

Welcome to the Tunnelling Open House

Eglinton Crosstown West Extension

March 20, 2024

Introducing the WestEnd Connectors project team

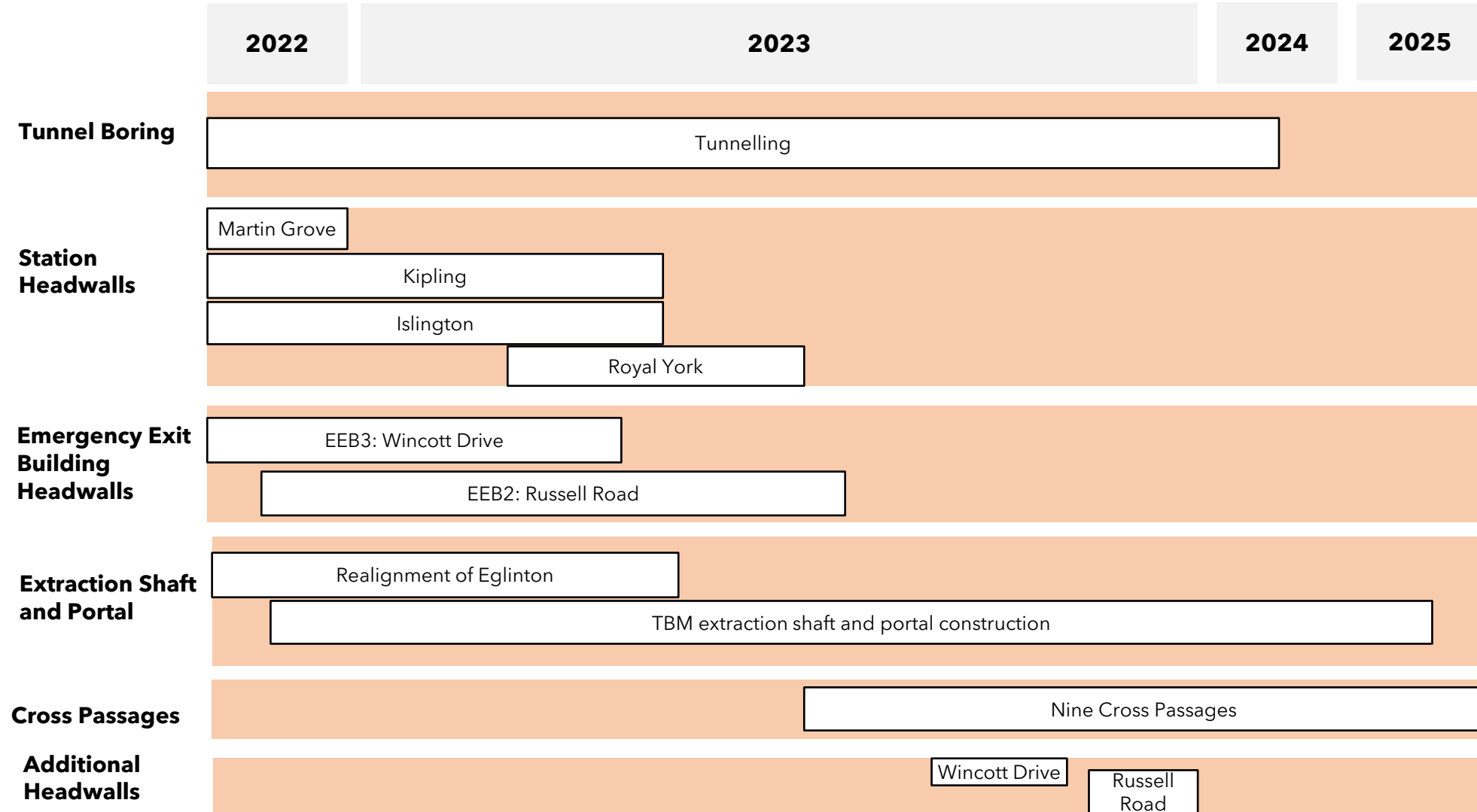
WestEnd Connectors Construction is an integrated general partnership consisting of three Canadian and international leaders in tunnel construction: Dragados Canada Inc., Aecon Infrastructure Management Inc., and Ghella Canada Ltd. Together, the team is delivering and financing tunnelling for the Eglinton Crosstown West Extension project, from Renforth Station to Scarlett Road.

Our team members have extensive experience in Canadian heavy civil and urban infrastructure projects and bring a unique expertise in underground tunnelling works.



