A True Partnership

PROUDLY CANADIAN

GENYK

Polyurethane

'ICI' BASEMENT METAL FLASHING

BOREAL NATURE ELITE

Polyurethane Foam *Boreal Nature Elite*

A Multifunctional Insulation for a High-Performance Building Envelope

Spray-applied ***Boreal Nature Elite*** polyurethane foam is often seen as just a thermal insulator, but it's much more than that.

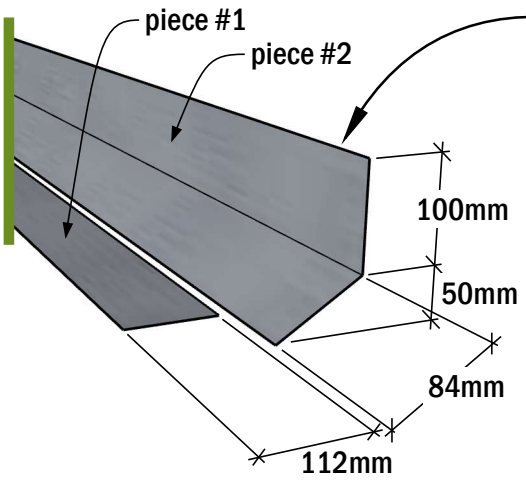
It's a multifunctional material that plays several key roles within the building envelope. In addition to its outstanding thermal resistance, it also acts as an air barrier, vapor