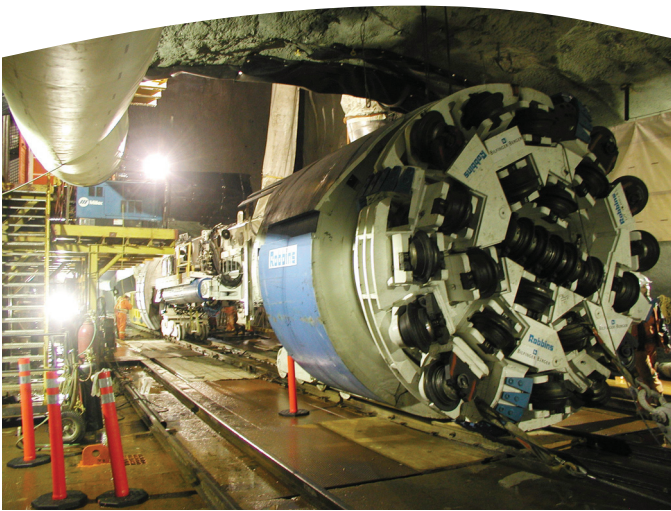




Award of Merit Seymour-Capilano Twin Tunnels Project



Consultant

Hatch

Owner/Client

Metro Vancouver

Category

Municipal

For more information, please contact:

Bruce Harland, P.Eng.
Hatch
☎ (604) 629-1736
bruce.harland@hatch.ca

Drinking water for Lower Mainland communities comes from rain and snowmelt collected by three mountain watersheds. Metro Vancouver is responsible for storing and treating this vital resource and supplying clean, safe drinking water to over 2.4 million residents.

Twin tunnels deep beneath Grouse Mountain and Mount Fromme convey water from the Capilano Reservoir to the new Seymour-Capilano Filtration Plant, before being returned to the Capilano system for distribution. The tunnels measure 3.8 metres in diameter and 7.1 kilometres in length, with shafts up to 275 metres deep. Mined westward using hard rock tunnel boring machines, the tunnels were designed with steel-lined vertical shafts and end sections, and central sections in solid rock or lined with shotcrete.

Designing tunnels in BC's rock conditions required a leading, world-class tunnel designer. Hatch implemented innovative approaches that produced a resilient tunnel design and employed new technologies. Computation fluid dynamics aided the design of rock traps at the ends of unlined sections, and infrared technologies provided quality assurance for the grout backfill behind the steel liners.

Sustainability was a core project value that helped guide design and construction decisions and future operations. The tunnels were connected to an energy recovery facility to offset energy used to pump water to the filtration plant, and optimizing the length of unlined tunnel reduced the amount of steel and backfill materials.

With a hydraulic capacity of up to 1,250 million litres per day, this feat of deep-rock tunnel engineering is a lasting contribution to the region's water infrastructure.