Renforth to Scarlett tunnel timeline

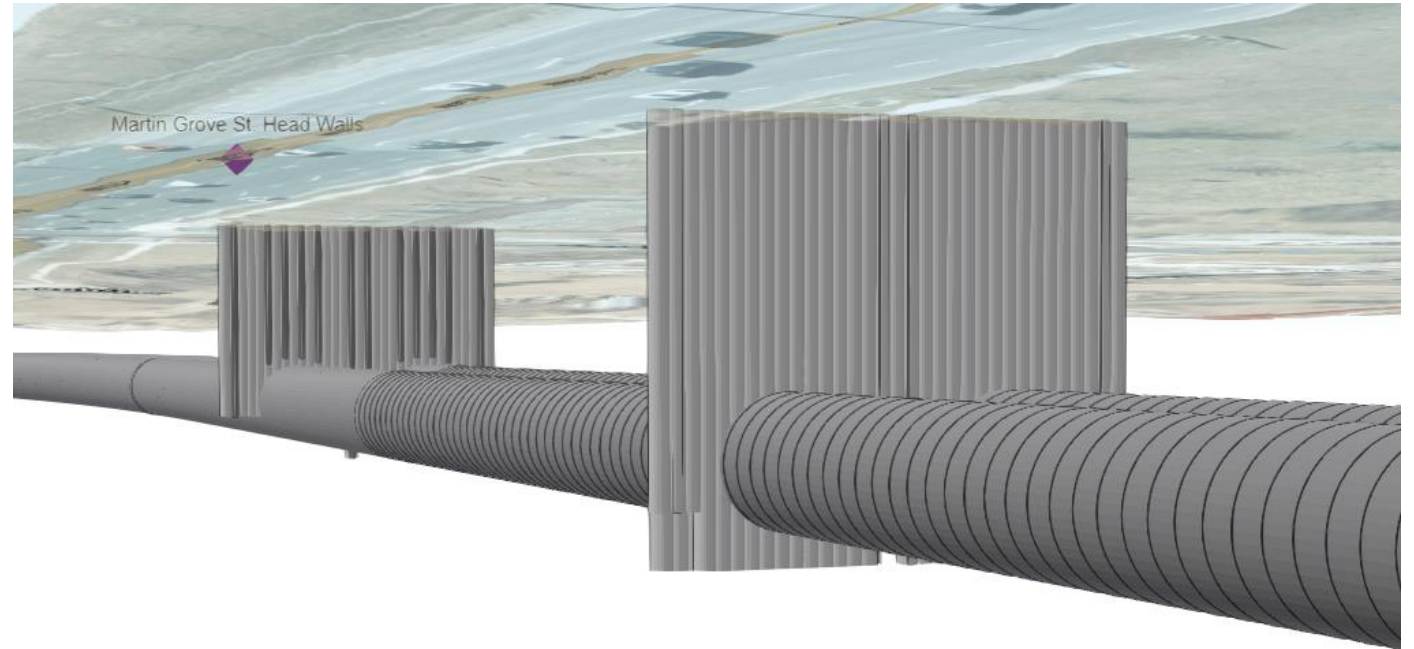
Timelines are subject to change.



Headwall overview

What are headwalls?

- Headwalls are underground support walls located at the east and west ends of the station location.
- The TBMs bore through the headwalls, therefore crews must build them prior to the TBMs arriving at each site.
- There will be four underground stations in this tunneled section (Martin Grove, Kipling, Islington and Royal York) and each will require two headwalls be built.
- There will also be headwalls constructed for two emergency exit buildings – one between Kipling Avenue and Islington Avenue, the other between Islington Avenue and Royal York Road.



3D model of two headwalls



Did you know?

All headwall work for the future stations were completed in July 2023.

Headwall overview

Future Stations and Emergency Exit Buildings (EEBs):



Martin Grove



Kipling



Islington



Royal York



EEB #3 (Wincott Drive)



EEB #2 (Russell Road)