retarder, radon barrier, and even helps prevent intrusion by rodents and insects.This versatility makes polyurethane foam a powerful asset in designing airtight, durable, and high-performance buildings.

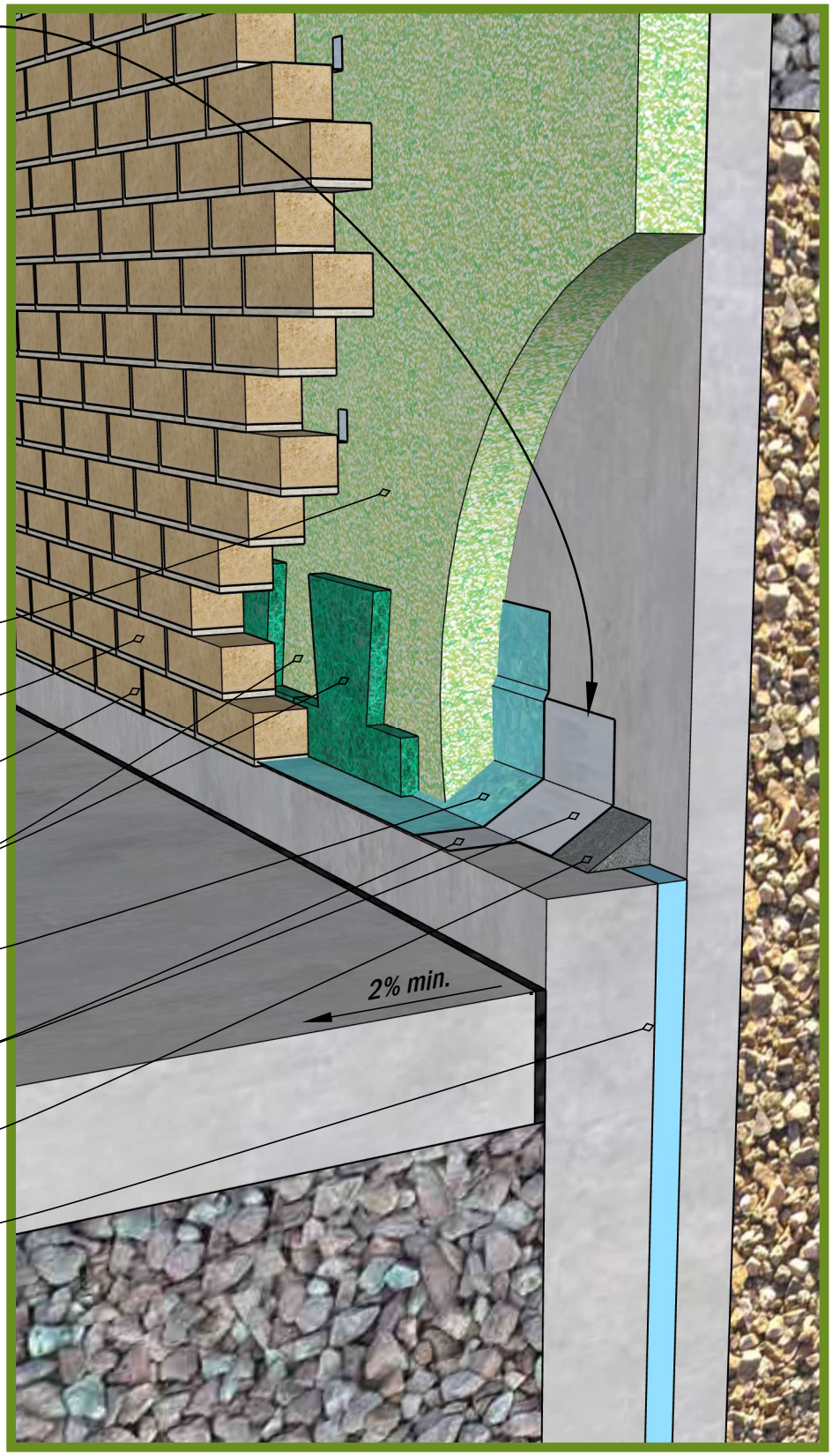
By incorporating polyurethane foam into your institutional, commercial, or industrial projects, you're choosing an insulation solution that is high-performing, continuous, and built to last. Its density, adhesion, and superior insulating properties make it ideal for creating seamless, uncompromising building envelopes.

