climate zones, from the damp coastal regions to the frigid North, demand high-performing and versatile air barrier systems. Builders have several air barrier options, and the right choice depends on the project's complexity, location, budget, and construction sequence. Each type brings unique advantages and installation considerations.

Self-adhering sheet membranes

Self-adhered sheet membranes are one of the most commonly used air barrier systems in commercial construction. These rubberized asphalt sheets with polymeric facers are supplied in rolls and applied to primed substrates such as gypsum, concrete, or plywood.

FIGURE 1



The "four control layers" that govern building enclosure performance: thermal, vapour, air, and moisture.

ILLUSTRATION COURTESY ELASTOCHEM

Advantages:
- Strong adhesion to smooth, primed surfaces
- Good resistance to air and moisture infiltration
- Reliable sealing around fasteners, joints, and detailing transitions
- Many products offer limited vapour permeability, depending on formulation

However, success with sheet membranes depends heavily on proper surface preparation and precise installation. Misalignment or wrinkles can compromise performance, and detailing corners or irregular shapes requires skill and additional components. These membranes are best suited to flat, uniform surfaces and projects where sequencing allows meticulous application.

Closed-cell spray polyurethane foam (ccSPF)

Closed-cell sprayfoam is unique because it acts as a four-in-one control layer, providing thermal insulation, air sealing, vapour resistance, and moisture control in a single product. Applied directly into wall cavities or over exterior sheathing, ccSPF is popular in commercial and residential construction, particularly for complex geometries and tight spaces.

Advantages:
- High R-value per inch (approximately R-6 per inch, RSI 1.06), minimizing wall thickness
- Superior adhesion to various substrates, including wood, concrete, and steel
- Conforms easily to irregular or curved surfaces
- Minimizes thermal bridging, especially when applied as continuous insulation (c.i.)

Closed-cell spray polyurethane foam (ccSPF) and self-adhered membranes used as a system to create an air barrier system.

IMAGE GENERATED BY CHATGPT/DALL-E, OPENAI

Despite its benefits, ccSPF does come with considerations. It must be shielded from UV light, often requiring protective cladding or coatings. In commercial applications, it also needs to be co-ordinated with thermal barriers for fire protection compliance. Additionally, installation must be performed by certified applicators, as improper ratios or ambient conditions can affect performance.

Liquid-applied and spray-applied membranes

Liquid and spray-applied air barriers have grown rapidly in popularity, especially in high-performance and net-zero energy buildings. These materials, ranging from water-based acrylics to polyurethanes and elastomers, are applied by roller, brush, or spray equipment, forming a monolithic membrane directly on the substrate.

Advantages:

- Seamless application, eliminating the need for taped joints or overlaps
- Excellent flexibility, accommodating structural movement and cracks
- Superior detailing capabilities around penetrations and transitions
- Effective over irregular or non-uniform surfaces, including concrete masonry unit (CMU) and corrugated sheathing

Liquid membranes reduce the complexity of traditional assemblies, making them a good choice for retrofits, mass timber buildings, and complex facade geometries. Some products are vapour-permeable, supporting drying strategies in wall assemblies, while others provide full vapour resistance, giving designers a wide range of performance options.

By understanding each system's strengths, limitations, and application methods, project teams can optimize building envelope performance and ensure the air barrier integrates effectively with other control layers. Whether prioritizing durability, drying potential, ease of installation, or long-term energy efficiency, Canadian builders have a robust toolkit tailored to the demands of modern, climate-responsive construction.

Why air barriers must survive the real world

Air barrier systems are critical to long-term building performance, but only if they can withstand time. In theory, most air barrier materials perform well in laboratory conditions, where application is controlled and consistent. However, the real-world construction environment is far less forgiving. Jobsite conditions, installation sequencing, mechanical damage, and weather exposure all present challenges that can compromise the integrity of the air barrier, sometimes before the building is even enclosed.

In Canada, where buildings are routinely exposed to extreme temperature swings, high winds, and prolonged freeze-thaw cycles, the durability of air barrier systems is more than just a nice-to-have; it is essential. A compromised air barrier reduces energy efficiency and allows bulk water, moisture vapour, and contaminants to penetrate the building enclosure, leading to structural degradation, IAQ issues, and higher maintenance costs.

Construction site realities

The construction site is a dynamic environment with multiple trades working simultaneously under tight timelines. Windows and doors may not be installed when the air barrier is applied. Trades may fasten materials to walls, cut penetrations for mechanical systems, or adjust layouts, activities that can damage or disrupt air barrier continuity. Even storing materials or placing scaffolding against a wall can tear, puncture, or peel air barrier components.

Polyurea being applied to a window opening to tie in an air barrier system.

IMAGE GENERATED BY CHATGPT/DALL-E, OPENAI

This is especially problematic with rigid or thin membranes prone to mechanical damage. Sheet membranes may peel or tear at corners and transitions. Liquid-applied systems, if too thin or not fully cured, can be compromised by rain, dust, or impact. Sprayfoams may be gouged during framing or cladding work.

To remain effective, an air barrier system must be robust, not only when complete but also throughout construction staging and sequencing. That means:

- Adhering well to a variety of substrates, even in less-than-ideal surface conditions
- Tolerating incidental exposure to UV, moisture, or freeze-thaw before being covered
- Withstanding mechanical damage from scaffolding, trades, and weather
- Remaining flexible enough to accommodate minor movement or substrate shrinkage

Durability is a system attribute

Durability is not the property of a single material; it is a system-level trait. Every air barrier assembly includes transitions, fasteners, primers, sealants, and flashing. Even if the primary membrane performs well, failure can occur at joints, terminations, or substrate changes if components are incompatible or poorly adhered. This is why manufacturers often offer tested system packages that ensure long-term compatibility and performance.

Materials such as polyurea air barriers are engineered to meet these challenges. Polyurea provides high elongation (more than 300 per cent), enabling it to stretch with structural movement without tearing. Its tough, rubber-like finish resists punctures and abrasions during construction. With rapid cure times and weather resistance during application, polyurea often outperforms traditional systems in harsh or fast-track projects.

However, polyurea's performance relies on specialized equipment and trained installers. Like any air barrier, even the most durable materials can fail if not installed correctly.

Installation quality: The human factor

Durability is not just a property of materials; it reflects the installation process. A well-installed, moderately durable air barrier will outperform a premium product poorly applied. Temperature, humidity, substrate moisture, surface preparation, and film thickness affect performance. This is why many builders now use third-party inspections and quality assurance programs, such as those from the Air Barrier Association of America (ABAA) and supported by Canadian codes. Blower door tests, adhesion pull-tests, and site mock-ups are increasingly common in commercial construction, helping ensure that what is designed on paper is built in the field. Air barriers are only as good as their weakest link. For the system to perform over the building's life, it must:

- Be resilient enough to survive the rigours during construction
- Be designed as a complete system, not just a standalone product
- Be installed with skill, oversight, and attention to detail

With tightening energy codes and growing demand for high-performance enclosures, durability is no longer optional; it is central to success. Selecting the right system and installing it correctly means fewer callbacks, lower lifecycle costs, and buildings that perform as intended, today and decades from now.

The crucial role of air barriers in wall assemblies

Controlling moisture is one of building science's most critical and complex challenges. While rain and plumbing leaks are often at the top of mind, much of the moisture that affects wall assemblies comes from air leakage and vapour diffusion. Air barriers play a central role in mitigating these risks and ensuring long-term durability, particularly in Canada's diverse and often extreme climate zones.

Air barriers influence moisture behaviour in three key ways:

Air leakage—driven vapour transport

This is the primary mechanism of moisture movement in most buildings. When warm, humid air leaks through cracks and gaps in the building envelope, it carries water vapour. If this air reaches a cooler surface, such as the backside of sheathing or an insulated cavity, it can condense, leading to rot, mould, and corrosion. A continuous, airtight barrier is the most effective way to stop this movement at its source.

Bulk water resistance

The air barrier often doubles as a secondary weather barrier in exposed wall assemblies, especially those without an exterior rainscreen. When properly detailed with sealed transitions and flashing, air barrier membranes can resist wind-driven rain and bulk water infiltration, providing an added line of defence behind the cladding.

Vapour diffusion control

The vapour permeability of the air barrier material can also influence the wall's drying potential. Vapour-permeable air barriers allow water vapour to pass, while impermeable ones limit drying, so their placement and compatibility with other materials must be carefully considered.

Insulation strategies and dew point control

Moisture risk is closely tied to temperature gradients within a wall. As warm indoor air moves outward in winter (or inward in summer), it cools, and condensation occurs if it reaches the dew point temperature. This is why the location and ratio of insulation play such a significant role in managing condensation risk.

A liquid-applied air barrier forms a seamless membrane directly on the substrate, simplifying detailing around penetrations and transitions.

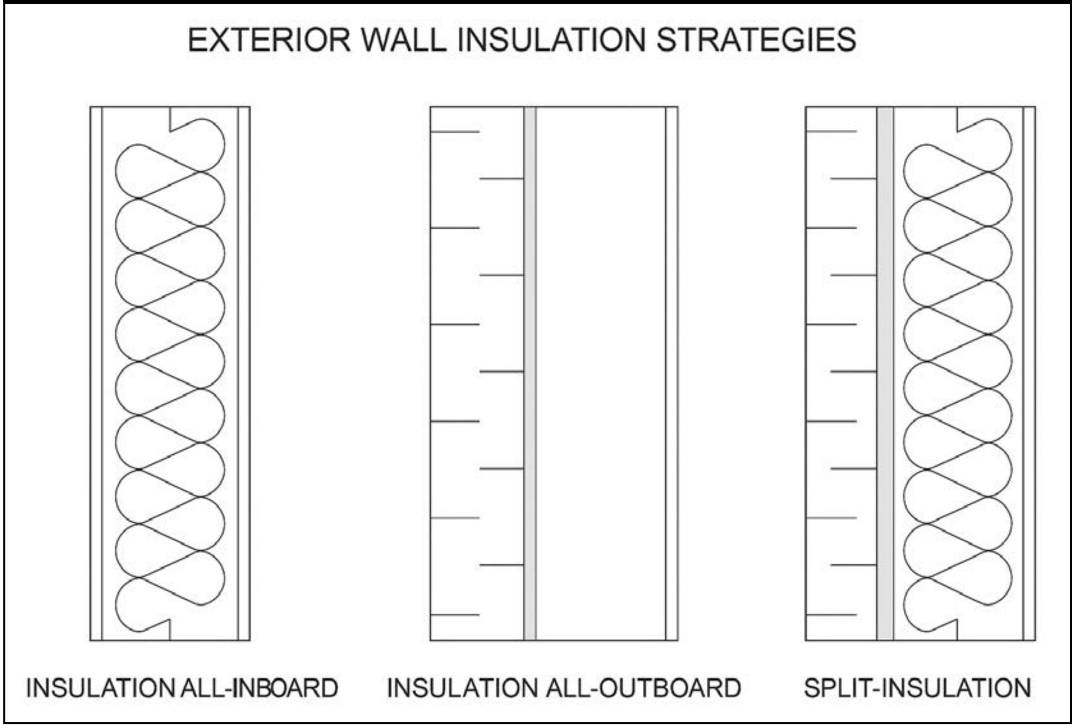
IMAGE GENERATED BY CHATGPT/DALL-E, OPENAI

- All-interior (inboard) insulation: Historically, walls with all-interior insulation often used a vapour-impermeable (vapour-closed) air barrier on the exterior and a vapour retarder on the inside, limiting the wall's ability to dry. For future projects, using an inboard insulation with a vapour retarder or impermeable insulation, the air barrier should ideally be vapour-permeable. This allows outward drying if moisture enters the wall cavity.

The interior insulation must be carefully specified if a non-permeable exterior air barrier is preferred. In this case, the insulation should be vapour-permeable, and a smart vapour retarder should be installed on the warm side to enable drying toward the interior.

- All-exterior (outboard) insulation: All-outboard insulated wall enclosures differ from all-inboard insulated walls in two ways. First, the vapour barrier is located on the warm side of the assembly. In typical outboard-insulated assemblies, this places the air and vapour control layers inboard of the dew point, which tends to fall within the continuous insulation. As a result, the risk of condensation at the vapour barrier is reduced, and dew point calculations may not be necessary in many cases. However, careful moisture analysis is still recommended to confirm performance under specific project conditions. Building science is objective, but typical recommendations for air barrier permeance in exterior insulated walls are as follows: with permeable exterior insulation (mineral wool), either a vapour-permeable or vapour-impermeable air barrier may be used; with impermeable insulation

FIGURE 2



Common exterior wall insulation strategies—interior-only (all-inboard), exterior-only (all-outboard), and split-insulation—each influencing dew point location, drying potential, and air barrier selection.

ILLUSTRATION COURTESY ELASTOCHEM

Closed-cell sprayfoam conforms easily to irregular or curved surfaces, providing continuous insulation (c.i.), air sealing, and moisture control in a single product.

PHOTO COURTESY ELASTOCHEM

(*e.g.* SPF, XPS), a vapour-impermeable air barrier is recommended. These are general guidelines, and an enclosure study is always ideal once all components are selected.

- Split-insulated assemblies: Split-insulated systems differ from the other two systems because the dew point shifts between the interior and exterior insulation with seasonal temperature changes. As a result, the air barrier's vapour characteristics must be selected and validated, ideally through hygrothermal analysis, to prevent interstitial condensation. If advanced software is not available, a rule of thumb is: when the interior insulation is ccSPF or permeable insulation with a vapour retarder, pair it with a vapour impermeable air barrier and exterior open-cell sprayfoam insulation (ocSPF) and/or mineral wool to allow drying to the exterior. If using a vapour-impermeable air barrier with a permeable insulation, the interior side should feature permeable insulation with a smart vapour retarder to facilitate drying inward. As always, a full enclosure review is recommended before finalizing the design.

Designing for drying: Best practices in modern construction

Moisture control today is not just about stopping water from getting in, but also about ensuring it can get out. Many older buildings used vapour-closed materials on both sides of the wall, unintentionally trapping moisture within. Modern best practices prioritize one- or two-directional drying, enabling assemblies to release moisture safely to the interior or exterior.

This can be achieved by:

- Selecting vapour-permeable air barriers on the exterior when the interior has a low-permeability vapour retarder

- Using smart membranes that adapt their permeability based on relative humidity (RH), offering more drying potential when moisture levels are high
- Avoiding impermeable materials on the exterior, which have the potential to trap moisture in the assembly

Hygrothermal modelling software such as WUFI is increasingly used for complex projects or buildings to simulate real-world moisture behaviour. These tools help designers understand the long-term impact of temperature, humidity, vapour drives, and solar loading, ensuring assemblies are energy efficient and durable.