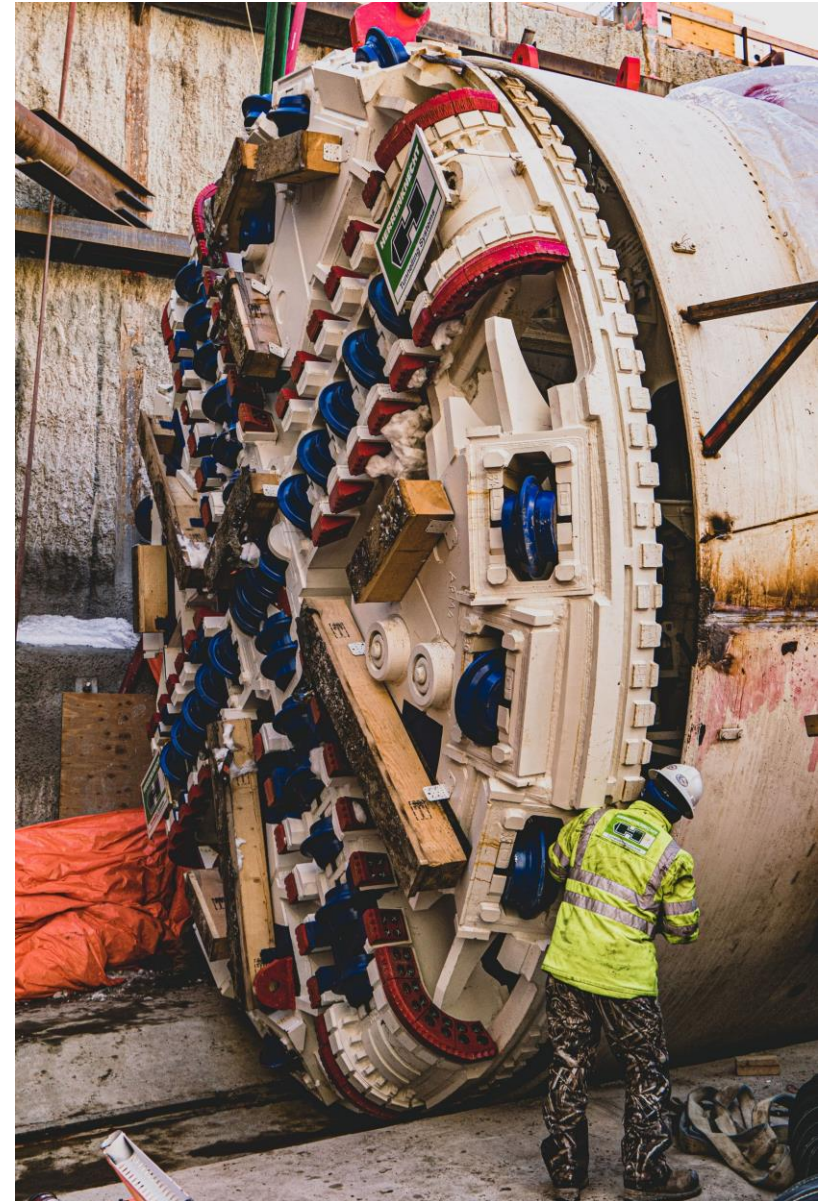
The inside of a tunnel boring machine



Tunnel boring machine (TBM) fun facts

Did you know?

- Each TBM weighs about 750 tonnes each, which is about five times as heavy as a blue whale.
- TBMs travel on average 10 to 15 metres a day.
- TBMs typically collect around 2,000 tonnes of earth and rock per day as they tunnel.
- While the TBMs dig, they also install tunnel rings. It can take between 50 to 120 minutes for a TBM to excavate and install one liner ring.



