



**SNC • LAVALIN**

**Building the Evergreen Line**  
AQTr

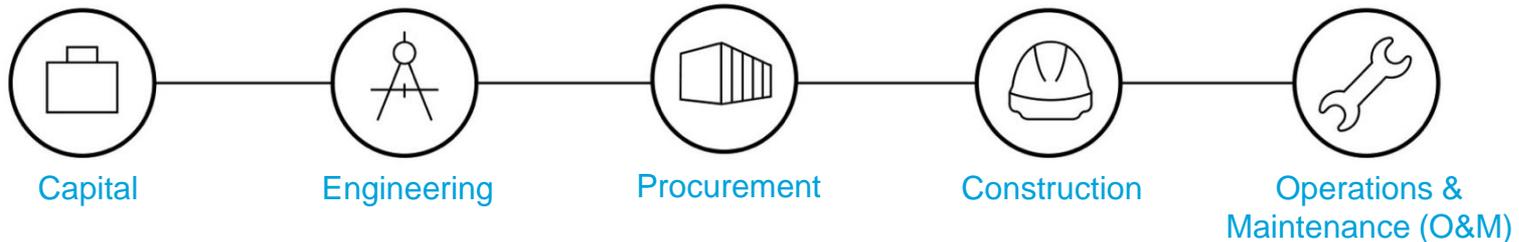
September 2017

# SNC-Lavalin (Atkins) Introduction

## SNC-Lavalin

- › Is a leading engineering and construction firm
- › Is listed on the Canadian Stock Exchange (50,000 employees)
- › Is a major player in infrastructure ownership
- › Provides end-to-end rail services (including design, consultancy and advisory)
- › Provides services across all transit modes

