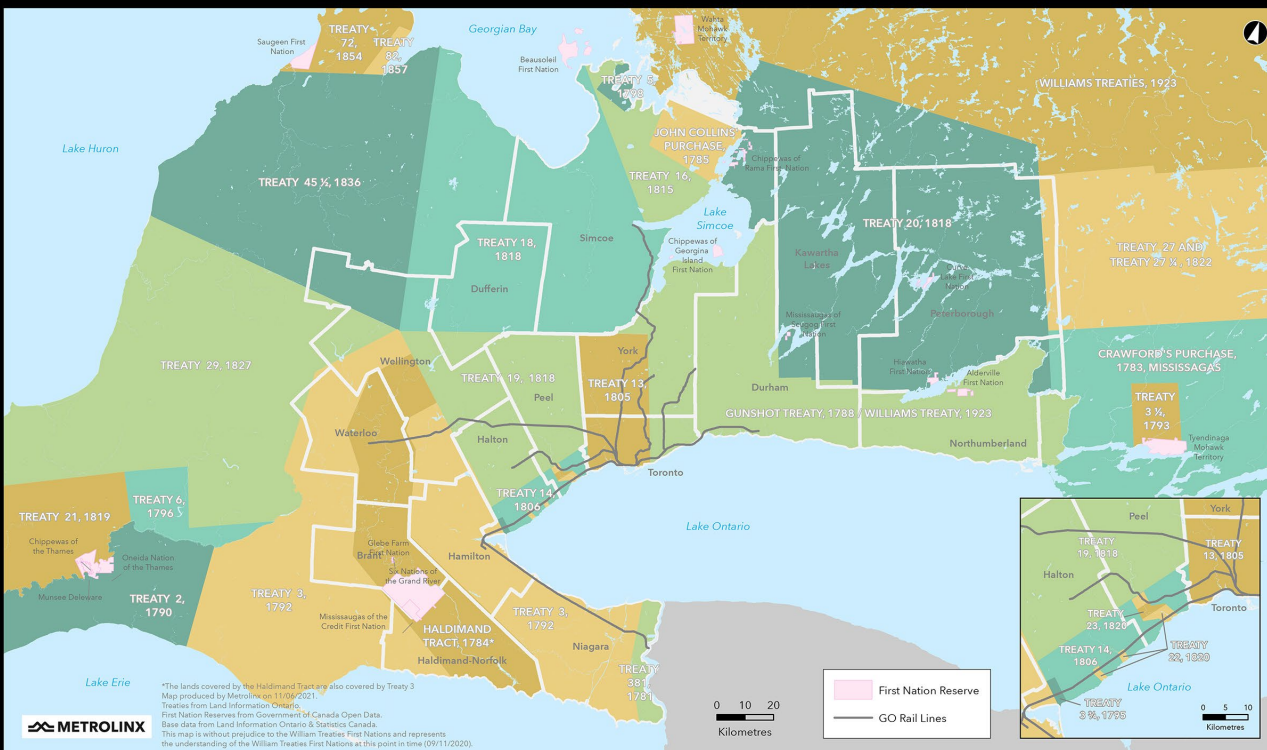


Land Acknowledgement

Treaties and Reserves in the Greater Golden Horseshoe



Let us take a moment to acknowledge we are on lands that have been, and continue to be, home to many Indigenous Peoples including the Anishnabeg, the Haudenosaunee and the Huron-Wendat peoples.

We are all Treaty people. Many of us have come here as settlers, as immigrants or involuntarily as part of the trans-Atlantic slave trade, in this generation, or generations past.

We acknowledge the historic and continued impacts of colonization and the need to work towards meaningful reconciliation with the original caretakers of this land.

We acknowledge that Metrolinx operates on territories and lands covered by many treaties that affirm and value the rights of Indigenous communities, Nations and Peoples.

We understand the importance of working towards reconciliation with the original caretakers of this land. At Metrolinx, we will conduct business in a manner that is built on a foundation of trust, respect and collaboration.

Pape-Riverdale

Public Technical Briefing on

Upcoming Subsurface Impacts

November 19, 2024

What We Need To Build: Pape-Riverdale Works Overview – 2024-2026

- Over the next two years, underground utilities will be relocated and existing buildings will be demolished to make room for subway portal and tunnel construction near Pape-Riverdale.
- Work from late 2024 to early 2026 will include:
 1. Micro-tunnelling a new storm sewer on the eastern edge of Pape Avenue JPS' property.
 2. Excavating to install a new combined sewer under the east side of Pape Avenue.
 3. Excavating to install a new water main south of Pape and Langley.
 4. Excavating to remove the existing storm sewer under Pape Avenue.
 5. Demolishing buildings at 388-402 Pape Avenue and the 449 Carlaw Avenue Plaza.
 6. Piling and excavating to build the subway tunnel portal.
 7. Preparing for subway tunnel boring machine launch and tunnelling.

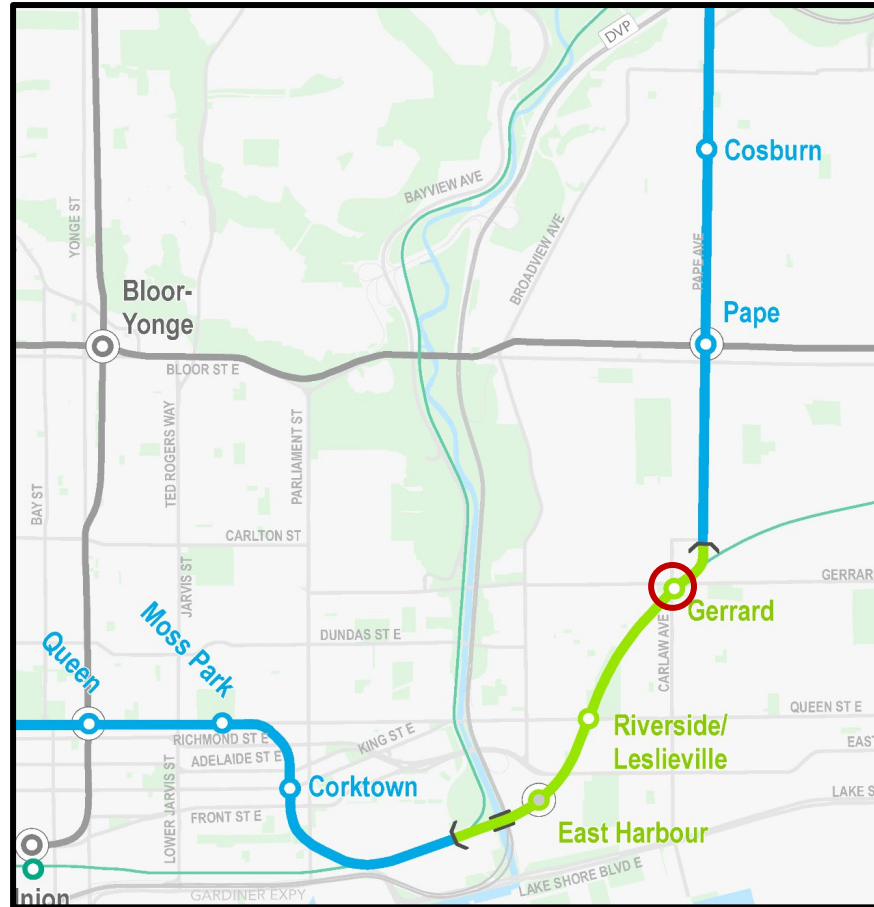
Note: detailed traffic and pedestrian management diagrams will be shared via construction notices prior to each stage of work.