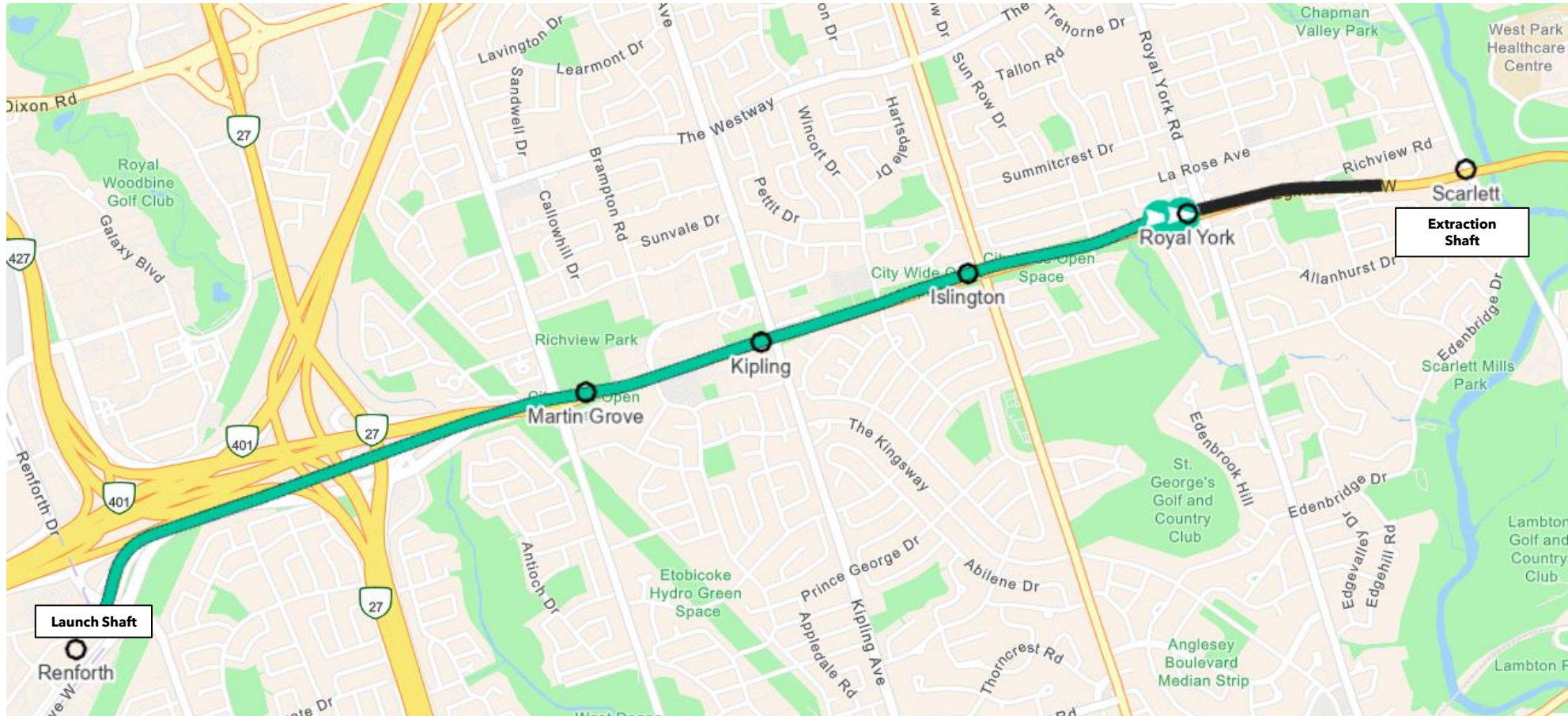
Multi-service vehicles (MSVs) are used to transport people and equipment from the surface to the TBMs deep inside the tunnel.



Tunnelling update

Where are Renny and Rexy, the two tunnel boring machines (TBMs) now?

The TBM Tracker can be found on the project website and is updated regularly.



Launch Shaft - Renforth

Did you know?

- Our Launch Shaft, where Renny and Rexy first began digging, is 80 metres long, 20 metres wide and 17 metres deep, and at about 27,200 cubic metres, has roughly the same volume as 11 Olympic-size swimming pools.
- The conveyor belt that removes the soil and rock from the tunnels can hold up to 500 tonnes of material per hour.
- Tunnel liners are made of reinforced concrete and give the tunnels their structure. We'll use about 7,400 concrete rings to complete the tunnels for the project.