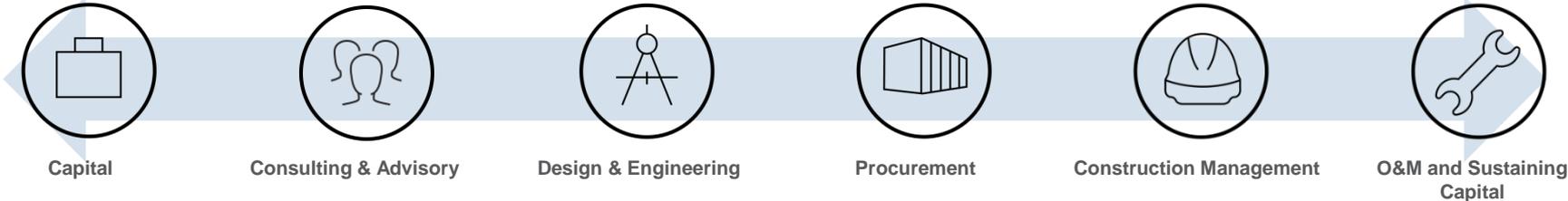
### End-to-End Services



# Deepens Project Management, Design, Consulting and Engineering Capabilities



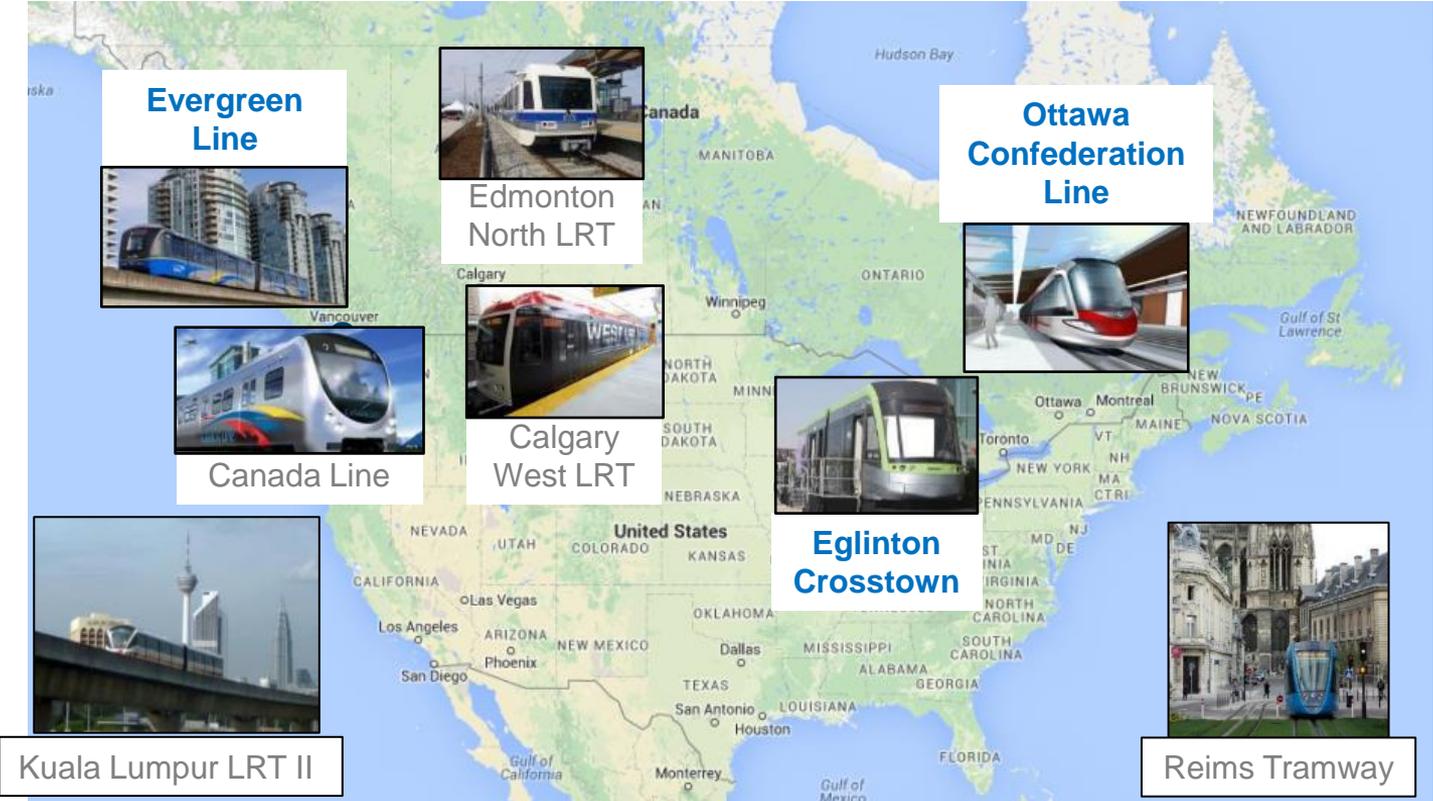
Enhances SNC-Lavalin's Value Chain by Delivering a More Comprehensive End-to-End Service Offering to Clients



Consulting & Advisory	Design	Engineering	Project Management
<ul style="list-style-type: none"> <li>✓ Extensive engineering and master planning capability with structuring, financing and project preparation expertise</li> </ul>	<ul style="list-style-type: none"> <li>✓ Concept, feasibility and design services</li> <li>✓ One of the most accomplished international building designers</li> </ul>	<ul style="list-style-type: none"> <li>✓ End-to-end offering; from initial regulatory approvals to final build-out</li> <li>✓ 20+ years' experience offering simulation consultancy and advice</li> </ul>	<ul style="list-style-type: none"> <li>✓ Asset Management</li> <li>✓ Commercial Management</li> <li>✓ Cost Management</li> <li>✓ Program Management</li> <li>✓ Project Controls</li> </ul>



# SNC-Lavalin LRT Projects



# What is the Evergreen Line?



# Vancouver SkyTrain



*The  
Skytrain*



# Vancouver SkyTrain Network

- First opened in 1986 as part of Expo '86 and then extended 3 times
- 79.6 km fully segregated ROW
- 454,600 daily ridership
- Driverless – Fully Automated
- Linear Induction Motors



