



MEMO / NOTE DE SERVICE

To / Destinataire	Mayor and Members of Council	File/N° de fichier: 38-2022
From / Expéditeur	Michael Morgan Director, Rail Construction Program Transit Services	
Subject / Objet	Stage 2 Trillium Line Project - Support Oversight Appointments	Date: August 19, 2022

The following memorandum provides Mayor and Council with information regarding appointments to the Stage 2 Trillium Line Project to support the delivery and startup of the project.

Systems Integration

As noted in previous updates to Council, the Stage 2 Trillium Line Project Agreement (PA) adopts lessons learned from Stage 1 and uses a different strategy for dealing with systems integration and verification of project requirements. The Trillium Line PA requires that TransitNEXT undertake a robust approach to systems integration activities based on a systems engineering approach defined by European Standards EN 50126, 50128, and 50129 and ISO/IEC/IEEE 15288:2015 standard.

These standards establish a defined framework for the implementation of systems integration activities within project life cycle stages. Simply put, the framework defines what systems integration activities need to take place during each project phase using a regimented project management approach. This process ensures that the necessary interfaces and interactions between the different project components, including infrastructure, facilities, subsystems, software, operations and maintenance, have been identified and engineered to function together as a holistic system. The Stage 2 Trillium Project includes a series of substantive changes such as:

- The addition of tunnel ventilation systems to the Dow's Lake tunnel.
- Major building code and fire life safety enhancements to stations.
- Introduction of a new signaling system and new fleet.
- The centralization of rail traffic control functions in the City's Transit Operations Control Centre.

The application of these standards will support these interdependent systems coming together to form a safe and reliable transit service.

To assist with these activities, the City and TransitNEXT have jointly engaged a System Integration Verifier (SIV) who will assist the parties in confirming the system integration

requirements at Substantial Completion. The Stage 2 SIV contract has been awarded to **Ricardo Rail**, an international multi-disciplinary engineering consultancy firm with specific specialization in independent rail systems verification. Ricardo Rail has provided independent systems verification services throughout the world, including the certification of 50 metro lines across Asia, and integrations testing and verification services for the Utrecht Tram and Amsterdam Metro (Netherlands).

System Safety and Assurance

The Stage 2 Trillium Line Project Agreement also requires that TransitNEXT undertake a vigorous system safety assurance process to certify that all elements of the new expanded system are safe prior to the start of revenue operations. TransitNEXT's system safety and assurance process is guided by the systems engineering approach and standards that define and manage safety assurance activities during each project phase. This iterative approach to system safety and assurance ensures that TransitNEXT is regularly reviewing, defining, and improving upon its safety tasks during each project phase.

The City is overseeing all aspects of the safety certification process through a joint team of City staff, the City's Owner's Engineer, and an independent safety auditor. The auditor will confirm that TransitNEXT's approach to system safety and assurance is sound, and that it has fulfilled compliance with all safety requirements throughout each project phase.

The City has engaged **SENER Inc.** as the safety auditor, an international engineering and technology firm with wide experience in safety auditing and acceptance services. SENER is a certified Railway Independent Safety Auditor (ISA) that has provided ISA services throughout the world, including metro line 9 to the Barcelona International Airport (Spain), the Zapopan to Guadalajara and Tlaquepaque LRT system (Mexico), and the Lusail LRT Tramway (Qatar).

Stage 2 Independent Oversight

As is the standard model for this type of project, an Independent Certifier (IC) has been engaged to actively review the progress of works on site and authorize payments for works completed. The IC assigned to the Stage 2 Trillium Line Project, **AW Hooker**, is actively reviewing project progress and certifying payments as part of their services to the Project.

In addition to the Project Agreement requirements outlined above, a variety of independent regulatory bodies, including the City's Building Code Services, the Technical Standards & Safety Authority (TSSA), and Ottawa Fire Services play an important role in ensuring that station and systems elements meet pertinent code requirements.

Finally, as the Trillium Line is a federally regulated railroad, the City is actively engaged with Transport Canada and the Canadian Transportation Agency to obtain the necessary regulatory approvals. These approvals include an amended Railway Operating Certificate and an updated Certificate of Fitness, respectively, required to permit the resumption of service for the expanded Trillium Line.

Should you have any questions about the information provided in this memo, please do not hesitate to contact me at extension 52718.

*Original signed by
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