


Collaborative solutions for complex infrastructure

Alternative Delivery



Infrastructure creates opportunity for everyone — whether it's improving your commute, keeping the lights on, providing access to clean water or transforming skylines, we believe infrastructure has the power to uplift people and communities.

Through our legacy firms across Canada, we have been creating, enhancing, and sustaining Canadian infrastructure for well over 100 years.

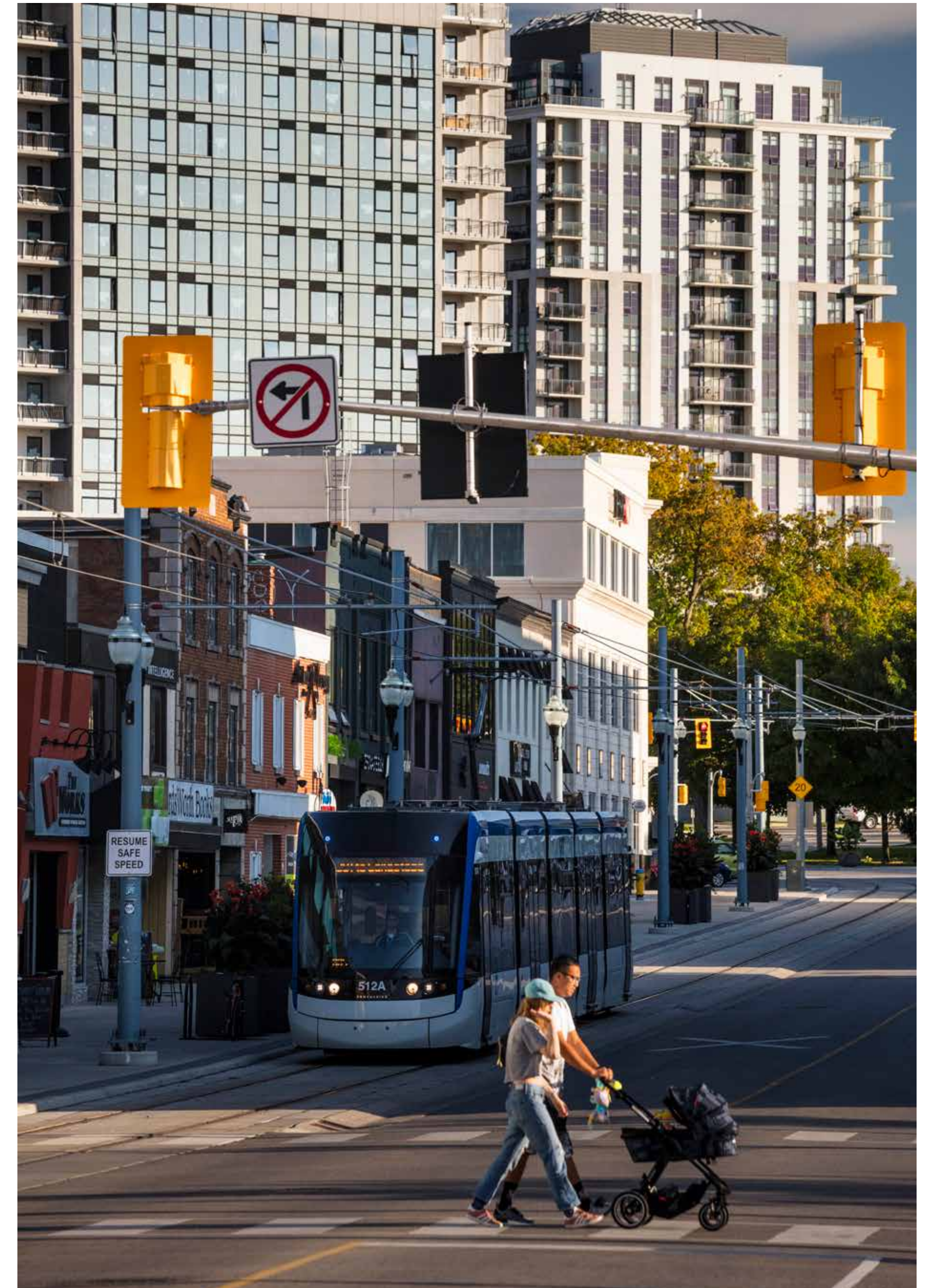
In Canada alone, we have more than 30 office locations and employ approximately 3,000 skilled professionals. Our local experts collaborate across our broad global network of professionals to ensure sustainable project outcomes — those that integrate harmoniously with natural and social environments, meet regulatory requirements and promote social responsibility.

We are the world's trusted infrastructure consulting firm, delivering professional services throughout the project lifecycle — from planning, design and engineering to program and construction management. Our teams are driven by a common purpose to deliver a better world through our unrivalled technical expertise and innovation; a culture of equity, diversity and inclusion; and a commitment to environmental, social and governance priorities.