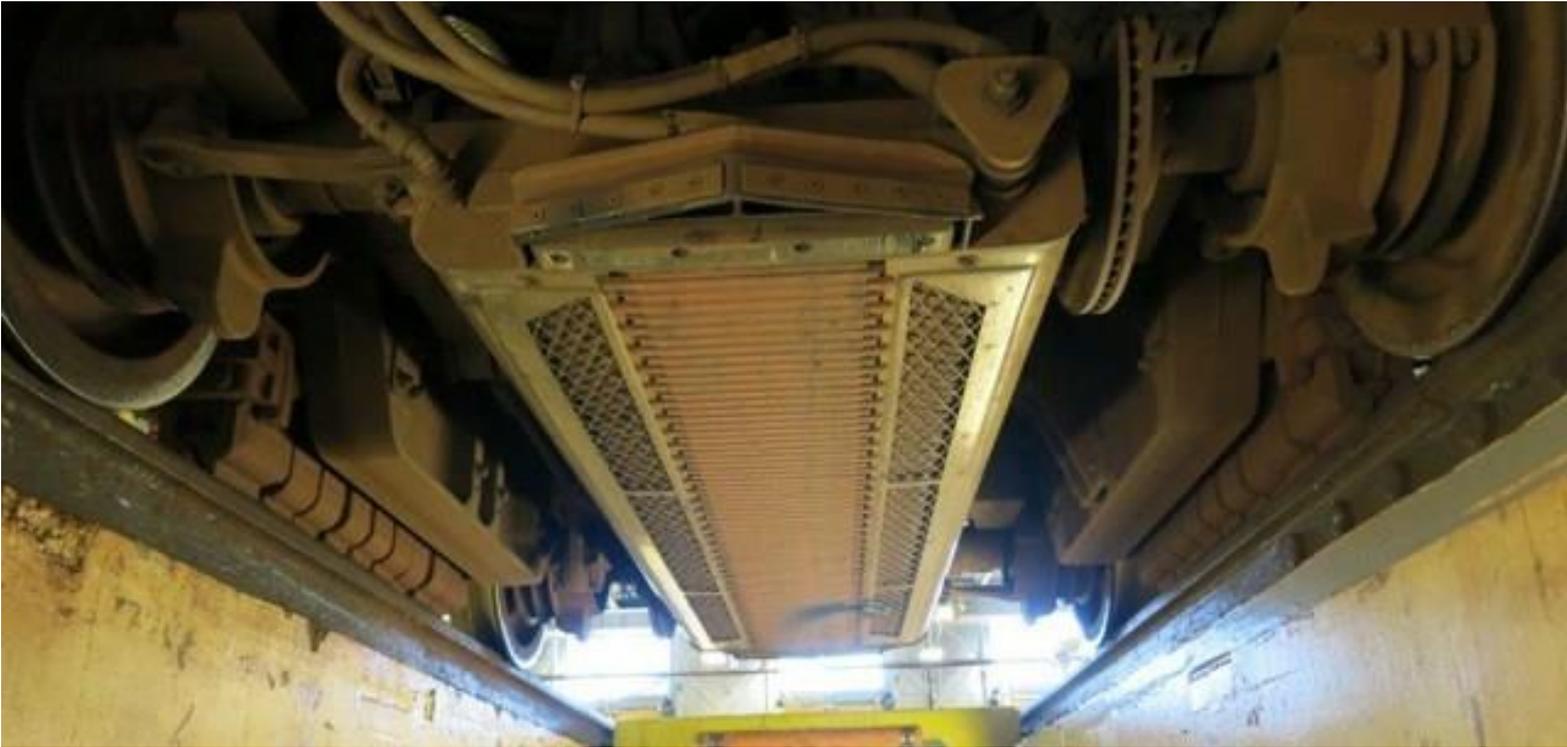
# Vancouver SkyTrain Network



# Vancouver SkyTrain Network



# Vancouver SkyTrain Network



# Vancouver SkyTrain Network

Fastest LIM

Red Force rollercoaster

Ferrari Land

Portaventura, Spain

0 to 180 km/h in 5 s



# The Evergreen Line



# What is the Evergreen Line?

- 11 km extension to the Vancouver SkyTrain network
- 4 km elevated guideway, 2 km tunnel, 5 km at-grade
- 6 New Stations + 1 Expanded Existing
- 1 Vehicle Cleaning and Storage Facility



