

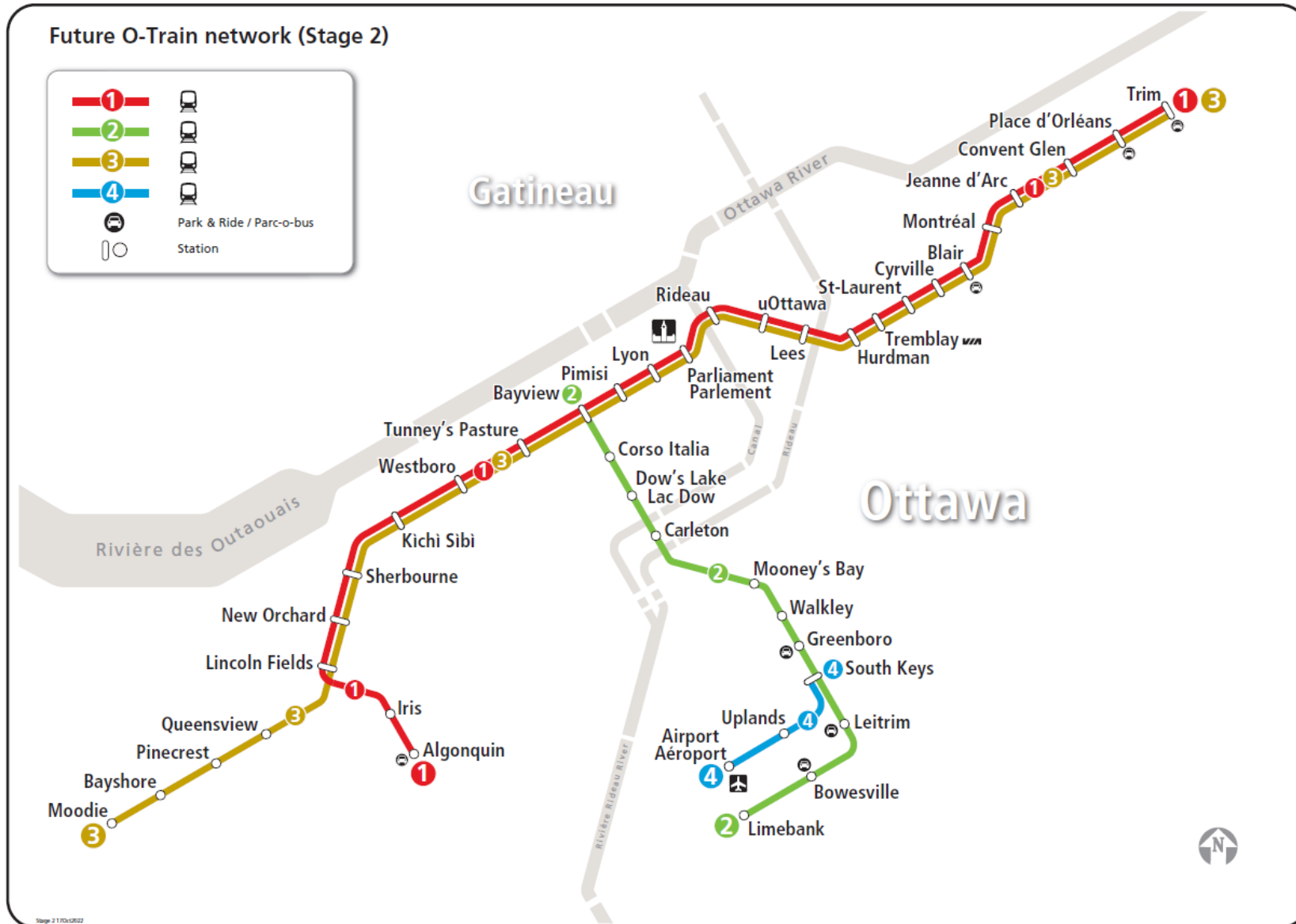


Stage 2 LRT Parkway Tunnel Construction

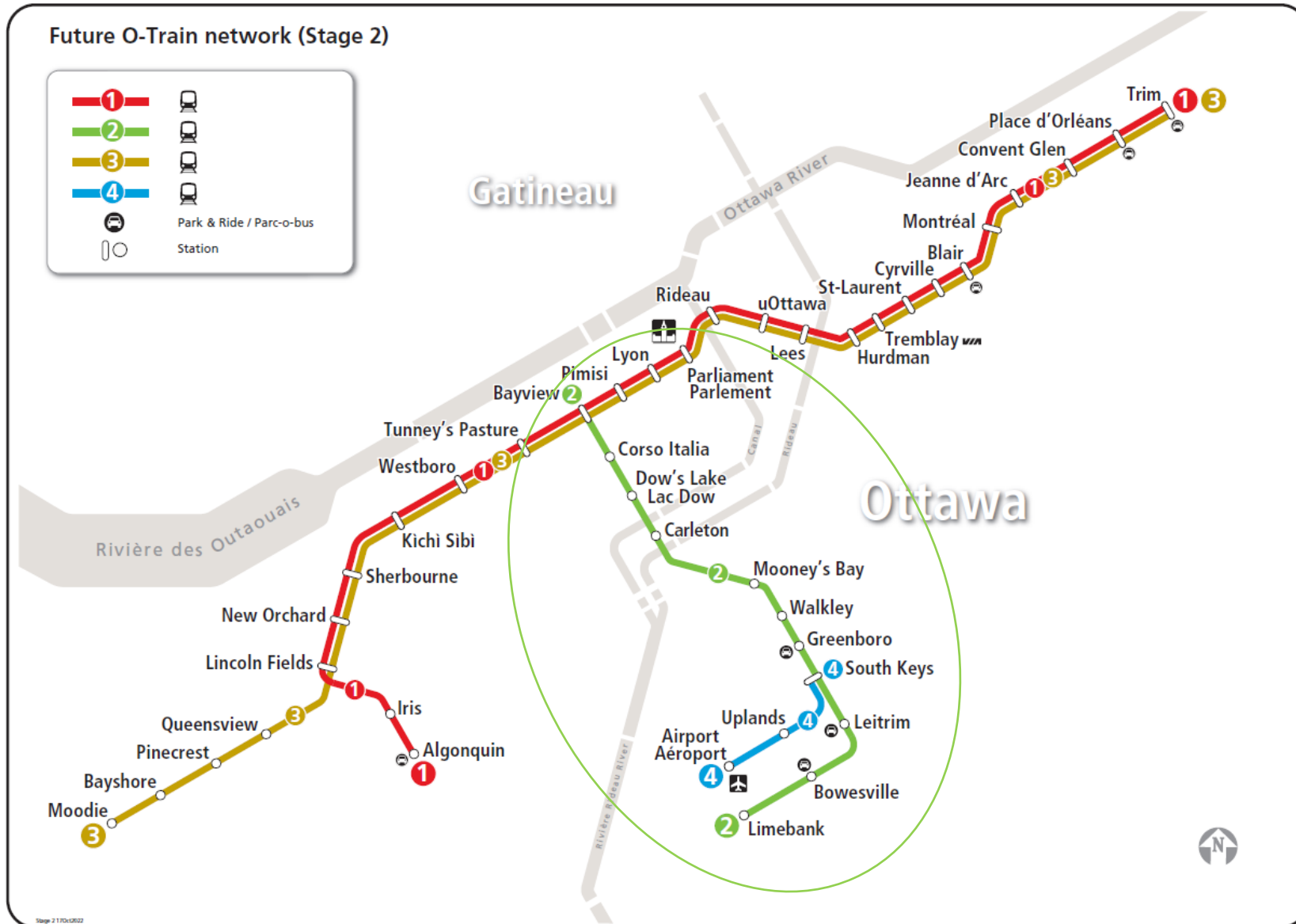
Mary-Ellen Gleeson
Program Manager- RCP
City of Ottawa

