

Canada



Name: Tunnelling Association of Canada (TAC)

Type of Structure: Federally incorporated not-for-profit society

Number of Members (2022): 450 individual members, 71 corporate members

ASSOCIATION ACTIVITIES DURING 2022 AND TO DATE

2022 saw the return of in-person events across TAC's five regional chapters, the TAC National Conference in Vancouver, TAC's submission of a proposal to host the World Tunnel Congress in 2026 in Montréal, and the continuation of the TAC Young Members (TACym) webinars to connect members and large audiences across the country.

TACym was active in 2022, hosting three webinars, three site visits, and one social event. As well as the TACym events, 13 in-person events were hosted by the TAC Chapters in Vancouver, Toronto, Montreal and Quebec.

The TAC 2022 Conference was hosted in Vancouver, British Columbia from November 2nd – 4th, under the theme 'Tunnelling for the Future' and the sold-out event was attended and supported by 400 tunnelling professionals, 28 sponsors and 39 exhibitors. The conference featured five keynote speakers, short courses, two technical tours and 70 technical sessions with 115 speakers.

As part of the conference, the annual TAC Achievement Awards were presented at the Gala dinner held on November 3, 2022. The 2022 recipients included:

- Lifetime Achievement Award – Patrick McNally
- Young Tunneller of the Year Award – Dani Delaloye
- Tunneller of the Year Award – Paul Cott
- Canadian Innovation Initiative Award – Novamera Inc. for Mechanized Boring for Surgical Mining
- Canadian Project of the Year Award (Up to \$100M CAD) – Hatch, REM, NouvLR and CIMA+ for the Mount Royal Tunnel
- Canadian Project of the Year Award (Over \$100M CAD) – Metrolinx, Toronto Tunnel Partners (Ellisdon & Strabag), WSP and Jensen Hughes for the Go Expansion
- Photo of the Year Award – Bertin Caron-Boulé for Mount Royal Tunnel
- TAC Outstanding Service Award – Wayne Gibson
- Dan Eisenstein Memorial Scholarship – Caitlin Fischer



TAC2022 Conference at the Fairmont Hotel Vancouver

- TAC Undergraduate Scholarship – Jay Modi

Full 2022 TAC Achievement Award details and videos are posted on the TAC website (https://www.tunnelcanada.ca/awards_2022.php).

TAC looks forward to its next annual conference from September 24th to 26th, 2023 in Toronto, Ontario.

TAC has submitted a proposal to host the 2026 World Tunnel Congress and 52nd ITA General Assembly in Montréal. The proposed theme of the conference is "Connecting Communities through Underground Infrastructure". A copy of the proposal can be accessed online (https://congresmtl.com/Communications/Bids/WTC2026/WTC2026_Montreal.pdf).

TAC communicates with its members and the general public through a number of forums:

- "Canadian Tunnelling" magazine - in partnership with Tunnelling Journal, this twice-yearly publication focuses on Canadian tunnelling activity and TAC events. Canadian Tunnelling was published in February and September 2022, with issues mailed to the TAC membership.
- TAC and TACym maintain a full Social Media presence, including an active LinkedIn page (<https://www.linkedin.com/company/tunnelling-association-of-canada/>).
- TAC also implemented a bi-monthly newsletter which was published with 5 issues in 2022.



TAC has implemented a series of Special Projects over the years as a means to promote the Association and the tunnelling industry in Canada in general. In 2022, TAC carried out the following initiatives,

- Development of the French version of the 2021 book "Canadian Tunnelling – Memories and Achievements", which highlights historical Canadian Tunnelling projects.
- Development of the "Canadian Tunnelling Projects Dashboard" – a GIS-enabled database that will provide TAC members with an overview of upcoming projects across Canada.

TAC launched an EDI taskforce in 2022 with a mission to identify and address issues of diversity and address issues of diversity, equity, and inclusion to improve the experience of working in the tunnel industry in Canada and invest in the participation and promotion of underrepresented groups, while supporting the tunnelling industry to achieve their diversity and inclusion goals.

CURRENT TUNNELLING ACTIVITIES

The tunnelling industry in Canada continues to be very active with tunnelling projects underway in all five Canadian Chapters. The following are some of the key projects currently underway:

Key Western Canada projects currently in progress or completed in 2022 include:

- Second Narrows Water Supply Tunnel - This 6.5m diameter slurry TBM driven tunnel under the Burrard Inlet between North Vancouver and Burnaby houses three critical water mains (1.5m dia. and 2x2.4m dia.). Tunnelling is complete and final pipe installation is underway.
- Annacis Water Supply Tunnel – This new

water supply tunnel between Surrey and New Westminster commenced construction in 2022. The project includes a 4.5m diameter EPBM to construct the 2.3km long tunnel below the Fraser River, which connect into two deep shafts (50 and 60m in depth).