Extraction shaft and portal

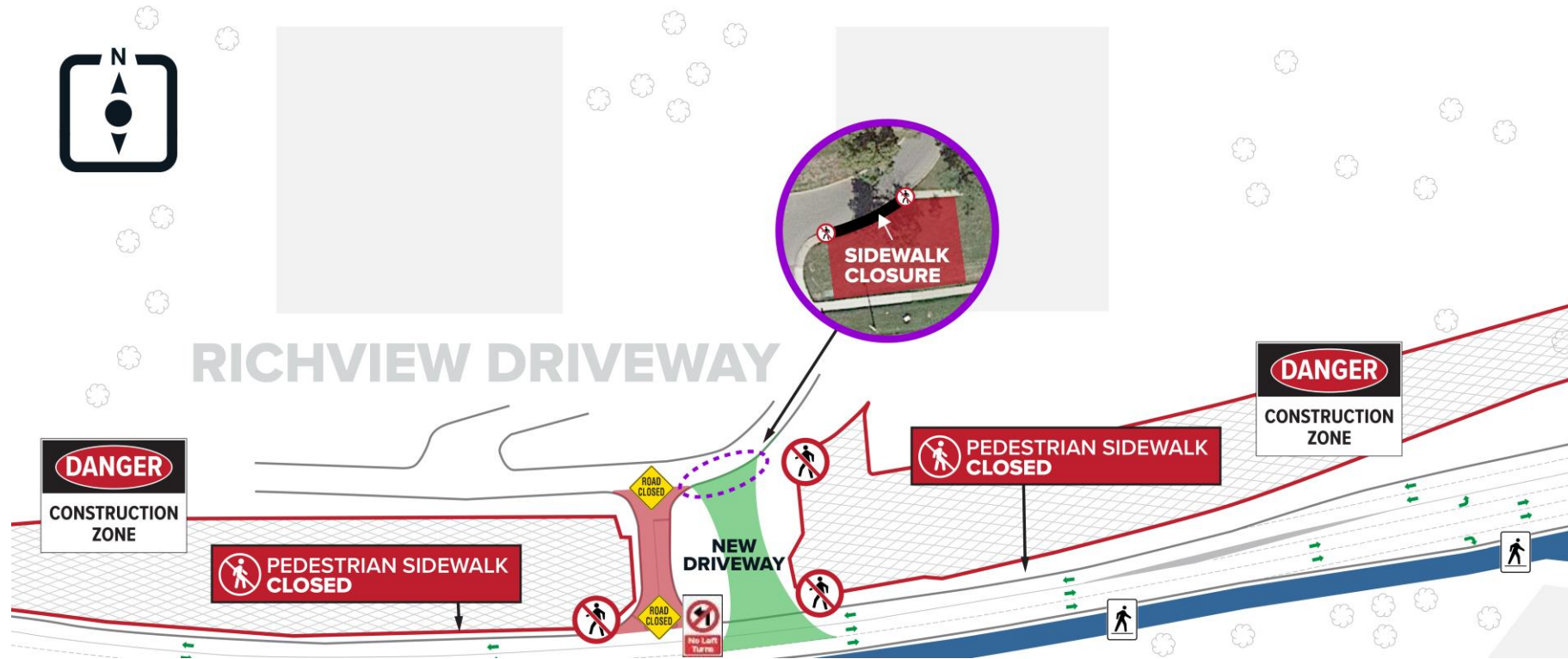


- The TBMs will finish digging west of Scarlett Road where they will be dismantled and removed from the ground through an extraction shaft.
- The shaft is also the portal for where the light rail vehicles transition between the tunnel and the elevated guideway.
- Construction for the extraction shaft/portal began in winter 2022. The TBMs are expected to finish tunnelling and be removed in Spring 2024.

Driveway relocation at Richview Road

New work zone and traffic staging: October 2023 - 2025:

Traffic map not to scale.



- To continue working on the extraction shaft, crews relocated the Richview Road driveway further east from its original location.
- The private Richview Road sidewalk will remain open, however, a small portion is closed off to provide access for the driveway.
- Left turns into the driveway will remain prohibited.

TBM Breakthrough in Spring 2024

- Renny and Rexy are expected to breakthrough at Scarlett Road and Eglinton Avenue West in Spring 2024.

This is what a TBM breakthrough looks like



Photo Credit: Ghella

TBM Extraction in Spring - Summer 2024



- After Renny and Remy breakthrough at the extraction shaft, crews will begin dismantling the TBMs.
- This process can take up to one month for each TBM.
- Residents can expect lane closures during this period.



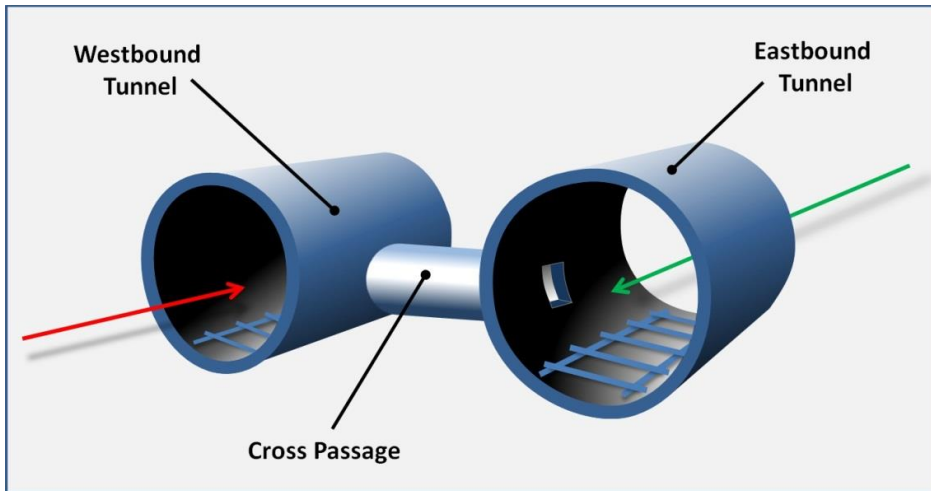
Cross Passage construction

A cross passage (CP) is a small passageway built to connect the eastbound and westbound tunnels for maintenance and/or emergency purposes.