We remain atop Engineering News Record's list of the Top 500 design firms where we are ranked #1 in General Building and Transportation, delivering integrated and sustainable solutions

to solve our clients' most complex challenges and shape a better future. Our global network of nearly 47,000 employees delivers projects in over 150 countries and is unified by common goals and values — delivering unrivaled expertise, protecting people and the environment, and making the world a better place. This is evidenced by the fact that we have been named one of Fortune magazine's World Most Admired Companies for the sixth consecutive year.

Through our Think and Act Globally strategy we are focused on extending our industry-leading, global expertise to each of our projects around the world, transforming the way we deliver work through technology and digital platforms, and enhancing our position as a leading Environment, Social & Governance (ESG) company. We're committed to managing our business with the upmost responsibility and to always strive for better — be that reducing emissions, creating social value or diversifying our senior leadership and workforce.





As municipalities struggle to bridge the gap between growing infrastructure needs and limited available funding, they're considering public-private partnerships (P3) as a means to effectively manage deficits. With experience from both the public and private sectors, our P3 experts help navigate this procurement model with seamless technical, financial and contractual expertise that includes sociopolitical and legislative insight, revenue forecasting, and guidance through all phases of the procurement process.

Our vast experience working on Public Private Partnerships (P3) and alternative delivery projects gives us the unique perspective of working on all sides of a project— as owners advisors, design-build contractors and as developers.

We are industry leaders, able to bring tailored teams of specialized professionals to help you deliver major projects on time and within budget. With experience on more than 650 P3 projects around the world, you can count on us to help deliver your most critical infrastructure projects.

We customize our approach to meet the distinct needs of each project. We partner with developers, concessionaires and design-builders to provide planning, modeling and detailed design services for every type of project delivery method and transportation mode. Once projects are built, protecting your infrastructure and making sure it's operating at peak efficiency are critical.

Our P3 Owner Advisory professionals can help you navigate the complexities of P3 delivery and provide guidance on the intricate technical, financial and legal strategies needed for these projects to succeed. From conceptual planning through to implementation, operation and maintenance, we can help you negotiate contracts, define project scope, assess payment mechanisms, set output specifications and outline clear project performance requirements.

As the asset owner, you establish the purpose and scope of your project and you procure some, or all, of the financing, design, construction, operation and maintenance. Our P3 Owners Advisory professionals are highly skilled at structuring these complex agreements with clearly outlined commercial and technical requirements for fixed infrastructure, systems, vehicle procurement, construction, traffic management, business continuity, testing and commissioning, operations and maintenance, safety, sustainability and asset handover.

As your technical advisor, we provide fully integrated design, contract administration, construction oversight and complete program management services. Our comprehensive public sector background gives us a firsthand understanding of how to balance policy goals, garner stakeholder support and produce value for money. Our public sector clients also rely on our broad private sector insights to help inform decisions on what is financeable and what risks should be transferred. Our P3 Advisory team offers conceptual planning, environmental impact assessment, systems analysis and design, procurement support, contract management and construction oversight.



A sampling of our work

Gordie Howe International Bridge

Design Lead

Location: Windsor, Ontario Canada / Detroit, Michigan, United States

Owner: Windsor Detroit Bridge Authority (WDBA)

Client: Bridging North America

Delivery model: Design-Build-Finance-Operate-Maintain

Project value: \$5.7 B CAD

Dates: 2018-2024 (Under construction)

Services:

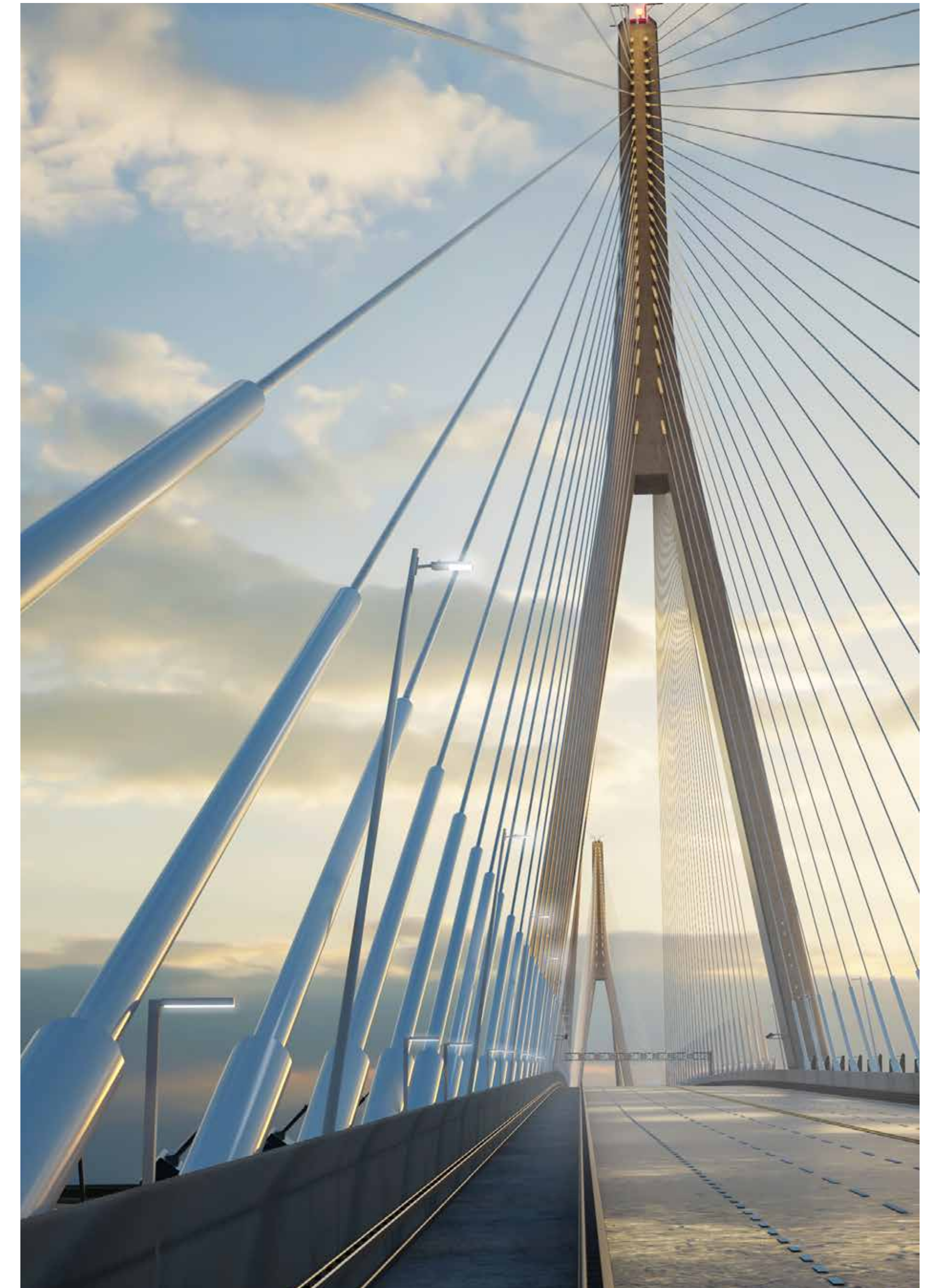
- Planning
- Architecture and engineering (facilities, mechanical, electrical, plumbing, structural)
- Contracting/subcontracting
- Roadway
- Drainage
- Structures
- Maintenance of traffic
- Illumination
- Intelligent transportation systems
- Electronic toll collection
- Utility coordination and relocation reviews

Awards:

- CanBIM Awards, Highway Bridge Category, Engineering Design Award, Global Envoy Award, Best in Innovation Award, 2021
- NAEP Environmental Excellence Awards, NAEP Best Available or Innovative Technology Award, 2021
- Numerous awards for client / project team.

We are the lead designer/design manager of the Gordie Howe International Bridge connecting Windsor, Ontario, with Detroit, Michigan. At 2.5 km long, it will be the longest cable-stayed bridge in North America and will set a record for the world's longest composite steel and concrete cable-stayed bridge deck. In addition to the 6-lane bridge, the project includes Canadian and US ports of entry and a Michigan interchange. We delivered detailed design and construction plans for Segment 1, including roadway, drainage, structures, maintenance of traffic, illumination, intelligent transportation systems, electronic toll collection, and utility coordination and relocation reviews.

The design team faced challenges of different requirements at a province, state, and federal levels, as well as differences in units of measurement. Design standards and manuals of both the USA and Canada were used to comply with the Project Agreement.



Réseau express métropolitain (REM)

Detail Design

Location: Montreal, Quebec, Canada

Owner: CDPQ Infra

Client: NouvLR

Delivery model: Engineer-Procure-Construct

Project value: \$6.9 B CAD

Dates: 2018-2024

Services:

- Design lead on NouvLR general partnership
- Design tunnels, bridges, stations, railway infrastructure (tracks, power, and traction systems) road improvements, intermodal equipment and other structures
- Obtaining environmental permits
- Environmental monitoring
- Urban integration

Detailed design and construction of REM, a light rail system that will connect Montreal, the South Shore, the North Shore and the Trudeau-Montreal Airport through a single, fully automated 67 km light rail network with 26 underground, surface or overhead stations. Once built it will be one of the largest automated transportation networks in the world. The project is the largest integrated public transportation infrastructure investment in Quebec since the construction of the Montreal metro which opened in 1966.

Our team is responsible for design of tunnels and underground stations, including the airport tunnel, Mount Royal tunnel, Technoparc station, McGill station and Édouard-Montpetit station. Our professionals are also responsible for geotechnics, excavation, structure, ventilation as well as some elements of the mechanical and electrical systems of these structures.