# What is the Evergreen Line?

- \$900 Million Design-Build Project
- Created 8,000 new direct & indirect jobs during construction
- Started Construction in early 2013
- Opened for Service December 2<sup>nd</sup>, 2016
- Estimated 70,000 riders per day by the year 2021





# Building the Line

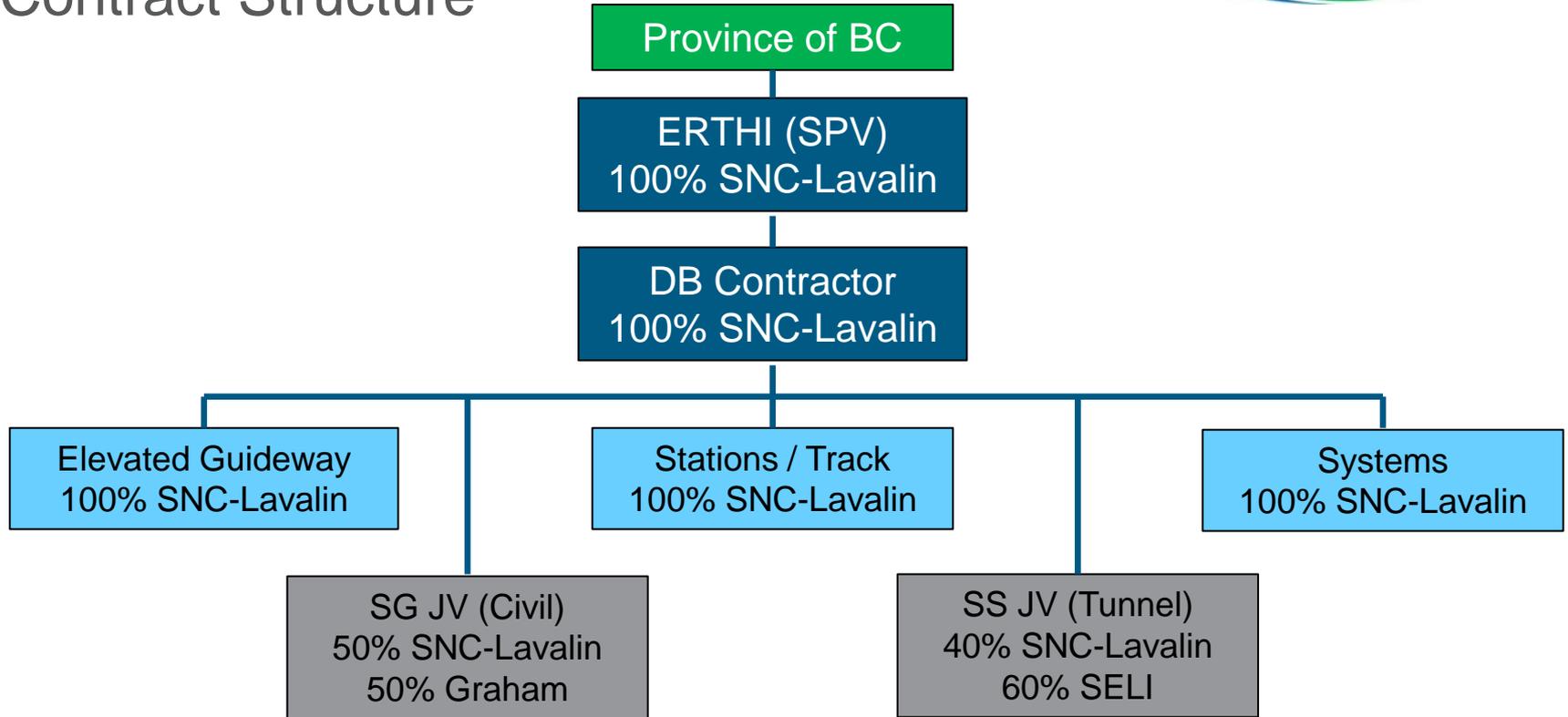
# Evergreen Line: The Team



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# Evergreen Line: Contract Structure