- **Broadway Subway Transit Project** - Construction of the 5.7km extension to Vancouver's transit system is underway. Tunnelling of the 5km of twin TBM-bored tunnels commenced in 2022, as well as excavation of the six new underground stations.
- **Trans Mountain Pipeline – Burnaby Mountain Tunnel** - As part of the Trans Mountain Expansion Project with excavation of a 2.6 km long, 4m diameter tunnel using an EPBM under Burnaby Mountain. The new tunnel will contain three 0.76m crude oil delivery pipelines. Tunnel excavation was completed in mid 2022, with the overall project expected to be fully operational in 2024.
- **Kemano T2** - a second tunnel has been commissioned to convey water into the Kemano Powerhouse in British Columbia, marking the end of the Kemano T2 hydropower project. The new, 16km tunnel was filled up with water and produced its first megawatt of electricity in July 2022 after its construction was completed in May 2022. Both T1 and T2 are now operating together, ensuring the long-term reliability of the power supply for the BC Works aluminium smelter in Kitimat and neighbouring communities.

Key Eastern Canada projects currently in progress or completed in 2022 include:

- **Eglinton Crosstown West Extension** - This 9.2km extension to Eglinton Crosstown LRT which includes 6.4km of 5.75m (ID) twin bored tunnels. Remy and Renny, the two TBMs started tunnelling on 11th April 2022 and are well advanced, achieving record excavation rates.
- **Scarborough Subway Extension** - This project will feature the largest diameter transit tunnel in Canada, 11.9m ID. The project consists of 7.8km of single bore tunnel, 500m cut & cover box structure between Kennedy Station and end of tunnel and three stations. The TBM arrived at the job site in Toronto in 2022.
- **Ashbridges Bay Outfall Tunnel** - The ABTP Outfall project has reached an important milestone: tunnel completing and TBM removal. To final completion there are a couple of raisers to be installed followed by tunnel connection and the rest of the marine work



Rehabilitation of the Mount Royal Tunnel for the REM Project, Montreal.

including riser connection and diffusers installation.

- **REM Transit Line** - TBM "Alice" finished excavation on July 7th, 2022 of the 2.5km long 7.4m diameter single track tunnel that runs underneath an airport runway and taxiway with very negligible settlement. Conversion of the 5km long, 100 year old Mt Royal tunnel, from a commuter rail operation to a high frequency light rail operation is underway (see photo below).

FUTURE TUNNELLING ACTIVITIES

Canada has more than 50 major tunnelling projects planned for the next 10 years valued at more than \$50bn. A summary of some of these projects is provided below.

- **Eagle Mountain Gas Pipeline Tunnel Project, BC** - 9km tunnel to house a 24" gas pipeline
- **Stanley Park Water Supply Tunnel, Vancouver** - Metro Vancouver project will feature a 1.4km tunnel under Stanley Park constructed by roadheader
- **Coquitlam 4 Water Supply Tunnel** - new 5.5m diameter, 2km long water supply tunnel in the greater Vancouver suburb of Coquitlam
- **Cambie Richmond Water Supply Tunnel, Vancouver** - new water supply tunnel under the Fraser River between Vancouver and Richmond
- **Haney Water Supply Tunnel** - Pitt River Crossing, Vancouver - 1.2km long tunnel under the Pitt River between Port Coquitlam and Maple Ridge to house a 2.4m diameter steel water main
- **Green Line LRT, Calgary** - Extension to the existing LRT, which includes 3km of tunnel and four underground stations

in the city's downtown. Award of the DB project is expected in 2023.

- **Ontario Line, Toronto** - The Project will be the largest transit project in Canada including 15.6km of subway line with 15-stops running from Exhibition Place, through the heart of downtown, and all the way to the Ontario Science Centre. The D/B project is expected to be awarded by the end of 2022.
- **Yonge Extension, Toronto** - The Yonge North Subway Extension (YNSE) will extend the TTC's Line 1 subway service 8km from the existing terminus at Finch Station into the City of Richmond Hill. It will include a 6.1km underground tunnel segment. The RFP is expected in 2023.
- **Inner Harbour West, Toronto** - The project is stormwater storage for Wet Weather Flows (WWF) and water quality improvement. The project includes 5.5km of tunnels (6.3m ID), three shafts (up to 30m dia.), nine connections and eight drop structures.
- **Taylor Massey-Creek Tunnel, Toronto** - Represents the last phase of the Toronto and includes approximately 6km tunnel, wet weather flow storage shafts and connection points to the tunnels for stormwater and combined sewer overflow
- **Blue Line Extension, Montreal** - 3km Metro line extension, with five stations. Conventional BB contract. Request for proposals for is expected shortly.
- **REM East Extension** - Work is proceeding in the 5km long 100-year-old Mont-Royal Tunnel that is being converted from a commuter rail operation to a high frequency light rail operation.

- Québec City-Lévis Road Tunnel, Montreal - The provincial government has selected a twin tunnel configuration with two lanes in each direction as opposed to previously announced one bore with three lanes in each direction.
 - Québec City Tramway Tunnel - 1.8km Tunnel with two tracks and two UG Stations. Tender Design is progressing for the Quebec Tramway with two packages:
- Preliminary Design is expected to end in 2025
- the rolling stock and the infrastructure packages that are being tendered in sequence. Each package has received two proponents team. Bids are due in Fall 2022 for rolling stock and in Spring 2023 for the infrastructure package.