Valley Line LRT

Owner's Engineer

Location: Edmonton, Alberta, Canada

Owner: City of Edmonton

Client: City of Edmonton

Delivery model: Public-Private Partnership (DBOM – Phase 1)

Project value: \$1.8 B CAD

Dates: 2011-2026

Services:

- Design Reviews
- Technical Advisory Services

The Valley Line Light Rail Transit (LRT) is the City of Edmonton's largest infrastructure project that marks a shift away from a high-floor largely segregated LRT network to a street level urban integrated model. We are leading the Owner's Engineer team for the P3 procurement of the Valley Line Phase 1, Southeast, and is Prime Consultant for the preliminary design / reference concept design of the entire Valley Line, Southeast to West LRT. As the Owner's Engineer, we built and led the team that developed all reference design and procurement documents, including a 'Green Charter' that provides core project principles to help the LRT integrate into the community in a environmentally and community friendly manner. We managed the complexity of designing a compact urban LRT line while minimizing disruption to communities.



McLoughlin Point Wastewater Treatment Plant

Lead Design

Location: Esquimalt, British Columbia, Canada

Owner: Capital Regional District

Client: Capital Regional District

Delivery model: Design-Build

Dates: 2017-2021

Services:

- Full design-build services
- Design
- Construction Monitoring
- Start-up and commissioning
- Operator training
- Permitting
- Environmental Management

Addressing the Capital Regional District's decades long history of wastewater challenges we, along with our JV partner Graham Construction, provided design and construction services for a new wastewater treatment plant at a brownfield site near Victoria, BC. The plant can treat 108 megalitres of wastewater per day to a tertiary level – one of the highest levels of treatment available. The team successfully acquired all permits and approvals for the construction and environmental monitoring and focused on extensive consultation with local and Indigenous communities to advance this project.

The plant's relatively small 1.5 Ha footprint incorporates sustainability and energy efficiency elements, including an operations and maintenance building built to LEED Gold standards, that utilizes heat recovery from within the facility. Future opportunities exist to extend these energy resources into the surrounding neighbourhood. The facility includes a multi-level green roof, mature landscaping and an observation deck which can be increased in capacity to accommodate future population growth. A critically important space in the region, education and interpretive areas have been designed to engage the community with the plant's water cycle, local natural environment, and the overall importance of stormwater management.



Barrie Simcoe Emergency Services Campus

Architect and Engineer of Record

Location: Barrie, Ontario, Canada

Owner: City of Barrie

Client: City of Barrie

Delivery model: Integrated Project Delivery

Dates: 2017-2020

Services:

- Conceptual and detailed design
- Architecture
- Mechanical, electrical, landscape and civil engineering
- Contract administration
- Commissioning and post construction services.

This new campus includes the headquarters for Barrie Police Service and an operational base for Simcoe County Paramedic Services. The project was delivered through an Integrated Project Delivery (IPD) method, one of the first in Ontario. The Police component includes Command, Executive Services, Investigative Services, Tactical, K9, Property and Evidence and Fleet in addition to booking, cells and Training and Intelligence. A separate Accident Reporting Station was included.

This campus consists of two secure buildings with an overall design driven by efficient circulation of First Responders' vehicles. The main 4-storey building is home to police headquarters and operations, EMS operations and common areas such as lunchrooms and a fitness area. The second is a maintenance building for a fleet of police vehicles. This energy efficient facility operates 24/7 and is designed to a LEED Silver target. Future plans for site expansion include a 6-storey fire training building, police service firing range, fire/police vehicle test/training track and fire props such as a burn tower.



Bloor-Yonge Capacity Improvements

Owner's Engineer

Location: Toronto, Ontario, Canada

Owner: Toronto Transit Commission

Client: Toronto Transit Commission

Delivery model: Progressive Design Build

Dates: 2021- On-going

Services:

- Advisory services in the implementation of the progressive design-build model
- Training and application of LEAN and BIM
- Project specific output specifications
- Procurement support
- Estimating and costing services
- Design document review

Our Buildings + Places team was recently appointed owner's engineer for the Bloor-Yonge Capacity Improvements (BYCI) project. In this role, we will provide consulting services to implement a progressive design-build model, including employment of LEAN project delivery and building information modelling (BIM). The BYCI project aims to expand and modernize the transit hub to accommodate current and future ridership, improve accessibility and safety features, and enhance the customer experience.

As the busiest interchange in Toronto's subway system—and one of the busiest in North America—the station is expected to experience significant ridership demand due to population growth in the Toronto area and the implementation of planned transit expansion initiatives.

For the past 10 years, our team was responsible for conducting a feasibility study and providing preliminary architecture and engineering services. Going forward, we will support TTC through the next phases of this project, including selecting a design-builder, detailed design, procurement, construction, commissioning, handover and close-out.