Polyurea air barrier technology

One of the most exciting advancements in air barrier technology is the use of spray-applied polyurea. Known for its use in industrial coatings, polyurea is now being adapted for building enclosures thanks to its unique properties:

Key benefits

- Fast-curing: Tack-free in under 30 seconds and supports high production rates
- Cold-weather application: Can be applied in sub-zero temperatures, ideal for Canadian winters
- High elongation: More than 300 per cent flexibility, accommodating building movement
- Seamless membrane: No seams, no fasteners, no tape, just one monolithic layer

This makes polyurea a particularly good fit for:

- Mid- to high-rise commercial and institutional buildings
- Complex geometries or irregular substrates
- Projects with short construction schedules or winter timelines

Conclusion

In Canadian construction, the air barrier is not just a product but a system and strategy. It is vital in high-performance enclosures, contributing to energy efficiency, moisture control, and long-term durability. Whether using traditional membranes or advanced polyurea coatings, success depends on understanding how the air, vapour, thermal, and moisture layers work together. By limiting air movement, air barriers improve comfort and help prevent condensation, mould, and structural damage.

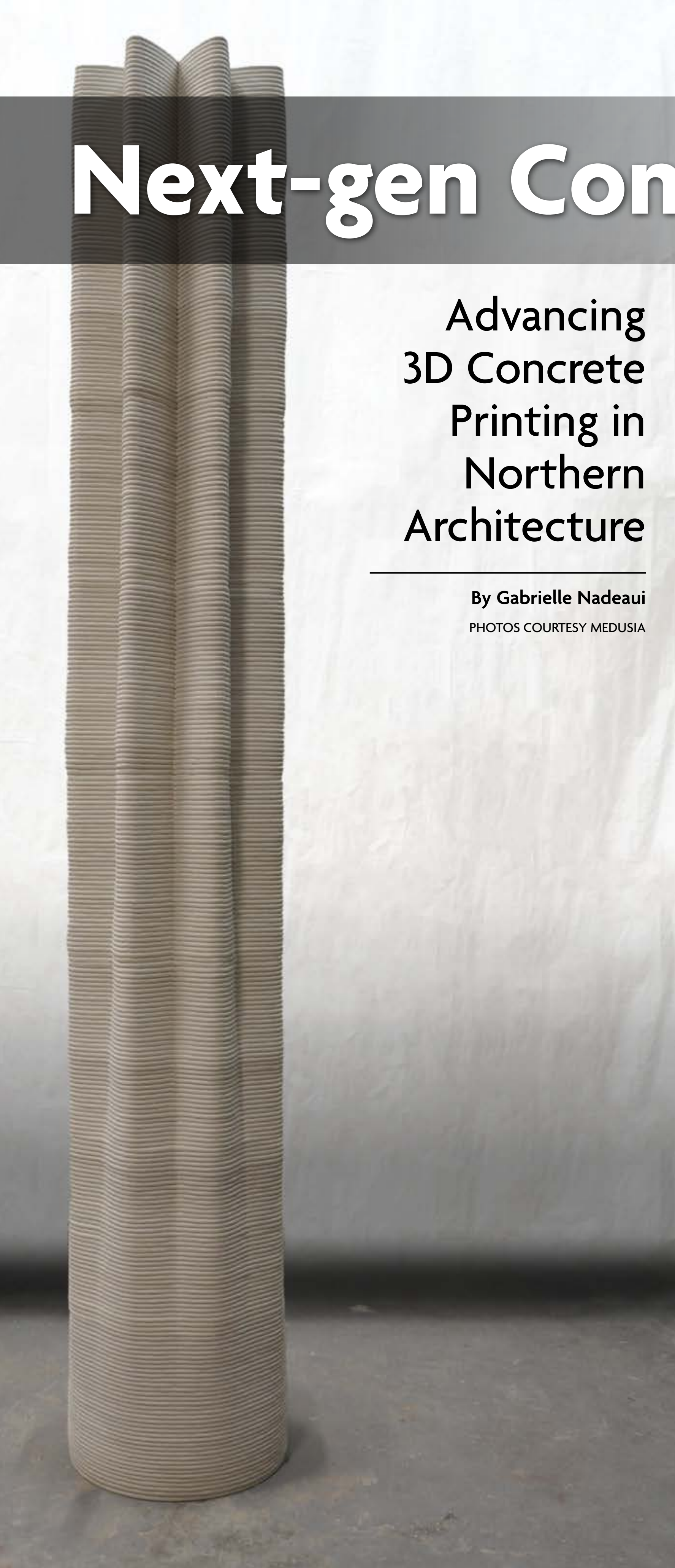
Air barriers have evolved, with innovations such as spray-applied polyurea offering faster installation and greater durability, which is especially useful in Canada's demanding climate. These solutions respond to challenges such as labour shortages and the need for speed and reliability. Still, proper installation is critical; even high-performance materials can fail if poorly applied.

Understanding how air barriers interact with vapour and insulation layers is essential to building durable, resilient enclosures. A well-integrated, robust air barrier system is essential for high-performance buildings to succeed over time. As the industry advances, adopting innovative materials and techniques will be key to building energy-efficient, long-lasting structures. Smart wall design goes beyond sealing; it enables buildings to dry, perform, and endure Canada's harsh climate.

Rockford Boyer, B. Arch. Sc., MBSc, BSS, is an experienced building science leader at Elastochem with more than 20 years of expertise in sustainable building design. He holds an undergraduate degree in civil engineering and architecture and a master's in building science. He is also a member of Passive House Canada and the Ontario Building Envelope Council (OBEC). He is also a part-time professor at Sheridan College, teaching in the architectural technology program and sharing his knowledge and expertise with future generations of architects and designers.

As the vice-president of marketing at Elastochem, Betsy Cosper uses her extensive global expertise in building materials commercialization and sustainability strategy. She has gained international leadership experience across the construction, horticulture, and advanced materials sectors, holding a BSc honours and an MBA.

Next-gen Construction



Advancing 3D Concrete Printing in Northern Architecture

By Gabrielle Nadeaui

PHOTOS COURTESY MEDUSIA

In recent years, 3D concrete printing (3DCP) has been reshaping the architecture and construction industries, moving beyond its experimental origins to become a viable method for producing complex, high-performance structures. No longer constrained by the limitations of traditional formwork, designers and architects can now explore new possibilities in geometry, expression, and construction tectonics, expanding what concrete can be and do.

Advanced digital technologies create intricate, non-standard volumes that were once impractical or impossible to fabricate with conventional materials and methods. Once the exclusive domain of skilled stonemasons, detailed and expressive architectural elements can now be produced through advanced digital fabrication, marking a new paradigm within the industry. A prime example is the first 3D-printed unreinforced concrete pedestrian bridge in Venice, built by the Block Research Group, in collaboration with Zaha Hadid Architects (ZHA). This project illustrates the ability of 3DCP to manufacture structurally efficient designs that save a substantial amount of material compared to formwork-based solutions, as no use of steel reinforcement or mortar was needed.

3DCP offers promising opportunities that align with regional environmental goals and the functional demands of northern climates. Through computational design and geometric optimization, 3DCP enables highly customizable building forms that improve thermal performance, reduce operational energy use, and enhance durability against harsh weather conditions. These capabilities are particularly relevant in northern regions, where resilience and energy efficiency are essential performance criteria. As Alami *et al.* (2023) note, "the utilization of 3D printing has the potential to enhance the thermal insulation of buildings and decrease energy usage, resulting in structures that provide improved thermal comfort. This can be achieved by printing geometries that are specifically designed for superior thermal insulation, such as cellular or lattice structures, or by altering the printing mix to include aerogels or air bubbles." In addition, the technology promotes resource efficiency, generates less material waste compared to single-use custom formworks, and supports alternative low-carbon concrete mixes. This approach aligns with Canada's commitment to carbon neutrality and sustainability. In the Northern region's high-grade building codes for high-performance durability, safety, and efficiency, the application of 3D printing technology in construction necessitates a modification of these regulations. It does so, however, with fresh avenues of prefabrication and modularity, reducing construction time without compromising high-performance standards. By integrating these advancements, 3DCP has the potential to redefine architectural practice in northern climates, offering a year-long solution for production.

With the construction sector currently under pressure to improve efficiency and a shortage of typically skilled labor, automated concrete 3D printing is being explored as an alternative building strategy capable of reducing construction material waste. As cement production contributes to around eight per cent of the global CO2 emissions, the need for more resource-efficient approaches has never been greater (Placzek & Schwerdtner, 2023). By challenging conventional construction methods and harnessing the distinct possibilities of additive manufacturing, architects and engineers can redefine the limits of modern building practices.

3DCP technology and advantages

Understanding 3DCP

At its core, 3DCP involves extruding specially formulated concrete layer upon layer. This process is known as additive manufacturing or, more commonly, 3D printing. Such concrete mixtures are usually made using hydraulic binders, aggregates, and additives. Generally, 3D models are processed through a slicing algorithm to produce a specific toolpath adapted to the chosen printing system. The three main technologies that account for most 3DCP are: robotic arms, gantry systems, and mobile crane systems.

3D printed 2.4-m (8-ft) column.

- Robotic arm systems: A robotic arm system comprises multiaxis robotic arms with a specialized printhead attached to extrude concrete. They can produce complex, non-planar geometry and fine detail due to their wide range of motion, making them appropriate for custom models. The build volume is limited by the working length of the robotic arm. Therefore, larger structures may need to be prefabricated into smaller sections to assemble on-site. To increase their operational footprint, robotic arms can be installed on rail systems, enabling them to move along extended paths and fabricate larger components.
- Gantry systems: Gantry-based 3D printers operate on a Cartesian co-ordinate system, moving the printhead along fixed axes over a large build area. This configuration is well-suited for large-scale, repetitive building designs that produce long structural elements. The modular nature of gantry systems enables scalability, with some designs capable of constructing entire buildings in a single print sequence. Bod 2 by COBOD marks this

3D concrete printing (3DCP) layer merging.

category. However, the gantry systems may require independent foundations to generate additional constraints and costs (COBOD, n.d.).

- Mobile crane-based systems: Systems such as the MaxiPrinter by Constructions-3D blur the line between robotic automation and construction equipment. Functionally closer to a crane than a traditional robotic arm, the mobile crane system features a long, articulated printhead mounted on a mobile tracked chassis. It can be repositioned across a prepared site, allowing for extended build areas without the infrastructure required by gantry systems. While it lacks the fine motion control of industrial robotic arms, its mobility and scale make it well-suited for large structural prints in open environments (Constructions-3D, n.d.).

Three critical factors contribute to the effectiveness of 3DCP: printing speed, geometry, and rheology. Rheology refers to the study of how materials flow and deform, particularly focusing on their plasticity and suitability for pumping. In concrete printing, rheology primarily involves yield stress, the minimum stress required for the concrete to transition from solid-like to fluid-like behavior, enabling extrusion (Khan *et al.*, 2023).

To achieve rapid solidification, essential for structural integrity, 3DCP mixtures typically contain two to three times the amount of cement found in ordinary premixed concrete. This higher cement content significantly accelerates setting times, often resulting in solidification within minutes. Due to this rapid curing, concrete must be deposited within that setting time to ensure cohesive bonding between each layer. This time span varies from one concrete mix design to another. Precise timing and rheological control are thus critical to achieving optimal adhesion and minimizing defects (Le *et al.*, 2012).

While the cement proportion is elevated, the overall volume of material required per component is often significantly reduced. 3DCP enables geometrically optimized designs, such as hollow or ribbed structures, that use far less concrete than conventional cast elements. As a result, the total cement consumption per project can be lower, helping offset the mix's higher concentration. This material efficiency translates into a reduced carbon footprint when assessed at the building or system level. Moreover, ongoing advances in printable low-carbon mixes and binder technologies continue to improve the sustainability profile of 3D printed concrete.

Digital tectonics and design expression

The potential of 3DCP inspires a rethinking of architectural design principles and tectonic expression. Parametric and organic shapes and structurally optimized designs become achievable, enabling novel esthetic outcomes (3Dnatives, n.d.).

The inherent layering process of 3DCP introduces a new tectonic language in architecture. Designers can use the exposed stratification and layering patterns as expressive tools, giving buildings distinct identities. This method enables an honest expression of materiality and construction process, aligning with contemporary architectural trends that focus on authenticity in materials and processes (3Dnatives, n.d.). 3DCP inherently facilitates the expression of bespoke textures and patterns within the fabrication process. Controlled layer deposition creates stratified effects, while varying the extrusion path produces raised patterns, enhancing the tactile and visual qualities of concrete surfaces. This capability contrasts with traditional methods, which inevitably require additional preparation and finishing steps to achieve similar results (3D Concrete Printing Solutions | Vertico, n.d.).

The precision and versatility of 3DCP make it especially ideal for custom-designed projects such as facades, urban furniture, and sculptural installations. A compelling example is Tor Alva, the world's tallest 3D concrete printed tower, designed by ETH Zurich and built in the Swiss Alps. The project demonstrates how 3DCP enables expressive architectural forms, such as twisted geometries and perforated surfaces, that would be prohibitively complex using traditional

Layer stratification as an expressive tectonic language.

methods. Beyond its architectural significance, Tor Alva is a cultural and touristic landmark, showing how 3DCP can help small communities attract visitors, support local identity, and promote sustainable economic development (ETH Zurich, 2023).

Optimization and productivity gains

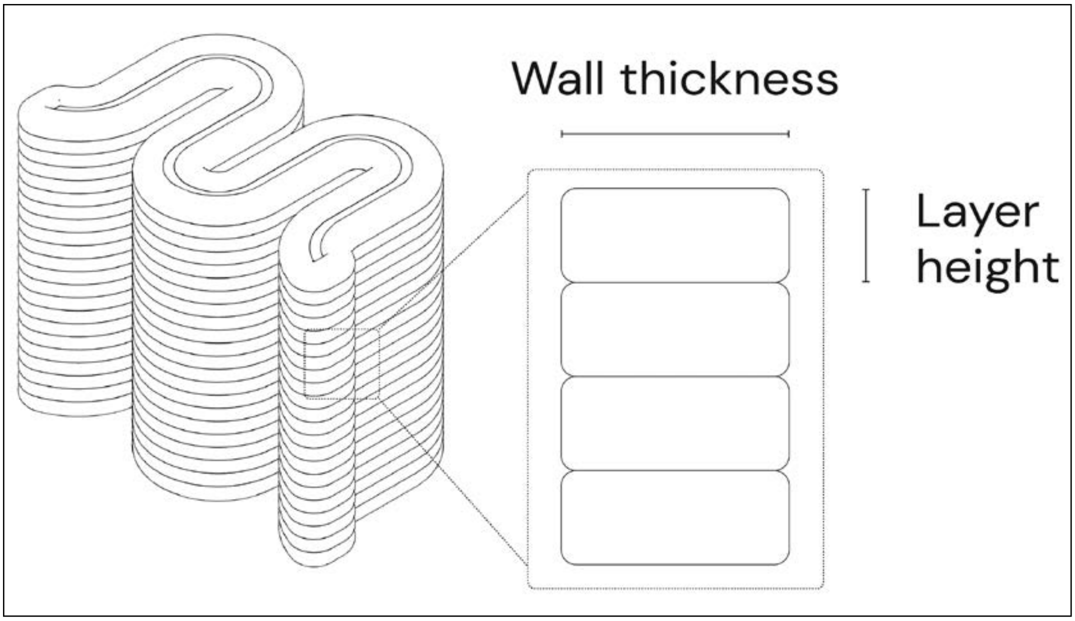
Integrating 3DCP into the construction sector has introduced significant productivity, cost efficiency, and construction logistics advances. By enabling direct fabrication from digital models, 3DCP eliminates the need for traditional formwork, a process representing up to 50 per cent of total costs in conventional concrete construction (Jipa & Dillenburger, 2021; Placzek & Schwerdtner, 2023). This transition lowers the material demands and the substantial workforce typically required for casing assembly and disassembly, which is especially pertinent considering the skilled labour shortage in the construction industry (Placzek & Schwerdtner, 2023).