The Ontario Line in Your Neighbourhood



Future Ontario Line station spanning Carlaw Avenue at Gerrard Street (view looking south on Carlaw Avenue)



30 minutes or less Ontario Line end-to-end journey time

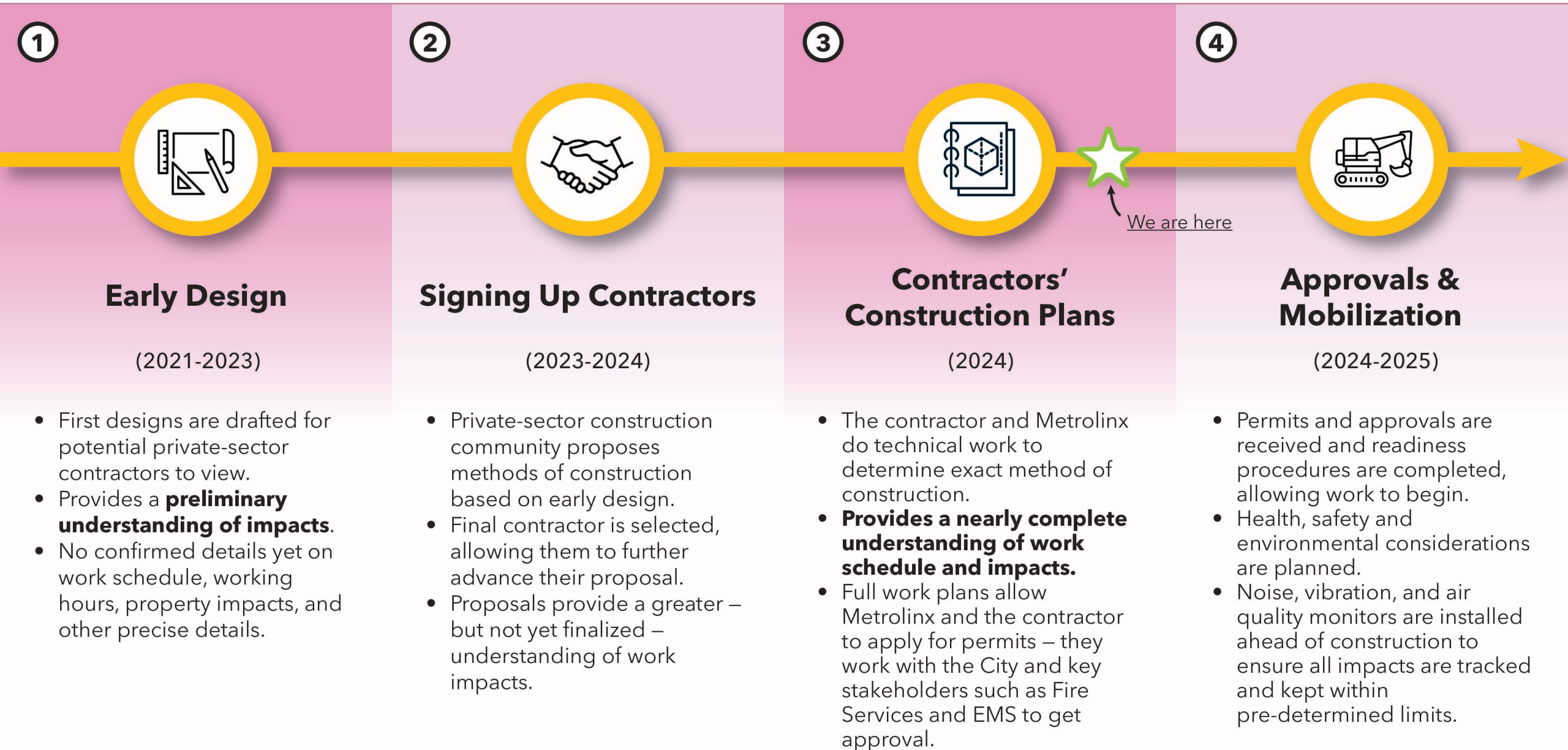


28,000 fewer car trips every day



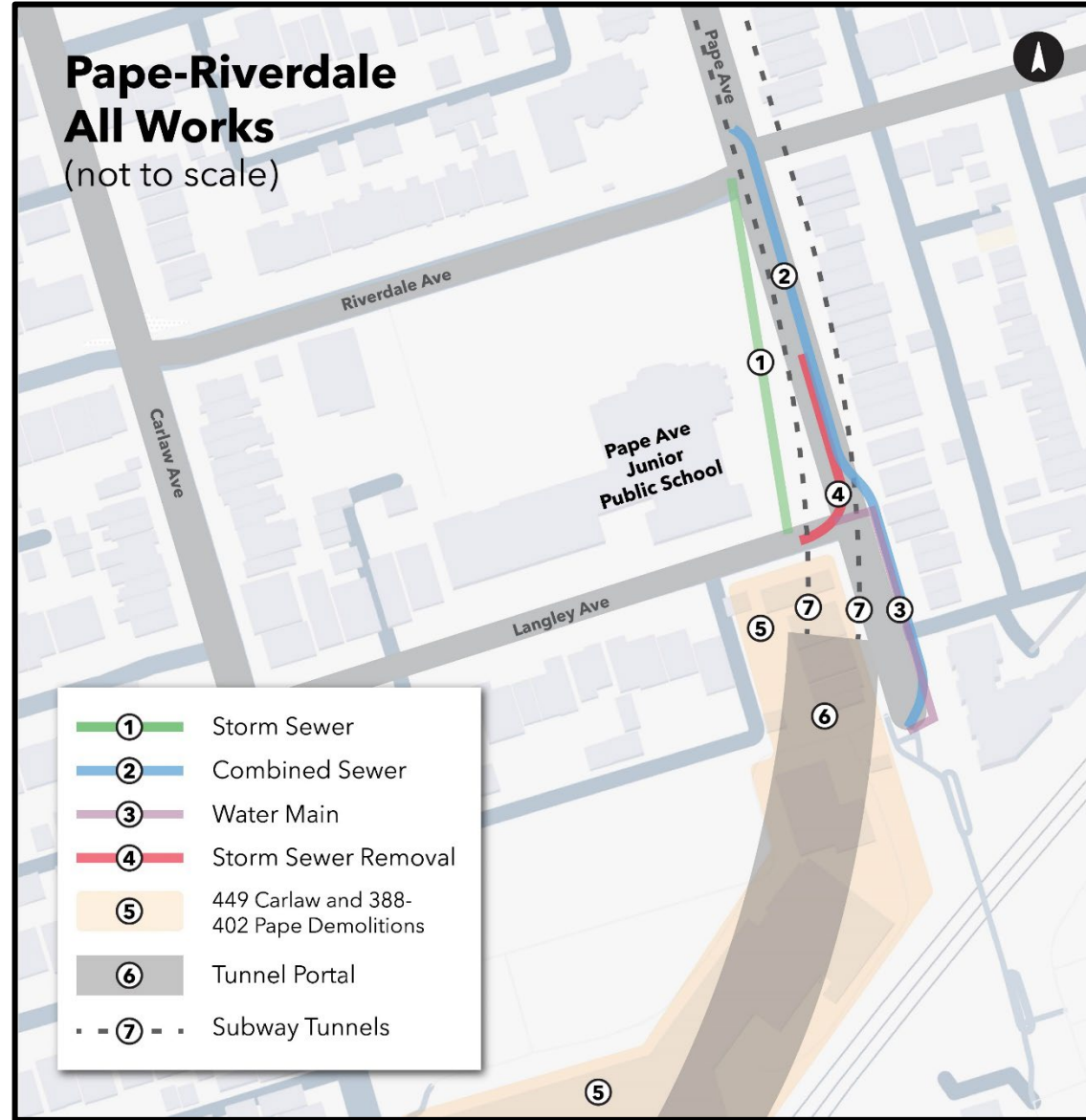
40+ connections to other transit options

Project Timeline – Early Design to Mobilization



What We Need To Build:

Pape-Riverdale Works Overview 2024-2026



Working in the Community

Our goal is to be a good neighbour and deliver the Ontario Line on-time. To do this, we are implementing measures to minimize disruption and keep the community informed and safe during construction:

- 1. Noise and Vibration Monitoring:** Monitors are installed around Pape-Riverdale that provide real-time data. When exceedances are detected, automatic alerts are triggered that provide data to make informed decisions about how to adjust work and/or mitigate noise and vibration.
- 2. Noise Mitigations:** We have installed a noise wall around Pape Avenue Junior Public School. A noise wall will be constructed at 449 Carlaw Avenue. Contractors are required to minimize construction noise including the use of enclosures and quieter equipment.
- 3. Traffic Control:** To maintain community safety around work zones, we have instituted a plan for traffic control personnel, crossing guards, and paid-duty police officers to be on site and at nearby intersections during work hours.
- 4. Air Quality and Soil Management:** Prior to work starting, we investigate soil conditions and we monitor air quality during construction. Air quality alerts are triggered before exceedances occur so we can adjust work or implement additional dust control measures.
- 5. Contractors' Role:** Contractors are required to meet Metrolinx good neighbour requirements. This includes maintaining clean and safe sites, and utilizing designated parking and smoking areas.



Noise Wall



Pick-up Drop-off Area Signage



Traffic Control People on Site

Working in the Community: Health & Safety Plan

Metrolinx has developed a Health and Safety plan to govern construction activities near Pape Avenue Junior Public School and shared it with the TDSB.

The plan includes standards for items such as air quality, traffic management, noise and vibration, and site operations.

To view the full plan, scan the QR code or visit the link below and click on the Health & Safety Plan:

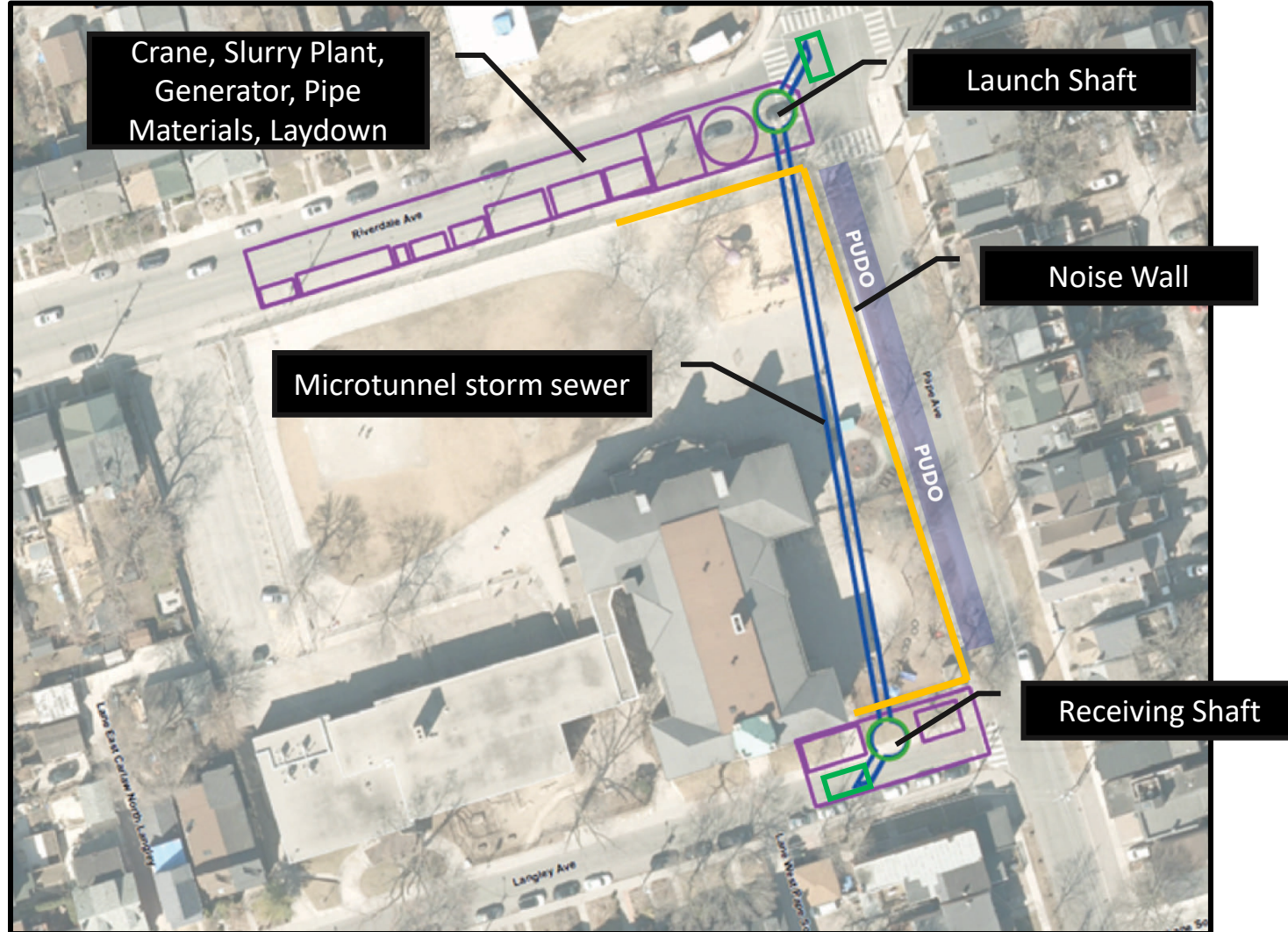


www.metrolinx.com/en/projects-and-programs/ontario-line/community-meetings/pape-school-clc



Storm Sewer Preparation and Micro-Tunnelling

1



Storm Sewer Preparation and Micro-Tunnelling



Anticipated start date: January – March 2025

Full duration: Nine months (two months of micro-tunnelling)

Activity	Description	Duration
Launch & receiving shaft construction + chamber installation on Riverdale and Langley	<ul style="list-style-type: none"> • Shaft excavation to 8 metres • Equipment: Excavators, Hydro-Vacs, Piling Rig, Generator • Sewer chamber construction on Riverdale and Langley to connect new to existing sewer • Excavators, hydro-vacs 	7 months
Micro-tunnelling	<ul style="list-style-type: none"> • Cutting face digs out earth and uses slurry to pressurize face, pipe segments inserted behind • Bore from north to south • Equipment: crane, generator, slurry plant, grout plant, dewatering plant 	2 months

What to Expect	What We're Doing to Help
<p>Potential perceptible vibration and noise inside school and playground (noise levels will adhere to the limits described in the Health and Safety Plan).</p> <p>Noise wall modification on Langley to accommodate shaft footprint.</p>	<ul style="list-style-type: none"> • Micro-tunnelling to occur during summer months. • Use of quieter generators and equipment where possible. • Localized noise barriers around work zone on Langley. • Noise & vibration monitoring, stoppages if 10-minute noise average exceedances are detected inside playground.
