

Mount Pleasant Sub-Station

Vancouver, Canada (2013)

BACKGROUND

BC Hydro's Vancouver City Central Transmission (VCCT) project is the most significant investment that BC Hydro has made to Vancouver's electrical system in almost 30 years. The project includes construction of a new substation in the Mount Pleasant area of Vancouver and installation of a new transmission line.

The substation is the first Leadership in Energy and Environmental Design (LEED) standard substation for BC Hydro. The building design includes: energy star rated roof material, energy-efficient lighting, water-efficient landscaping and over 15% recycled building content and 20% regional building materials.

The substation design team faced two significant challenges. First: the site sits at the bottom of a hill, where water flow rates entering the site range from 1900 to 5700 liters (500 to 1500 gallons) of water per day. To solve this challenge, the engineers designed the building to sit on a 1.5 m (5 ft.) thick raft slab to keep the building from floating. The construction team needed a waterproofing solution for below grade areas to keep the high-voltage machinery completely dry. There would be zero tolerance for leaks and moisture. Second: designing a concrete that could withstand the abrasive wear of equipment being moved on steel wheels.

SOLUTION

The construction team selected Kryton's Krystol Internal Membrane (KIM) Concrete Waterproofing admixture to waterproof below grade areas including the raft slab and all below grade walls. To completely tank the below grade electrical housing, the team used Kryton's Krystol Waterstop System for all the below grade construction joints. The Kryton waterproofing system was used in conjunction with an externally applied membrane.

To provide the concrete with abrasive wear resistance, the team decided to use Hard-Cem, Kryton's Integral Hardening Admixture. It was added to the concrete used in the flatwork of the storage rooms, feeder rooms, reactor rooms, cable tunnels and capacitor bank rooms. Approximately 1,875 m³ of Hard-Cem concrete was used to increase the hardness of the concrete and expand its wear life.

OWNER:

BC Hydro

ARCHITECT:

PBK Architects Inc.

ENGINEER:

WSP Global (formerly Genivar)

CONTRACTOR:

PCL Contractors Inc.

PRODUCTS:

Learn more at kryton.com
 Krystol Internal Membrane™ (KIM®)
 Krystol® Waterstop System
 Hard-Cem®



Construction work on the exterior of the substation.



Laying the rebar for the 1.5 m (1.5 ft.) thick raft slab.