The automation of the printing process facilitates continuous, precise, and repeatable fabrication. This reduces human error and increases overall productivity while maintaining the possibility of custom pieces and small production runs. This is especially beneficial on construction sites where timelines and workforce availability are constrained. Additionally, the elimination of manual formwork allows for faster lead times between design and production and mitigates delays associated with conventional construction sequencing (Wangler *et al.*, 2016).

Moreover, eliminating casing contributes significantly to waste reduction, particularly in the context of custom architecture. While standard and linear formwork systems can often be reused across multiple projects, the growing demand for distinctive architectural forms frequently requires custom moulds that are typically used only once. These bespoke formworks are rarely repurposed and often end up as waste, especially when made from plywood or expanded polystyrene. In such cases, 3DCP provides a highly efficient alternative by enabling the direct fabrication of complex geometries. This not only reduces construction waste but also avoids the environmental impact of over-dimensioned components, which have cascading environmental impacts throughout a building's life-cycle (Jipa & Dillenburger, 2021). The precision of robotic printing further improves build quality and reduces the need for rework on-site, thereby minimizing resource consumption.

Beyond reducing labour and construction time, 3DCP, therefore, significantly improves material efficiency by enabling the fabrication of geometrically optimized components. For example, topology-optimized slabs, columns, and beams can be produced using minimal material while maintaining or enhancing structural performance (Jipa & Dillenburger, 2021).

Today, applications range from residential housing and smaller architectural elements to



3D concrete printing (3DCP) layer variability.

large-scale commercial projects. These include prefabricated structural walls, hollow columns with internal post-tensioning, and complex hybrid components that serve both structural and architectural roles. This versatility positions 3DCP as a key innovation in the shift toward more sustainable, efficient, and customizable construction methods.

A hybrid approach is emerging as the most practical route for large-scale adoption, combining the geometric freedom of 3D printing with traditional construction techniques. By using additive manufacturing for optimized forms and integrating conventional reinforcement where necessary, the industry can achieve both material savings and structural reliability (Placzek & Schwerdtner, 2023). 3DCP enables the creation of hollow forms, strategic material placement, and structural reinforcement through infill patterns. It also supports embedded features such as pockets for lost formwork, onsite casting zones, and seamless integration with reinforcing bars.

Material challenges in cold climates

Current state of materials in the Canadian market

The Canadian market for 3DCP is currently expanding, with several local companies developing proprietary mixes tailored to their specific printing systems. However, global leaders such as Sika and Mapei also provide ready-to-use premixes adapted to the demands of additive manufacturing. In a recent move to support regional adoption, Sika has established local production of its 3D printable concrete in Montreal. This shift not only lowers importation costs but also reduces environmental impacts related to transportation and improves supply reliability for Canadian operators (Sika Canada, 2024).

The Canadian climate poses additional material challenges. Printable concrete must demonstrate freeze-thaw resistance and maintain mechanical integrity under severe winter conditions. While manufacturers often claim high structural performance, including compressive strengths exceeding 30 MPa (4.35 ksi), many commercially available mixes still lack formal testing according to CSA standards, particularly regarding fire resistance and durability under freeze-thaw cycles (Silveira *et al.*, 2024; Wagner *et al.*, 2024).

The complexity of 3DCP introduces another key issue: high sensitivity to variations in mix composition. Even minor deviations in water content, admixtures, or curing conditions can lead to significant impacts on printability and structural performance (Silveira *et al.*, 2024). These inconsistencies pose operational risks and highlight the critical importance of locally produced, quality-controlled mixes.[19] In their 2024 study on material performance in 3D printed concrete, Wagner *et al.* reported that a proprietary mix used for full-scale printed elements exhibited about 40 per cent lower compressive strength than its mold-cast counterpart. This finding highlights the ongoing challenges in achieving reliable structural performance in layered additive construction

Segmentation and assembly.

while new 3D concrete mixtures are launched on the market (Wagner *et al.*, 2024).

Despite these hurdles, there is clear momentum toward the standardization of materials. Active efforts are underway to develop adapted testing protocols and validate materials against Canadian building codes. These steps are essential for enabling the full integration of 3DCP in structural applications within the country's regulatory framework.

Toward more sustainable and high-performance materials

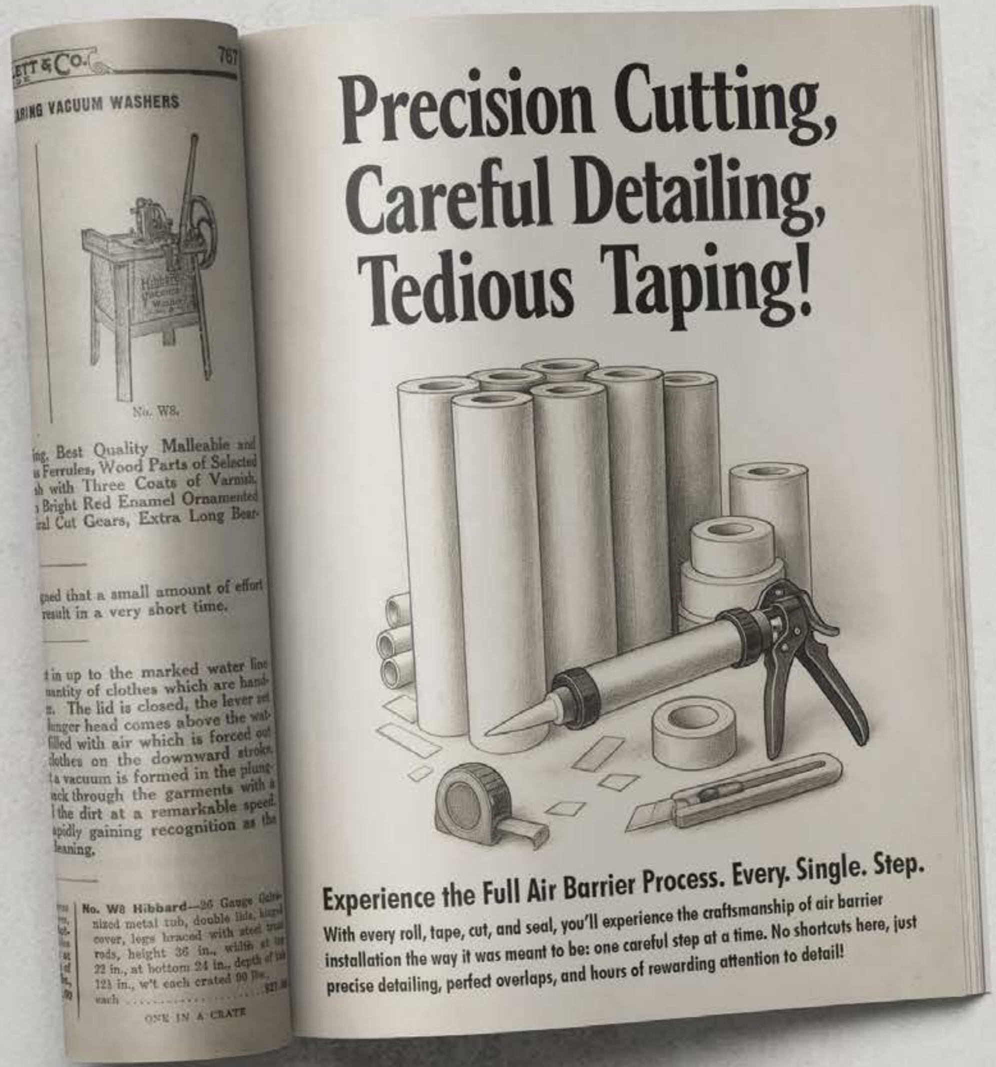
When cured and cut, layers in 3DCP typically show no visible seams, except for traces left by cutting tools. The use of fine aggregates 0–2 mm (0–0.08 in.) in 3DCP significantly enhances mechanical properties, allowing compressive strength to reach approximately 50 MPa (7.25 ksi), which is almost double the strength of conventional foundation concrete (Tran *et al.*, 2024).

The construction industry is actively seeking innovative solutions to reduce its carbon footprint by developing more environmentally responsible materials. Among these efforts, the author's company has developed a bio-concrete with the capacity to capture 348 kg (767 lb) of CO2 per square metre, a significant improvement compared to traditional concrete mixes. This innovation holds strong promises for decarbonizing the construction sector, particularly when coupled with robotic 3D printing technologies that further optimize material use. It is best suited for non-structural applications and used for its isolation properties (Medusia, 2024).

Internationally, the use of natural materials such as clay and earth in 3D printing has gained traction as a low-impact alternative. In the United States, the practice has been notably advanced by Rael San Fratello, whose research explores large-scale 3D printing with regionally sourced soils. Through projects such as Mud Frontiers, they demonstrate how locally sourced materials and robotic fabrication can merge to produce affordable, biodegradable structures that are both environmentally responsive and culturally rooted, offering a sustainable pathway for construction in arid and rural regions (Rael San Fratello, 2024).

The Gramazio Kohler Research group is also exploring similar directions with its "Impact Printing" method—a gravity-driven additive construction process that uses clay instead of concrete. By eliminating the need for formwork, binders, and energy-intensive hardening processes, this technique drastically lowers the environmental impact of fabrication. Impact Printing allows for high levels of geometrical freedom, is reversible (since clay is reusable), and offers true circularity in construction workflows (Etherington, 2024).

In addition to structural applications, ceramic 3D printing is becoming a medium for esthetic and cultural innovation. Studio RAP (Netherlands) exemplifies this approach with its "New Delft Blue" project, which combines algorithmic design and robotic 3D printing to create custom ceramic facade tiles inspired by traditional Dutch craftsmanship. The process minimizes waste and allows for local, small-batch fabrication using naturally derived materials (Studio RAP, 2023).



Air barriers don't have to be old school.

INSULAIRE 2K™

Spray on with Insulaire 2K. Move on with your build.

Insulaire 2K is a polyurea air barrier membrane that sprays on in a seamless pass with no taping, cutting or layering required. Using fewer tools and smaller crews, it cures quickly, bonds securely, and delivers lasting strength, even in freezing temps.

elastochem.com/insulaire

learn more

ELASTOCHEM®

Canadian-made and owned 1-877-787-2436 elastochem.com

A bio-concrete (patent pending) prototype.

As material science evolves, the shift toward high-performance, low-carbon, and locally sourced printable materials appears essential for the future of sustainable construction.

Technical aspects and regulatory framework

Reinforcement integration and structural performance

One of the critical technical challenges in 3DCP is the integration of reinforcement within printed structures. Unlike traditional concrete construction, where reinforcement bars are embedded in cast elements, 3DCP must contend with the layering process, which often restricts the direct integration of rebar. Researchers such as Silveira *et al.* (2024) have explored methods such as incorporating vertical reinforcement cages post-printing or developing interlocking geometries to improve cohesion between layers. Their experiments demonstrated that properly reinforced 3D printed walls under axial compression can achieve structural behaviour comparable to traditional systems, provided the interface between layers and reinforcement is adequately managed.

Wagner *et al.* (2024) further emphasize the importance of rethinking the structural design paradigm. Rather than attempting to replicate monolithic concrete behaviour with inferior layer adhesion, 3DCP allows for more efficient shell and arch-like structural logic using high-performance concrete mixes. This shifts the focus from over-dimensioned solid concrete elements to thin-walled structures where strength derives from geometry and material quality, not mass. However, such optimization requires engineers to familiarize themselves with digital fabrication workflows, parametric modelling, and the non-uniform behaviour of layered materials (Inozemtcev, 2024).

To illustrate, a typical 3D-printed wall composition might involve a double-skin concrete extrusion with an internal cavity for insulation or reinforcement. Post-tensioning, short-fibre additions, or metal rods inserted between layers are among the methods being tested for load-bearing performance (Inozemtcev, 2024). These developments demand new competency from structural engineers, who must assess printed components not as conventional masses of concrete but as engineered shells with differentiated mechanical behaviour.

Building codes and regulatory challenges

The adoption of 3D-printed concrete in the construction industry remains constrained by the absence of standardized testing protocols and formal recognition within building codes. In Canada, for example, printed structures do not yet meet the full requirements of CSA A23.3 for reinforced concrete due to unresolved issues related to fire resistance, freeze-thaw durability, and long-term performance (Silveira *et al.*, 2024). As a result, 3D-printed homes in Canada typically require case-by-case approvals, often involving special permits or engineering justifications. These regulatory uncertainties present a major barrier to scaling the technology and integrating it into mainstream construction workflows.

To support wider adoption, building codes must evolve to reflect the specific mechanical behavior of printed elements, particularly their anisotropic properties, the bond strength between layers, and alternative reinforcement strategies. Without dedicated provisions for these features, 3D-printed components remain difficult to certify under existing structural design standards.

ISO/ASTM 52939:2023, *Additive Manufacturing for Construction—Qualification Principles—Structural and Infrastructure Elements*, offers an initial framework to address some of these challenges. The standard sets out quality assurance principles for non-metallic additive construction processes and applies to both load-bearing and non-load-bearing elements in residential and commercial projects. It emphasizes the control of process conditions and quality-relevant parameters on-site to promote safe and consistent practices in large-scale 3D printing.

However, ISO/ASTM 52939 has not yet been formally adopted in Canada. According to the Standards Council of Canada, the standard currently holds no regulatory status, limiting its enforceability within national frameworks. The absence of a national standard also reinforces the need for printed components to be reviewed by locally certified engineers and to comply with regional codes. This further highlights the importance of integrating new standards with existing regulatory systems.

Continued efforts are required to adopt such standards to national contexts and align them with evolving building codes, enabling the broader industrial deployment of 3D printing technologies in construction.

Conclusion

The next steps in advancing concrete 3D printing will focus on improving reinforcement strategies, refining printable material formulations, and expanding on-site capabilities. These developments will be instrumental in transitioning additive manufacturing from a niche technology to a widely adopted construction method (Placzek & Schwerdtner, 2023).