But how does it perform around penetrations, like metal flashings?

GENYK Polyurethane

ICI – shop drawing #1 – no drip metal flashing
BOREAL NATURE ELITE





The drawings are for reference only.

LEGEND

BOREAL NATURE ELITE (closed-cell)

PIERRE-LUC ST-LOUIS - Building Science Technician

DATE	REV #
June 13th, 2025	REV-0

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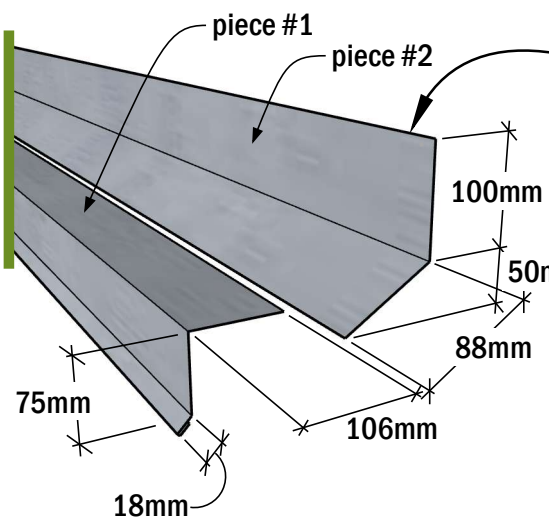
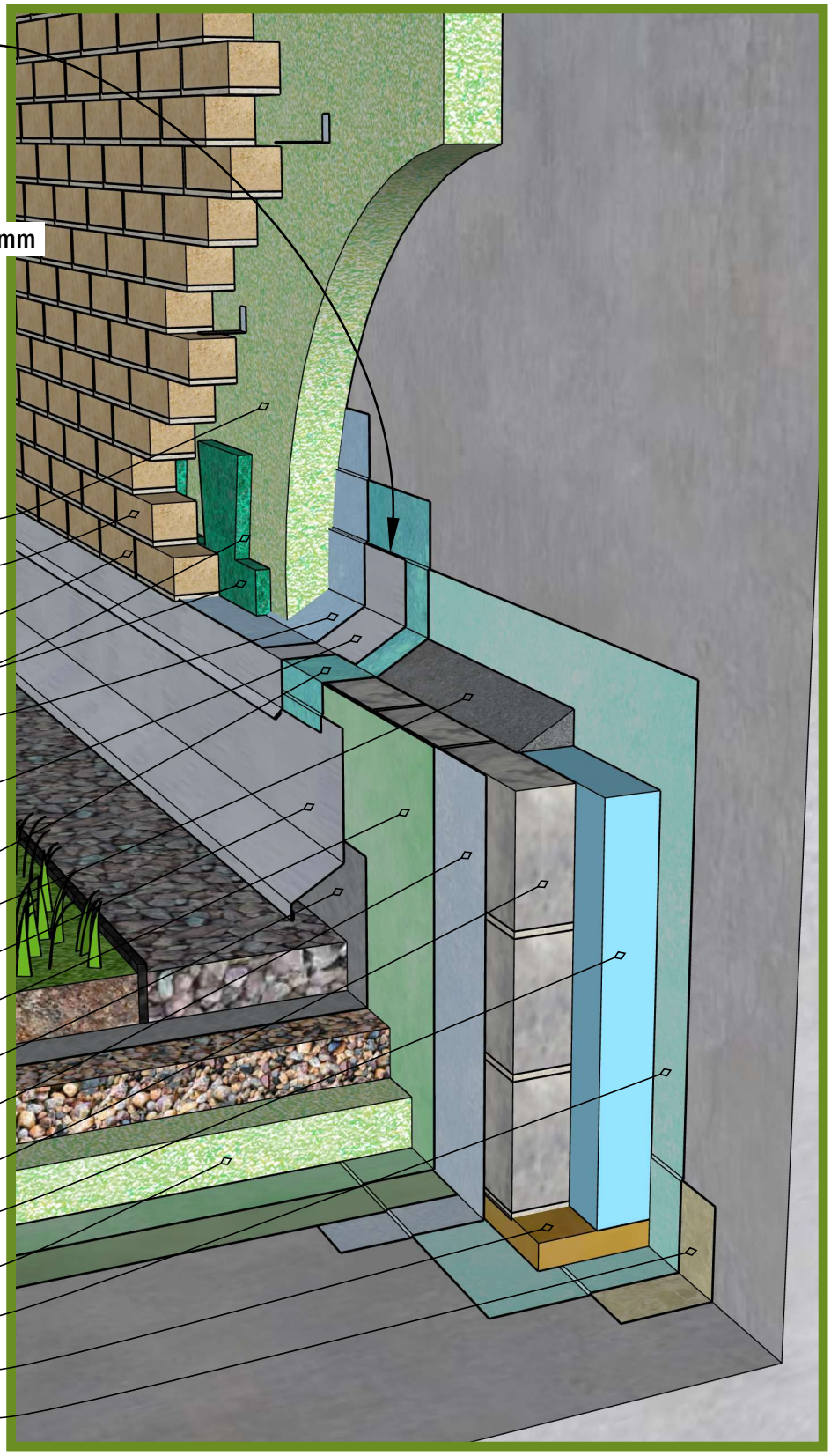
ICI – shop drawing #2 – high/low roof with drip (W/drip edge)

BOREAL NATURE ELITE





BOREAL NATURE ELITE
masonry cladding
weep hole @ 900mm o.c.
25mm mortar net /air gap
flexible thru wall flashing
prefin. metal flashing W/drip
(refer to the detail at the top of the page)
flex thru wall flashing tie into base sheet
mortar cant
prefinised metal flashing
cap sheet
filter fabric terminate behind flashing
base sheet
90mm concrete block
75mm rigid insulation (INS-RB-1)
BOREAL NATURE ELITE
air/vapour barrier sheet membrane
wood block
air seal

The drawings are for reference only.