QEW Credit River Bridge

Design Lead

Location: Mississauga, Ontario, Canada

Owner: Ontario Ministry of Transportation

Client: Ontario Ministry of Transportation

Delivery model: Design-Build-Finance

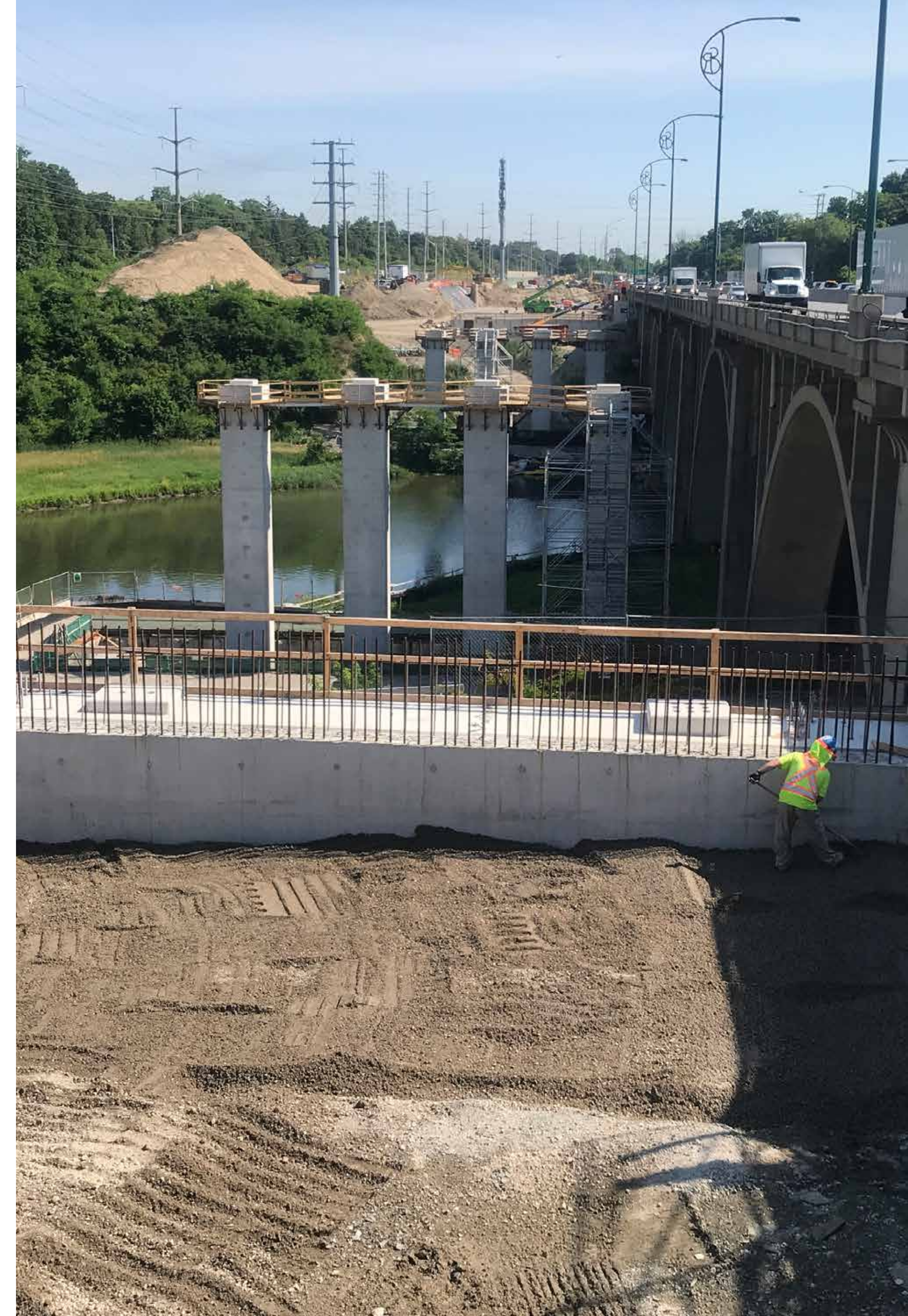
Project value: \$313.8 M CAD

Dates: 2020-2025

Services:

- Electrical
- Traffic engineering (data collection)
- Highway and bridge design (topo/utilities/hydro)
- Drainage and hydrology
- Geotechnical and paving
- Hydrogeology
- Environmental and landscape
- Sub-consultant management

The QEW Credit River Bridge project features a new bridge north of the existing Credit River Bridge and QEW improvements for an ultimate eight lanes with median High Occupancy Vehicle lanes plus auxiliary lanes. The project includes improvements to and reconfiguration of the existing Mississauga Road interchange and ramps, and replacement of the Mississauga Road overpass to accommodate QEW mainline improvements related to new Credit River Bridge. Multi-use trails and multi-use paths, including active transportation structures crossing over the QEW will also be incorporated. As the lead designer, we are providing design services for electrical, traffic engineering (data collection), highway and bridge design (topo/utilities/hydro), drainage and hydrology, geotechnical and paving, hydrogeology, environmental and landscape, and overseeing sub-consultants design for the pedestrian bridge design, geotechnical and hydrogeology, and ATMS/ITS.