The future of 3DCP in Canada hinges not only on continued technical innovation but also on the evolution of regulatory frameworks that can accommodate and certify this emerging construction method. For 3DCP to scale beyond prototypes and one-off projects, its acceptance by authorities such as the National Research Council (NRC) and the Canadian Commission on Building and Fire Codes (CCBFC) is essential. These organizations play a pivotal role in integrating new materials and methods into the *National Building Code* (*NBC*), a prerequisite for mainstream adoption. The NRC's initiatives, such as the Additive Construction Consultation Workshop held in January 2025 in Toronto, are already advancing development in the right direction by effectively bringing together key Canadian 3DCP stakeholders.

Research and development are central to this transition. Standardized testing for fire resistance, freeze-thaw durability, and mechanical performance must be developed and validated under Canadian climatic conditions. The lack of such data currently impedes regulatory approval, even as early results demonstrate that printed structures can meet or exceed traditional benchmarks when properly designed and reinforced (Silveira *et al.*, 2024; Wagner *et al.*, 2024).

In Quebec, the Innovative Group for Sustainable Building Printing (RI^{3}D-FRQNT) is actively bridging the regulatory and technical gaps that currently limit the deployment of 3DCP. This interdisciplinary initiative, uniting academic institutions and industrial partners, aims to develop localized performance benchmarks, testing protocols, and certification frameworks tailored to the Canadian context. RI^{3}D's work supports the broader evolution of building codes, ensuring that emerging digital construction methods are recognized and responsibly integrated into national standards.

To accelerate adoption, a focus on prefabrication aims to integrate this technology progressively into existing workflows. 3DCP components can already be integrated into diverse building types, from multifamily residential projects to hotels, museums, and retail spaces, as soon as today (Medusia, 2024). However, scaling its impact will require several key steps: the development of national certification pathways for 3D-printed elements, the promotion of pilot projects in collaboration with municipalities, and stronger partnerships between academia, industry, and regulators. With these in place, 3DCP could become a cornerstone of Canada's low-carbon, high-efficiency buildings, transforming how we build and define architectural and structural standards in the 21st century.

View full list of resources online at constructioncanada.com/3D-printed-concrete.

Gabrielle Nadeau, M.Arch, is a project manager at Medusia. She oversees product development and marketing strategy, focusing on advancing 3D printing technology and its applications. Her work in AI explorations and 3D modelling enhances Medusia's creative approach, bringing fresh, tailored solutions that resonate with both functionality and design innovation.

Layered Logic

The Case for Rainscreens

By Jeff Ker

PHOTO ©NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

In the context of North America's diverse climate, rainscreen facades are considered to be one of the most practical and effective solutions for exterior wall design. Despite being a well-established technology, many buildings still lack the benefits of this advanced facade performance. This raises the questions: why, when, and where is a rainscreen the right choice? Water wins. That statement is often well understood in the world of construction. This is much like a rock/paper/scissors game. There is an order of dominance in the shapes vis-à-vis one another, but no one symbol dominates all. If water were included, it would win every time. Whenever considering the healthy structural integrity of a building, it typically does not include moisture in the mix. A humidity range of 30 to 50 per cent is beneficial for general health, but in construction, water permeation is typically frowned upon.

The evolution of building envelopes

The function of a building envelope is to separate the exterior environment from that of the interior. Traditionally, this includes separating thermal conditions, precipitation, and wind. Precipitation was traditionally thought to be managed with what is currently referred to as a perfect barrier, comprised of either masonry or wood. In contemporary designs, it could be expanded to metal, vinyl, or stucco (EIFS). The idea of the perfect barrier was that it possessed no flaws to permit moisture intrusion. And if it remained 'perfect,' it would succeed at this. The problem was, even if these barriers started out perfect, they seldom remained so. They would eventually develop flaws, and moisture would infiltrate without a sufficient means to escape before damage resulted.

Why imperfection works

An imperfect barrier, despite its name, has the potential of being a far more effective system than it sounds. In the world of facade technology, an imperfect barrier system is made up of a combination of barriers. Not one of the single barriers is tasked with completely stopping moisture intrusion. It uses a layering system and diminishes the precipitation/moisture as it attempts to transcend through multiple layers of the facade. In a sense, it is like a combination of hurdles that restrain the inward movement of precipitation through the system, until the water runs out of momentum and falls on its face. It is also vented and drained through an unobstructed active plenum. Venting ultimately absorbs and exhausts the remaining moisture that gravity could not drain. It should be noted that not all moisture found within a wall cavity is the result of precipitation, but could be the result of condensation from thermal deltas. Moisture within wall assemblies, regardless of origin, needs to be evacuated.

While the outermost layer has to manage the punishment of UV stress, wind, and other environmental stressors, the inner barriers do not. As a result, their lifespan is far greater. The outermost layer, if required, can be replaced with relative ease without disrupting the remainder of the inner system, and the envelope can remain intact. A rainscreen is an imperfectly 'perfect system' in this context. One could describe it as giving precipitation a front door to enter and a back door to exit.

The wondrous quality about high-performance rainscreen technology is that there is never a circumstance where it is the wrong solution for a facade system. Some environments can justify it more than others, but it is never less than a great design. It can also be made of a multitude of materials. Some materials will endure better than others when confronted with environmental stressors (UV, wind, freeze/thaw), but it is all about the how and virtually nothing about the what. Metals, fibre-reinforced composites (FRCs), ceramics, and phenolics are among a few materials that traditionally make up a contemporary rainscreen. Some of these materials require rainscreens to meet their respective warranty requirements. The materials are the outer skin of the assembly or the 'armour.' Rainscreens manage moisture well and conveniently work in unison with outboard insulated high-performance facade systems. This makes a rainscreen a relevant and passive technology when considering the higher thermal performance the building industry strives for, whether in a cold, temperate, or warm climate. Lastly, the successful management of wall assembly moisture that rainscreens offer also has beneficial implications for the health of occupants.

The role of RAiNA

In 2020, an association named Rainscreens in North America (RAiNA) was founded. The founding members appreciated the benefits of rainscreen technology and, through empirical building science-based expertise, were determined to share it with their industry peers. At the time, this technology had some roots in Canada, fewer in the U.S., and less in Mexico. One of its primary focuses was establishing a single and current design definition for rainscreen, as there were now many in the current industry and many of those that had evolved proved less effective than others. RAiNA arrived at this: "A rainscreen is defined as an assembly applied to an exterior wall which consists of, at minimum, an outer layer, an inner layer, and a cavity between them sufficient for the passive removal of liquid water and water vapor."

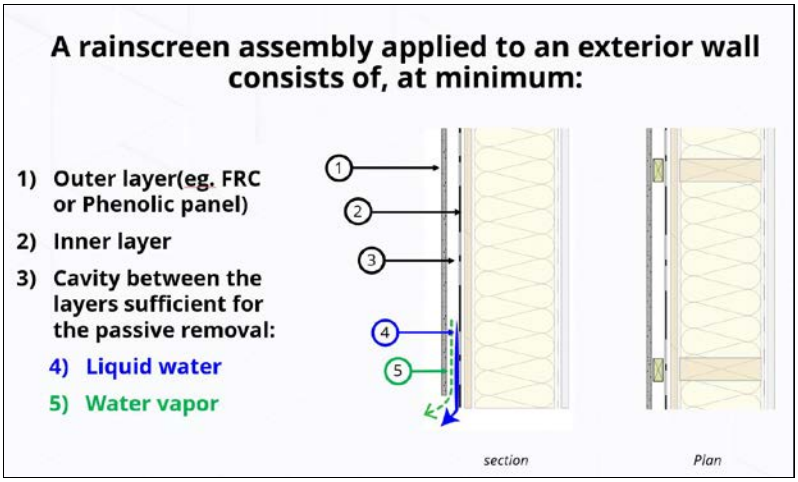
Since its inception, the association has opened itself to membership and invested in creating various committees to address technological questions, establish a vocabulary, develop specifications, etc. The RAiNA mandate is to be the authority on rainscreen wall assemblies in North America, and they pursue this relentlessly. Through this focus, they provide educational tools, conferences, and technical material for the industry to rely on as a guide for integrating this technology into the current design of new buildings and retrofits. Given some of the poor design iterations of rainscreens in the past 30 years, this association and initiative come at a good time, as the technology, applied correctly, is very successful.

New builds, retrofit, and economic realities

New buildings can be designed with a high-performance rainscreen facade, and many are. The question remains: Why are all new buildings not adopting a rainscreen-type facade? While there is no simple answer to this, there is a lingering resistance to change in the construction industry.

The passive power of the unobstructed active plenum.

PHOTO COURTESY ENGINEERED ASSEMBLIES



A single and current design definition for rainscreen.

PHOTO COURTESY RAINSCREENS IN NORTH AMERICA (RAINA)

Even if these barriers started out perfect, they seldom remained so.

PHOTO COURTESY ANDERTON STRUCTURAL REPAIR SERVICES (ASRS)

The adage of "why can't we do it the way we've always done it" continues to hinder innovation. Truth be told, Southeast California, Nevada, and Arizona do not see precipitation to any significant degree and would not suffer noticeably if rainscreen technology was not employed in these areas. Yet, it could be employed, and would not add any remote degree of significant costs to any cladding project. For that matter, buildings in the Middle East would be fine building their envelopes in their traditional manner as well. Though all of Europe, most of the Americas, Australia, Oceania, and Asia should be building with a rainscreen design. Rainscreen technology is smart technology and planning for the future often involves accepting change, not resisting it.

There is also the potential to incorporate rainscreens in retrofit scenarios. Repurposing buildings is a large market in recent years, and recladding a building for rebranding purposes, or for amping up thermal performance with outboard continuous insulation (c.i.), is an obvious opportunity for rainscreen technology. So, while rainscreens are an innovative facade design and there is never a geographical or climatic circumstance where it is the wrong solution, does that mean the industry will be retrofitting all buildings without rainscreens to have one? Probably not. In most cases, where a particular building could perform better, though there are no apparent signs of deterioration, no owner/operator will typically spend significant money to upgrade the facade when it does not appear to be compromising anyone. Then there are cases where a reclad is in order, but the process is prohibitive because the existing structure lacks the integrity to support a new one. This is common with brick buildings, for example, where masonry is in poor condition or brick ties are deteriorated. Some cases cannot be helped.

A new standard

An effective high-performance rainscreen benefits a building tremendously in managing unwanted moisture. The contemporary facade should be engineered with high performance in mind, as it is the armour of the primary passive environmental control system of a building. As the industry moves toward pushing the envelope of better building science, there is a need to ensure the best technology at hand is being employed for new builds and applicable retrofits, because rainscreens are affordable and effective. So the question is, can the industry afford not to build with rainscreens and make them the new standard? The answer is that it cannot.

Jeff Ker is the senior technical advisor at Engineered Assemblies. He has more than 30 years of technical sales experience within the Canadian architectural and construction community, 14 of which were spent specifically representing a variety of high-performance rainscreen systems.

Sustainable Ceilings

Balancing Acoustics and Design

By Rachel Berkin

PHOTOS COURTESY ROCKFON

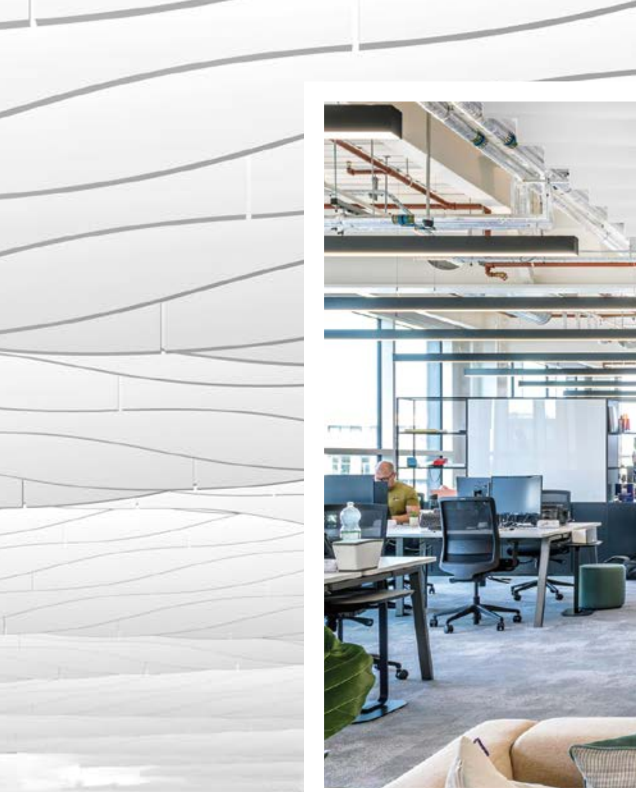
Designing new builds is more challenging than ever before. Project owners demand that architects and designers select more sustainable materials, whether a company is constructing a multifamily residential, commercial, or industrial building. When specifying ceiling tile and panel systems, those materials also need to meet the required acoustic performance goals and, in a perfect world, support the design vision simultaneously.

With a variety of options available for ceiling systems in the marketplace, how does one choose the right product? Two material types, in particular, can offer designers and architects significant benefits in terms of acoustical and sustainability requirements: metal and stone wool.

Design flexibility

Metal offers performance, durability, and flexibility. Due to its properties, aluminum in particular, does not need additional treatments to resist high heat or high humidity in environments. Most options are also highly corrosion-resistant, increasing their longevity.

Another advantage of metal, which designers and specifiers sometimes overlook, is it can be modified to meet the acoustical requirements



Ceiling systems with enhanced acoustic and sustainable design material help control noise, support confidential conversations, and contribute to a more focused and comfortable workspace for all users.

for a variety of buildings. Meeting these requirements is vital as it assists with managing noise control for factors such as privacy and speech intelligibility.

Select the right perforation pattern to enhance the acoustic performance in the building while also supporting design esthetics. They can be machined so building occupants cannot see them from about 1.5 to 3 m (5 to 10 ft) away. No matter the size of the perforations, these spaces allow sound to travel through the metal surface.

"The backs of the panels can be covered with an acoustical fabric, which offers two advantages. The fabric absorbs a portion of sound energy coming through the panels while, in the case of large perforations, making it so people cannot see through the panels," says Gary Madaras, acoustic specialist at Rockfon. "If a building owner requires extremely high sound absorption, this requirement can be met by adding a fibrous pad backer on top of ceiling panels."

"The addition of acoustical backers on metal ceiling panels offers upwards of a 0.95 noise reduction coefficient (NRC)," he adds.

Metal ceiling panels can also be installed with a combination of perforated and non-perforated panels if there are areas of a room where a designer prefers to have sound reverberate, such as near stages during conferences, where they might want a speaker's voice to project further.

Another advantage of metal ceiling panels is that they can be manufactured in various finishes, offering designers and architects flexibility. For people looking for a wood finish, many metal panels are produced using a baked-on coating that gives the metal woodgrain design options. The benefits of adding wood or other natural materials to a space are well-known, including bringing the feeling of being outside indoors; those benefits can also be achieved using a wood-like metal product that is more durable and less vulnerable to humidity.