This scope of the project will have 9 cross passages along the Eglinton Avenue West corridor.

Work for the first cross passage at Renforth, "CP-10" started on May 15 - slightly ahead of schedule.

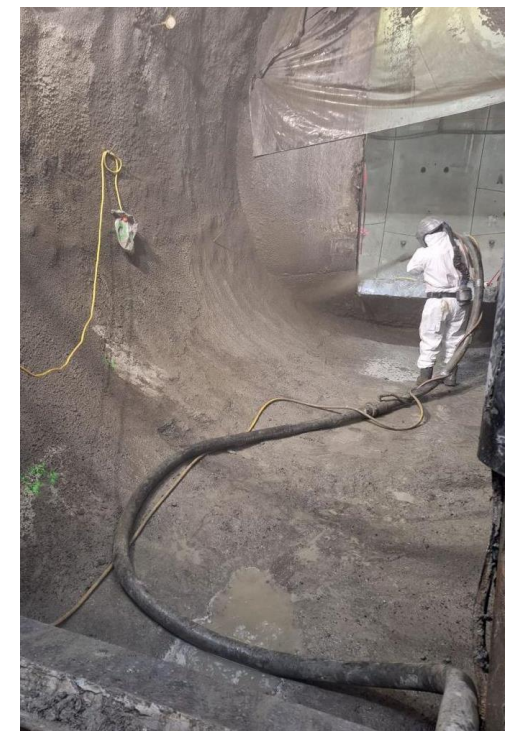
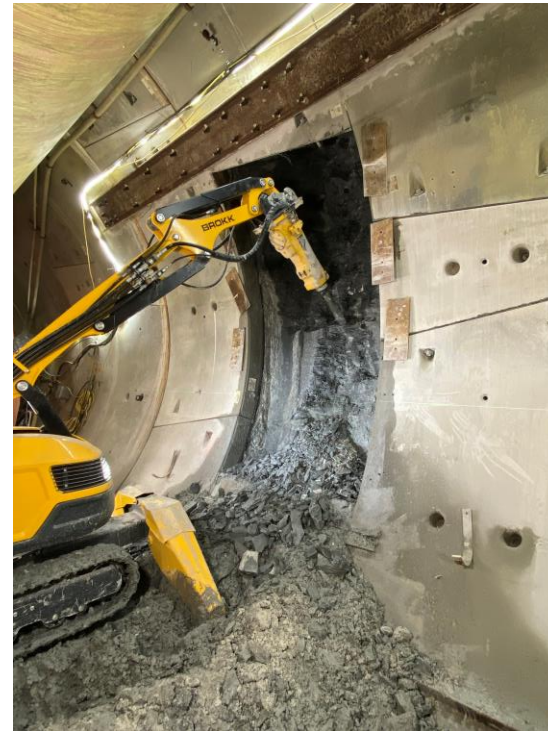
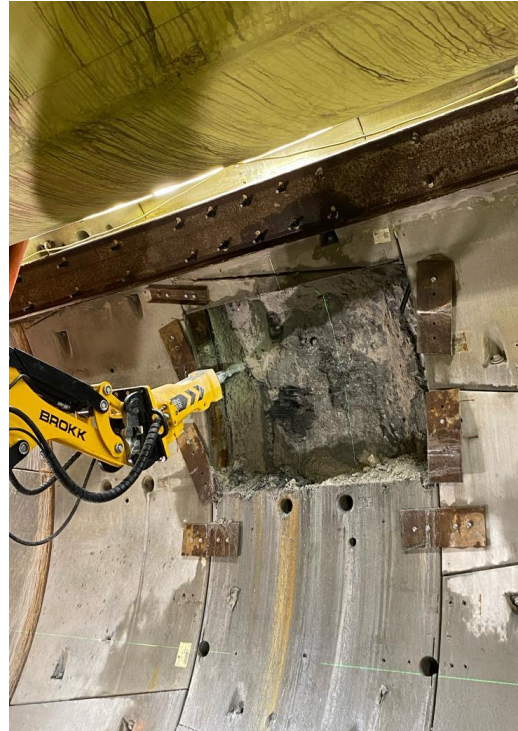
While many other projects build cross passages after the TBMs complete their digging, our team's methods, equipment, and expertise allow us to build them during TBM operation.