Bruno Pigeon
Construction Manager - KEV
Kiewit

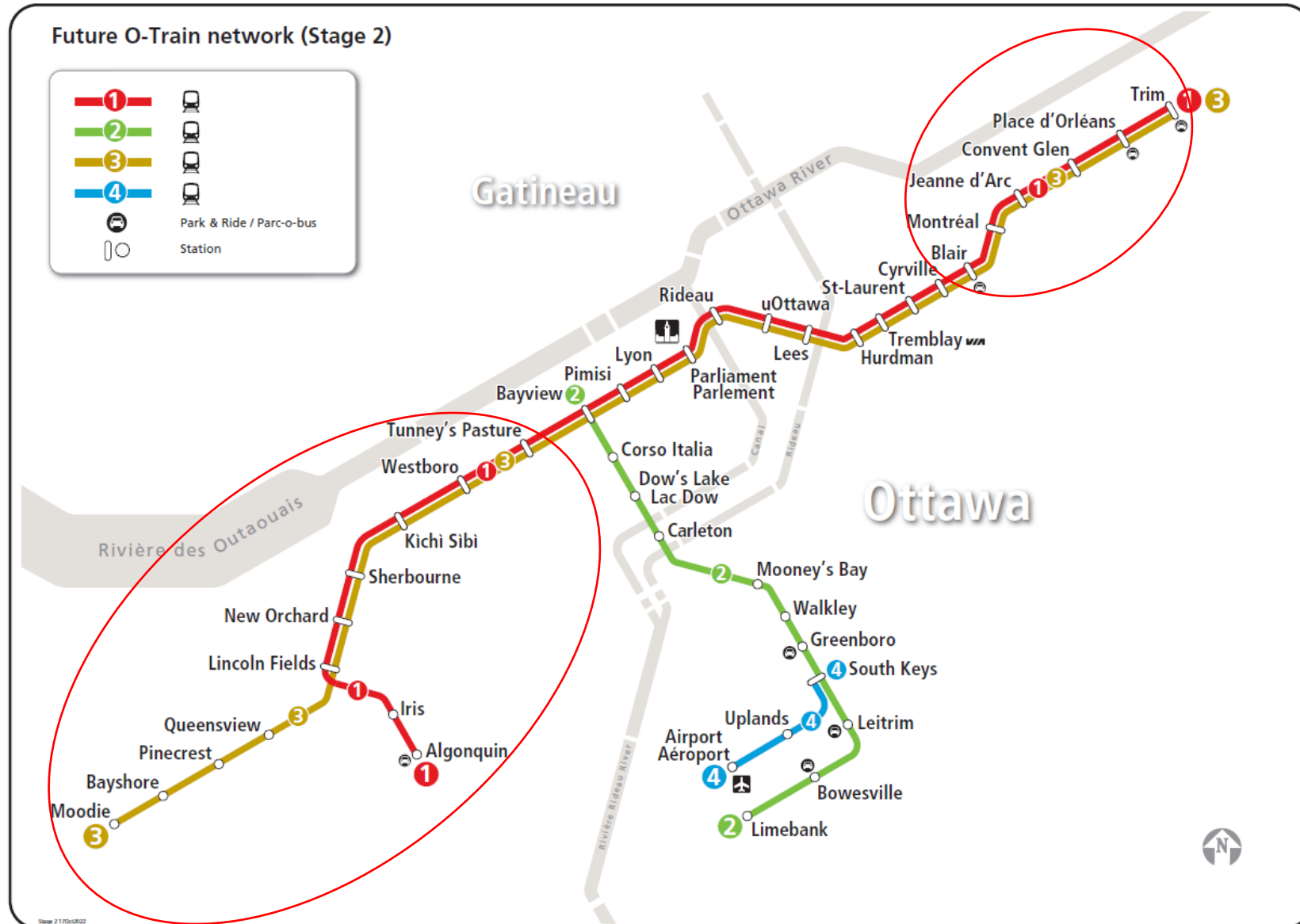
Future O-Train Network



Future O-Train Network



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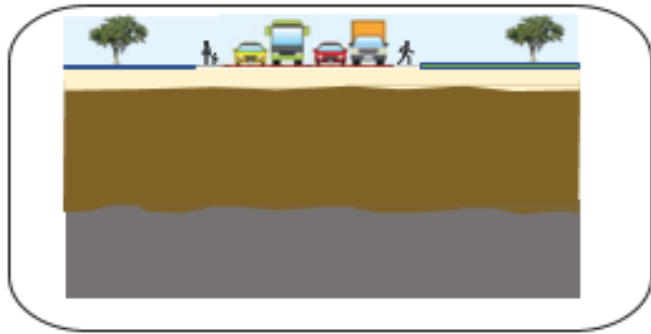


CUT AND COVER SEGMENT

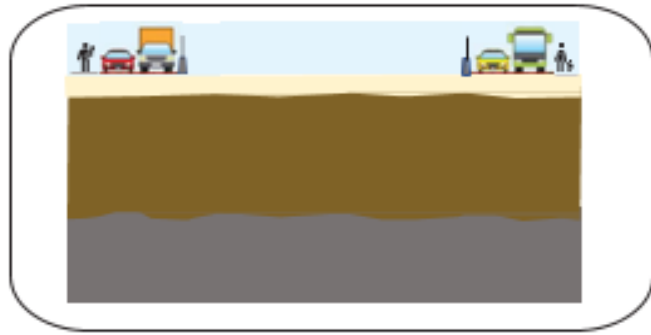
Parkway Tunnel – Fall 2020



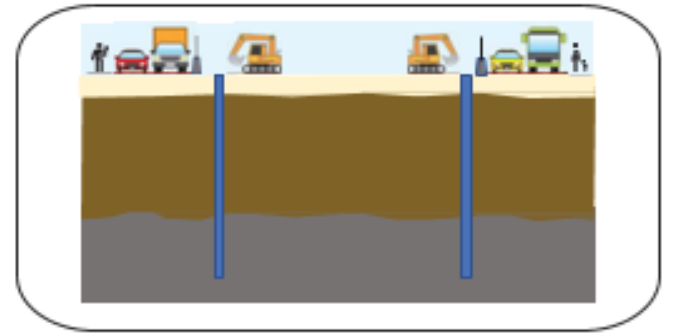
CUT & COVER METHODOLOGY



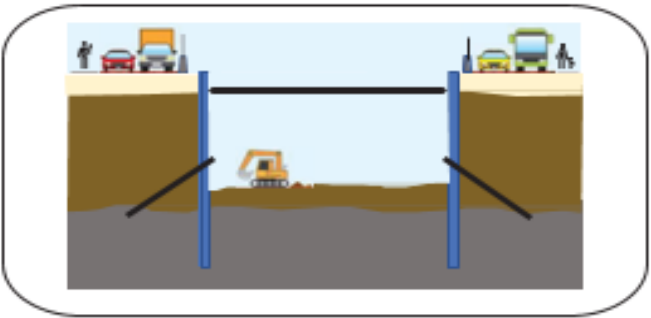
1. Existing Conditions



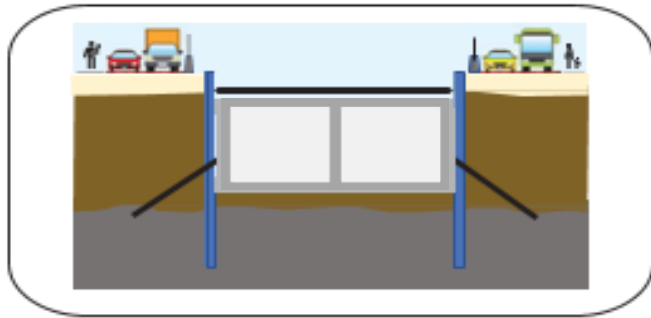
2. Relocate Traffic & Walkways



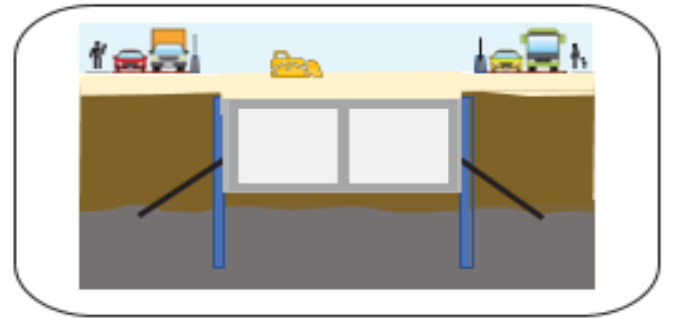
3. Install Support-of-Excavation



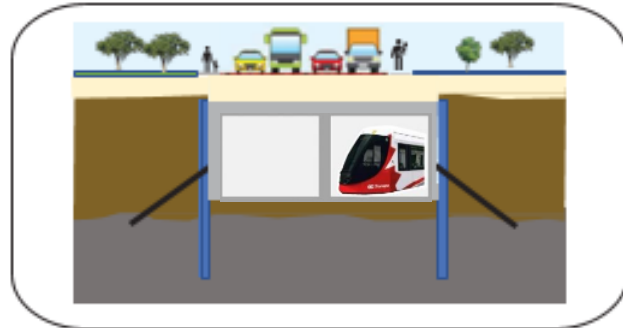
4. Excavate "CUT" and Install additional support