Metal ceiling products are offered in snap-in, lay-in, torsion spring, and hook-on options. All use grid-based suspension systems, making installation straightforward for builders, who are typically accustomed to using these types of systems to install ceiling tiles, panels, and planks.

PHOTO BY TOM ARBAN

Royal Alberta Museum

Located in downtown Edmonton's Arts and Entertainment District, the Royal Alberta Museum (RAM) is one of the largest in western Canada. Greeting approximately 400,000 visitors annually, the RAM's 38,926-m^2 (419,000-sf) building houses 2.5 million items in its collection, as featured in more than 7,618 m^2 (82,000 sf) of exhibits on human and natural history.

Reflecting its focus on people and the environment, the fully accessible museum earned LEED Gold certification through the Canada Green Building Council (CAGBC). DIALOG Design with Ledcor Design-Build, museum planning consultant Lundholm Associates, and acoustical engineers FFA Consultants designed the RAM's interior walls and ceilings. Baytek Interiors provided design-assist services on the RAM's interior walls and ceilings.

To meet the project's numerous esthetic, performance, and sustainability goals, Baytek recommended multiple ceiling systems, including acoustic stone wool and metal ceiling panels, suspension systems, and perimeter trim. In addition to enhancing the RAM's visual experience with various esthetics and levels of light reflectance depending on the space, these products optimize the acoustics within the museum and contribute to ideal environmental conditions, helping the project meet LEED criteria.

The selected products were used to achieve multiple design goals depending on the needs of the museum spaces. Acoustic stone wool and metal ceiling panels showcase a modern appearance that complements the museum's design without distracting from its exhibitions.

The design has an engaging sense of place and responds to the architecture and spirit of Edmonton and Alberta. It features a continuous narrative, a dialogue between inside and out, between the city, the building, and nature.

The Royal Alberta Museum is bright, warm and welcoming, inviting visitors to come in and discover Alberta in a dynamic new way.

The selected products were used to achieve multiple design goals depending on the needs of the museum spaces. Acoustic stone wool and metal ceiling panels showcase a modern appearance that complements the museum's design without distracting from its exhibitions.

Stone wool for sustainability

More architects and designers are raising the bar, demanding product transparency and easy access to information to meet sustainability targets. Stone wool ceilings feature high sound absorption, fire resistance, humidity resistance, durability, and low environmental impact.

"We take one of the Earth's most abundant bedrocks, basalt, and perfect it. There is no need for added antimicrobials or fire-retardants because the source material has inherent fire and humidity-resistant properties. Stone wool ceiling tiles are a great choice for creating a healthy and safe indoor environment as it does not support the growth of mould, fungi, or bacteria," explains Nadia Tagashova, senior product manager for stone wool portfolio at Rockfon.

"Stone wool is a very efficient absorber compared to other material selections that are not necessarily fibrous," Madaras explains. "It is the fibres and structure of stone wool that make it a very efficient sound absorber over other material choices. For example, stone wool ceiling panels typically have high NRC ratings between 0.80 and 0.95, even at standard ceiling panel thicknesses of 5/8, 3/4, and 1 in. [15.8, 19, and 25.4 mm] allowing to absorb more sound."

Another key advantage of stone wool is its highlighted ability to be endlessly recycled. It does not degrade over time and has a 30-year warranty, allowing it to be recycled repeatedly without compromising product quality.

LEFT: Perforated metal ceiling panels can enhance acoustics in large spaces such as airports, reducing noise levels while maintaining a sleek and modern esthetic.

RIGHT: Architects and designers can experience the best of both worlds—performance and esthetics—with ceiling systems that enhance acoustics while complementing the overall design vision.

Safety education

Meeting the acoustical requirements of a building has always been considered a health and safety factor.

"Acoustics affect health, safety, and welfare," says Madaras. "Noise leads to stress, increased blood pressure, muscle tension, and voice fatigue, making it a crucial aspect of indoor environmental quality."

The American Institute of Architects (AIA) uses continuing education credits to educate and standardize acoustic performance to enhance the well-being of building occupants. A study in the Iranian Journal of Public Health also highlights the effects of noise on workers.

Ensuring a building has the optimal acoustics can be vital in some applications for the health and safety of building occupants. One example is in a hospital environment. Hospitals rely on optimal acoustics to protect patient privacy, enhance speech clarity (especially in crises or emergencies), and support seamless communication among employees in various spaces.

"In health care, alarm fatigue impacts clinical staff. Nurses on long shifts face constant medical alarms, and without proper acoustics, they struggle to localize them, risking the wrong direction in response. In emergencies, clear audio instructions can be a matter of life or death," Madaras explains.

Properly designed acoustics are important for safety in environments where safety is key. Poor acoustics may hinder the understanding of critical messages, affecting immediate safety responses.

Greater design flexibility to meet esthetic vision

In the not-so-distant past, architects' and interior designers' visions for a building's interior dictated the type of material to be specified. Thanks to evolving technologies and applications, this is no longer the case.

Over the decades, manufacturers have developed perforated metals that look like wood and perforated metals that can be solid, clean white panels. Now, the visual esthetic no longer necessarily determines the acoustic performance.

Architects and designers can experience the best of both worlds: performance and esthetics. Products available in a variety of forms, shapes, colours, and finishes can widen design possibilities and help achieve a designer's vision and performance goals.

Certifying sustainability

Architects today are redefining what it means to create a lasting impact. By using industry-recognized certifications and standards, professionals can ensure their projects have low embodied carbon, are resource-conscious, and are healthy for occupants. When designers and architects specify building products for projects, they must seek as much information as possible

PHOTO BY RANDY HOEPNER PHOTOGRAPHY

about each product, ensuring that third-party certifications validate any sustainability claims.

Highlighting specific, measurable, and science-backed benefits is a best practice that promotes transparency, builds trust, and strengthens sustainability claims. Product certifications relevant to stone wool ceiling tiles include GREENGUARD Gold Certification, which tests for volatile organic compounds (VOCs). All stone wool ceiling tiles achieve this credential. The industry relies on environmental product declarations (EPDs) to understand the overall impact of a product on the environment over its entire life-cycle, from extraction to disposal. Both health product declarations (HPDs), administered by the HPD Collaborative, and Declare Labels, administered by the Living Future, are essential tools for architects and designers who want to focus on material health and transparency.

Various third-party building standards address each of these product certifications, including LEED, WELL, and the Living Building Challenge. LEED v4.1 is a holistic certification focusing on reducing a building's environmental footprint across categories such as energy efficiency and water while encouraging the use of materials with third-party certifications. LEED is administered through the United States Green Building Council (USGBC) and Canada Green Building Council (CAGBC) in Canada.

Other certifications, such as WELL v2, focus on the impact of buildings on people in concepts such as air, materials, and sound. The Living Building Challenge v4.1 emphasizes human and environmental health through its energy, water, and materials petals while incorporating beauty and equity.

Third-party building standards such as these set the benchmark for sustainability targets. Stone wool can achieve optimal acoustics while maintaining low embodied carbon impacts, and it has published transparency labels with HPD and Declare.

Ultimately, selecting a sustainable and durable product is the cornerstone of achieving performance goals. It is more than a choice; it is a commitment to longevity, efficiency, and building better.

Rachel Berkin is the senior sustainability manager at Rockfon, where she spearheads the integration and execution of sustainability initiatives. Her focus is on healthy materials, carbon management, and performance optimization for stone wool and metal ceilings. With years of experience in the manufacturing sector, she is dedicated to advancing sustainable practices, serving as the Mindful Materials manufacturing engagement group chair. Berkin holds a master's degree in environmental policy and sustainability management.

SPEC-TACULAR
Moments on the Rock

By Jason Cramp

PHOTO ©KYLE BEDELL/ ISTOCK/GETTY IMAGES

CSC | Rock That Spec
2025 | CONFERENCE ST. JOHN'S • NF
May 21-25, 2025

The Delta Hotels St. John's Conference Centre in St. John's, the easternmost capital city in North America, set the stage for the 2025 Construction Specifications Canada (CSC) national conference, held May 21 to 25. With this year's theme, Rock That Spec, attendees were treated to a dynamic program reflecting the region's rugged charm and the profession's forward momentum. The week-long event featured insightful technical sessions, lively panel discussions, and inspiring keynote presentations, designed to sharpen skills and strengthen connections across the construction and design community.

Led by conference chair Harry P. Forbes, FCSC, the 2025 planning committee delivered a memorable and engaging experience for all in attendance. Supported by Abigail MacEachern, RSW, who headed the technical committee, and an outstanding team including Adam Strachan, RSW; Calvin Hollett, CCCA; Scott Cunning, CCCA; Chris Mooring, CCCA; Warren Dietrich; Andrew Smith; Cheryl Allen; and Steve Faulkner, the committee ensured that delegates had ample opportunities to connect, exchange ideas, and build lasting professional relationships. Thanks to their collective efforts, this year's event left participants energized and equipped with fresh insights to help them Rock That Spec in their work ahead.

Behind the scenes, Clafton Fiola, CSC's programs and events manager, played a pivotal role in ensuring the conference's seamless execution. Marking 30 years of dedicated service to CSC, Fiola's leadership has been instrumental in the continued growth of the conference sponsorship program, transforming it into the success story it is today.

Thanks to the combined efforts of the entire team, this year's event left participants energized and equipped with fresh insights to help them Rock That Spec in their work ahead.

The event started with a meet-and-greet for new members and first-time conference attendees, offering a relaxed setting to connect ahead of the Welcome Reception, which Arconic Architectural Products sponsored. The following morning, delegates and guests gathered for a satisfying Welcome Breakfast to officially start the week's program.

Technical sessions were conducted throughout the conference, enabling attendees to customize their experience by selecting from three specialized educational streams. Stream A focused on specifications and building science, highlighting practical material specification strategies and ensuring code compliance. Stream B tackled innovations in materials and performance challenges, exploring design and engineering solutions that prioritize performance in emerging building technologies. At the same time, Stream C centred on sustainability and life-cycle analysis, (LCA) examining long-term sustainability strategies, life-cycle metrics, and the impact of cutting-edge technologies on transforming the built environment.

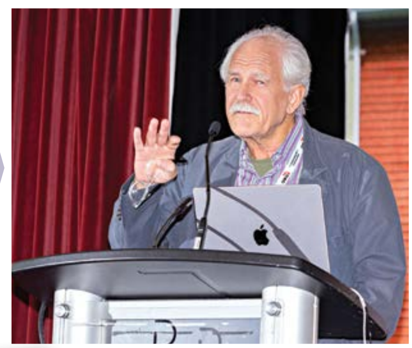
This year's technical program featured many compelling presentations across all three streams. "Masonry Specification Pitfalls," presented by Andrew Smith, M.A.Sc., P.Eng., of the Canada Masonry Design Centre, offered practical insights on avoiding common errors in masonry documents. In "Wildland-Urban Interface (WUI) Fires in Canada and Applicable Solutions," Ali Al-Janabi, M.Sc., P.Eng., explored resilient design approaches for at-risk communities. High-performance envelope design was the focus of "High Performance Facades for a Sustainable Future" by Andrew Brassington, CTR, technical sales manager, Western Canada for Owens Corning. "Fire Code and Design: Understand the Gaps—Specifications" covered fire safety and compliance, led by Alana MacLellan-Bonnell of Jensen Hughes Consultants. Acoustical performance in timber buildings was addressed in "Effective Approaches to Acoustical Challenges in Mass Timber Buildings" by Kiyoshi Kuroiwa, CCCA, and Sarah Mackel, technical associate, of Aercoustics. Meanwhile, Cyle Sheppard and Tanmay Naik, sustainability designers at NORR, explored the role of LCA in shaping more sustainable specifications in their session, "How Focusing on Embodied Carbon Will Impact Sustainable Specifications."

Sessions on project delivery and envelope retrofits also stood out. Stacey McDougall, P.Tech.(Eng), NCSO, LEED AP, project technologist, of RFC Engineers shared lessons from an occupied retrofit in "Revitalizing a Community: Lessons in Large Scale Building Envelope Retrofits," and Keith Robinson, FCSC, FCSI, RSW, detailed

Yvon Lachance, FCSC, CCCA, picks up his badge at the registration desk during the opening day of CSC Conference 2025 in St. John's.

PHOTOS BY CRAIG A. WILLIAMS PHOTOGRAPHY

Attendees reflect on their evolving roles during Thursday's luncheon keynote, "Be Indispensable," by Joelle Jefcoat, FAIA, Esq., of Perkins Will. Sponsored by Dulux / Sico.



Delegates take in a thought-provoking presentation by Robert Mellin, FRAIC, NLAA, during Friday's luncheon, sponsored by Dulux / Sico Architectural Coatings.

Lively networking moments were a hallmark of the conference, thanks to numerous opportunities arranged by the organizing committee.

In a packed seminar room, Andrew Smith, M.A.Sc., P.Eng., of the Canada Masonry Design Centre presents "Masonry Specification Pitfalls," offering practical guidance on avoiding common errors in masonry documents.

Chapters: Accolades for Individuals and Collectives

CSC president Russell Snow, FCSC, CSP, CTR (far left) presents the Chapter Award of Merit certificates.

The President's Chapter Awards of Merit encourage and recognize active, forward-looking chapters in categories ranging from membership growth and education programs to financial contributions and meeting attendance. When it came time to decide the best of the best and hand over the Lloyd Boddy Chapter of the Year Award, the London chapter was the winner for the second consecutive year. The award recognizes the chapter's efforts towards the association's goals through professional development opportunities, spirit and participation in the local industry, and CSC committees.

The chapters also presented Chapter Awards of Merit to their outstanding members. This year's recipients include:

- Atlantic—Warren Dietrich, Ralston Mooring, CCCA, and Robert Rowlings
- Calgary—Kirsten Janes and Casey Reece
- Edmonton—Dylan Leclair, CTR, CSP, and Kevin Osborne
- Grand Valley—Kyle Melvin
- Hamilton/Niagara—Paul Fancy
- London—Josh Bowman, CTR, and Paul Gerber
- Montreal—Raphaële Bernier and Mariève Rochefort
- Okanagan Valley—Terry Brown and Herb Guhl, FCSC, RSW
- Quebec City—Mélissa Hamel and Marie-Christine Savard
- Regina—Jillayne Williamson
- Saskatoon—Darly Cherry, CCCA, and Amber Moar
- Toronto—Kevin Becessar, Natasha Brin, CSP, Karthick Kanagalingam, CTR, and Joshua Trevisan, CTR
- Vancouver—Tony Martinelli, CCCA, and Mikhala Vail
- Winnipeg—Kelly Pickard, Terri Randall, and Mile Rendulic

sustainability metrics in "Low Carbon Concrete." Tammy Stockley, PQS(F), MRICS, GSC, AET - chair - CIQS, CIQS - board director, and Altus Group, director development advisory, brought forward strategies for collaboration in "How Specifiers Could Benefit from Quantity Surveyors' Input During Design and Construction."