Cross Passage construction process



Preparatory Works



Excavation and Primary Lining

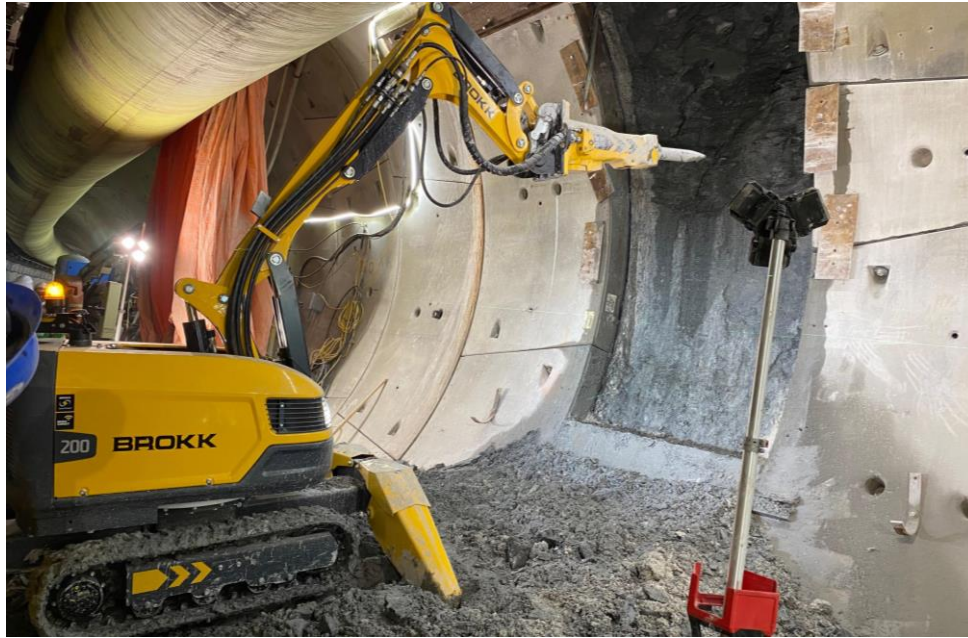
Cross Passage construction process



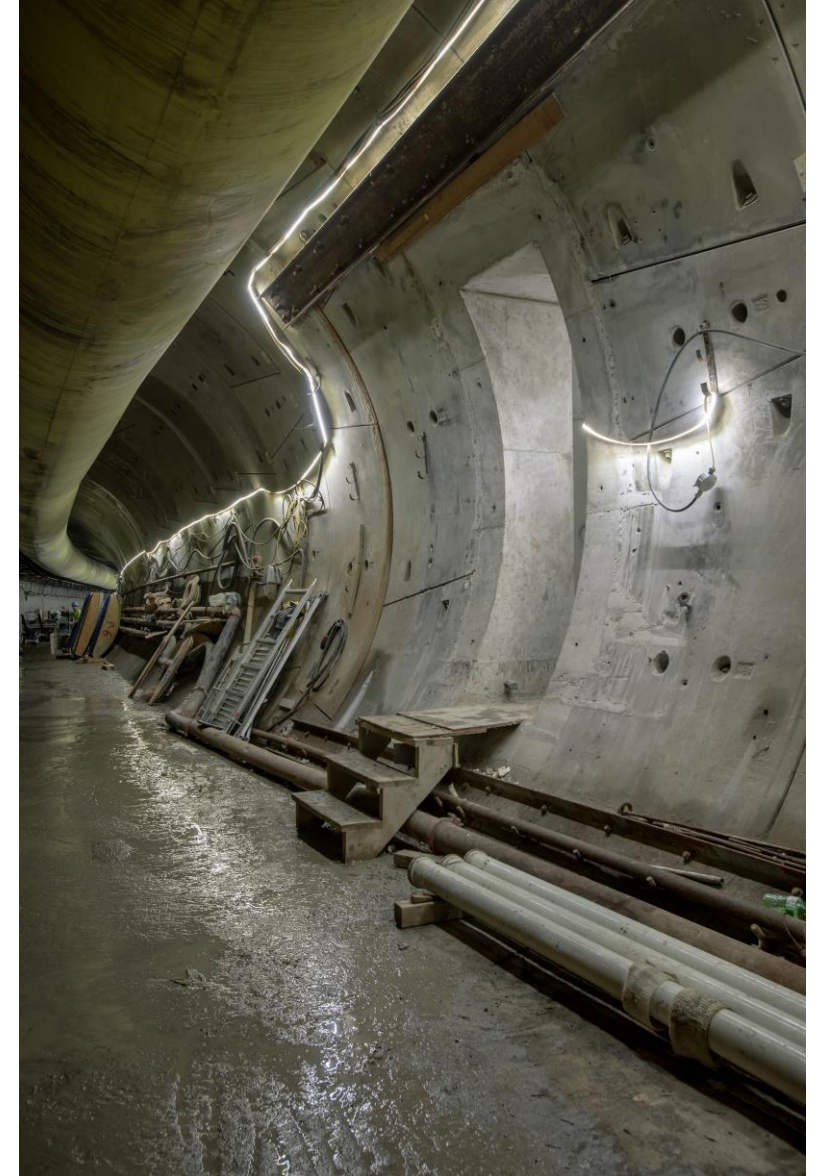
Final Lining Completed

Cross Passage construction progress

44 % Completed



- Work for CP-10, CP-9, CP-8 and CP-7 began in May 2023 and was completed in December 2023.
- Preparatory works for CP-6, CP-5, CP-4, CP-3 and CP-2 began in February 2024.
- All cross passage work is expected to be completed in 2025.



Dewatering for cross passages

Winter 2024 - 2025



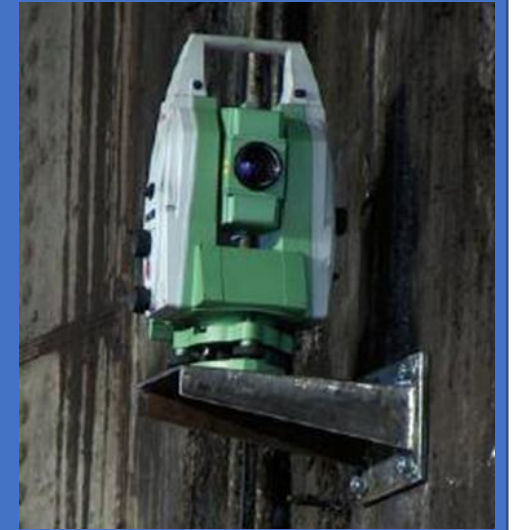
- Dewatering systems will be installed along Eglinton Avenue West for future cross passage work. While the majority of work will occur underground within the tunnels, dewatering operations will be visible on the surface as well.
- The term **"dewatering"** means pumping ground water away from the site where excavation will take place.
- Dewatering wells are an important part of the cross passage construction process. The wells ensure the water table remains low enough to allow for mining to be completed to construct the passage outside the main tunnels.
- The dewatering pumps and/or generators are required to be active 24 hours a day until cross passage work is completed.

Monitoring noise and vibration

