

AECOM

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engineer

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**CANADIAN
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AWARDS**

**FINCH WEST
LIGHT RAIL TRANSIT**

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Project Summary

AECOM is the Technical Advisor for Metrolinx and Infrastructure Ontario's 11km light rail transit (LRT) system that will carry passengers in dedicated right-of-way transit lanes separate from regular traffic with priority signaling at intersections. The 18 stop LRT (Keele Street to Highway 27) will connect with local and regional transit services, providing people with reliable and comfortable transit and access to surrounding neighbourhoods. It is expected to accommodate 2,250 passengers/hour during peak times and 46,000 passengers/weekday by 2031.

Finch West LRT – Innovation



Finch West Light Rail Transit (FWLRT) is a Design, Build, Finance and Maintain (DBFM) project using the Province of Ontario’s Alternative Financing and Procurement model - P3. The project’s public-sector sponsors are Ontario Infrastructure and Lands Corporation (IO) and Metrolinx (the Sponsors). The Sponsors retained AECOM in the role of Technical Advisor. Mosaic Transit Partners General Partnership (Mosaic Transit Group or MTG) is responsible for the delivery of the Project.

Project participants on the FWLRT worked separately and jointly to optimize project delivery and implemented the following features to overcome project-specific challenges and enhance value for money:

- Record breaking closing period.
- Savings-yielding syndication strategy.
- Medium-term bonds.
- Innovative optimization procedure.
- Innovative system extension solution.
- Contingency service levels.
- Incentives to minimize construction impact.
- Construction quality incentives.
- Timely construction period payments.
- Optional lands/lands reduction.

In particular, the FWLRT closed in a record 26 days from Preferred Proponent Notice as a result of leveraging relationships with the Sponsors, funders and advisors. It was the first P3 project in Ontario to use medium-term bonds and the financial evaluation not only considered pricing and cost of finance, but also the cost of energy, lane closures and optional/excess lands. By including these, the Sponsors incentivized MTG to optimize not just the overall cost but to make design and staging choices that minimized disruption to the public and encouraged energy efficiency.

Finch West LRT – Innovation



Finch West LRT

The FWLRT closed in a record 26 days from Preferred Proponent Notice and is expected to result in an earlier delivery of critical infrastructure for the benefit of the public. It is the first P3 project in Ontario to use medium-term bonds and a financial evaluation that not only considered pricing and cost of finance, but also the cost of energy, lane closures and optional/excess lands.

As the Technical Advisor, AECOM worked with the Sponsors to:

- Incorporate a major amendment to the procurement to accommodate a change in light rail vehicle supplier while still closing the job with all three bids below the affordability cap.
- Implement a significant third-party DBF handback scope within the DBFM contract.
- Structure the project agreement to include output specifications for both transit and highway/bridge components.

AECOM helped to facilitate an open and direct interaction between the public and private sectors leading to innovative risk allocation mechanisms that struck the right balance between the risks and the party best-suited to manage them. As a result, the Sponsor maintained control and ownership over the project while achieving the best-value solution and successful execution of the project. During the procurement phase, AECOM also prepared extensive preparatory works for third party private utility relocations to mitigate schedule and cost risk associated with the risk transfer to MTG and managed the Ontario Ministry of Transportation's Independent Quality Assurance Firm (IQAF) requirement for Highway/Bridge P3 scope elements—the first market introduction of this requirement.

Finch West LRT – Complexity



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AECOM's team has worked closely with the Sponsors to progress the project through Reference Concept Development and Output Specification and Project Agreement development and into the in-market period. Throughout the process there were a number of challenges that we addressed including:

Stakeholder management - Early engagement with stakeholders on critical issues was paramount. The schedule can slide when stakeholder consultations during design and planning are protracted. Through the use of working groups, workshops and topic specific meetings, these objectives were achieved.

Environmental Assessment risk analysis - Concepts in the approved Environmental Assessment designs were checked in further depth to ensure consistency with LRT service and stakeholder objectives.

Version control for documents - With the number of different authors and organizations contributing to various documents, having strong document and version control was key, as was the use of proven configuration management systems.

Property services - To accommodate the FWLRT, 96 property acquisitions were conducted, mainly as partial acquisitions, easements and expropriations. AECOM negotiated with property owners for the land required for infrastructure changes and also considered the long term expansion requirements and space proofing for additional infrastructure.

Utility services - A utility conflict matrix and strategy including coordination with local municipalities and private utility companies was developed in the early stages of project to reduce the risk of escalating the project cost and help to maintain the construction schedule and substantial completion dates.