The day concluded with a well-attended panel discussion on adapting to shifting construction industry resources, moderated by Abigail MacEachern, architect, NSAA RSW, LEED AP, AIA international associate, CDT, design director and technical office continuous improvement lead for Pomerleau. The panel featured Jonathon Greenland, CTR, western Canada sales manager for Arconic Architectural Products, Jeff Haleshewski, RSW, specifications writer, with DIALOG, and Joelle Jefcoat, FAIA, Esq., deputy general counsel, principal, of Perkins Will, offering candid perspectives on how professionals are navigating workforce and material constraints in today's market.

On the final day of technical programming, attendees explored another full slate of

Conference speakers delivered engaging and insightful sessions across all three technical streams at CSC 2025.

Jonathon Greenland, CTR, of the Calgary Chapter (right), receives the Russell W. Cornell Award for sponsoring the most new members—seven in total—from CSC president Russell Snow, FCSC, CSP, CTR.

Members of CSC's College of Fellows present at the conference welcomed the 2025 College of Fellows inductee. Bottom row centre: David Graham, FCSC (Calgary chapter).

Incoming president Kelly Sawatzky, RSW, CSP, addressed attendees at the President's Ball, recognizing the dedication of CSC's volunteers and sharing her inspiring vision for the year ahead.

The London Chapter takes home the Lloyd Boddy Chapter of the Year Award for the second year in a row.

engaging educational sessions. Brent Belanger, CTR, senior architectural technical solutions manager with CertainTeed Canada, presented "Code Requirements and Innovation for Fire-rated Assemblies," offering updates on fire performance standards and innovations in gypsum-based systems. Paul Gerber, senior specifier with Archispectural Consulting Inc., provided a practical and eye-opening session on "Substitutions vs Alternatives – a Terminology Misuse," highlighting the often misunderstood distinctions and implications for project documentation and consultant reviews.

Stephanie Fargas, CSP, RSW, associate and sustainable materials specialist at DIALOG, and Matthew Winters, project manager with Steligence, ArcelorMittal, teamed up to deliver "Practical Guidelines & Best Practices for Low Carbon and Equitable Steel," which examined environmental responsibility and equity in steel material sourcing. In "LFW 101: A Sustainable Approach to Building Envelope Construction," Mohammed Dawoud, technical development manager at Ennova Facades, walked attendees through the benefits of modular large-format wall systems for enhanced performance and sustainability.

Dale Jarvis, executive director of Heritage Newfoundland and Labrador, shared local insight in "A Window on Heritage," exploring the preservation of historic wooden windows and vernacular architecture. Michael Barrington, P.Eng., PE, BECXP, director at Fishburn Sheridan & Associates Ltd., presented "Building Enclosure Commissioning," detailing how BECx processes can reduce future risk and enhance building performance from design to operation.

Later in the day, Dory Azar, OAA, LEED AO, MRAIC, senior strategic sales specialist with RIB Software, energized the crowd with "Social Media for Architects: Unlocking Possibilities and Benefits," exploring how architects can amplify their voices and connect with clients through platforms like TikTok and Instagram. Troy Ferriera, technical director of the Canadian Roofing Contractors Association, demystified "Wind Uplift on Low-slope Roofing Assemblies," breaking down key code requirements and testing protocols for modern roofing performance. Rounding out the educational sessions, Yuri Bartzis, director of innovation operations at Pomerleau, shared insights into

This year's National Award of Merit was presented to (left to right) David Graham, FCSC; Jennie Lamoureux, CTR; Jeff Halashewski, RSW; and Kelly Sawatzky, RSW, CSP.

Top (left to right): CSC president Russell Snow, FCSC, CSP, CTR; Abigail MacEachern, RSW; Harry Forbes, FCSC; and Yvon Lachance, FCSC, CCCA. Forbes and MacEachern received the Conference Program Director's Award in recognition of their work in preparation to host CSC Conference 2025.

Above (left to right): CSC president Russell Snow, FCSC, CSP, CTR; Jesse Watson, RSW; Jeff Halashewski, RSW; Don Shortreed, FCSC, RSW; Mila Legge, FCSC, RSW; and Abigail MacEachern, RSW. Legge, Shortreed, and Watson received the Conference Program Director's Award for their work as CSC representatives on CCDC. Halashewski was also recognized for his outstanding support of the Technical Studies Committee.

emerging technologies and site robotics in "Robotics and Innovation in Construction."

The day concluded with a second well-attended panel discussion, tackling the topic of Remote Projects—the unique challenges involved in contracting, designing, specifying, and supplying work in regions with limited construction resources. Moderated by Adam Strachan, RSW, specification writer with CBCL Ltd., the panel featured Stephanie Fargas, CSP, RSW, associate at DIALOG; Michael Gehue, P.Eng., of Pomerleau; and Steve Gusterson, FCSC, CTR, vice-president of pre-construction design at Alumicor. Their combined expertise offered real-world strategies for navigating logistical, material, and labour-related complexities in remote project delivery.

Throughout the week, attendees—toting their sponsored conference bags—had multiple opportunities to expand their professional networks during four dedicated Speed Networking sessions, held between seminars and during the always-popular Connections Café in the exhibit hall.

At Thursday's luncheon, sponsored by Dulux / Sico Architectural Coatings, attendees were invited to reflect on their evolving role in the construction and design industry with a keynote presentation titled "Be Indispensable" by Joelle Jefcoat, FAIA, Esq., of Perkins Will. Drawing from her unique perspective as an architect and legal professional, Jefcoat delivered a compelling talk on cultivating trust, credibility, and cross-disciplinary expertise in a rapidly changing AEC landscape. She challenged delegates to think beyond their traditional roles and embrace a mindset of continuous learning, strategic thinking, and adaptability. With candour and clarity, Jefcoat shared practical insights on how professionals can position themselves as essential contributors, no matter where they sit within a project team or organization.

At Friday's luncheon, sponsored by Dulux / Sico Architectural Coatings, delegates were treated to a rich and thought-provoking presentation by Robert Mellin, FRAIC, NLAA, architect of Robert Mellin Architect in St. John's. A registered member of the Newfoundland and Labrador Association of Architects, a Fellow of the Royal Architectural Institute of Canada (RAIC), and a member of the Royal Canadian Academy of Arts and the Vernacular Architectural Forum. A past chair of the Heritage Foundation of Newfoundland and Labrador, he was appointed to the Order of Canada in 2014. He was awarded an honorary doctorate from Memorial University in 2015 for his contributions to preserving the province's built heritage.

CSC president Russell Snow, FCSC, CSP, CTR, (far left) and CSC 3rd vice-president, Jonathon Greenland, CTR, presented Program Director's Awards to: (left to right) John Alley; Kimberly Tompkins, FCSC, CTR; and George McCutcheon, CSP, in recognition of their exceptional contributions and ongoing dedication to the Vancouver Chapter.

Kazim (Kaz) Kanani, FCSC, CCCA, CSP, received the Program Director's Award for Media, Communications, and Promotions, recognizing his leadership and eight years of volunteer service in advancing CSC's media and communications efforts. Left to right: CSC president Russell Snow, FCSC, CSP, CTR; David Graham, FCSC; and Kanani.

Members of the Education Certification Committee received Program Director's Awards for their dedication and efforts in advancing CSC's education and certification goals.

Left to right: CSC president Russell Snow, FCSC, CSP, CTR; Shamanna Kelamangalam, CTR, PCD; Anne-Sophie Allard, CCCA; Abigail MacEachern, RSW; Herb Guhl, FCSC, RSW, CCS; and Peter Hiebert, FCSC, CTR. Also recognized, but not present for the photo: Paul Wong, CSP, and Grace Bergen, CCCA.

In his keynote, Mellin offered a compelling overview of Newfoundland's architectural evolution following its 1949 confederation with Canada. Through his watercolours, drawings, and photographs, he illustrated how Premier Joseph Smallwood's embrace of modern architecture shaped the province's built environment. Mellin also highlighted the artistic influence of local architects Frederick A. Colbourne and Angus J. Campbell, providing the first comprehensive reflection on this formative period in both urban and rural development.

Friday night's Rally in the Alley (fun night) was a true East Coast celebration—no outboard motor required, just a good pair of walking shoes and a spirit for fun. Before tucking into a traditional fish and chips dinner at the Delta Hotel, delegates each chose a coloured bandana, which determined their starting point for the evening's lively pub crawl through the iconic streets of downtown St. John's, Nfld. From there, three groups set off to experience the city's legendary hospitality, with stops featuring local entertainment and cultural touchstones including sing-songs, step-dancing, and even the time-honoured Newfoundland screech-in. The evening wrapped up with all groups reuniting at a final venue fit for a proper kitchen party, complete with a live dance band and plenty of toe-tapping merriment.

Before dinner service began, delegates heard from a Home Again Furniture Bank representative. This nonprofit organization is dedicated to helping individuals and families in need by providing gently used furniture to create safer, more stable home environments. In keeping with CSC's tradition of giving back, this year's host chapter selected Home Again as the conference charity, further reinforcing the East Coast spirit of community, care, and coming together.

The following evening, delegates gathered for the perennial highlight of the conference—the President's Reception and Ball, proudly sponsored by Alumicor Ltd. Before the formal program began, CSC president Russell Snow, FCSC, CSP, CTR, president-elect Kelly Sawatzky, RSW, CSP, and immediate past-president David Graham, CSI board chair William Sundquist, FCSI, and other executive members, along with their significant others, were piped into the ballroom.

This year's celebration was expertly emceed by Craig Wetmore, FABAA, CDT, EBS, a longtime industry colleague and friend of outgoing president Russell Snow, FCSC, CTR, CSP, who perfectly weaved humour with heartfelt stories about Snow, ensuring everyone in attendance felt both genuinely connected and thoroughly entertained. Immediately following

Ali Ahrabi, M.Sc., P.Eng., PMP (middle) received the 2025 F. Ross Browne Award for editorial excellence presented by *Construction Canada's* executive editor, Jason Cramp (left) and Kenilworth Media's vice-president of sales, Joseph Galea.

Right: CSC president Russell Snow, FCSC, CSP, CTR, presented a President's Award to Don Shortreed, FCSC, RSW, Life Member (left).

Top right: CSC president Russell Snow, FCSC, CSP, CTR, presented a President's Award to Sandro Ubaldino (left).

his introduction, Snow delivered his outgoing address and announced the names of the president's award recipients. This prestigious honour is bestowed upon members who have directly provided exceptional support, guidance, mentorship, and assistance to the president. It recognizes individuals whose contributions have significantly aided the president in fulfilling their duties and advancing CSC's mission. This year's recipients included: Don Shortreed, FCSC, RSW, Life Member; Sandro Ubaldino; Bob Mercer, FCSC; Darlene Helfrich, CTR, IDT; Steve Gusterson, FCSC, CTR; and Cathy Schneider, CTR.

Attendees also heard from incoming president Kelly Sawatzky, RSW, CSP, who addressed the audience with a message of gratitude and inspiration. Reflecting on the association's ongoing evolution, Sawatzky acknowledged the impactful leadership of her predecessors while expressing her commitment to building on that legacy. She emphasized the vital role of CSC's dedicated volunteers—past and present—whose efforts continue to shape the strength and success of the organization. With optimism and resolve, Sawatzky looked ahead to a promising future driven by collaboration, passion, and professional excellence.

Recognizing excellence

The annual awards luncheon, sponsored by Owens Corning Canada, provided a meaningful moment to celebrate excellence within the CSC community. Emceed by John Alley of the Vancouver chapter, the event honoured the outstanding contributions of members and associates whose dedication continues to strengthen the association and elevate the industry.

National Award of Merit

This award is presented to members in recognition of their contributions to the well-being of CSC beyond that of a Chapter Award of Merit, for exceptional effort, zeal, effectiveness, and time expended for the benefit of CSC as a whole and towards the betterment of the industry. This year, the National Award of Merit was presented to four individuals: David Graham, FCSC; Jeff Halashewski, RSW; Jennie Lamoureux, CTR; and Kelly Sawatzky, RSW, CSP.

Program Director Awards

Program Director Awards are presented to those who have provided commitment, dedication, and service to the betterment of CSC and its core beliefs and have greatly assisted in improving CSC programs. The respective Program Directors have nominated the award recipients.

CSC president Russell Snow, FCSC, CSP, CTR, presented a President's Award to Steve Gusterson, FCSC, CTR (right).

CSC president Russell Snow, FCSC, CSP, CTR, presented a President's Award to Darlene Helfrich, CTR, IDT (right).

Conferences

In recognition of their work in preparation to host CSC Conference 2025, members of this year's Conference Committee received the Conference Program Director's Award:

- Harry Forbes, FCSC
- Abigail MacEachern, RSW

Technical Studies Committee

This award was presented to Mila Legge, FCSC, RSW; Don Shortreed, FCSC, RSW; and Jesse Watson, RSW, for their work as the CSC representatives on CCDC. In addition, Jeff Halashewski, RSW, was recognized for his outstanding dedication and support of the Technical Studies Committee. His thoughtful contributions, collaborative spirit, and technical insight have been instrumental in helping the committee achieve its strategic goals.

Membership Communications and Legislative

This award was presented to John Alley, George McCutcheon, CSP, and Kimberly Tompkins, FCSC, CTR, recognizing their exceptional contributions and ongoing dedication to the Vancouver chapter.

Education Certification Committee

For their dedication and efforts in the advancement of the CSC Education Certification Committee goals, this award was presented to Anne-Sophie Allard, CCCA; Grace Bergen, CCCA; Herb Guhl, FCSC, RSW; Shamanna Kelamangalam, CTR; Abigail MacEachern, RSW; and Paul Wong, CSP.

Media, Communications and Promotions Report

Kazim (Kaz) Kanani, FCSC, CCCA, CSP, was honoured with this award for his leadership and for volunteering in the media, communications, and promotions over the last eight years. His vision, expertise, and unwavering enthusiasm have been instrumental in helping CSC stay relevant and connected in an increasingly digital world.

F. Ross Browne Award

The F. Ross Browne Award recognizes editorial excellence in *Construction Canada*, highlighting the author or co-authors of an article in the magazine. The winner of this year's F. Ross Browne Award was Ali Ahrabi, M.Sc., P.Eng., PMP, for his article, "Advancing Concrete Anchor Installation Standards: What's New in CSA A23.3 Annex D," which appeared in the January 2025 issue of *Construction Canada*.

Drawing on a strong academic and professional background in structural engineering, Ahrabi

The President's Ball was expertly emceed by Craig Wetmore, FABAA, CDT, EBS, a longtime colleague and friend of outgoing president Russell Snow, FCSC, CTR, CSP. Wetmore blended humour with heartfelt stories, leaving attendees both entertained and deeply connected.

holds a bachelor's degree in civil engineering (2006) and a Master of Science in civil engineering from Concordia University (2012), and has been a licensed professional engineer (Ing.) in Quebec since 2013. With experience across a range of engineering disciplines, Ahrabi now serves as manager of codes and approvals at Hilti Canada, where he plays an active role in the development of fastening-related provisions within the *National Building Code* (*NBC*) and the Canadian Standards Association (CSA). His contributions focus heavily on anchoring systems, and he is a member of several CSA technical committees, including A23.3, S6, S16, and S304, helping to guide key updates in structural standards.