Lane closures on Riverdale and Langley.	<ul style="list-style-type: none"> • Paid-duty officer, traffic control personnel, and signage.
Riverdale PUDO space restriction.	<ul style="list-style-type: none"> • PUDO relocated to Pape Avenue for duration of storm sewer work.

See something? Call us: 416-202-5100

Why Microtunnel?

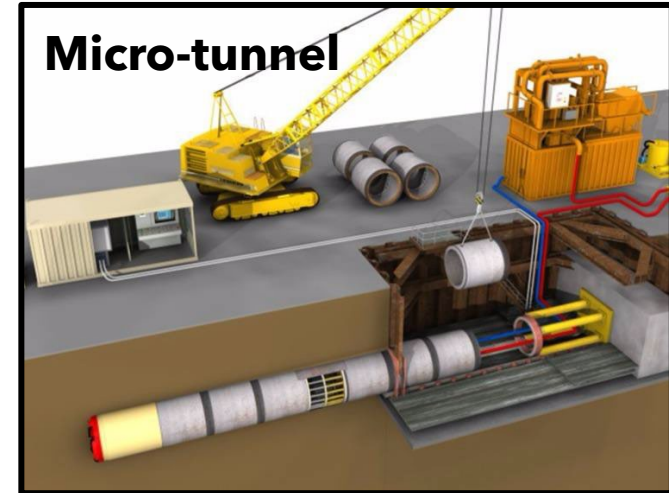
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Minimize surface disruptions

- Traditional pipe installation involves digging an open trench along the full sewer length.
- With micro-tunnelling, two shafts are excavated (launch and receiving shafts).
- No open excavation occurs between the two shafts, therefore no excavation on school property.
- Significantly less soil removal than trenched excavation.

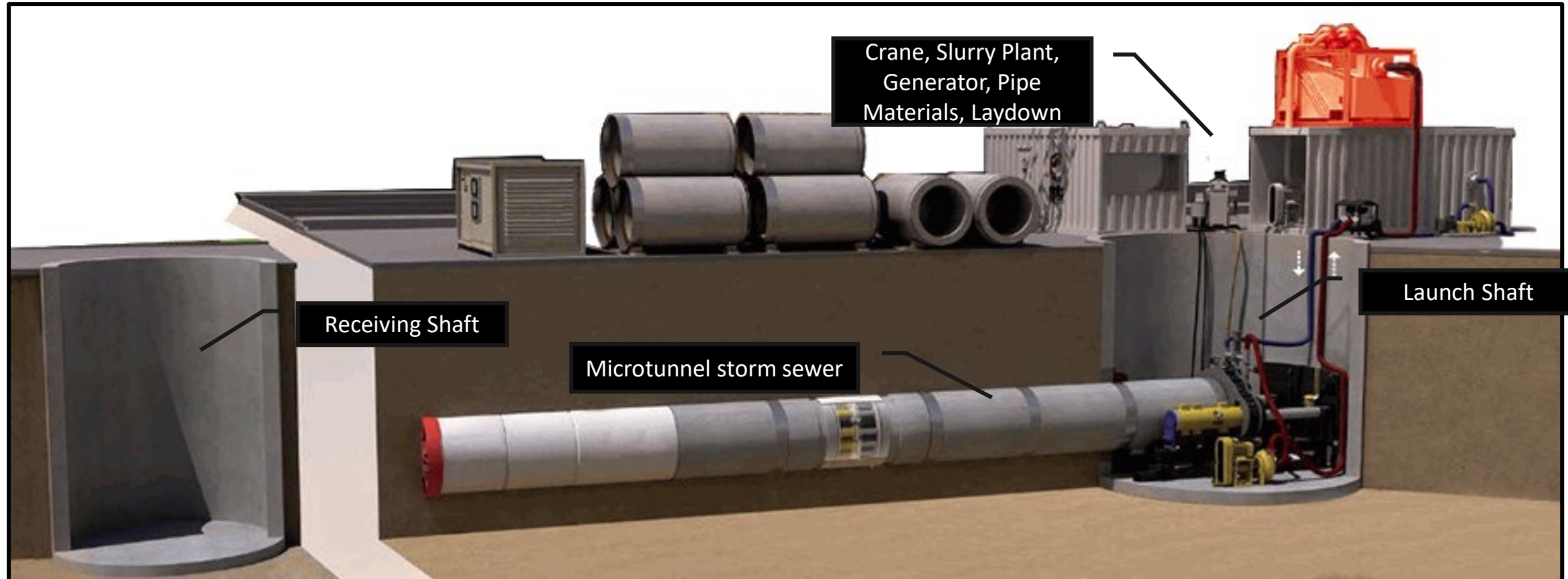
Reduce settlement

- Ground movement has been modelled and the result is negligible movement. This is far less than a comparatively deep open trench excavation.
- Fluid pressure (slurry) is used to stabilize the ground as the micro-tunnel is bored, minimizing ground movement.
- Grout is used to fill any voids or gaps between pipe and soil to stabilize ground.