- Noise, air and vibration monitors have been installed on the properties of residences, offices and commercial buildings in the vicinity of the construction as per the Noise, Vibration and Air Quality Management Plans. This equipment helps us measure and minimize noise and vibration throughout the project term to prioritize safety and well-being.
- The project team receives noise, air, and vibration monitor alerts in real time located along the project extent.

This is not a camera!

This is a total station, an automatic monitoring system that reads slope measurements and surface movements at specific points. As the TBMs tunnel across Eglinton Avenue West, the project team can read the data collected by these instruments to see if they have caused any surface or ground impacts as they pass.



Noise monitor



Air quality monitor



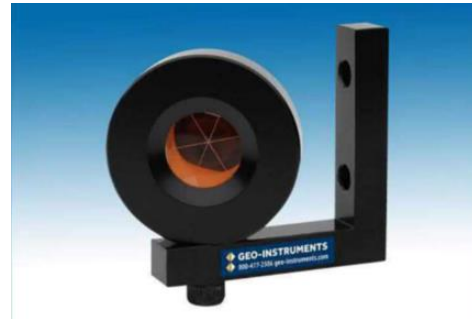
Vibration monitor



Geotechnical Instrumentation Monitoring Points Instruments



Installed in the ground, these short white cylindrical posts are Surface Monitoring Points that monitor any ground movement along the tunnel alignment as the TBMs pass through.



The L-Bar Mini Prism is a compact and versatile optical target used with automated total stations to monitor potential ground movement and the structures on it. Suitable for a wide range of applications, the L-Bar Mini Prism is installed on the exterior building facades.



Together, these instruments operate as a whole.