LEGEND

BOREAL NATURE ELITE (closed-cell)

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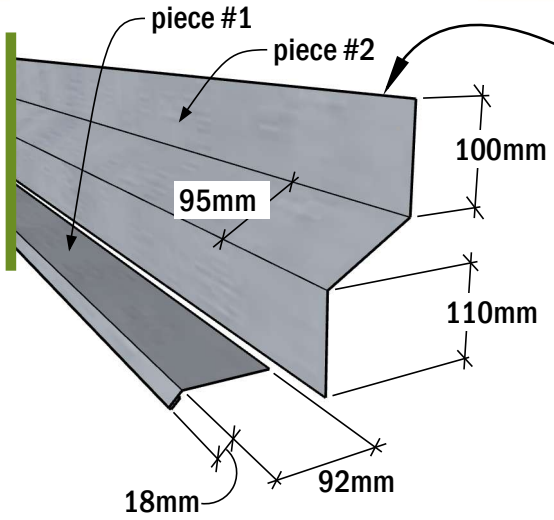
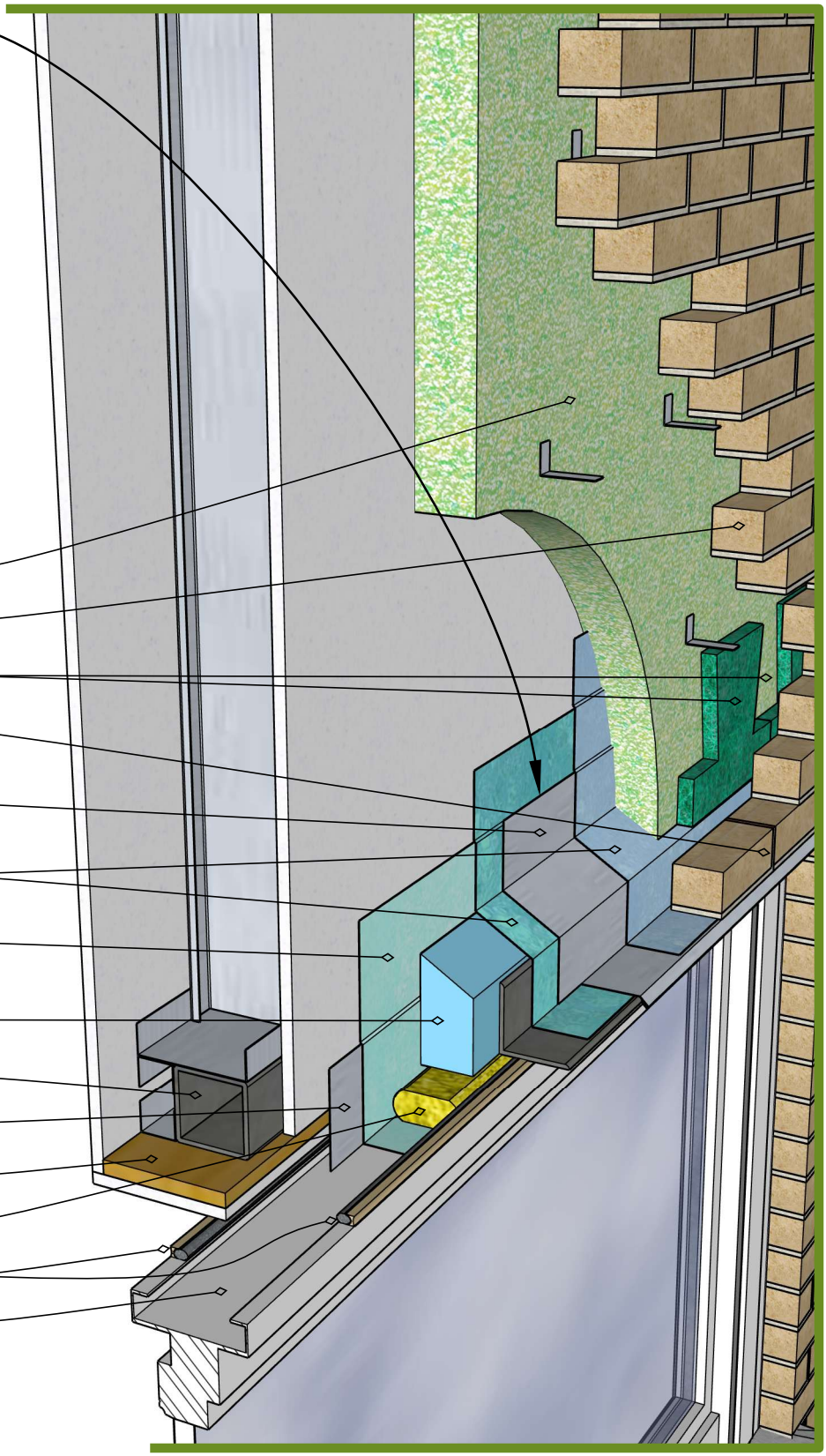
ICI – shop drawing #3 – head of window with drip edge