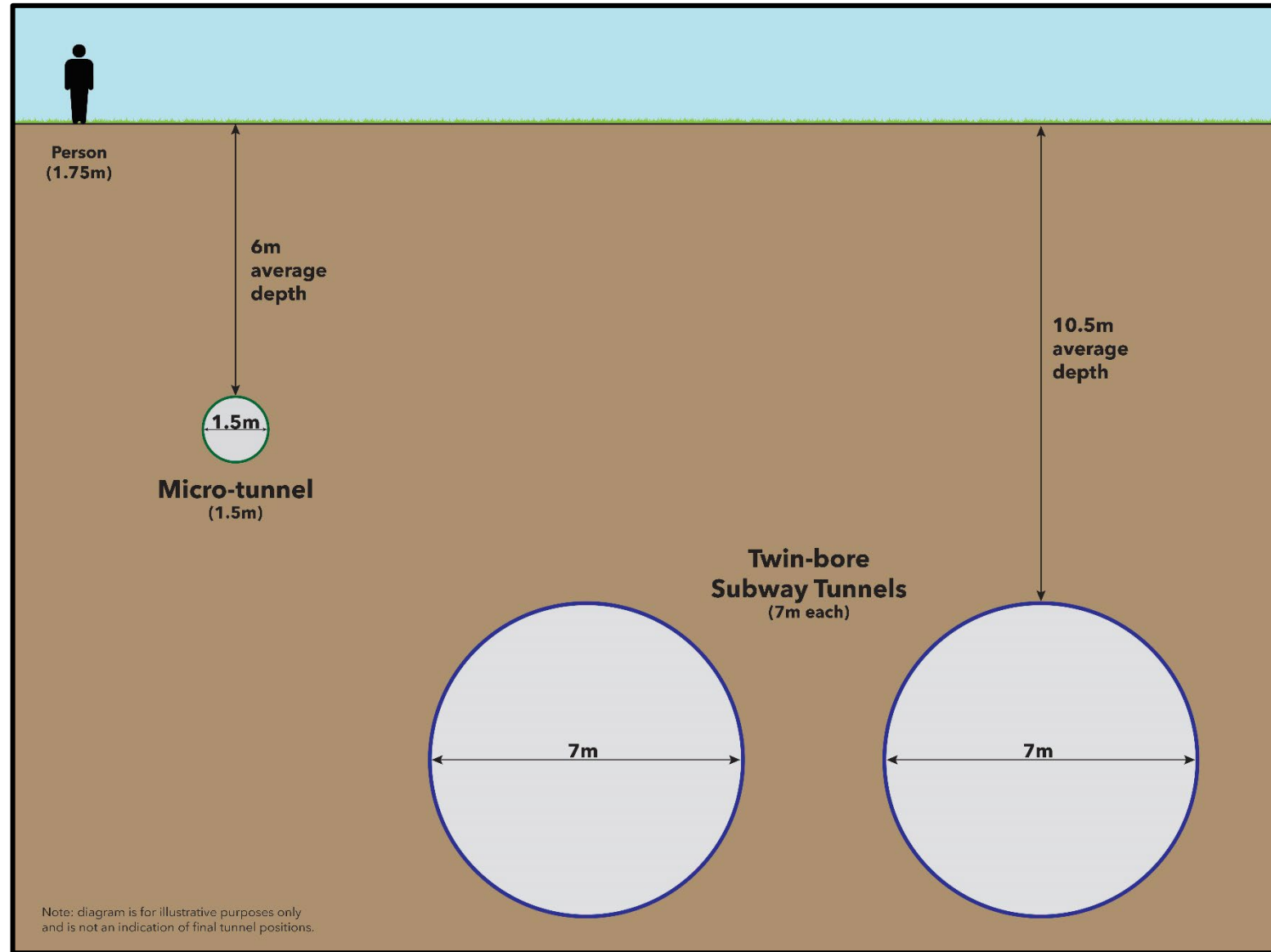
Micro-tunnelling Example Diagram (concept only)