# Elevated Guideway



05.05.2014 11:28



# Elevated Guideway



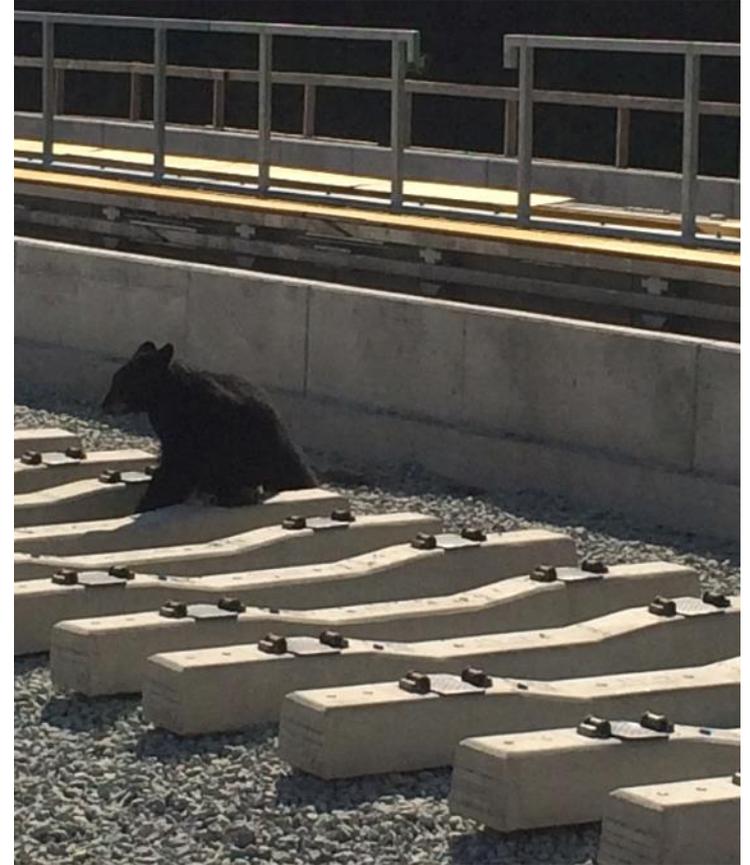
# Elevated Guideway



## At-Grade Section – Pocket Track



# Vehicle Cleaning and Storage Facility



# Inlet Station – Precast Tunnel Box ready for jacking



# Inlet Station – Station construction



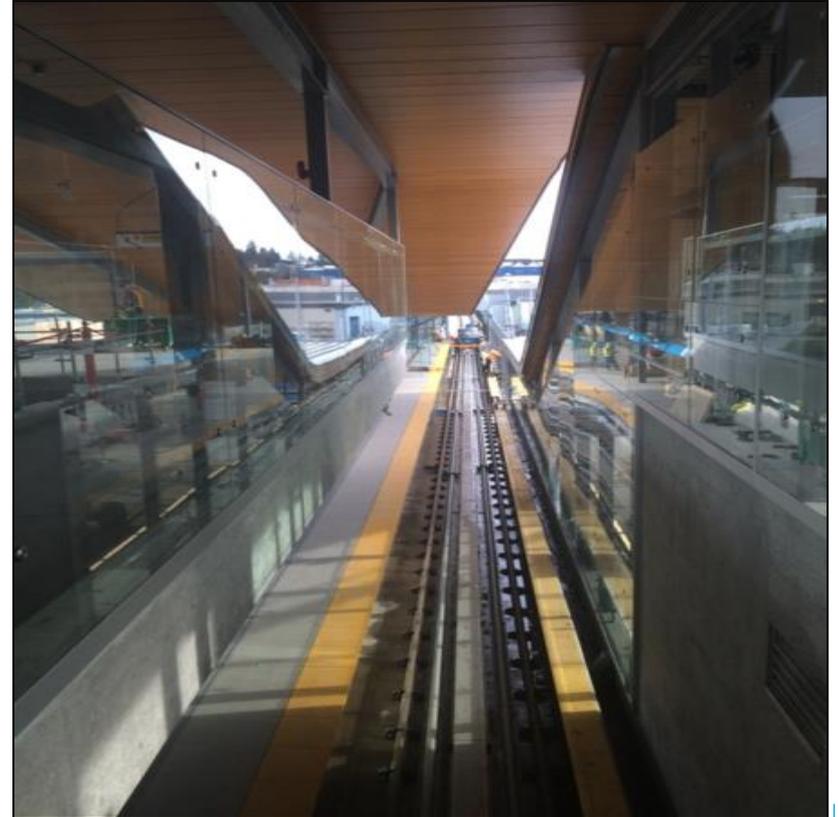
# Inlet Station



# Stations



# Stations



“Alice”

