



2017 AWARDS FOR ENGINEERING EXCELLENCE

Award of Excellence

Port Mann Main Water Supply Tunnel



Consultant

Ausenco Engineering Canada Inc.

Owner/Client

Metro Vancouver

Category

Municipal & Civil Infrastructure

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The Port Mann Water Supply Tunnel crosses beneath the Fraser River from Coquitlam to Surrey. A critical link in the water supply network of Metro Vancouver, key objectives of the project included:

- resisting high soil movement and forces generated by a major 1 in 10,000 year earthquake;
- avoiding riverbed scour;
- allowing for future population growth;
- minimizing impact on the community and environment.

To meet these objectives, the engineering team included many design innovations including:

- use of performance-based design for the entry shaft's underground structures – both the concrete shaft and the steel pipe within it yield and deform during a major earthquake, yet remain operational and continue delivering water;
- designing the tunnel lining to withstand the highest external ground water pressure encountered in soft ground tunnelling; and
- designing the outer ground support walls for the deep shaft excavations to be constructed without steel reinforcing;

The design and construction of the Port Mann Water Supply Tunnel demonstrate the state-of-the-art engineering practices in BC, and expand the realm of possibilities for soft ground tunnel projects in seismically active sites worldwide. The project received the Tunnelling Association of Canada's 2016 Canadian Innovation Project of the Year award.