River District

Vancouver, BC, Canada (2020)

PRODUCTS USED:

Krystol Internal Membrane™ (KIM®) Krytonite™ Swelling Waterstop
Krystol Waterstop Treatment™ Krystol Waterstop Grout™

OWNER/DEVELOPER/CONTRACTOR:	ARCHITECT:	ENGINEER:	READY-MIX SUPPLIER:
Wesgroup Properties	IBI/HB Architects	Glotman Simpson	Lafarge

BACKGROUND

Located along the Fraser River in Vancouver, Canada, the River District is a 130-acre neighborhood that aims to deliver affordable and convenient waterfront living. To that end, there are over 7,000 economical apartments available in the area for residents with easy access to nearby shops, restaurants, banks, health-care centers, and many other services. At the same time, the district features waterfront paths that connect to 5 km (3 mi) of a continuous scenic riverfront pathway, which goes from Vancouver to Burnaby, and over 25 acres of lush green space, encouraging residents to engage in healthy, outdoor activities.

Such appealing features all came about through the detailed collaboration between locals and experts in urban design, architecture, landscaping, and environmental sustainability. And it's that collaboration that also enabled the River District to win multiple awards, including one for having the best neighborhood and master plan design.

To ensure that design held up, the district's construction team had to carefully consider the water concerns surrounding the area. While they planned to give most of the buildings there two-story underground parkades, the whole development would be between a river and a steep hill. Such a location would have to deal with a very high water table and excess water runoff coming down from the hill, which would expose the whole development to very high hydrostatic pressure.

SOLUTION

That could have proven difficult for the foundation of the buildings to withstand. So to ensure that it could withstand the hydrostatic pressure, the construction team determined that they needed the raft slab to be 2 m (5 ft). That would create enough weight to stabilize the buildings being constructed below the high water table.

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However, the construction team still had to consider how they could best prevent water ingress from occurring in such a high water table area.

With that in mind, the design team specified the use of KIM in the concrete mix for all the below grade areas of the development. It would ensure that the buildings would receive the permanent waterproofing they needed, as KIM contains waterproofing Krystol® technology.

When added to concrete, that technology will remain dormant, only reacting in the presence of water and unhydrated cement particles. However, once activated, it will create its chemical reaction to form insoluble needle-shaped crystals. These crystals fill the pores and capillaries in the concrete to block any pathways that water might get through.

Any moisture introduced through cracks in the concrete over time then will trigger this crystallization and self-sealing process, protecting concrete from water ingress and its rebar from corrosion.

To complete their waterproofing system, the construction team went on to apply Krytonite Swelling Waterstop, Krystol Waterstop Treatment, and Krystol Waterstop Grout on the below grade construction joints.

One point of this holistic waterproofing system that stood out to the construction team was the applied Krytonite Swelling Waterstop. As a synthetic rubber waterstop, Krytonite Swelling Waterstop uses swelling pressure to effectively compression seal concrete construction joints and stop water from passing through. Its innovative trapezoid shape makes it easier for the waterstop to resist being dislodged and to enhance concrete consolidation. Moreover, this particular waterstop provides consistent high-performance swelling, even in contaminated water.

It and the many other solutions used in the River District have kept that district free from water ingress for several years, making this award-winning project a watertight one as well.

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