

CASE STUDY

From the Ground Up: The Role of Heatlok Soya HP Spray Foam and Coatlok in Modern Foundation Systems

Québec, Canada

HUNTSMAN
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GROUPE VALCO SETS NEW BENCHMARKS WITH A CUTTING-EDGE FOUNDATION THAT PROTECTS AGAINST WATER INFILTRATION AND MOISTURE

In the vibrant heart of Montréal, the construction of a commercial building presented both a unique challenge and a remarkable opportunity for Groupe Valco. Renowned for their expertise in insulation and waterproofing, Groupe Valco employed an innovative combination of high-performance spray foam insulation and polyurea coating to address the building's foundation with exceptional precision. This advanced solution was a collaboration with Huntsman Building Solutions, utilizing their Heatlok Soya HP spray foam product and Coatlok coating. These cutting-edge materials have been instrumental for Groupe Valco's clients, who aim to meet the stringent demands of modern standards for resiliency and durability in building envelopes. Together, this partnership sought to transform the commercial building's foundation into a benchmark of contemporary engineering excellence.

Groupe Isolation Valco is a leading insulation and waterproofing company dedicated to providing

exceptional service to a diverse and growing clientele. Specializing in urethane and sprayed polyurea waterproofing, they pride themselves on high-quality workmanship and a professional approach. Their dedication to quality, efficiency, and reliability has propelled them to become one of the most recognized names in their field.

For this project, Huntsman Building Solutions' Heatlok Soya HP spray foam and Coatlok polyurea were the premier products used. These products offer unmatched waterproofing and insulation capabilities, far surpassing traditional methods such as tacked or peel and stick membranes. Their reliability and robustness provide superior protection, while their versatility allows them to be applied to various parts of a building, including foundations, and footings. This makes them a comprehensive solution for both renovations and new construction projects.

Unseen Issues with Traditional Foundation Membranes

Originally, the commercial building project that Groupe Valco was selected to work on featured a traditional foundation with a peel and stick membrane for waterproofing. These membranes are designed to form a protective barrier against water, preventing issues like cracking, mold growth, and structural deterioration. However, the traditional application of these membranes and the subsequent pouring of concrete can create latent problems. These issues often remain hidden because the membrane's integrity cannot be inspected after the concrete has set, leading to potential unawareness at the time of construction.

Upcoming foundation issues became evident to the building owner in Montréal following previous experiences, typically leading to expensive repairs. While peel and stick and tacked membranes are commonly used for waterproofing foundations,



CHALLENGE	SOLUTION	RESULT
The Groupe Valco project faced significant hurdles primarily due to the building's proximity to other buildings and sidewalks, which made impossible to excavate the exterior of the new foundation. The waterproofing work therefore needed to be completed prior to the pouring of the concrete foundation. Moreover, working on foundations in cold weather introduced additional complexities, necessitating special techniques and considerations to ensure the construction's integrity and durability. The durability of the peel and stick membrane initially specified also needed to be improved.	When combined, Heatlok Soya HP polyurethane and Coatlok polyurea create a powerful solution for foundation and waterproofing systems in construction. Polyurethane's insulating and adhesive properties complement polyurea's durability and rapid curing, forming a robust barrier that protects against environmental stresses, enhances structural integrity, and improves thermal efficiency. Their adaptability and ease of application make them ideal for various construction scenarios, including complex foundation geometries, like blindside walls, where traditional methods may fail. This solution aimed at resolving space limitations and durability concerns.	The application of Heatlok Soya HP and Coatlok on the building's foundation yielded outstanding results, significantly enhancing its structural, thermal, and moisture resistance properties. This approach provided substantial reinforcement, effectively protecting the foundation from environmental and mechanical stresses, thereby greatly improving its longevity and structural integrity. The efficient application process was particularly advantageous in cold weather, as it was completed within a single day, making it also cost-effective. Additionally, it allowed the team to work effectively in the tight space available. Overall, this solution proved to be ideal for the project. No excavation was needed around the new foundation as it was already insulated and waterproofed.

their effectiveness greatly depends on the precision of their installation and the concrete pouring technique. In this case, the hidden aspects of the membrane post-installation led to unexpected maintenance challenges and costs. This highlights the critical need for rigorous construction practices and the potential necessity to implement more reliable and robust waterproofing solutions.

When concrete is poured against a tacked or peel and stick membrane, the process needs to be carefully managed to avoid damaging the membrane. The force and weight of the concrete being poured can dislodge or damage the tacking

points of the membrane. This displacement or damage can occur because the sheer weight and movement of the concrete can exert significant pressure on the membrane. If the membrane is not securely attached or if the concrete is poured too quickly, this can lead to shifts or bulges in the membrane. Also, membranes must be overlapped at joints and sealed to prevent water ingress. If these overlaps are not correctly aligned or sealed, or if the membrane detaches at the seams due to the pressure of the concrete, gaps can form.

"The critical challenge with this setup, something that our team encounters frequently, is once the concrete is set, any dislodging or imperfect sealing

of the membrane is hidden from view,” says Dominic Valiquette, President of Groupe Valco. “The foundation might appear solid and intact, and without visible signs of failure, issues can go undetected. But over time, water may find its way through the smallest imperfections in the foundation membrane—often at the joints or where the membrane has been dislodged.”

Polyurethane and Polyurea: Groupe Valco’s Winning Combination

Groupe Valco’s cutting-edge insulation process is executed in two efficient stages, all within the same day. The first stage involves spraying a layer of Heatlok Soya HP onto the retaining wall surface. This crucial step corrects all imperfections, including minor cracks, holes, and defects. Acting as both a primer and an additional absorption layer, the polyurethane accommodates structural movement and seals cracks and gaps.