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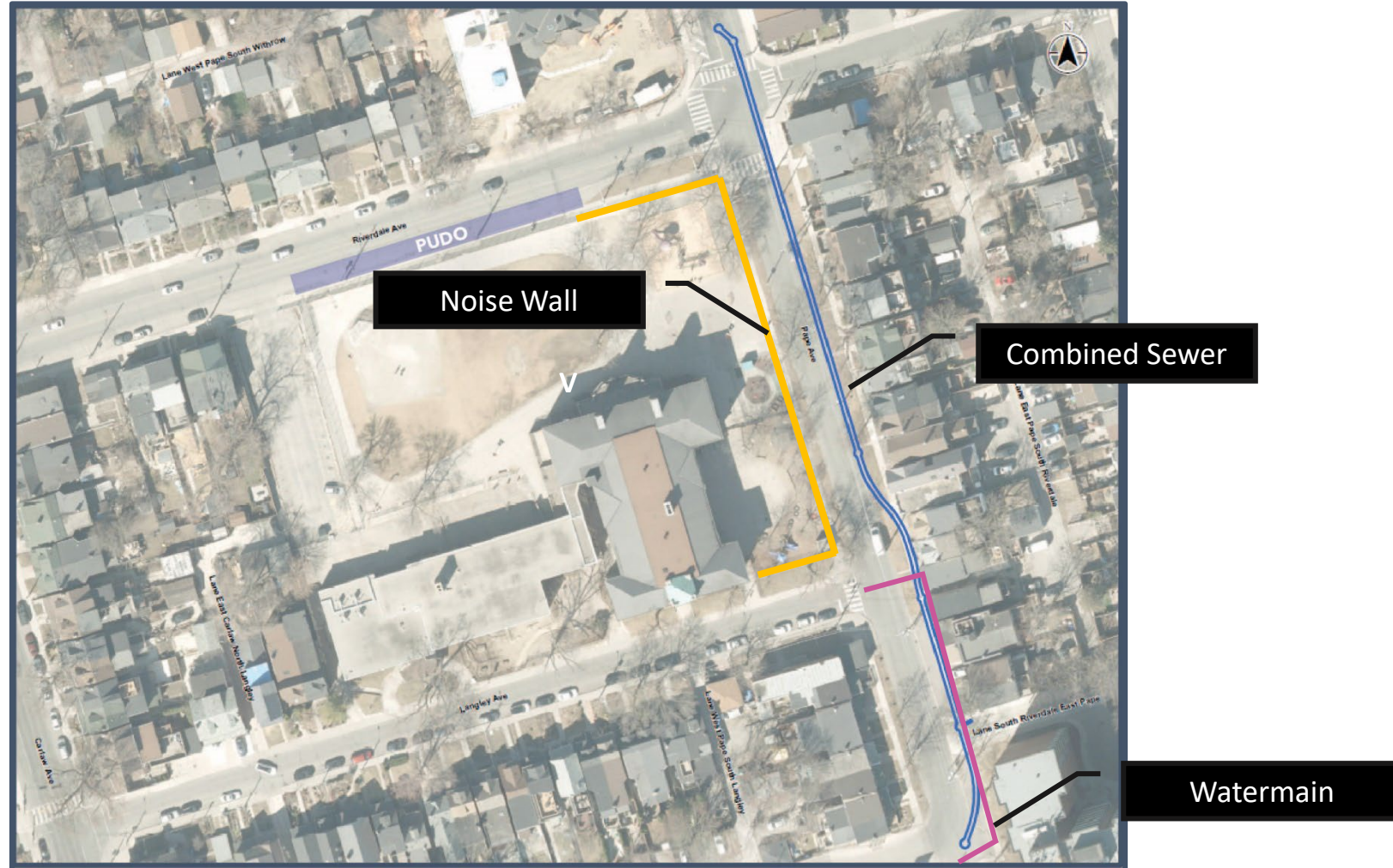


Micro Tunnel vs. Subway Tunnel:

Size Comparison



Combined Sewer & Watermain Installation



Combined Sewer and Water Main Installation



Anticipated start date: Late summer 2025

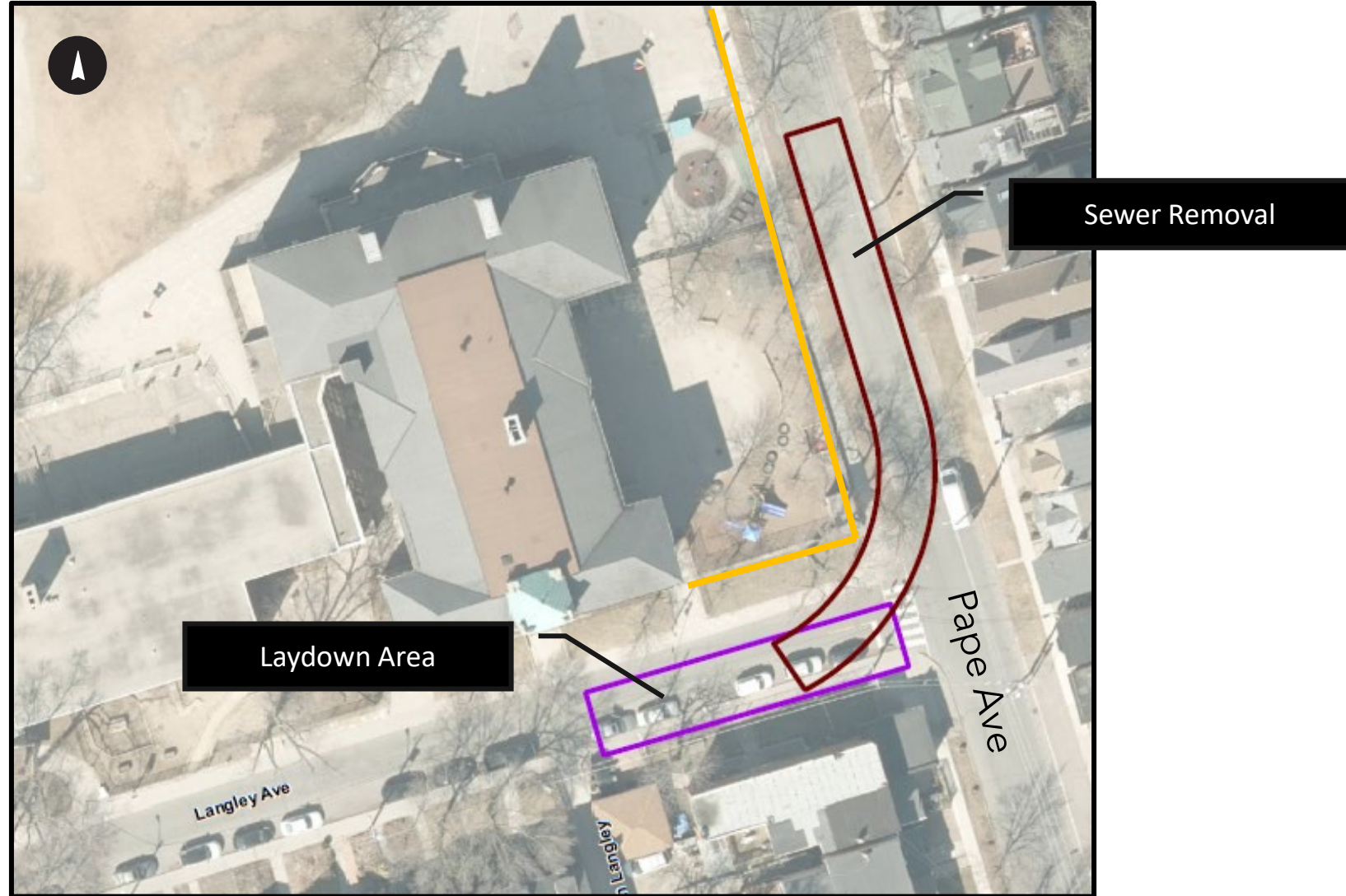
Full duration: Five months

Activity	Description	Duration
Open trench excavation - Sewer	<ul style="list-style-type: none"> Excavation 6 metres deep Support of excavation to be constructed Equipment: Excavators, Hydro-Vac 	3 months
Open trench excavation - Watermain and Pipe Installation	<ul style="list-style-type: none"> Excavation 2 m deep Equipment: Excavators, Hydro-Vac 	2 months

