

**Location**

Toronto, ON

**Client**

Metrolinx

**Project Value**

CAD \$3.75M

**Status**

2013-2022

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**Project Description**

Construction of a 19 km public transit corridor that includes 10 km of underground twin tunnels. The Crosstown is part of the \$8.4 billion investment from the Ontario government to expand transit in Toronto. The Crosstown project is the largest transit expansion in the history of Toronto.

During the Early Works phase the team provided technical support to the tunnels team with tunnel alignment control and as-built survey audits, QA/QC of tunnel contractors' survey work, support for the geo-engineering and other 4Transit teams as required, and management of Metrolinx-contracted survey consultants. During the Implementation phase the geomatics team provided technical support to the 4Transit teams with survey assistance, handover of survey-related deliverables and project-wide control network to AFP contractor, and continued development and maintenance of the ECLRT GIS. The 4Transit JV, with a design team consisting of approximately 100 transportation professionals, used the Web GIS to coordinate and manage design activities. The ECLRT project and this RQQ share similarities including the management survey resources, LiDAR pre-engineering, and output to GIS.

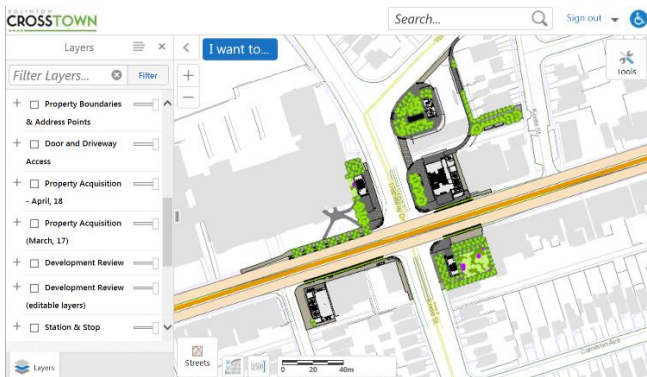
**Project Deliverables****Survey Services**

- Developed an advanced project specific reference datum with 7-parameter transformation and scale factor to cover the unique cross-city project area.
- Assigned and performed quality control checks on control network surveys, topographic surveys, and tunnel alignments for railway-specific applications.
- Prepared, managed, and reviewed tunnel surveys specific to railway applications including profile as-builts, alignment cross-sectional drawings, and envelope clearance reports.
- Managed and reviewed several high definition LiDAR surveys of the LRT street level corridor and existing station interchanges.
- Ensured the constructor adheres to Metrolinx quality standards and terms of reference.

- Daily management of owner-contracted surveyors, and provision of support to client and technical advisors, perform compliance reviews of technical submittals.
- Oversaw auditing and verification surveys and provided direct consulting to Metrolinx.
- Managed schedule, budget, quality, risk, procurement, HSE, and HR that oversaw 50+ project surveyors.
- Identified daily survey audit needs as they pertained to the project and acted to carry them out using contracted surveyors.

### GIS Services

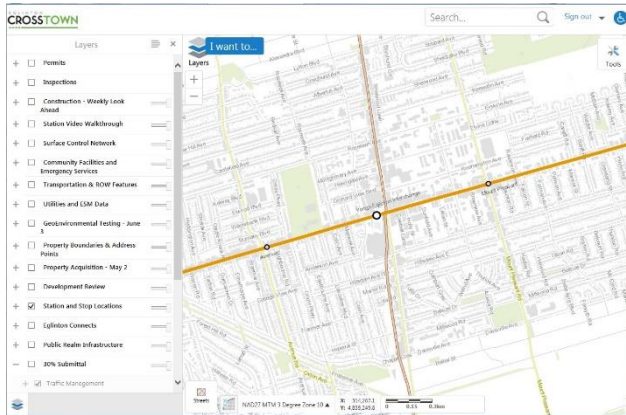
- Acquire and distribute the City of Toronto's Topographic, Orthometric, Property, Water, Sewer and Storm Asset Database.
- Provide base mapping data to the design team including topographic mapping, property lines, property acquisitions, road limits, buildings, rivers and streams, geotechnical boreholes, and ortho photography.
- Transform the static Multiview Locate CAD file into a functional geographic database.
- Convert the Utility Conflict Matrix from a tabular database into a functional spatial geographic database.
- Convert CAD files from the various reference concept design submissions and generate a unified geographic database.
- Convert all Station Reference Concept Designs into a Geographic Database, level by level, including outlined room uses; Assemble singular complete alignment from different sections of the RCD.
- Provided Geodatabase of 100% designs for all stations in GDB ESRI format
- Convert geotechnical borehole data into Geodatabases, complete with detailed information; Convert permits and applications database into a usable spatial GIS.



### Web GIS Services

- Converted engineering, landscape, and environmental CAD design drawings on a scheduled basis to the Arc GIS format to be used in the Web GIS.
- Updated property data on a scheduled basis providing pertinent information and links to City issued sketches
- The Web GIS displayed info, search, zoom, pan data. The user can markup data and take a screenshot or measure using the measure tool.

- Ability to view project related data based on common themes providing up-to-date engineering, property acquisition, geotechnical, and environmental design drawings.
- The Web GIS was used by all project staff, sub-consultants, and senior executives for the purpose of communicating design status and other information required for decision making.
- The Web GIS services were designed with security in mind yet easily accessible to approved users.
- Easily accessible by standard web browser systems; data restricted to project members via secure user ID and Password.



## Reference

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