BOREAL NATURE ELITE





The drawings are for reference only.

LEGEND

BOREAL NATURE ELITE (closed-cell)

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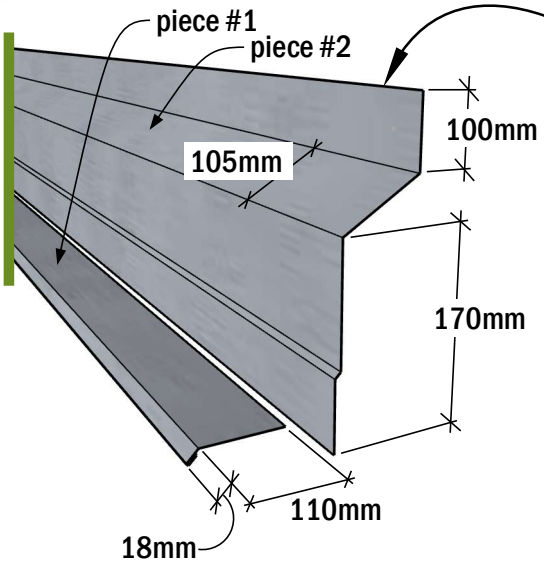
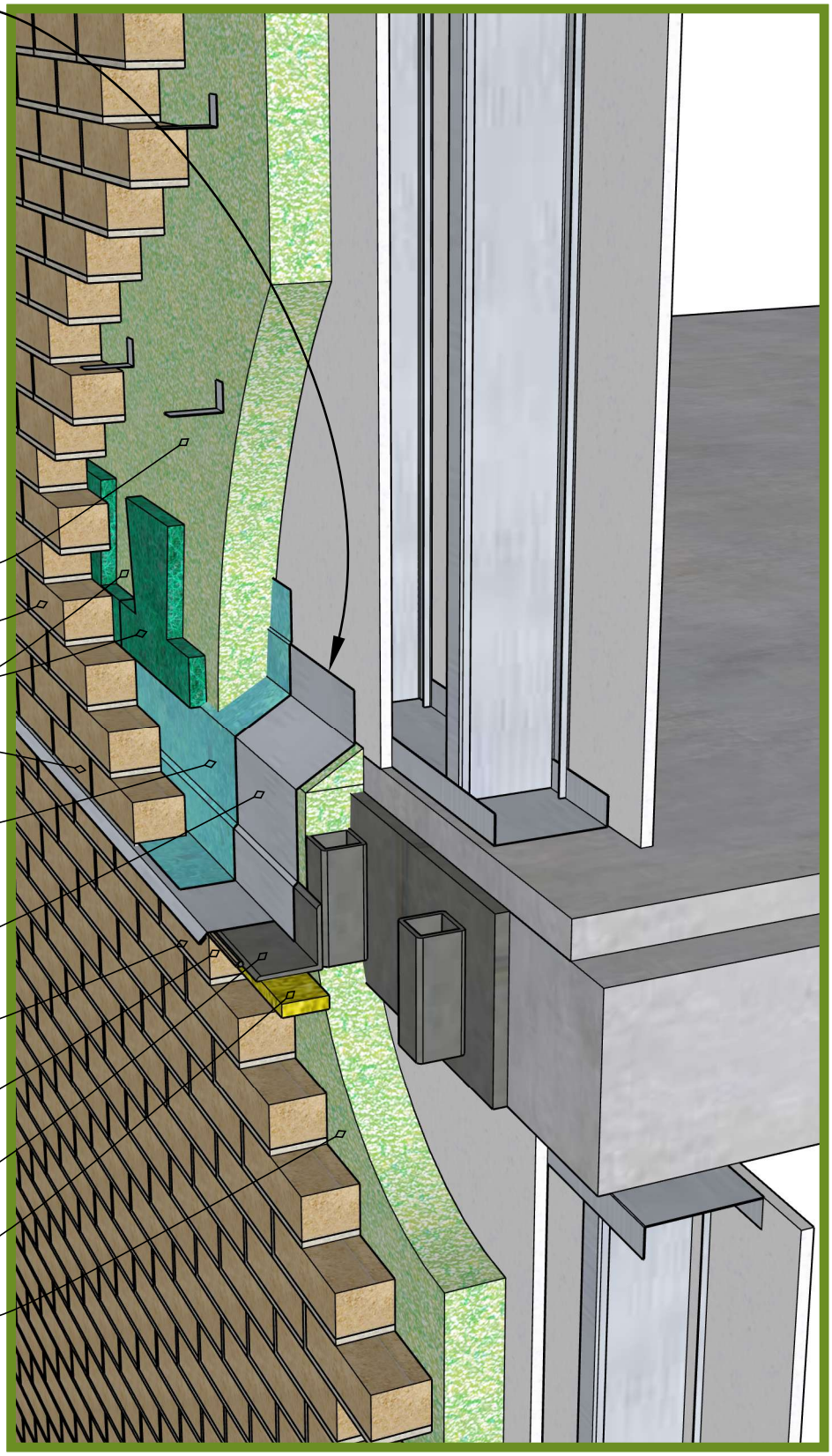
ICI – shop drawing #4 – shelf angle with W/drip edge