5. Construct Concrete Structure



6. Remove Supports and Install "COVER" to grade

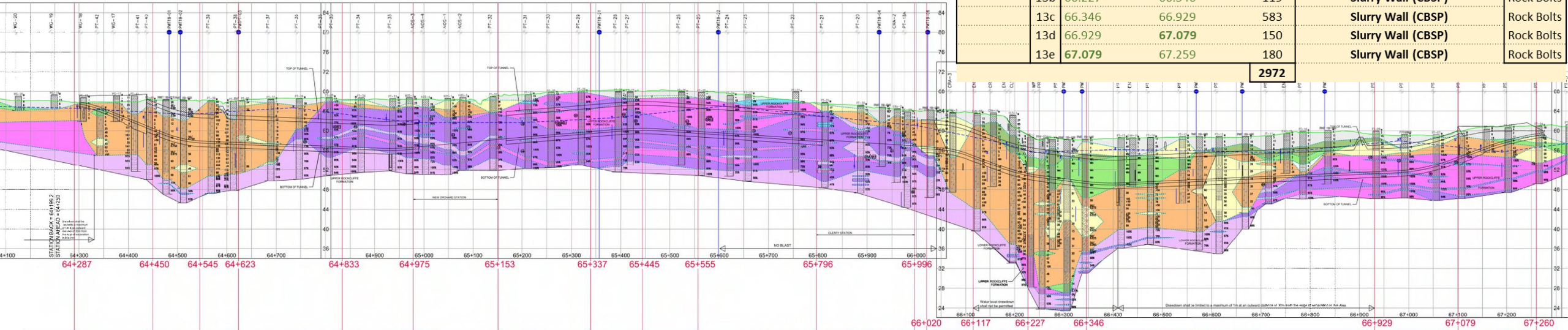


7. Reinstate to Original

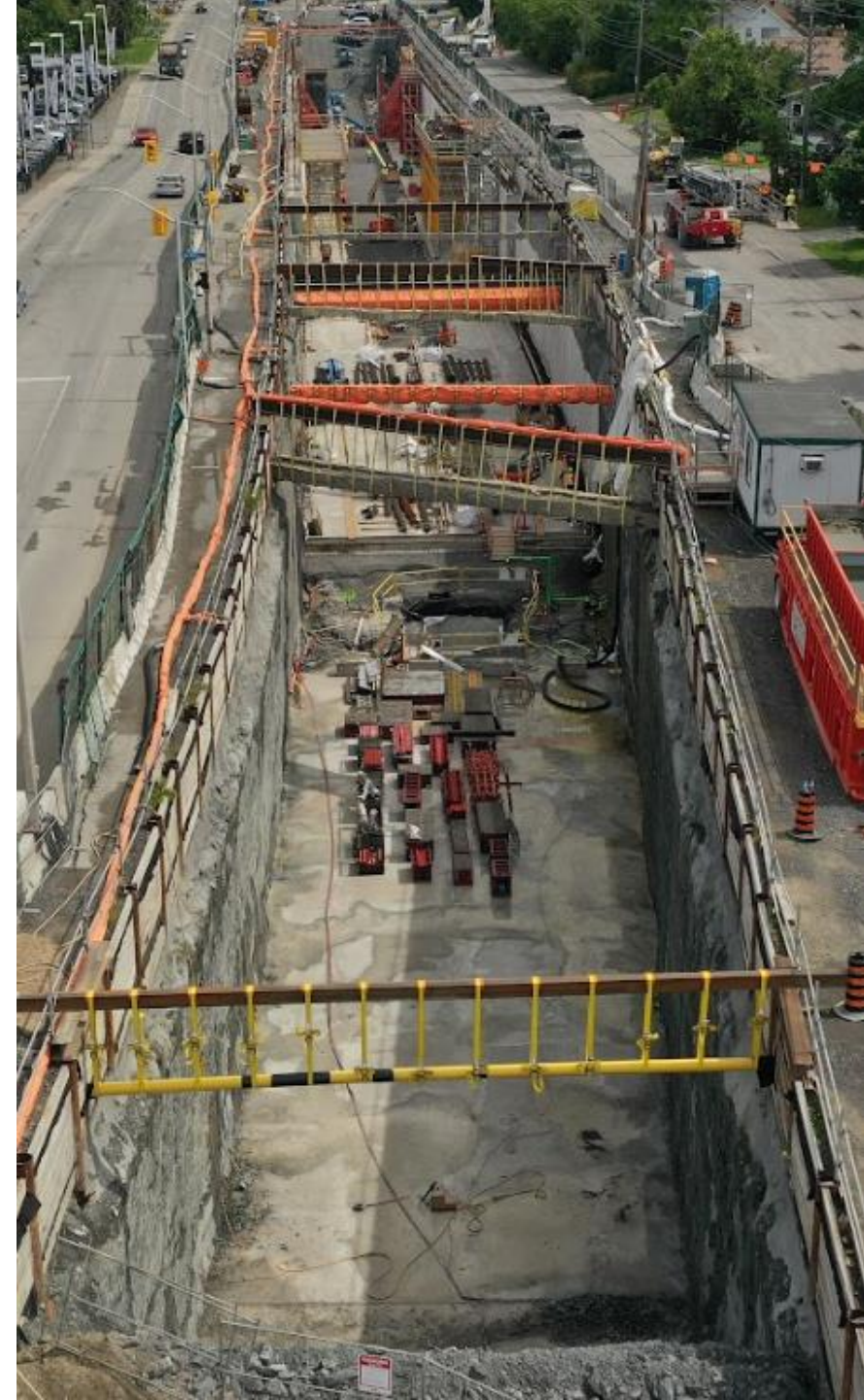
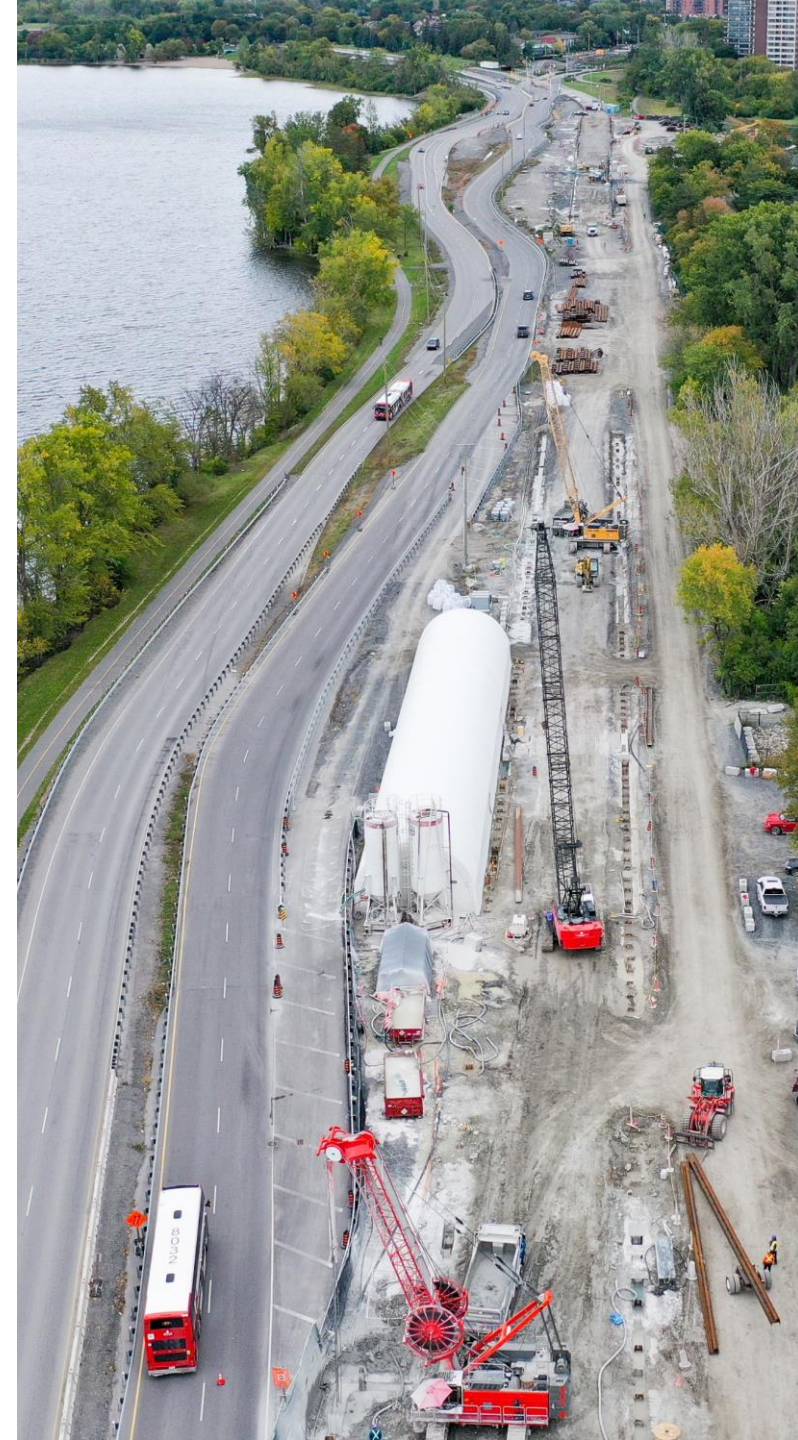
CUT & COVER PARKWAY SOES