In the second stage, the polyurethane (Heatlok Soya HP) layer is encapsulated with a sprayed polyurea (Coatlok) coating membrane, creating a robust and seamless protective barrier. This superior quality membrane stands out for its rapid application, significantly reducing the duration of the work while providing exceptional waterproofing and durability.

Groupe Valco is renowned for its expertise in applying sprayed polyurethane and polyurea membranes. Although this technology is not new, it remains innovative due to its superior waterproofing properties, strength, adhesion, and elasticity. The unparalleled durability and advanced technology of combined polyurethane and polyurea make it the most effective foundation system available, suitable for various substrates, including concrete, metal, wood, and geotextile.

“At Groupe Valco, we believe the foundation of any structure sets the stage for its integrity and longevity,” says Valiquette. “Our unique two-stage process, completed in a single day, starts with the

meticulous application of polyurethane to address imperfections and prepare for resilience. We then encapsulate this layer with a sprayed polyurea membrane, creating a shield that guards against the elements and adapts to structural dynamics. This method isn’t just about protection; it’s about creating a durable foundation that ensures peace of mind. Urethane and polyurea—this is our winning combination for reliability and excellence.”

Tackling Urban Challenges and Setting a New Standard for Blindside Walls

In cities like Montreal, where space is at a premium and construction is dense, traditional excavation methods for foundation repair are often impractical. Éric Proulx, Commercial Director, for Groupe Valco, explains, “In cases of major foundation problems, such as those where you can no longer dig from the outside due to obstacles like towers and sidewalks, traditional solutions are not feasible.

During the assessment and planning stage, Groupe Valco meticulously evaluated the foundation issues and surrounding constraints. The project, conducted in cold weather conditions, involved a building with a blindside wall constructed directly adjacent to an existing structure or retention system. With only approximately four feet of working space, further crowded by construction equipment, Groupe Valco faced significant spatial limitations.

To overcome this challenge, the team utilized an unobstructed vantage point from a crane. From this elevated position, they applied their signature waterproofing membrane, consisting of three inches of high-performance spray foam followed by a polyurea coating, to the surface of the adjacent structure or retention system before pouring the concrete foundation directly on the membrane, which was 30 feet in depth. This strategic approach ensured the effective application of the waterproofing membrane and the successful execution of the project within the confined space.





"It was not necessary for Groupe Valco to build a wooden box before applying the membrane on the H-Beam. With Polyurethane, we were able to skip this step and apply directly to the wall," says M. Valiquette.

Valiquette adds, "For blindside walls, traditional methods are costly and would require significant excavation to allow for foundation work and membrane application. With polyurethane, this extensive digging is unnecessary."

Given the limited space for excavation, Groupe Valco determined that Heatlok Soya HP spray foam and the Coatlok coating were the optimal solutions.

Heatlok Soya HP spray foam serves as an exceptional primer, providing thermal insulation, air sealing, and moisture barrier protection. When applied to foundations, it forms a continuous, monolithic barrier that adapts to and fills every nook and cranny, effectively sealing against water and air infiltration. This robust foam enhances the structural integrity of the foundation by filling gaps and creating a solid, airtight, and water-resistant layer. It helps stabilize the foundation against environmental and mechanical stresses, such as soil movement and freeze-thaw cycles, which is particularly important in extreme weather conditions.

A polyurea membrane ensures robust waterproofing for blindside walls and foundations, offering durable protection against water infiltration. Unlike traditional nailed or peel and stick membranes that can detach when concrete is poured, leading to long-term water infiltration and potential mold and foundation deterioration, Groupe Valco's membrane solution remains securely in place.

Whether dealing with conventional foundations or blindside walls, Groupe Valco provides high-performance solutions to protect building foundations, setting a new standard in foundation waterproofing and insulation.

Results

The strategic use of Heatlok HP spray foam with Coatlok polyurea coating in the building's foundation significantly enhanced its structural, thermal, and moisture resistance properties. This approach reinforced the foundation, protecting it from environmental and mechanical stresses and ensuring long-term structural integrity.

The combined materials created a robust barrier against moisture intrusion, crucial for preventing water damage and mold growth in Québec's cold and humid weather conditions. This protection safeguards the building's

interior and structural components from moisture-related deterioration.

By utilizing the superior insulating properties of Heatlok Soya HP spray foam followed by the Coatlok coating, the project was completed quickly and efficiently despite the space limitations. This approach was also more cost-effective than traditional methods. Today, the building is seeing significant improvements in thermal efficiency, and the client has praised the immediate enhancements in comfort and the reduction in maintenance and energy costs. These benefits have led to a swift return on investment, affirming the project's success.

"In modern construction, deploying Heatlok Soya HP spray foam and Coatlok is about redefining possibilities," says Maxime Duzyk, Senior Global Director, Building Science and Engineering. "This project with Groupe Valco shows that innovative materials and a visionary approach can turn traditional challenges into benchmarks of sustainability and efficiency. Together, we've fortified a building and demonstrated that collaboration and technology can elevate both form and function."

Huntsman Building Solutions and Groupe Valco have not only strengthened a commercial building's foundation but also set a benchmark for foundation waterproofing systems. This collaborative effort showcases how advanced materials can address today's building challenges while paving the way for tomorrow's construction standards.

Learn more about The Valco Project:
huntsmanbuildingsolutions.com/en-CA/tech-library/groupe-valco-qc

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