Stoney Transit CNG Transit Bus Facility

Lead Design

Location: Calgary, Alberta, Canada

Owner: City of Calgary

Client: PCL (As part of Plenary Infrastructure Calgary LP)

Delivery model: Public-Private Partnership

Dates: 2016-2019

Services:

- Architecture
- Interiors
- Structural, Mechanical, Electrical, Civil, and Process Engineering services

This new 44,300-square-metre LEED Gold facility has 36 maintenance bays, two steam cleaning bays, on-site compressed natural gas (CNG) fueling infrastructure and associated staff facilities. Throughout the fleet's transition to CNG, it will continue to service diesel buses as well. Our professionals provided design services for all aspects of this award-winning building, designed to maximize interior sight lines and natural light while incorporating sustainable measures such as heat plates for exhaust air heat recovery, displacement ventilation and rainwater harvesting for vehicle wash facilities.

The storage area accommodates 424 buses plus an additional 70 vehicles in overflow areas. The maintenance area has 36 vehicle maintenance bays to accommodate a mix of 40-foot and 60-foot transit buses. The service area has three lanes with two fueling and service points in each bay feed to the storage area through a drive through bus wash.



East Rail Maintenance and Storage Facility

Owner Advisor

Location: Whitby, Ontario, Canada

Owner: Metrolinx / GO Transit

Client: Metrolinx / GO Transit

Delivery model: Design-Build-Finance-Maintain

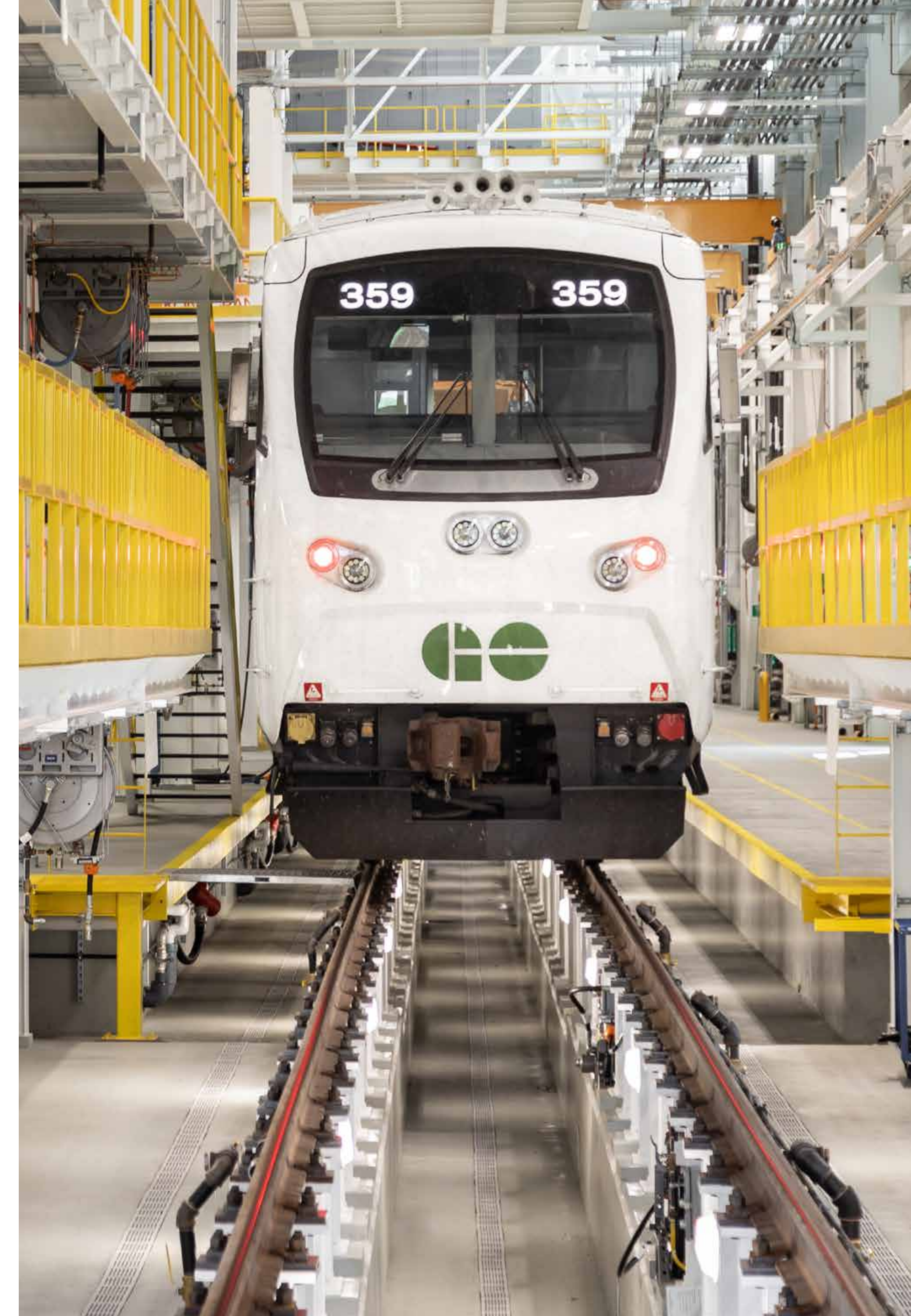
Dates: 2014-2019

Services:

- Management of Services
- Preliminary Design
- Output Specifications for DBFM Owner's Technical Advisor for DBFM

Our team was retained as Technical Advisor on the \$860-million Whitby Rail Maintenance and Storage Facility (WRMF) for GO Transit. This 92,903-square-metre facility services and stores 22 train consists and is used to maintain a portion of the overall locomotive and coach fleet. The WRMF facility, which opened in 2017, includes site development, a layover facility, train maintenance facility, crew centre, track maintenance facility and all supporting infrastructure.