PARKWAY					SOIL SOE	ROCK SOE
Station	Zone	Start	South Bottom Slab (Section D)	Length		
	1	64.287	64.450	163	Soldier Piles	-
	2	64.450	64.545	95	Soldier Piles	-
	3	64.545	64.623	78	Soldier Piles	-
	4	64.623	64.833	210	Soldier Piles	Rock Bolts
	5	64.833	64.975	142	Soldier Piles	Rock Bolts
New Orchard	6a	64.975	65.020	45	Soldier Piles	Rock Bolts
New Orchard	6b	65.020	65.153	133	Soldier Piles	Rock Bolts
	7	65.153	65.337	184	Soldier Piles	Rock Bolts
	8a	65.337	65.445	108	Soldier Piles	Rock Bolts
	8b	65.445	65.555	110	Soldier Piles	Rock Bolts
	9	65.555	65.796	241	Soldier Piles	Rock Bolts
Cleary	10	65.796	65.996	200	Soldier Piles	Rock Bolts
	11	65.996	66.020	24	Secant with Struts and Walers or CBSP	-
	12	66.020	66.117	97	Soldier Piles	-
	13a	66.117	66.227	110	Secant with Struts and Walers or CBSP	-
	13b	66.227	66.346	119	Slurry Wall (CBSP)	Rock Bolts
	13c	66.346	66.929	583	Slurry Wall (CBSP)	Rock Bolts
	13d	66.929	67.079	150	Slurry Wall (CBSP)	Rock Bolts
	13e	67.079	67.259	180	Slurry Wall (CBSP)	Rock Bolts



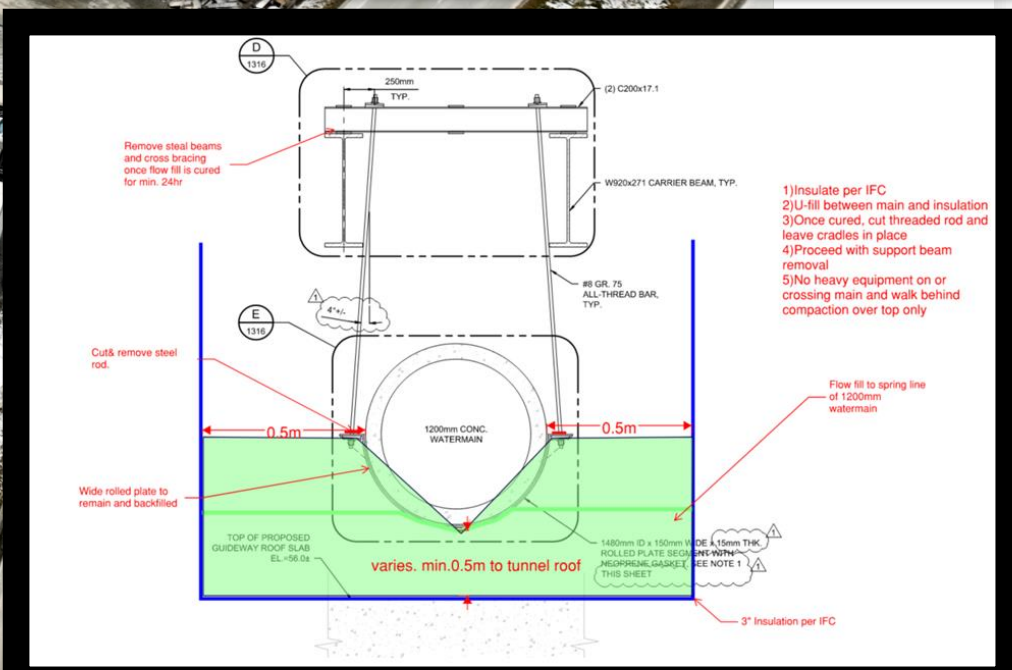
SOE Type	Soldier Piles										Slurry Wall (CBSP)					
Dewatering Type	Sump & Pump	Sump & Pump	Sump & Pump	Sump & Pump	Sump & Pump	Sump & Pump	Sump & Pump	Sump & Pump	Sump & Pump	Sump & Pump	Well Poin/Eductors inside Excavation Trench	Well Poin/Eductors inside Excavation Trench	Well Poin/Eductors inside Excavation Trench	Well Poin/Eductors inside Excavation Trench	Sump & Pump	Sump & Pump
Dewatering Equipment Type	KTZ 47.5 @ 15m	KTZ 47.5 @ 15m	KTZ 47.5 @ 15m	KTZ 47.5 @ 15m	KTZ 33.7 @ 50m	KTZ 33.7 @ 50m	KTZ 33.7 @ 50m	KTZ 33.7 @ 50m	KTZ 33.7 @ 50m	KTZ 33.7 @ 50m	Well Point + Pump @ 100m	Well Point + Pump @ 100m	Well Point + Pump @ 100m	Well Point + Pump @ 100m	Well Point + Pump @ 100m	Well Point + Pump @ 100m
Dewatering Equipment Specs	50/60Hz, 7.5kW	50/60Hz, 7.5kW	50/60Hz, 7.5kW	50/60Hz, 7.5kW	50/90Hz, 3.7kW	50/90Hz, 3.7kW	50/60Hz, 3.7kW	50/60Hz, 3.7kW	50/60Hz, 3.7kW	50/60Hz, 3.7kW	50HP, 575V, 3PH, 60A	50HP, 575V, 3PH, 60A	50HP, 575V, 3PH, 60A	50HP, 575V, 3PH, 60A	50HP, 575V, 3PH, 60A	50HP, 575V, 3PH, 60A
Equipment Type	90 Ton RT Tadano + CAT 349F	90 Ton RT Tadano + CAT 349F	90 Ton RT Tadano + CAT 349F	Gantry Crane + CAT 349F	90 Ton RT Tadano + CAT 349F	90 Ton RT Tadano + CAT 349F	90 Ton RT Tadano + CAT 349F	90 RT Tadano + CAT 349F	90 RT Tadano + CAT 349F	90 RT Tadano + CAT 349F	Tower Crane + CAT 349F	Tower Crane + CAT 349F	60 Ton RT Tadano + CAT 349F	60 Ton RT Tadano + CAT 349F	60 Ton RT Tadano + CAT 349F	60 Ton RT Tadano + CAT 349F
Equipment Access	North	North	North	North	South	South	North + South	North + South	North + South	South	North + South	North	South	South	South	South
Clear Power Requirements	460V, 3PH, 60Hz										460V, 3PH, 60Hz					
PBS	Zone 1, Zone 2, Zone 3, Zone 4, Zone 5, Zone 6 - New Orchard Station, Zone 7, Zone 8a, Zone 8b, Zone 9										Zone 10 - Cleary Station, Zone 12, Zone 13a, Zone 13b, Zone 13c, Zone 13d, Zone 13e					