What to Expect	What We're Doing to Help
Open trench in roadway, and in sidewalk south of Langley	<ul style="list-style-type: none"> Fencing and site security.
Pape Avenue closure south of Riverdale Avenue and sidewalk closure on east side of Pape	<ul style="list-style-type: none"> Paid-duty officer, traffic control personnel, and signage.
Close proximity of work to homes on east side of Pape	<ul style="list-style-type: none"> Work in front of these homes to be held until property acquisition process is completed.
Potential for perceptible vibration and noise within residences on east side of Pape	<ul style="list-style-type: none"> Detailed pre-construction condition surveys and interim surveys throughout construction to monitor houses on east side of Pape

See something? Call us: 416-202-5100

Existing Storm Sewer Removal



Existing Storm Sewer Removal

Anticipated start date: January - March 2026

Full duration: Five months

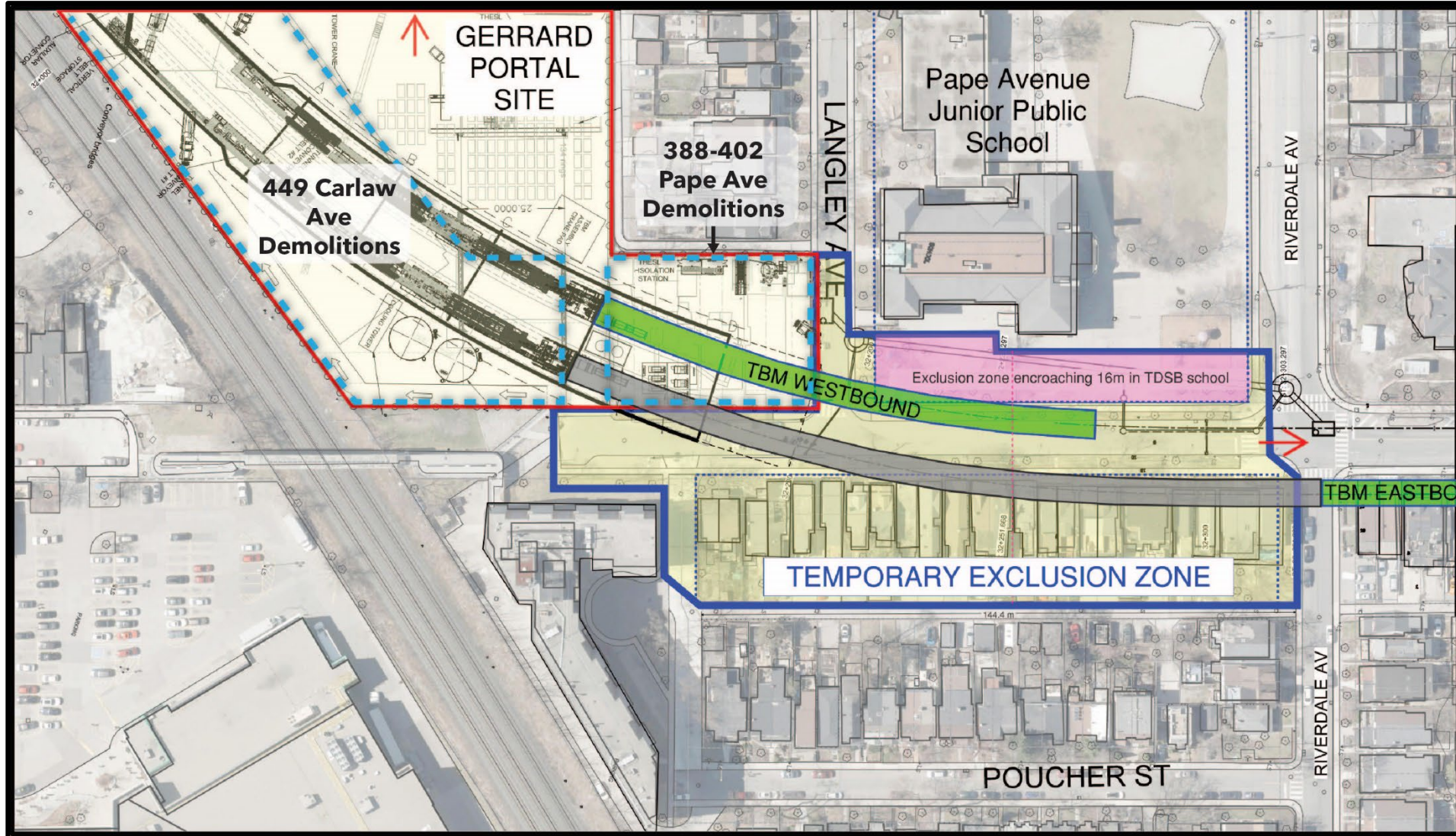
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Activity	Description	Duration
Support of Excavation Installation and Excavation	<ul style="list-style-type: none"> • Pile and lag shoring to be installed • Excavation to 8 metres deep • Equipment: excavators, hydro-vacs, piling rig, generator 	2 months
Sewer Removal	<ul style="list-style-type: none"> • Break-up and removal of existing sewer • Equipment: concrete breakers, jackhammers, excavators 	2 months
Road Restoration	<ul style="list-style-type: none"> • Pouring concrete sidewalks • Placement and compaction of road base • Asphalt placement, including vibratory compaction • Line painting 	3 weeks

What to Expect	What We're Doing to Help
Full road closure on Pape between Riverdale and Langley.	<ul style="list-style-type: none"> • Paid-duty officer, traffic control personnel, and signage.
Potential for perceptible vibration and noise inside school (noise levels will adhere to limits described in the Health and Safety Plan).	<ul style="list-style-type: none"> • Noise and vibration monitoring, stoppages if 10-minute noise average exceedances are detected inside playground.

Demolition, Portal Construction, and Tunnelling

5 6



388-402 Pape Avenue Demolitions

Anticipated start date: Early 2025

Full duration: Two months

5

Activity	Description	Duration
Utility Disconnects	<ul style="list-style-type: none"> Disconnecting utility services ahead of demolition. Depending on utility, this may require minor excavation to access. 	Up to two weeks
Abatement	<ul style="list-style-type: none"> Removal of hazardous materials from houses. 	To be determined by Designated Substances Survey findings
Structural Demolition and Site Preparation	<ul style="list-style-type: none"> Demolition of structures Removal of foundations Backfilling and compaction of site Excavators, dump trucks, compactors 	2 months

What to Expect	What We're Doing to Help
Short-term lane occupancies in front of properties during disconnections	<ul style="list-style-type: none"> Paid-duty officer, traffic control personnel, and signage.
Potential for perceptible vibration and noise inside school (noise levels will adhere to limits described in the Health and Safety Plan).	<ul style="list-style-type: none"> Noise and vibration monitoring, stoppages if 10-minute noise average exceedances are detected inside playground.