Finch West LRT – Social and/or Economic Benefits



More than 600 workers will be employed at peak construction on the project, with more than 85% of the labour expected to be sourced from the Greater Toronto Area.

The FWLRT project is being constructed in communities designated by the City of Toronto as Neighbourhood Improvement Areas, meaning they need additional social and economic support. The Finch West corridor is home to more than 3500 thriving industrial and commercial businesses, yet its residents face high unemployment, low income rates, and are not within walking distance of community meeting places, green spaces, and healthy food stores. A new LRT system, connecting the Finch West Station (East) with Humber College (West), will improve community members' access to amenities and employment opportunities. The corridor will also have enhanced connections into the local Humber College and adjacent neighbourhoods including feeder bus routes, pedestrian connections to the Humber River Valley, parks, mixed use areas, and community spaces.

FWLRT offers fully accessible facilities and stops, enhanced pedestrian and cycling connections, separated bike lanes, streetscaping and aesthetic improvements along the corridor to help revitalize neighbourhoods adjacent to the Project.

The contract to build the FWLRT includes a Community Benefit and Liaison Plan and an Apprenticeship Program. There are initiatives to provide skills development and training to youth and historically unemployed people, apprenticeship opportunities to eligible community members and business opportunities to social enterprises and local businesses. The goal is to employ apprentices from historically disadvantaged communities and equity seeking groups to perform 10% of all trade or craft working hours, on a trade-by-trade basis. The plan is to maximize the number of apprenticeships for trades and provide training that will give participants a strong future employment potential.

Finch West LRT – Environmental Benefits



The project aims to provide a way for Toronto to continue down its path to efficient, environmentally friendly transportation while minimizing disruption to existing traffic, mitigating construction impacts and reducing on-going operation and maintenance costs. With connections to inter-regional transportation links, the FWLRT is an important component of the Regional Transportation Plan that seeks to redefine how the Greater Toronto and Hamilton Area travels with a vision of the future that includes a high quality of life, a sustainable and protected environment and a strong, competitive economy.

Some of the key objectives of the FWLRT are:

- Offer higher order transit to promote transit usage and increase transit modal share.
- Improve connectivity with inter-regional transportation links.
- Reduce greenhouse gas emissions with fewer personal vehicles.
- Stimulate land development and support urban growth.
- Incorporate architectural excellence with emphasis on stations and stops to increase sustainability and enhance the urban environment.
- Provide outstanding service during the 30-year maintenance period to sustain ridership and customer satisfaction.

During the procurement process and in the project agreement, the Sponsors introduced additional energy consumption and elements that provide further flexibility to manage the costs by taking into account not only the energy consumption, but also the peak energy required and the moments when the energy is consumed. In doing so, final cost to the Sponsors and, consequently, to the taxpayers were reduced. This energy solution resulted in the Battery Energy Storage System which allows the Sponsors to provide utility redundancy and time of use savings.



The Finch West LRT project represents an exciting and significant investment in rapid transit for Toronto, one that provides vital connections to many transit services, linking the communities of Jamestown, Rexdale and Black Creek with downtown Toronto. It will transform how people connect with jobs, friends, and families.



Phil Verster, President and CEO, Metrolinx

Finch West LRT – Meeting Client’s Needs



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In November 2018, the project was recognized by the Canadian Council of Public-Private Partnerships with a Silver Award in Project Financing.

The Sponsors want to implement efficient, environmentally friendly transportation while minimizing overall cost to tax payers and disruption to existing traffic along the corridor. AECOM integrated separately procured project components, coordinated with numerous stakeholders with varying priorities, and managed significant risks associated with a project of this magnitude. The Sponsors benefitted from an effective allocation of the varying risks, and reduction in costs. Some of the benefits achieved include:

Cost Savings – The value-for-money (VFM) assessment estimates a risk-adjusted cost savings of approximately 22.6% for procuring the project using the P3 model versus a traditional delivery approach. The VFM also represents significant risk transfer to the private sector with an efficient payment and financing structure.

Certainty of price and execution – Traditional projects do not have a fixed price or committed completion dates so the tendency to go over budget and deliver late is higher. The AFP model results in more savings and less risk for the government. The Sponsors were able to mitigate or transfer significant risks, despite the fact that several third parties are supplying critical components of the project, namely vehicles.

Integration of multiple contracts – Procuring the contract as one P3 DBFM contract rather than carving the project into multiple smaller contracts helps to minimize the integration risk, which can be a significant factor leading to cost overruns.

Efficient allocation of risk – The transfer of risk and the successful integration of third-party elements resulted in an accurate evaluation of the overall project risk profile that enabled the parties to find a very competitive solution.



About AECOM

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