Utility Interactions

- 1200 mm backbone watermain
- Sequence change
- Operational considerations
- Schedule considerations



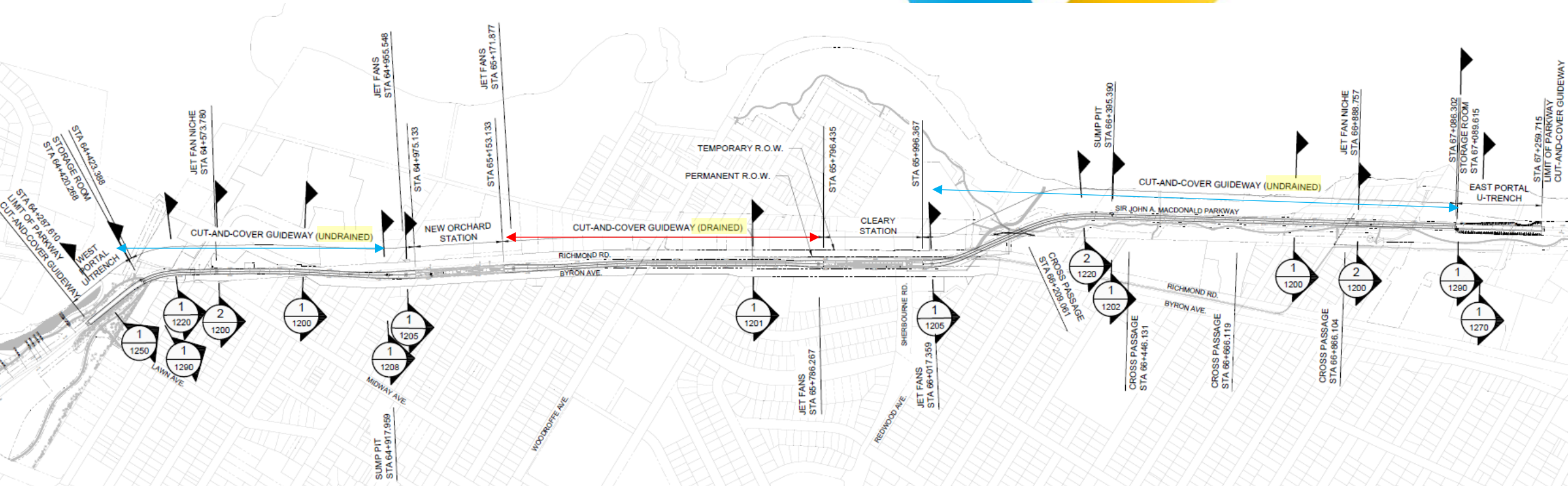


DESIGN CONSIDERATIONS

- Permanent dewatering
- Control of water
- Waterproofing system

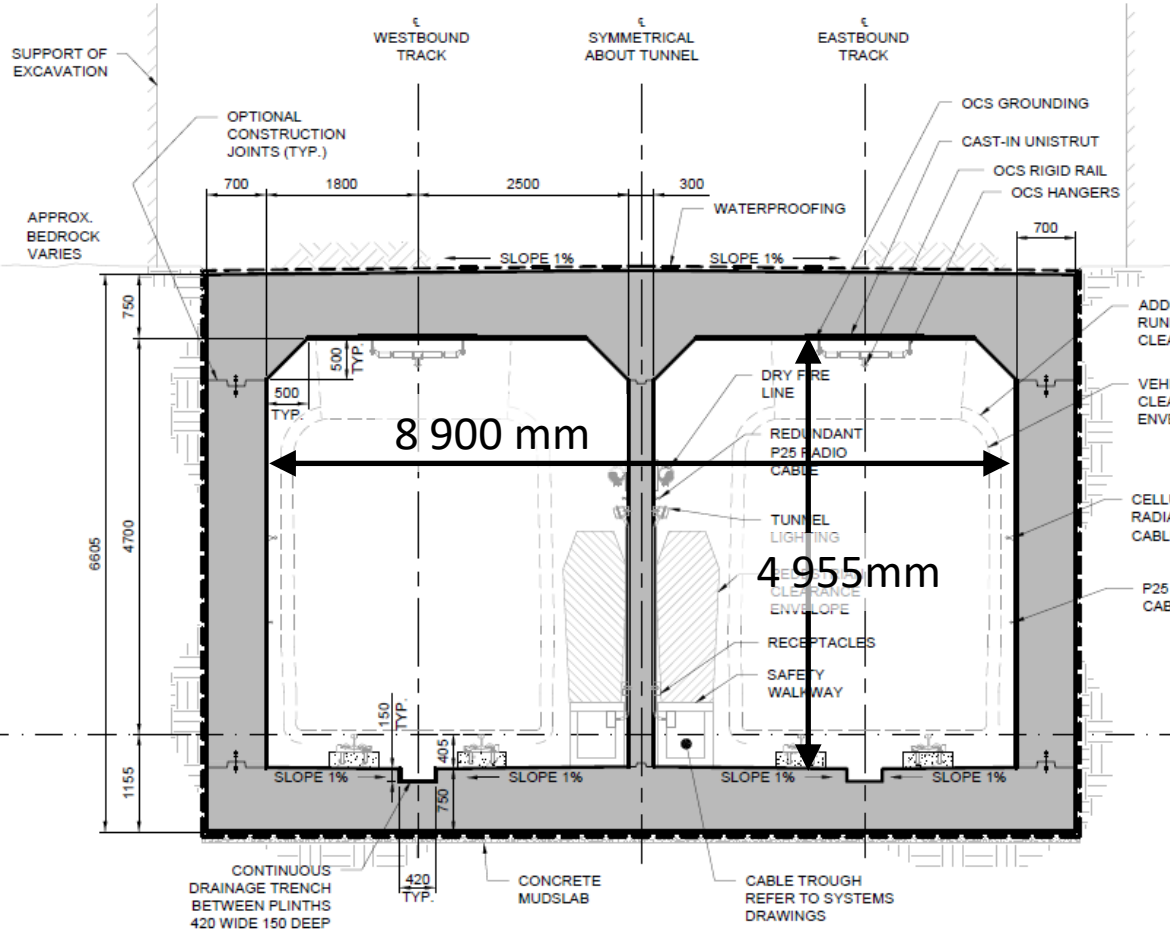