2 km bored tunnel

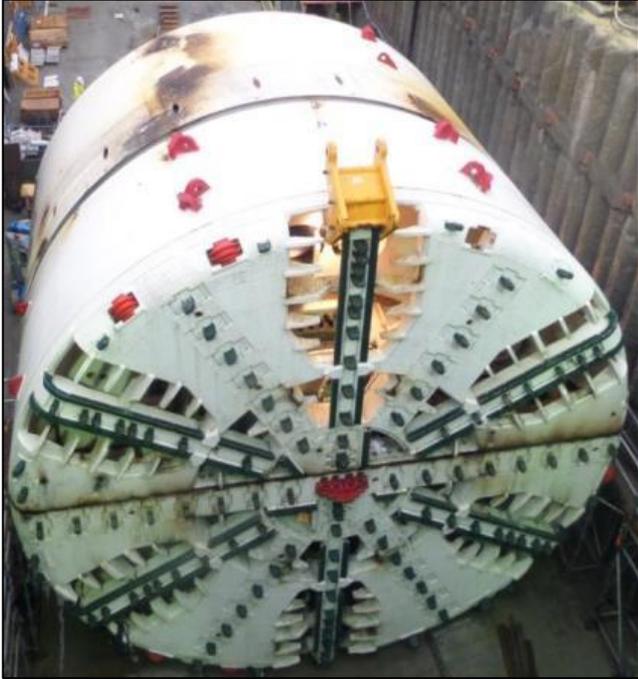
10m diameter

Earth Pressure  
Balance Machine

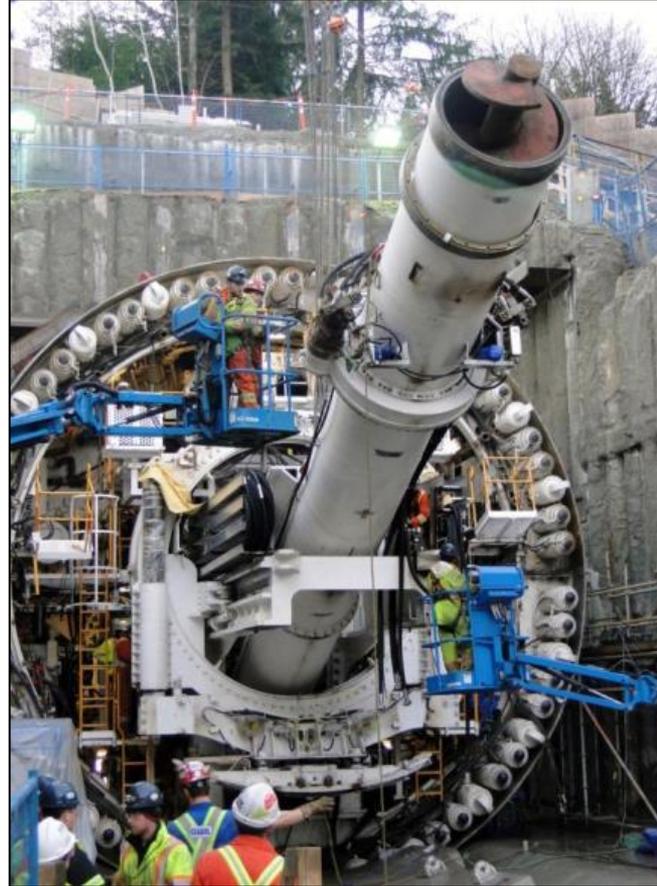