449 Carlaw Demolition and Portal Construction

5 6

Anticipated start date: Early 2025 (interior preparation in December 2024)

Full duration: Portal construction until mid-2026

Activity	Description	Duration
Building Demolitions & Site Clearance	<ul style="list-style-type: none"> Removal of existing structures and clearance of land at 449 Carlaw Equipment: Excavators and dump trucks 	~4 months
Support of Excavation	<ul style="list-style-type: none"> Installation of piles to create foundation and support excavation for portal Equipment: Drill rigs, front loader and dump trucks 	~5 months
Ground improvement	<ul style="list-style-type: none"> Soil improvement north of portal headwall to reduce surface settlement risks upon TBM breakthrough 	Will be determined based on further assessments
Excavation	<ul style="list-style-type: none"> Excavation of future portal area Equipment: Excavators and dump trucks 	TBD
Portal Construction	<ul style="list-style-type: none"> Rebar installation and concrete pours to construct the invert slab of the portal 	

What to Expect	What We're Doing to Help
Noise from equipment operation.	<ul style="list-style-type: none"> Noise wall at north end of 449 Carlaw Avenue plaza. Noise and vibration monitoring, stoppages if 10-minute noise average exceedances are detected.
High truck traffic volume for hauling.	<ul style="list-style-type: none"> Daytime work only.

Preparing for TBM Launch and Tunnelling



Preparing for TBM Launch and Tunnelling



Anticipated start date: Mid-2026

Full duration: Tunnel construction until end-2027

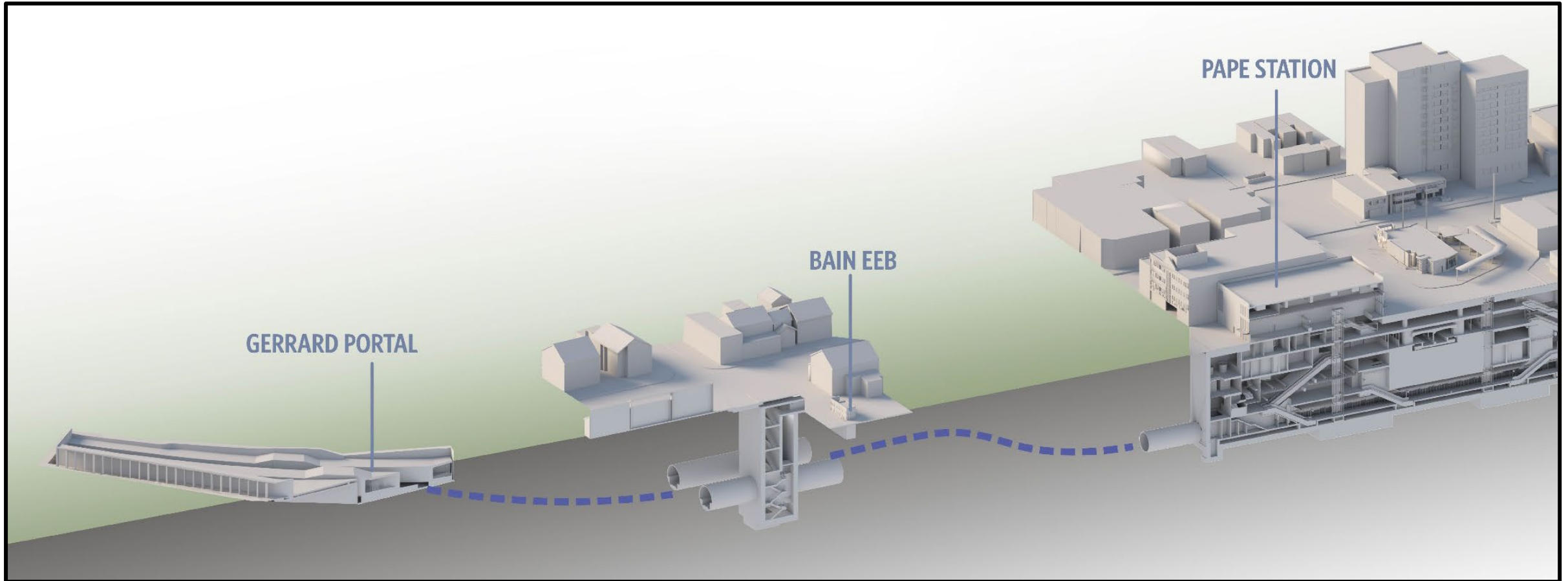
Activity	Description	Duration
TBMs & site facilities delivery and installation	<ul style="list-style-type: none"> Occasional large load delivery Use of heavy tonnage cranes Tunnel boring machine assembly Establishment of storage facilities, offices, conveyor belt, grout plant, water treatment plant, muck pit, tower cranes and ventilation installation Crane installation 	~6 months
Tunnelling	<ul style="list-style-type: none"> Twin 7.0m bored tunnels 2 x earth pressure balance TBMs for soft soils will be used for tunnelling Spoils from tunnel hauled from portal site (449 Carlaw) 	<ul style="list-style-type: none"> Three months to move north of Riverdale Avenue Rest of tunnelling anticipated to take approximately 10 months.

School Impacts	Mitigations
Portion of yard on Pape Avenue part of exclusion zone.	<ul style="list-style-type: none"> Temporarily close portion of school yard for eight weeks.
Noise from TBM and equipment assembly	<ul style="list-style-type: none"> Noise wall at north end of 449 Carlaw Avenue Plaza
Increased noise as TBMs bore through portal headwall.	<ul style="list-style-type: none"> Temporary exclusion zone to be established.

Note: further information on portal construction and tunnelling plans will be presented to the community in the future.

See something? Call us: 416-202-5100

What We're Building: Ontario Line Under Pape Avenue



How the Pape Subway Tunnels Will Be Built

Tunnelling:

- The Pape tunnels will be excavated with the use of tunnel boring machines (TBMs). These machines are regularly used in urban environments and allow for precise control of exactly how much earth is being removed, preventing any settlement closer to the surface.
- Vibration on the surface will be minimal because excavation will be performed in soft soils.
- The TBMs will advance 1.8 metres at a time, before stopping to install the concrete tunnel lining.
- The tunnel lining is made up of precast concrete segments. Each tunnel ring is composed of six segments, and the segments are 30 centimetres thick.
- Monitoring devices will be installed on the surface along Pape Avenue to check for any ground settlement.
- The TBMs maintain forward pressure by filling the excavation chamber with soil. This supports the ground stability ahead of the machine.
- Out of an abundance of caution, we are establishing a temporary exclusion zone over the area of Pape Avenue being tunneled closest to the surface (Pape-Langley to Riverdale) while the TBMs pass through. This zone will include the eastern side of the Pape Avenue Junior Public School yard.