BOREAL NATURE ELITE





The drawings are for reference only.

LEGEND

BOREAL NATURE ELITE (closed-cell)

PIERRE-LUC ST-LOUIS - Building Science Technician

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PROUDLY CANADIAN.

A Perfect Synergy Between ***Boreal Nature Elite*** Polyurethane Foam and Metal Flashings

Complex projects demand reliable, well-designed technical solutions. When a metal flashing penetrates an area insulated with polyurethane foam, our approach ensures:

- **Long-lasting air and water tightness**. Achieved through proven methods using membranes, sealants, and integrated collars.
- **Continuous insulation.** Foam is sprayed seamlessly around flashings to minimize thermal bridging and maintain envelope performance.
- **Reliable material compatibility.** Primers or surface treatments ensure strong adhesion of the foam to metal, preventing shrinkage or cracking.
- **Movement flexibility.** Joints are designed to accommodate differential expansion between metal and foam, preserving the integrity of the assembly over time.

Why Integrate Polyurethane Foam from the Design Stage?

- **Unmatched thermal performance.** High RSI/R values with minimal thickness
- **Built-in air barrier.** No need for additional membranes
- **Fewer layers in the wall assembly.** Simplifies construction and saves space
- **Adaptable to complex geometries.** Perfect for architectural details and design flexibility
- **Meets the demands of institutional, commercial, and industrial buildings**

1. A Continuous and Effective Air Barrier

Thanks to its expanding nature and excellent adhesion to common substrates (wood, concrete, steel, masonry), ***Boreal Nature Elite*** polyurethane foam forms a seamless monolithic membrane that acts as a continuous air barrier.It effectively blocks air infiltration through assemblies, wall junctions, and structural gaps. Tested in accordance with ASTM E2178, the foam demonstrates an air permeability of less than 0.001 L/(s·m²) at a differential pressure of 75 Pa, fully compliant with North American building code requirements for air barrier systems.

The result: reduced energy losses from air leakage, improved HVAC system performance, and enhanced comfort for building occupants.

2. An Integrated Vapor Barrier

Closed-cell polyurethane foam also functions as a Type I vapor barrier, often eliminating the need for a separate membrane within the wall assembly. At just 50 mm of thickness, it achieves a water vapor permeability of less than 34 ng/Pa·s·m² (as measured according to ASTM E96-A), allowing it to effectively control vapor diffusion toward colder zones. This helps reduce the risk of internal condensation, protects the integrity of adjacent materials, and prevents mold growth, especially in above-grade and foundation walls, where temperature differentials are more significant.

3. A Passive Barrier Against Radon

Radon is a naturally occurring radioactive gas that can enter buildings through the ground and pose serious health risks. ***Boreal Nature Elite*** polyurethane foam, with its ability to tightly seal cracks, slab joints, and service penetrations, serves as an effective passive radon barrier.

When applied beneath concrete slabs or on foundation walls, it provides protection equivalent to—or better than—traditional polyethylene membranes. This makes it compliant with the 2020 National Building Code of Canada (Section 9.13.4) for soil gas control, while also simplifying on-site installation.

4. A Physical Defense Against Pests

Unlike fibrous insulation materials, which can be displaced, compressed, or used by rodents for nesting, ***Boreal Nature Elite*** polyurethane foam forms a rigid, dense, and airtight barrier that pests cannot easily penetrate.

By sealing even the smallest gaps, it prevents the entry of rodents, ants, earwigs, spiders, and other small intruders. This feature is especially valuable in vulnerable areas such as wall bases, door thresholds, eaves, and foundation-to-wall junctions.

◆ **Summary of Polyurethane Foam Technical Performance**

Property	Performance Details	Standard / Reference
Thermal Conductivity (λ)	0.021 to 0.028 W/m·K	ASTM C518 / CAN/ULC-S705.1
Airtightness	< 0.001 L/s·m² @ 75 Pa	ASTM E2178
Water Vapor Permeance	< 34 ng/Pa·s·m² (at 50 mm) vapor retarder	ASTM E96-A
Radon Resistance	Equivalent to membranes, seals cracks and joints	NBCC 2020, Section 9.13.4
Pest Resistance	Gnaw-resistant, no nutritional value or attraction	Field observation + Becquerel radiation test

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An Integrated Solution for Designers and Builders

As an architectural technologist and building science specialist, you know that a building's performance doesn't rely solely on the sum of its components, but on how effectively they interact as a system.

By incorporating ***Boreal Nature Elite*** polyurethane foam into your technical details, especially in coordination with metal flashings, you're offering architects a solution that is:

- More efficient, more durable, and easier to implement
- Fully aligned with modern sustainable building standards (LEED, Novoclimat, etc.)

In Conclusion

Beyond its insulating value, polyurethane foam becomes a true thermal and environmental sealing system, contributing to the building's overall integrity for decades to come.

By integrating polyurethane foam from the early design phase, you deliver significant added value to your clients: performance, durability, and simplicity. Even complex details, like metal flashings—are technically resolved.

We're here to support you with technical details, field expertise, and proven solutions every step of the way.

Dare to perform. Simplify your envelopes. Choose *Boreal Nature Elite* foam.

Pierre-Luc St-Louis
Technicien en science du bâtiment
Genyk Polyurethane