DRAINED VS UNDRAINED SECTIONS

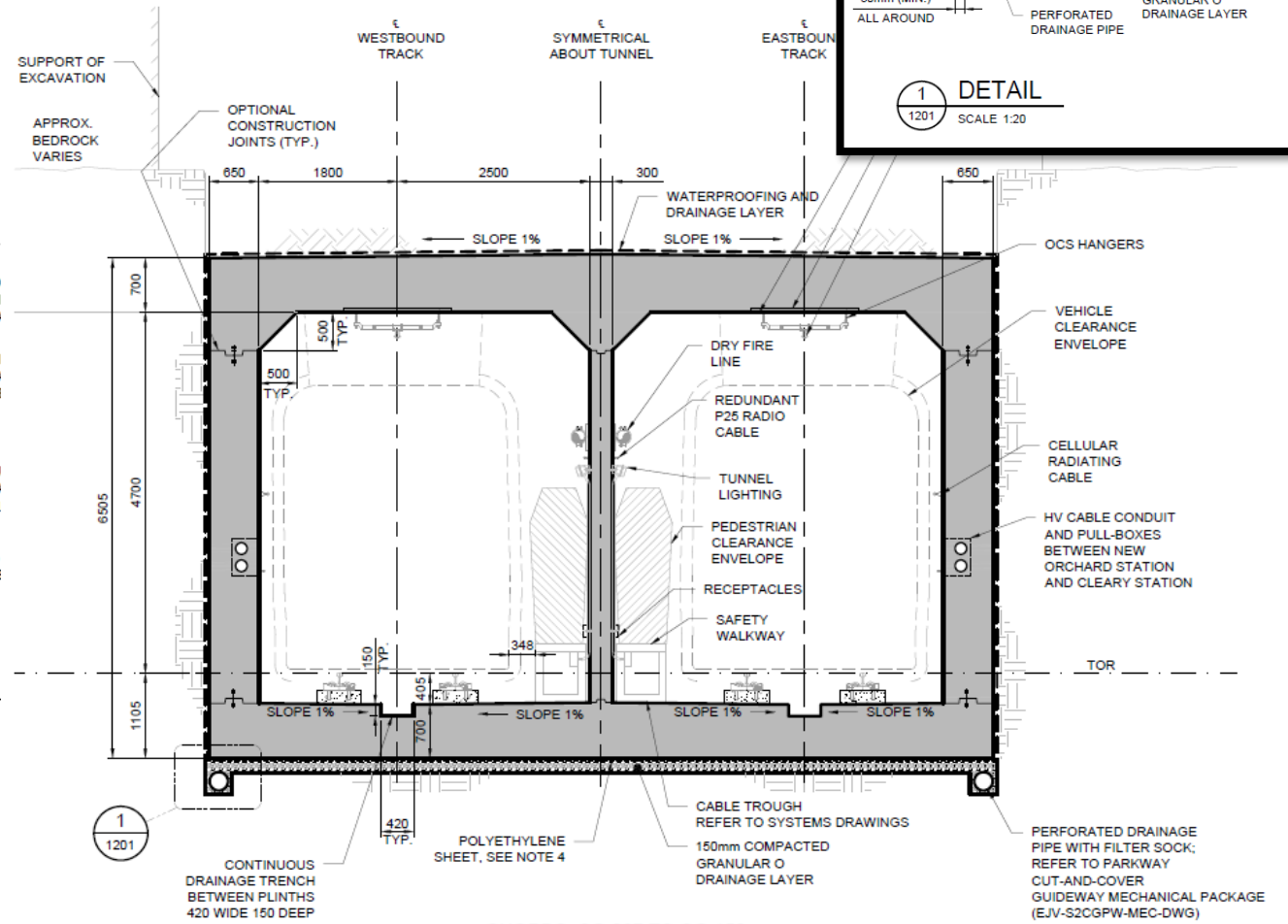


No waterproofing below the Invert slab on drained sections

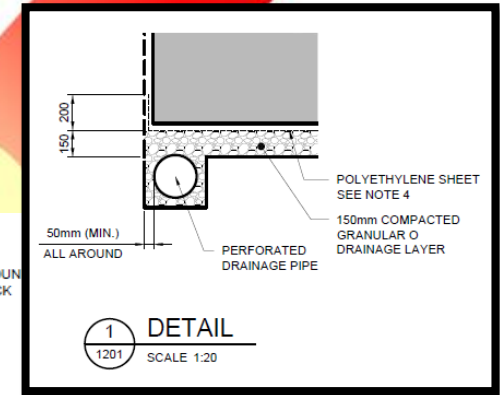
DRAINED VS UNDRAINED SECTIONS



Typical Undrained Box Section



Typical Drained Box Section



CHORDS: CG-087 TO CG-152