Fellowship

This year, the College of Fellows welcomed a new inductee with the formal induction of David Graham from the Calgary chapter. Brian Colgan, FCSC, RSW, assumed Claude Giguère's responsibilities as chancellor in his absence and was joined at the induction ceremony by John Lape, FCSC, FAIA, FCSI, CCS, dean; and Kimberly Tompkins, FCSC, CTR, registrar. They were accompanied by many other Fellows and attendees who gathered to celebrate the occasion.

CSC president Russell Snow, FCSC, CSP, CTR (left), pictured with his wife, Shelly, at the President's Ball.

Members Old and New

Since 1954, CSC has been an active and respected association in Canada's construction industry. The benefits of membership in CSC are clear, as evidenced by the association's overall member retention. This year, more than 156 members celebrated anywhere from 10 to 65 years of continuous membership in CSC.

Eureka Club Award for Membership Recruitment

To qualify for this award, a member must sponsor at least three new members during the membership year. Twenty-three current members sponsored a total of 35 new members, two members sponsored three or more, with Brad Beharrell of the London chapter with three and the other member and recipient of the Russell W. Cornell Award for most new members sponsored, with seven new members, is Jonathon Greenland, CTR, of the Calgary Chapter.

MEMBERSHIP LONGEVITY AWARDS

10 Years

Adam Develter, CTR
Alison Henry, CTR
Amir Jamal, CCCA, CSP
Anne-Sophie Allard, CCCA
Carlos Alegre
Craig Wadsworth, CCCA
David Dagnall, CCCA, CSP
Deborah Yates
Don Shankowsky
Evan Marshall, CSP
Fanny Bertrand
Fred Fulton
Harry Schroeder, CCCA
Ian Gruber, CTR
Jane Calvert
John Alley
Justin Tudor
Kenny Tam, CSP
Kevin Kramers, CTR
Kirk Beggs
Kirsten Janes
Lane Beougher
Laura Herbert
Mack Galouzi
Michael Phillips, CSP
Michelle Wood
Mike Vetzal
Nigel Francis, CCCA
Pete Overholt

David Graham

Graham joined CSC in 2003 and has spent the past 20 years as a highly engaged member, serving as a participating leader, instructor, and mentor. His journey began with regular attendance at Edmonton chapter meetings, where he actively introduced new industry professionals to CSC and encouraged them to get involved as they entered the field.

As his career progressed through moves to Calgary, Vancouver Island, and back to Calgary, he maintained active chapter participation and steadily grew his professional specification practice. He also served as a design mentor for the RAIC Syllabus Program, continually championing CSC involvement and fostering a strong professional network rooted in the CSC community.

President-elect Kelly Sawatzky, RSW, CSP, with her partner, Ross Ruttan, at the President's Ball.

Philip Caron
Sherri Wildman, CTR
Stefanie Hargest
Tom Grella
Wade Klassen, CCCA
William Snow

15 Years
Alena Fisher
Alpana Ansilio
Amin Sheivari
André Bélanger
Bart Draper
Behn Toop
Cameron Ewart
Christine Lintott
Coram Lalonde, CCCA
Dan Dufort
Daniel Morin
Danny Young
David DeMaria
Dennis Hall
Denny Duong, CSP
Greg Hofsted, FCSC
Jamie Rickard
Jared Cardiff, CSP
Jay Simpson, CTR
John M. Connely, CTR
Lee Hawkins
Lyndon Regular, CTR
Melissa Haynes, CCCA
Michael Fallon
Mike Kriesel, CTR
Nellie Vila-Legare, CTR
Paul Wong, CSP
Peter Saunders
Raef Ghali, CCCA
Richard Lucid, CTR
Robert (Bob) Bennett
Ryan Dawinan, CSP
Sal Maida
Sheldon Wolfe
Stanley Bury, RSW
Steven Buhagiar
Steven Linton
Tobie Guerin, RSW
Tracy Gould
Wayne Austin

20 Years
Bill Pelke
Bruce Duffield
Carma Holmes
Chris Lance, CCCA
Christy Karpenko
Denise Luksys, CCCA
Derek Semeniuk, CTR
George McCutcheon, CSP
Ghislain Bélanger
Isabelle Champagne, FCSC, CTR
Jacques Gauthier, CCCA
James Farrington, RSW
Joseph Giesbrecht, CSP
Kelly Sawatzky, CSP, RSW
Kenneth Lapp
Philip Chiovitti, CCCA
Sellathurai Selvarajan, CCCA
Steven Ioannides, CTR, CSP
Susanne Widdecke, CCCA
Theresa Prince, RSW
Thomas Ward, CCCA
Tom Bartley

25 Years
Alana Sunness Griffith, FCSI
Andrew Kennedy
Blair McDougall
Bob Driedger
Bob Lang, CTR
Brian Hall
Bruce Gillham, FCSC, CTR, CCCA
Cornelius Van Dyke
David Forsey, CTR
Ed Makarchuk, CTR
Eugene LaVallee
Franco Arpino
Jerry Wik
John Lape, FCSC, FCSI
Neil Cairns
Norm Villeneuve, RSW, CCCA
Pamela Shinkoda
Rick Adams, RSW
Salvatore Ciarlo
Steve Gusterson, FCSC, CTR
Steve LeBlanc, CTR
Wayne Gomes, CTR

30 Years
Chris Walton
Fred Rabiner
Hugh Lim
James Mansfield, RSW
James Waldbillig, CTR
Karl Fasolino, CTR
Marla Cosburn, CTR
Murray Alston, CTR
Peter Barrett
Roger Ali, CTR
Roy Jeff Goulding, CTR
Stephen Gazzola

35 Years
Brian Salazar
Frank Zack, RSW
Kelly Boldt, CSP
Mary Friesen, FCSC, RSW
Paul Pushman
Renato Veerasammy
Tom Newton, FCSC, CCCA

40 Years
Matthew Roberts, RSW
Sandro Ubaldino, FCSC, RSW

45 Years
Peter Wong, RSW, CCCA
Raymond Nakonechny

50 Years
David James
John Chomiak, FCSC

65 Years
Donald Ivkoff, RSW

Newfoundland tap dancers kicked off the President's Ball with lively steps, soon joined by delegates who followed their lead and filled the dance floor in true East Coast spirit.

Friday night's Rally in the Alley was a true East Coast celebration—no outboard motor required, just good shoes and a spirit for fun.

The night wrapped up with all groups reuniting at a final venue for a kitchen party-style finale, complete with a live band and plenty of toe-tapping merriment.

Delegates selected coloured bandanas to determine their starting points for a lively pub crawl through downtown St. John's, filled with music, step-dancing, and screech-ins.

Graham played a key leadership role in the rare and commendable formation of the Vancouver Island chapter, working to raise local awareness of CSC, particularly among the architectural community, where he is a well-respected member. He went on to serve as chapter chair and later director, leading mentorship and outreach efforts, co-ordinating CSC courses and events, and contributing meaningfully as part of CSC's board of directors.

In 2019, he was elected as CSC's 4th vice president, beginning a national leadership journey that culminated in his term as president for 2023–2024. While on the executive council, Graham was known for his infectious enthusiasm and strong commitment to mentorship—an effort that led to the development of CSC's new mentorship program during his year as immediate past president.

"Dave has always put himself into the community at large and has been passionate with his expectations of the specifications segment of our professional practice. He is a passionate supporter of the principles espoused by the learning programs at Construction Specifications Canada." — Keith Robinson, FCSC, FCSI, RSW.

Next Stop: Peg City

Looking ahead to 2026, CSC is pleased to announce that the next national conference will be held in Winnipeg, with events taking place at the Delta Hotel and the Winnipeg Convention Centre. Conveniently connected, both venues are just steps apart, making it easy for delegates to navigate the full program. With the continued support of the national conference committee and the association, Conference 2026 is already shaping to be another must-attend event on the CSC calendar.

CSC | Rock that Spec

2025 CONFERENCE ST. JOHN'S • NL

May 21-25, 2025

CSC Conference Committee expresses its appreciation to Corporate Sponsors
Le comité du Congrès DCC exprime sa reconnaissance aux commanditaires corporatifs

DIAMOND/DIAMANT

Alumicor BUILDING EXCELLENCE

REYNOBOND®

CUSTOM® TILE INSTALLATION SYSTEMS

Dulux SICO PROUDLY CANADIAN FIÈREMENT CANADIEN

IKO® COMMERCIAL

Kenilworth MEDIA INC.

LINCORA LOCKERS

MAPEI®

OWENS CORNING®

RIB

PLATINUM/PLATINE

ENNOVA

POMERLEAU

GOLD/OR

3M
ADEX architectural COATINGS
Alleguard
ARDEX AMERICAS
Allied Technical Sales Inc.
BASF We create chemistry
BEZDAN SINCE 1960
CPCI.ca CANADIAN PRECAST/PRESTRESSED CONCRETE INSTITUTE INSTITUT CANADIEN DU BÉTON PRÉFABRIQUÉ ET PRÉCONTRAINT
certainteed SAINT-GOBAIN
CS
ELEVATE
GP Georgia-Pacific Gypsum
GRECO Architectural Metal Products A CSW Industrials Company
hadrian
Henry
hubexo
inpro
Kingspan
NaturaSeal PERFORMANCE COATINGS FOR A HEALTHY PLANET
NEOGARD A part of HEMPEL
NORTHERN FACADES
Oldcastle BuildingEnvelope
POLYGLASS MAPEI GROUP
Rockfon
ROCKWOOL
SOPREMA
sound solutions Architectural Products
Schluter Systems
BUILDING TRUST CONSTRUIRE LA CONFIANCE Sika
somfy
ENVIROSPEC 1979
AirOutshield by SRP
V-SPECS
VELUX The No Leak Skylight™
Vitro Architectural Glass
WHITE CAP

SILVER/ARGENT

alfrex Fire Resistant & Non-Combustible Cladding
ALUMICO
ARMATHERM™ THERMAL BRIDGING SOLUTIONS
BAILEY METAL PRODUCTS LIMITED
Cafco
Chalkline
DUPONT
DURAbond 50 YEARS
Flextile Ltd.
gcp applied technologies
GGH GLAZING SUPPLY COMPANY
STEGO
UNICEL ARCHITECTURAL Defining the Space Within
W. R. MEADOWS A Family Company Since 1926

BRONZE

ABET LAMINATI Unlimited selection
ALCOTEX ALUMINUM COMPOSITE MATERIAL
AWMAC
CARLISLE SPRAY FOAM INSULATION
CGC
DuROCK Alfacing International Limited
dyson
GYPSUM ASSOCIATION
Morin By Kingspan
NFCA National Floor Covering Association

Manufacturers' Profiles*

JULY 2025

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.

NRCA Guidance on Roofing

The National Roofing Contractors Association publishes several publications to assist roof system designers and specifiers.

The NRCA Roofing Manual—available in hard copy and electronic download—is a four-volume set consisting of NRCA's best practice guidelines for the design, specification and installation of sustainable, high-quality roof systems. Each year, NRCA updates and publishes the oldest volume of the set.

Consider pairing the NRCA Roofing Manual with NRCA Construction Details: CAD Files, a manipulatable file that provides graphic depictions of typical roof system detail configurations.

The NRCA Roofing Manual Anthology: 1971-2021, provides past editions of the NRCA manuals in an electronic format to use when evaluating existing roof systems and roofing industry guidelines that were applicable in the past.

Information on these NRCA publications, as well as membership information, is accessible at nrca.net/shop/technical

NRCA
NATIONAL ROOFING CONTRACTORS ASSOCIATION

Mark Graham, NRCA vice president of technical services
2 Pierce Place, Suite 1200 Itasca, IL 60134
(847) 299-9070

Canadian Craftsmanship, Built to Last

Saint-Gobain, through its building products subsidiary CertainTeed Canada Inc., recently unveiled CarbonLow™, a new line of low-carbon gypsum wallboard to be sold in Canada in 2025. With up to 60% less embodied carbon cradle-to-gate than traditional alternatives, CarbonLow™ will allow contractors and homeowners to utilize the quality CertainTeed solutions they trust, while reducing their environmental footprint.

The range of solutions includes Easi-Lite®, Type X, M2Tech®, and GlasRoc® family of products, representing a complete portfolio of high-performance interior and exterior gypsum solutions. The lower embodied carbon wallboard will help architects to achieve building decarbonization in their designs, while requiring no change to standard installation procedures for contractors. To learn more, visit www.carbonlowgypsum.ca.

Announced at CertainTeed Canada's annual Architecture Symposium, the CarbonLow™ product line is set to be manufactured at CertainTeed's facility near Montreal, Quebec, which will soon be North America's first zero-carbon (scopes 1 and 2) gypsum wallboard facility. CertainTeed is working to update equipment and transition the plant away from fossil fuels to being powered completely by hydroelectricity.

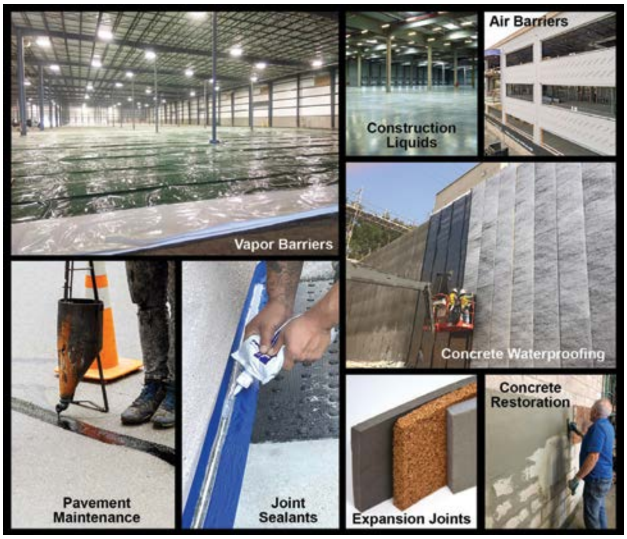
Saint-Gobain continues its commitment to growth and sustainable construction solutions in Canada:

- In June 2024, Saint-Gobain completed the acquisition of The Bailey Group of Companies, a leading manufacturer of metal framing building solutions in Canada. This acquisition is the company's third in Canada in three years after Kaycan (2022) and Building Products of Canada (2023), tripling its presence in the country. This enables Saint-Gobain to offer a full portfolio of building solutions in Canada.
- In May 2024, Saint-Gobain announced a partnership with TimberHP, offering high-performance wood fiber insulation in North America as the exclusive distribution partner in Canada.
- In February, the company completed the installation of a heat recovery system at its gypsum wallboard plant outside Vancouver, reducing scope 1 carbon emissions by up to 15%.
- In 2023, Saint-Gobain celebrated over 1 million tonnes of gypsum wallboard recycled and returned to production at its facility in Vancouver. The company operates similar recycling operations in Alberta, Manitoba, Ontario and Quebec.

certainteed
SAINT-GOBAIN

www.carbonlowgypsum.ca.