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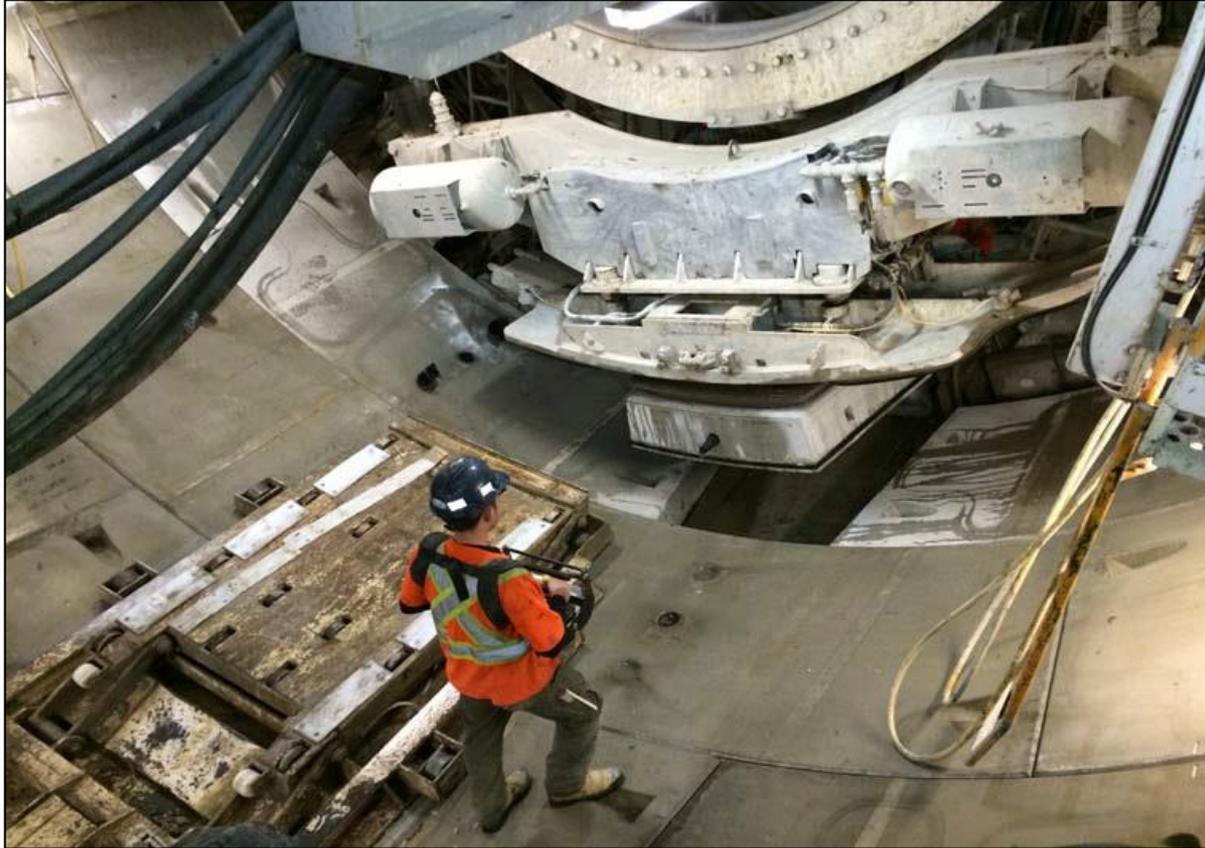
## Cutter Head - Front