CONSTRUCTION PICTURES



CONSTRUCTION PICTURES



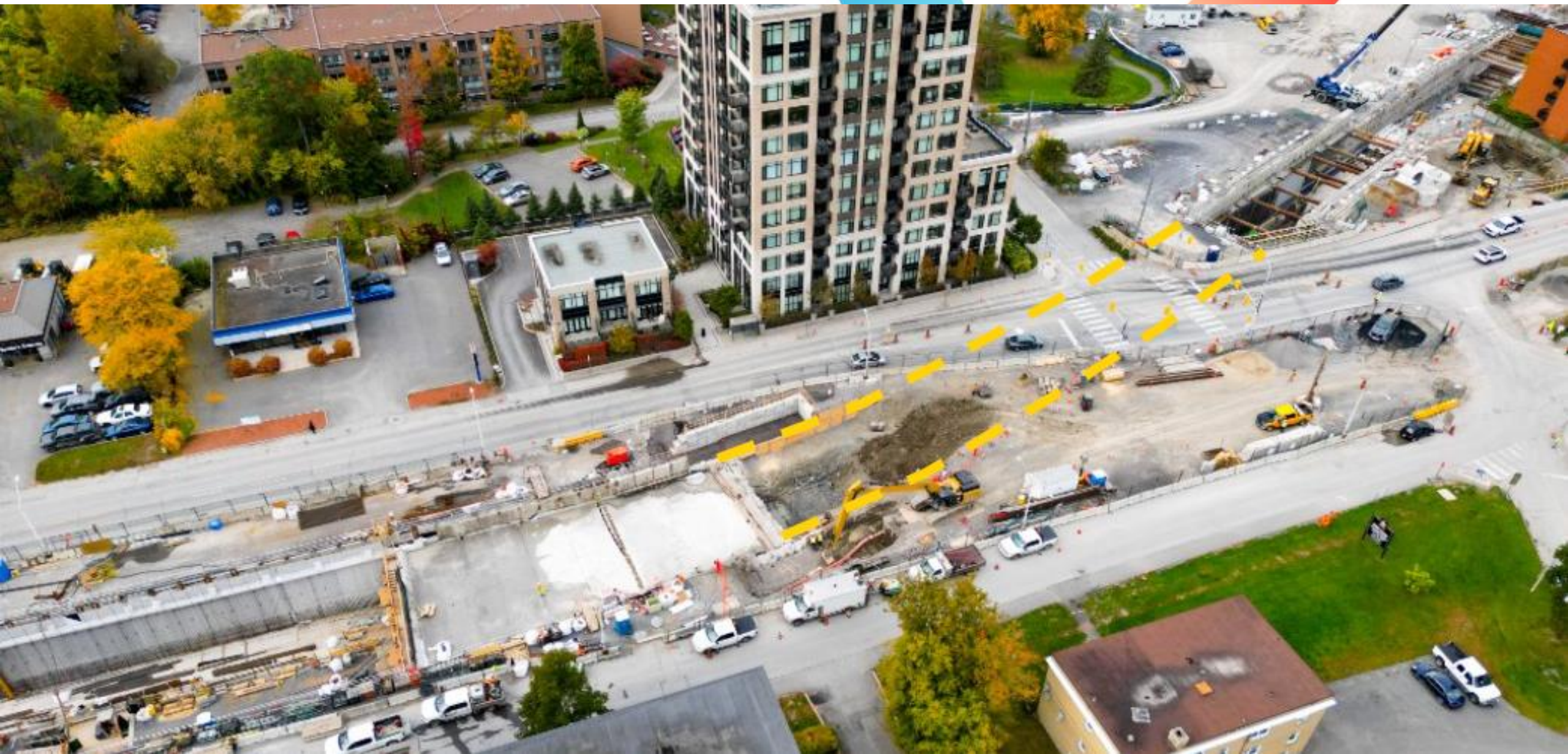
CONSTRUCTION PICTURES



CONSTRUCTION PICTURES

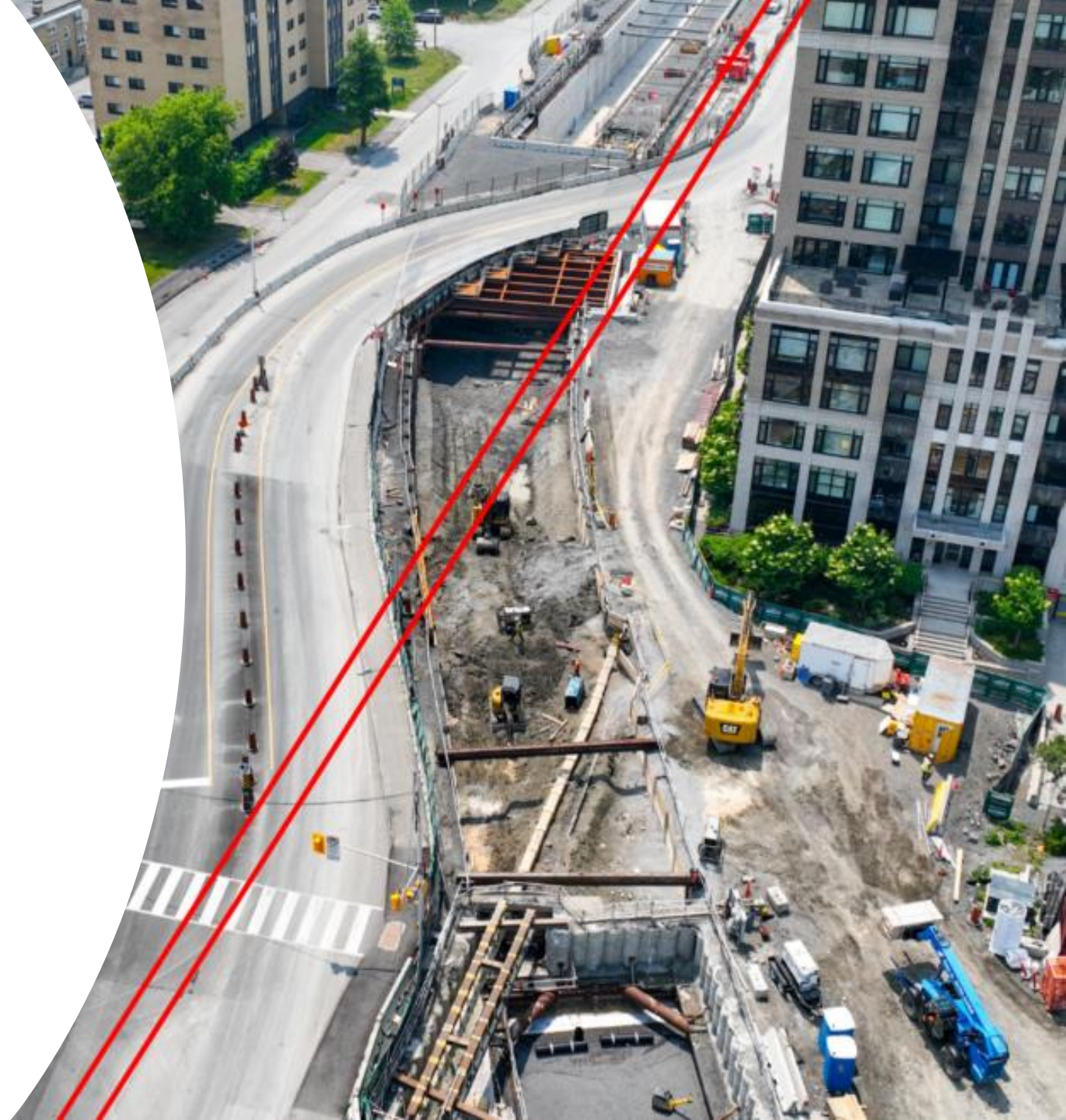


ZONE 12 – CLEARY/RICHMOND

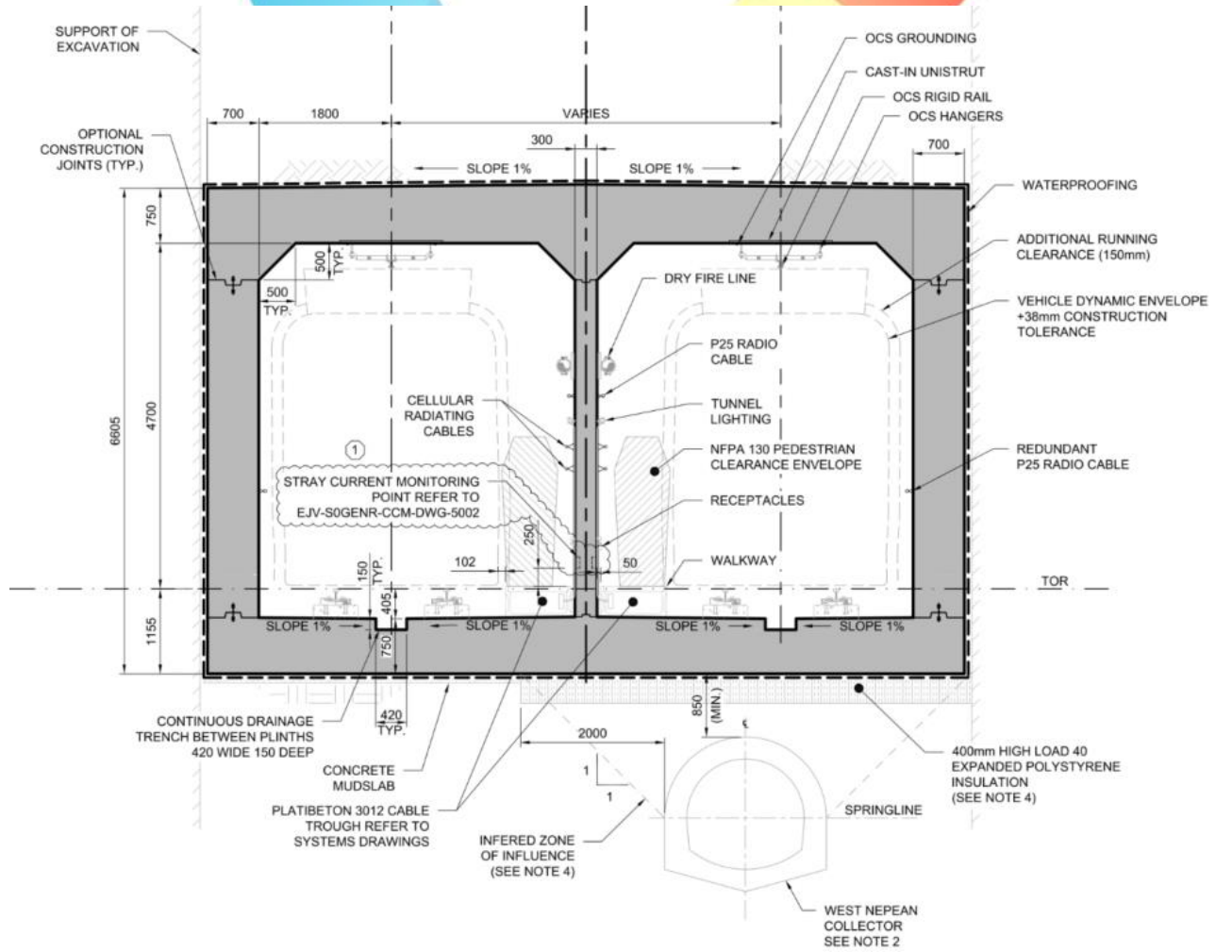
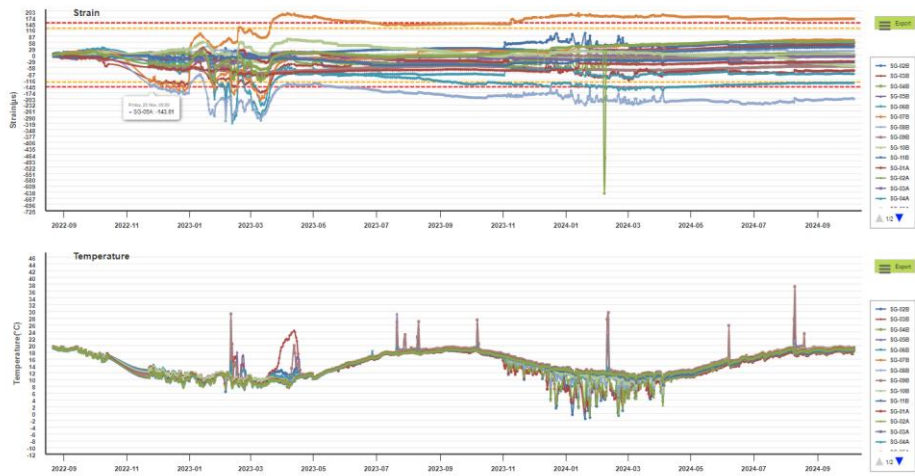