One Vision . . . One Family . . . One Philosophy



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. In the 95+ years since the founding, 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. These two facilities 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 involved with the day-to-day operations of the company.

In 1926, W. R. MEADOWS pioneered expansion joint technology, with our ASPHALT EXPANSION JOINT. Since then, the company has moved into several facets of the construction industry, and we are known not only for our breadth of line, but also our high 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 has a magnitude of products dedicated to 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 has all of your concrete construction, restoration and protection needs covered. Our progressive thermal and moisture protection line has a vast selection of products to help protect your construction projects and your properties from water and moisture damage. The product line includes drainage systems, bituminous dampproofing, waterproofing accessories, waterproofing membranes, vapor barriers, vapor retarders, air/vapor barriers and much more. Finally, 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 products and more, we've been satisfying the needs of the public and private sectors of the building construction industry since 1926. We are very proud of our 95+ years of dedication to providing quality construction materials to the concrete construction community. All of our quality 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

Uniting The House Of Design With The Field Of Construction. World Class Façade Materials.

Engineered Assemblies (EA) supplies world-class façade materials backed by leading expertise in Rear Ventilated Rain Screen (RVRS) assemblies. EA supports the industry by providing education as well as assistance in addressing technical design challenges.

Book a Lunch & Learn today on *Building Facades And Sustainability and How to Avoid The 5 Most Common Mistakes*. Key topics uncovered include:

1. Recognizing the façade as the *front line* of the building envelope and that the performance of the façade determines the success of the rest.
2. Identifies 5 key façade design principles that help maximize the lifespan of the material and contribute to a sustainable future.
3. Review potential errors made during installation and address them in real time.
4. Best practices and material options for sustaining maximum performance.
5. Understand how to achieve transparency so manufacturer warranty criteria are met.

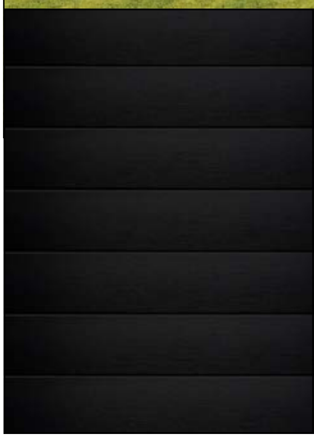
Email us today to reserve a Lunch & Learn for your team today! Contact Laurie Brooks at lbrooks@engineeredassemblies.com for available dates. Available right across Canada.

Have a design you would like technical support or shop drawings for? Contact one of our technical reps in your region today: https://www.engineeredassemblies.com/en/about-us/the-team/customer-representatives

ENGINEERED ASSEMBLIES

Visit our website to learn more about what we do! https://www.engineeredassemblies.com/

Mitten Launches First-Ever Black Vinyl Siding



For the first time ever, black vinyl siding is not only possible, it's proven to perform.

Mitten has launched the industry's first and only true black vinyl siding, and it's turning heads. Yes, it has a bold look, but it also boasts durability and colour retention. Made with a fade-resistant PVDF film, this breakthrough product resists warping and heat distortion – even in the most punishing conditions.

Tested in the Arizona Desert

To prove its performance, Mitten Black Vinyl Siding underwent rigorous field testing in one of North America's most extreme climates: Arizona. With more than 100 consecutive days of 40°C+ temperatures, the siding held its shape and colour – with no warping, no fading, no compromise.

It also recorded lower Delta E values (a measure of colour change) than traditional vinyl siding, proving it maintains its deep, neutral black finish over time, even in unforgiving sun exposure.

This is possible with its advanced PVDF coating, which has been long trusted in metal roofing and commercial exteriors. When applied to vinyl, it reflects heat, protects against UV exposure, and maintains colour integrity even under full-sun, south-facing installs.

Why Now?

Historically, manufacturers have avoided black vinyl siding. The intense solar absorption would cause panels to overheat, fade quickly, and warp. Bringing black vinyl to market wasn't worth the risk of costly callbacks and dissatisfied customers. Until now, builders had to settle for other dark-coloured vinyl or pay a premium for black metal or painted wood siding.

Mitten Black Vinyl Siding changed the game. It delivers:

- **Unmatched durability** – Superior colour retention for long-lasting curb appeal
- **Heat resistance** – Resists warping in high-exposure areas
- **Effortless integration** – A neutral black that enhances contrast and complements various exteriors
- **Low-maintenance luxury** – No repainting, caulking, or regular upkeep required

While the siding carries a slight premium over traditional vinyl, it's a fraction of the cost of other materials, making it an accessible upgrade for clients seeking a premium look without the premium price tag.

Profiles Built for Flexibility

Mitten Black is available in two builder-friendly profiles, both of which have a complete set of matching trims:

- **West Ridge Single 8" Plank** – Install horizontally, vertically, or even as a porch ceiling
- **Sentry Board & Batten** – A timeless vertical profile with modern appeal

MITTEN®
BUILDING PRODUCTS

Learn more or request a sample at www.mittensiding.com/black

Assisting architecture for three decades

ARCAT.com has over 30 years' experience assisting architecture professionals in their search for the best products for their projects. Starting as a desktop reference with listings and manufacturer's catalogs, ARCAT has evolved into the #1 most used website for finding building product information. Today ARCAT is an invaluable tool for AEC professionals, offering a powerful product search engine that is backed up by quality CAD, BIM, and specifications. And just as it was in 1991, ARCAT offers all of this at no cost to the user and without requiring registration.

Our hit podcast Detailed, hosted by Cherise Lakeside, has passed 1,000,000 downloads and features guests from top architecture firms. We're also offering continuing education courses certified by the AIA on Arcatemy. This truly makes ARCAT.com the one resource no AEC professional can be without.

Visit ARCAT.com today and see why architecture professionals have used us for more than three decades.

ARCAT®

www.ARCAT.com

NEW High-Performance Polyurea Air Barrier

Building enclosure integrity relies on precision, efficiency, and durability. Insulaire™2K a next-generation, spray-applied polyurea air barrier is engineered to elevate building performance without compromising design. Its seamless, monolithic application eliminates air leakage, improving energy efficiency and safeguarding structures against moisture intrusion.

Designed to withstand Canada's harshest climates, Insulaire™2K excels in extreme conditions. With rapid tack-free cure times and the ability to be applied in sub-zero temperatures, it keeps projects on schedule, even in winter.

Durability is a defining advantage. Traditional air barriers often struggle through the construction phase, prone to tearing, puncturing, and delamination. Insulaire™2K forms a tough yet flexible membrane with over 300% elongation, allowing it to move with the building while resisting damage. It adheres strongly to a variety of substrates, reducing the risk of failure and simplifying detailing around windows, corners, and intricate architectural geometries.

Beyond airtightness, moisture control is essential in sustainable construction. Uncontrolled airflow leads to condensation, mold growth, and premature deterioration. Insulaire™2K plays a critical role in mitigating these risks, preventing interstitial condensation that can compromise long-term structural integrity. It supports diverse insulation strategies while maintaining thermal efficiency, making it ideal for inboard, outboard, and split-insulated assemblies.

Compatibility is key for architects seeking system-wide performance. Insulaire™2K integrates seamlessly with varied materials and construction methods, ensuring continuity across the building envelope. By addressing airflow, moisture migration, and mechanical durability, it helps architects achieve energy-efficient, high-performance enclosures without design limitations.

ELASTOCHEM® INSULAIRE™ 2K

www.elastochem.com | 1-877-787-2436 | info@elastochem.com

Canadian Craftsmanship, Built to Last

JELD-WEN of Canada is a trusted partner for builders seeking reliable, high-performance windows and doors designed for Canada's diverse climates and communities. Our Canadian-made products combine energy efficiency, durability, and design flexibility to meet the unique demands of every project—from urban development to remote rural homes. With a focus on innovation and precision engineering, we deliver solutions that prioritize both performance and aesthetics, ensuring builders can meet client expectations while adhering to local standards.

As a Canadian manufacturer, we understand the importance of quality, consistency, and local expertise. Our "Well Made Here" commitment reflects our dedication to producing premium products that align with Canada's values and environmental goals. From energy-saving windows to robust doors, every component is crafted to enhance home efficiency, security, and longevity. By partnering with JELD-WEN, builders gain access to a trusted supplier that prioritizes reliability and has a deep understanding of Canadian building needs.

We believe that great homes start with great materials. That's why we continuously invest in research, sustainability, and product excellence to support the professionals who shape Canada's built environment. Whether you're constructing a single-family home or a large-scale development, JELD-WEN provides the tools and expertise to build with confidence. Together, we create spaces that not only meet today's standards but also stand the test of time.

With a legacy of innovation and a commitment to Canadian craftsmanship, JELD-WEN is more than a supplier—we're a partner in building better homes, one project at a time.

JELD-WEN®

905-265-5700
www.JELD-WEN.ca

Behlen Industries LP
Steel Building Manufacturers

Behlen is Canada's largest manufacturer of steel building systems and the first to manufacture frameless steel buildings in the country. Today, we sell pre-fabricated rigid frame and frameless steel structures including industrial, commercial, recreational, and institutional facilities across Canada and worldwide. Each steel building package is manufactured to the architects needs, all in one place, then shipped directly to construction sites around the world.

At Behlen we are proud of our work, and happy to highlight some of our greatest projects including, but certainly not limited to:

- The PEAK 2 PEAK gondola terminals which are an iconic landmark used in the 2010 Olympic Games in British Columbia.
- The roof for the Gangneung International Ice Rink in South Korea, which housed curling for the 2018 Winter Olympics.
- One of the largest clear-span aircraft hangers in Canada, in Hamilton Ontario.

Behlen offers optional insulated metal panels (IMP's) for projects, which offer a superior thermal performance for both walls and roofs, and are available in a variety of sizes and configurations. One of the greatest advantages of IMP's, is that they're quick and easy to install which allows your building to be completely enclosed in a fraction of the time it would take to install conventional wall assemblies. We encourage you to connect with us to learn more about the advantages of using our IMP's in your project.

Behlen maintains a healthy partnership with Authorized Builders as part of a network that spans across North America and parts of Europe. These builders are supported through a network of qualified sales managers, in-house engineers, and technical customer service representatives that are located in regional offices throughout North America.

Our team is committed to the markets we serve, providing quality products and services, offering cost-effective and innovative building solutions which are on-time and on-budget.

BEHLEN
STEEL BUILDINGS

Behlen Industries LP
1-888-315-1035 | info@behlen.ca | behlen.ca

This Cladding Changes Everything!

The architectural beauty of real wood and efficient installation, ALIGN® Composite Cladding delivers the high-end aesthetics customers want and efficient jobsite handling businesses need.

- Texture: Impressive style and realistic texture of freshly painted wood.
- Efficient Installation: Lightweight for efficient handling. No sealing, touch ups or caulking required.
- Guaranteed: Lifetime limited, transferable warranty for added peace.

Find ALIGN Composite Cladding and accessories at your local Gentek retailer.
gentek.ca/align

GENTEK®
GENTEK BUILDING PRODUCTS

gentek.ca/align

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

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

The Power of Shared Knowledge

When I think of CSC, I think of education. Whether through formal courses like "Principles of Construction Documentation," engaging technical sessions at our conference (like the recent one in St. John's!), or informative chapter meetings, education is at the forefront of who we are.

I've also benefited greatly from the direct knowledge shared by colleagues, whether in the offices where I've worked, among my incredible informal network of spec writers, or from trusted technical reps.

Sometimes, the answer to a question isn't readily available. When that happens, I lean on the curiosity my family helped instill in me—our dinner table was often filled with questions and the encouragement to "look it up." That mindset is essential for a specification writer.

When my teams come to me with questions, I start by trying to understand the underlying problem and its requirements. I rely first on what I already know, but I also challenge myself: What am I missing? Where are my knowledge gaps or biases?

From there, I turn to a range of sources, colleagues, mentors, master specification documents, government publications, industry standards and manuals, and even a good web search. And of course, I reach out to my technical reps (especially our CTRs!).

What kind of information am I looking for? It varies—chemical resistance, insulating value, cost, maintenance, installation limitations, environmental and sustainability considerations, warranties, esthetics—you name it. It can be a lot, but it's often necessary to specify with confidence.

I truly appreciate the investment that manufacturers make in producing and maintaining the technical data we rely on. And to my valued colleagues, tech reps, and spec writers alike, thank you. I know I sometimes reach out before finishing my own research, but your help makes my job easier and strengthens our work as a whole.

I am CSC.

Le pouvoir du partage des connaissances

Quand je pense à DCC, je pense à l'éducation. Que ce soit par des cours officiels comme les « Principes de la documentation en construction », des séances techniques à notre conférence (comme celle qui a eu lieu récemment à St. John's!) ou des réunions informatives sur les sections, l'éducation est au premier plan de ce que nous sommes.

J'ai aussi grandement bénéficié des connaissances directes partagées par mes collègues, que ce soit dans les bureaux où j'ai travaillé, parmi mon incroyable réseau informel de rédacteurs de spécifications ou auprès de représentants techniques dignes de confiance.

Parfois, la réponse à une question n'est pas facilement disponible. Lorsque cela se produit, je m'appuie sur la curiosité que ma famille a contribué à m'inculquer : notre table de dîner était souvent remplie de questions et d'encouragements à « chercher ». Cet état d'esprit est essentiel pour un rédacteur de spécifications.

Lorsque mes équipes me posent des questions, je commence par essayer de comprendre le problème sous-jacent et ses exigences. Je m'appuie d'abord sur ce que je sais déjà, mais je me mets aussi au défi : Qu'est-ce qui me manque? Où sont mes lacunes ou préjugés?

À partir de là, je me tourne vers un éventail de sources, collègues, mentors, documents de spécification, publications gouvernementales, normes et manuels de l'industrie, et même une bonne recherche sur le Web. Et bien sûr, je contacte mes représentants techniques (en particulier nos RTC!).

Quel genre d'information est-ce que je cherche? Cela varie — résistance chimique, valeur isolante, coût, entretien, limites d'installation, considérations environnementales et de durabilité, garanties, esthétique — vous pouvez tous les nommez. Cela peut être beaucoup, mais il est souvent nécessaire de préciser avec confiance.

J'apprécie vraiment l'investissement que les fabricants font dans la production et le maintien des données techniques sur lesquelles nous comptons. Et à mes chers collègues, représentants techniques et rédacteurs de specs, merci. Je sais que parfois, je communique avec vous avant de terminer mes propres recherches, mais votre aide facilite mon travail et renforce notre travail dans son ensemble.

Je suis DCC.