

Confederation Line Project Stage 2 City of Ottawa

Location: Ottawa, Ontario

Date: 2017

Structure: TBM tunnel alternatives

Length: Parkway Tunnel: 1.80 miles (2.9 km)
Connaught Tunnel: 1245 ft (380 m)

Cross-Section: Varies

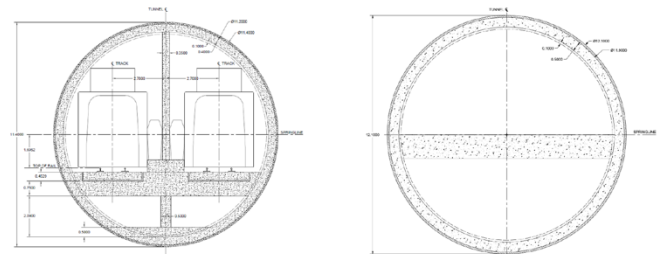
Geology: Fill, silty sands and clays, clayey silts, silts, glacial till, bedrock consisting of dolomite, limestone, dolostone, and shale layers.

Cost: ~\$3.45 Billion USD

Client: Bechtel

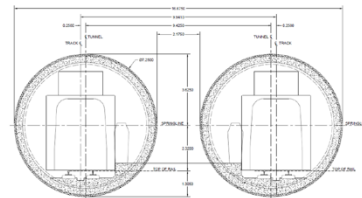


Figure 1. West Alignment Overview with Parkway and Connaught Tunnels indicated.



Medium TBM Bore (11.4 m)

Large TBM Bore (12.1 m)



Twin TBM Bore (7.25 m)

Figure 2. Evaluated Conceptual TBM Arrangements.

TBM Tunneling Expertise Consulting Services:

Stage-2 Light Rail Transit (LRT) is a proposed light rail extension to the under-construction Confederation Line, the next stage of the LRT system in Ottawa, Ontario, Canada. The Stage-2 project will add over 24 miles of railway and 23 new stations to the O-Train system from Bayshore to Place d'Orleans, and south to Bowesville at Riverside South. The proposed extensions include Trillium Line South, Confederation Line East and Confederation Line West, which includes construction of the Connaught and Parkway tunnels. Initial concept drawings indicate conventional cut-and-cover tunneling methods, with secant piles and a cast-in-place concrete structure, for construction of the two proposed tunnels.

Gall Zeidler Consultants (GZ) provided consultancy services for the development of TBM Alternatives including recommendations on the general tunneling strategy and a high-level review of associated risks. After providing general alignment and structural design considerations, three TBM alternatives were proposed, consisting of twin bore, medium bore, and large bore options. The TBM alternatives included recommendations on the vertical and horizontal alignment as well as station configurations, accounting for ground conditions (bedrock, mixed-face), existing structures, and the required right-of-way.