## Cutter Head - Back



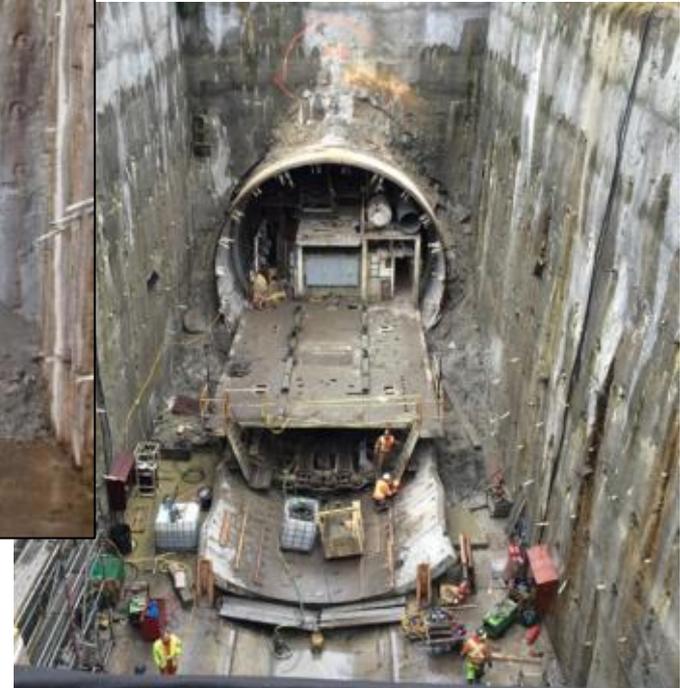
# Precast Concrete Tunnel Liner – Segment Erection



## Bored Tunnel – Under Construction



## TBM Breakthrough – Nov 27, 2015



## Bored Tunnel – Concrete Track Slab



# Bored Tunnel

Launch Pit, Trailing Gear, Staging Yard



Completed tunnel with  
invert & centre wall



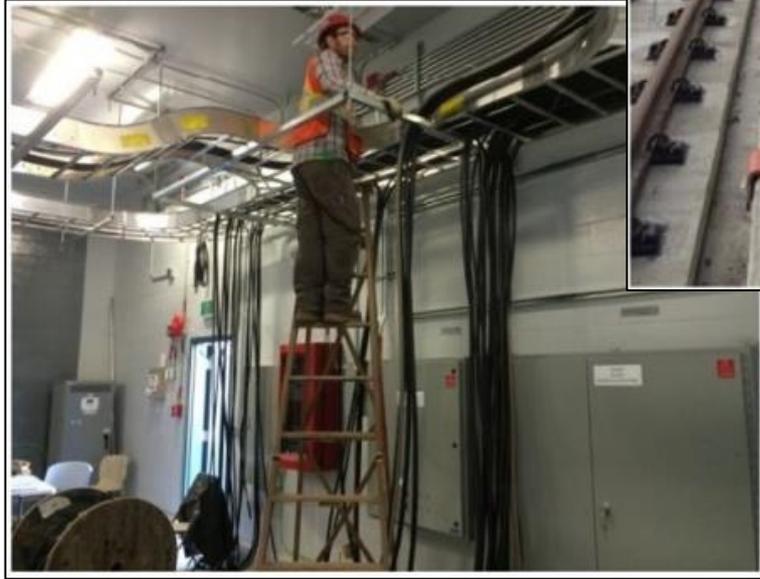


## Trackwork



# Systems Works

Traction Power /  
Communications



# Testing & Commissioning



Open for Service – Dec 2, 2016



# After the Project Completes...

# After the Project Completes....

Local Expertise = Support at the Ready:

- System Resiliency Audit
- Power Rail Upgrades
- Yard Expansion Projects





# Building what matters

   [snclavalin.com](https://snclavalin.com)