WEST NEPEAN COLLECTOR

- 1500 mm Combined Sewer – 1954
- Design considerations
- Construction considerations
 - Unloading
 - Work methodology
 - Monitoring



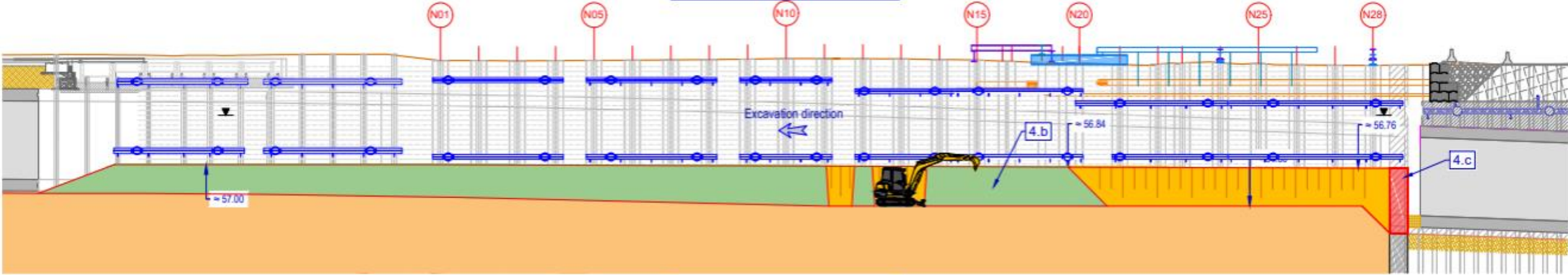
ZONE 12 – WNC CROSSING



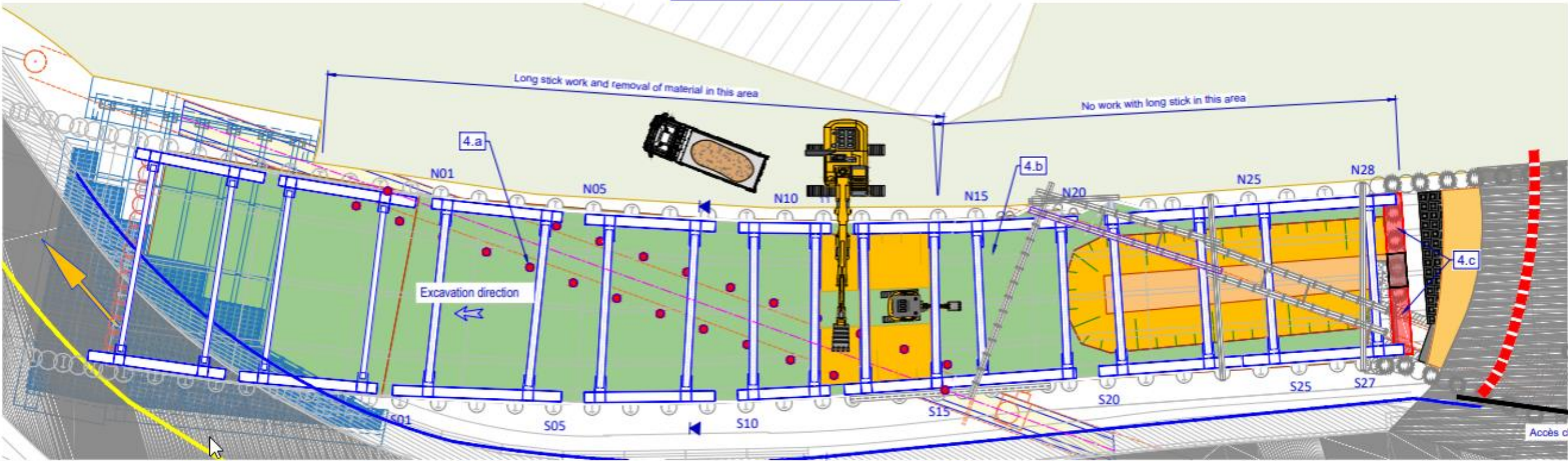
CHORDS: CG-165 TO CG-174
UNDRAINED COVERED GUIDEWAY
SECTION - WEST NEPEAN COLLECTOR CROSSING

DETAILED PLANNING

LONGITUDINAL SECTION

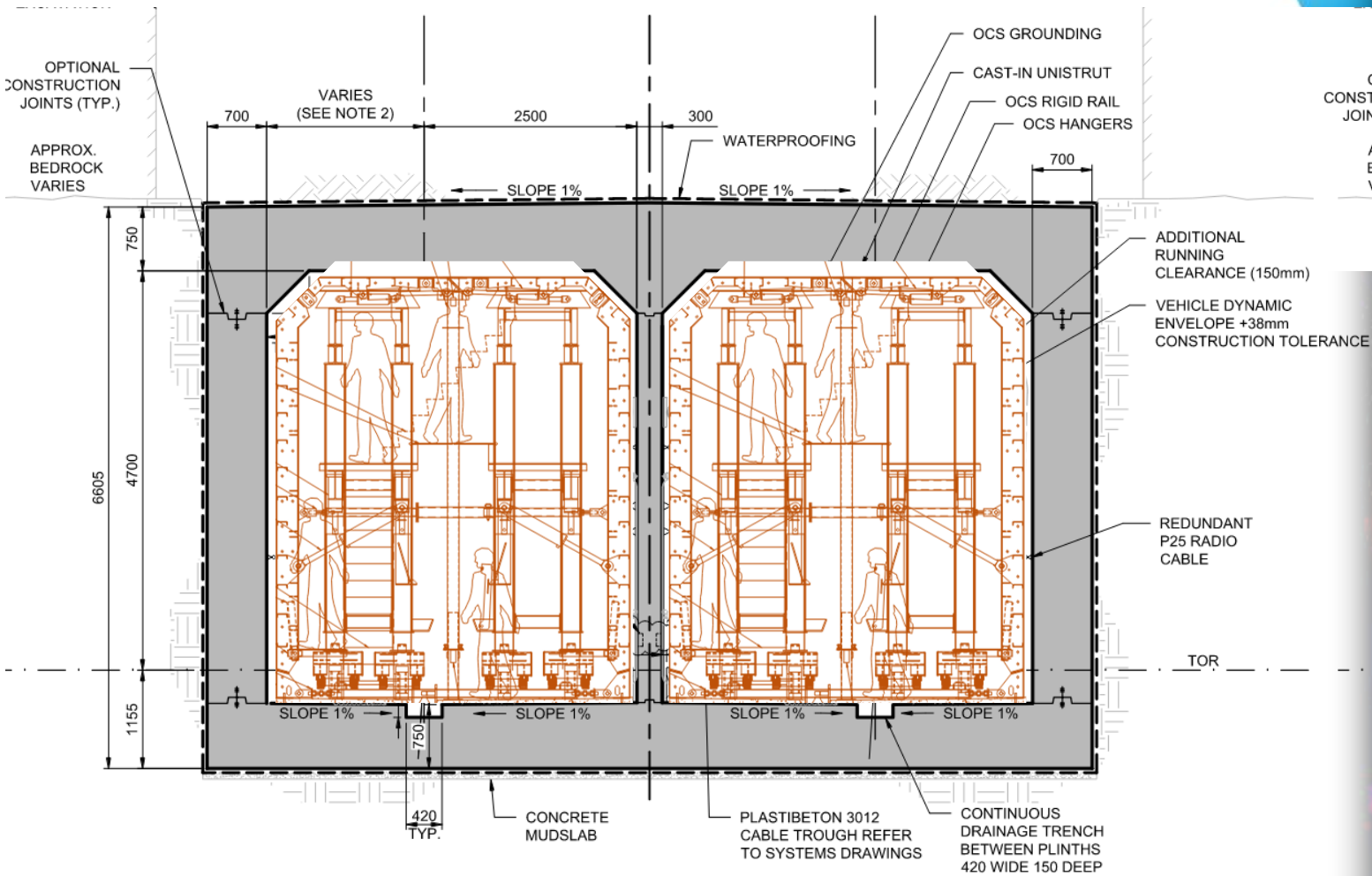


PLAN VIEW





TRAVELER SYSTEM





QUESTIONS?