Our first assignment was the Environmental Assessment (EA), followed by the detail design. When the work was 25% complete, Metrolinx and Infrastructure Ontario changed the delivery model from Design-Bid-Build to an Alternative Finance and Procurement contract. Our services included feasibility studies, the EA, public consultation, preliminary and detailed engineering, Project-Specific Output Specification and Reference Concept Design development, as well as providing procurement support and implementation phase services.



Confederation Line LRT

Technical Advisor

Location: Ottawa, Ontario, Canada

Owner: City of Ottawa

Client: City of Ottawa

Delivery model: Design-Build-Finance-Operate-Maintain

Project value: \$2.13 B CAD

Dates: 2010-2025

Services:

- Architecture and Design
- Environmental Services
- Planning and Consulting
- Program Management/Construction Management

Award:

- 2013 "Deal of the Year" from "Project Finance" Magazine
- 2013 CCPPP Gold Award for Innovation and Excellence
- 2014 "P3 Bulletin" Gold Award for Best Rail Project
- 2014 "P3 Bulletin" Silver Award for Best Trans. Project
- 2020 ACEC National Engineering Excellence Awards

The \$2.1-billion Confederation Line Light Rail Transit (LRT) was the crucial first step in Ottawa's Transportation Master Plan. As part of the Capital Transit Partners (CTP), we provided preliminary engineering on all project elements including tunneled, elevated and at-grade guideways, stations and a new maintenance and storage complex. We also provided detailed design, procurement support, project management and construction compliance services once the project had reached financial close.

Design services spanned tunnel design and included fire/life safety, rail systems, stations, maintenance and storage facilities, as well as environmental compliance and management services. Significant value engineering and scope refinements were undertaken to bring the estimated costs in line with the target budget. An innovation zone was also created for a challenging segment of the alignment to encourage bidders to develop creative design and construction ideas in their bids.

North End Water Pollution Control Centre

Owner's Advocate

Location: Winnipeg, Manitoba, Canada

Owner: City of Winnipeg

Client: City of Winnipeg

Delivery model: Design-Build

Dates: 2016-2019

Services:

- Feasibility studies
- Conceptual design
- Enhanced preliminary design
- Technical requirements
- Procurement support

Our team provided owner's advocate services for the North End Sewage Treatment Plant Upgrade to meet updated effluent nutrient limits for phosphorus and nitrogen and provide Class A biosolids. This upgrade included a new headworks facility, new biological nutrient removal facility, new secondary clarifiers, upgraded ultraviolet disinfection, and new solids treatment including thermal hydrolysis and phosphorus recovery. A new standby power generation facility and conversion of the distributed control system to a process control system were also included.

Market conditions for this project were not conducive to upgrading the entire plant under one contract so our team recommended the single upgrade project be portioned into smaller projects which better aligned with market conditions. We also hosted integration meetings to present approach and gather feedback on several topics such as health and safety, operations and on-going maintenance.



ION Stage 1 LRT

Design Lead and Engineer of Record

Location: Waterloo, Ontario, Canada

Owner: Region of Waterloo

Client: Kiewit

Delivery model: Design-Build

Project value: \$583 M CAD

Dates: 2013-2019

Services:

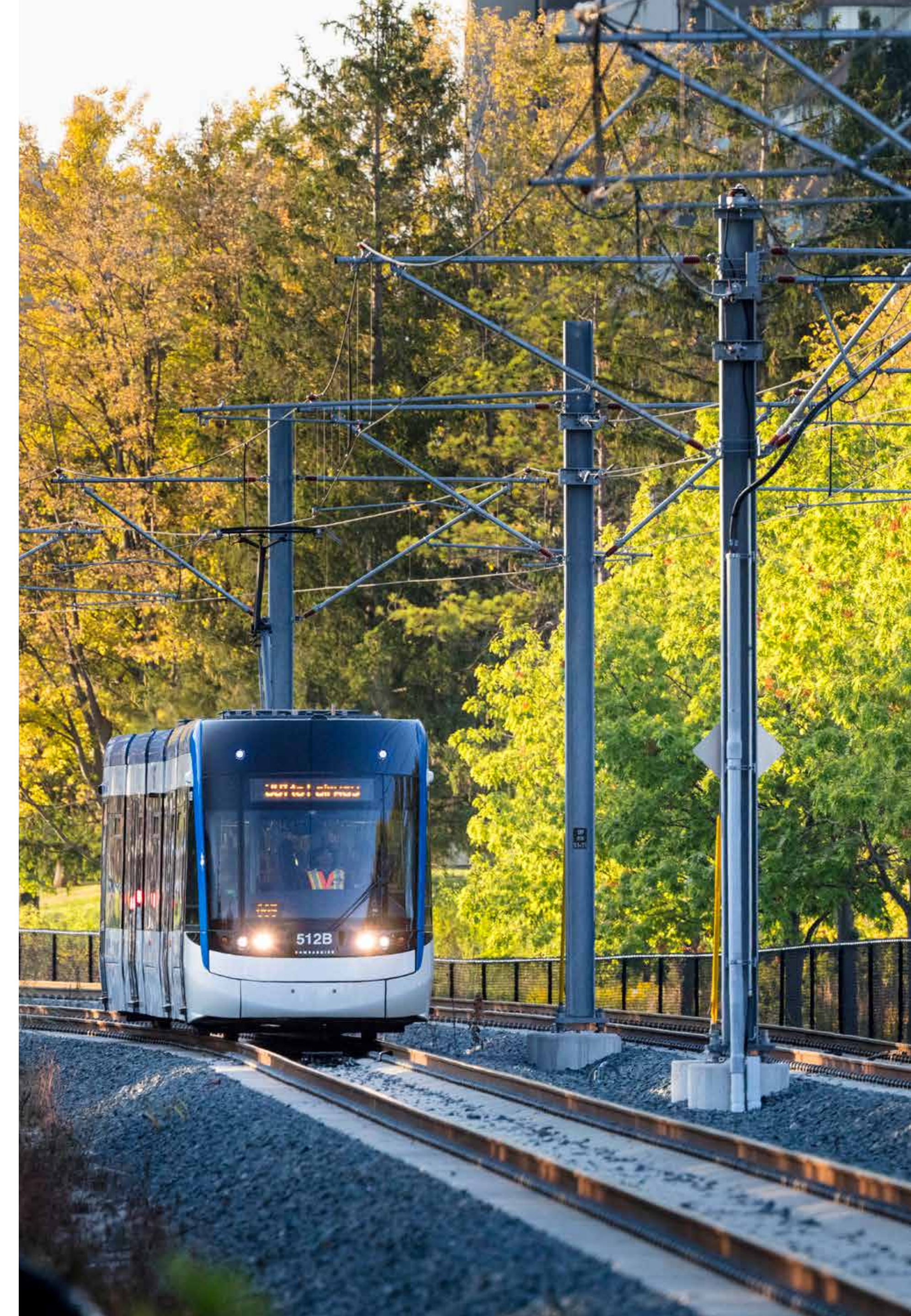
- Electrification
- Signalling
- Track work
- Grade separation
- Civil works
- Drainage and stormwater
- Utility protection and relocation
- Redevelopment/optimization of a hub station
- Testing and commissioning

Awards:

- IABC's Gold Quill Award of Excellence for Community Relations
- Award of Distinction, 2020, Ontario Consulting Engineering Awards (OCEA)
- 2014 North American P3 Deal of the Year – Infrastructure Journal Global (IJGlobal) Award

The ION Stage 1 Light Rail Transit (LRT), also known as the Waterloo LRT Project, encompasses the design of approximately 19 km of LRT, 19 stations, and a LEED Silver certified Operations, Maintenance and Storage Facility. The project is a mix of on-street, line-of-sight operation and off-street components on segregated right-of-way, sharing existing railway corridors.

AECOM was the Lead Designer and Engineer of Record. We managed a multidisciplinary team (track, roads and drainage, architectural, structural, mechanical, electrical, bridges, utilities, lighting, traction power, LRV integration, traffic signals and ITS, train control, communications, traffic modelling, urban design, LRV integration, environmental and geotechnical), as well as managing subconsultants providing specialty services. We managed the complexities of constructing a LRT corridor in an urban corridor containing an active freight rail line.



vivaNext Bus Rapid Transit (BRT) Expansion

Design Lead

Location: York Region, Ontario, Canada

Owner: York Region

Client: York Region

Delivery model: Design-Build

Project value: \$74 M CAD

Dates: 2006-ongoing

Services:

- Utility coordination and utility relocation
- Traffic and transit management
- Environmental management
- Schedule management and project controls
- Permitting and approval
- Stakeholder management

AECOM is the lead designer for a joint venture that is completing the vivaNext Bus Rapid Transit (BRT) expansion. This is part of the development of a York Region BRT system primarily in dedicated center-median transitways. The introduction of 90 kilometers of transitway and 85 stations is currently in various stages of development. AECOM is responsible for providing BRT and other technical expertise, overall project and program management, project direction, controls and administration, financial management, and detailed design services, including roadway design, structural design, and transit architectural services. Constructing this BRT in existing, operational corridors provided challenges including property constraints and traffic and transit management concerns. The project also included a significant Intelligent Transportation Systems scope in order to coordinate with the hundreds of existing signalled intersections not involved in the project.

Highway 427 Expansion

Technical Advisor and Owner's Engineer

Location: Toronto, Ontario, Canada

Owner: Infrastructure Ontario

Client: Infrastructure Ontario

Delivery model: Design-Build-Finance-Maintain

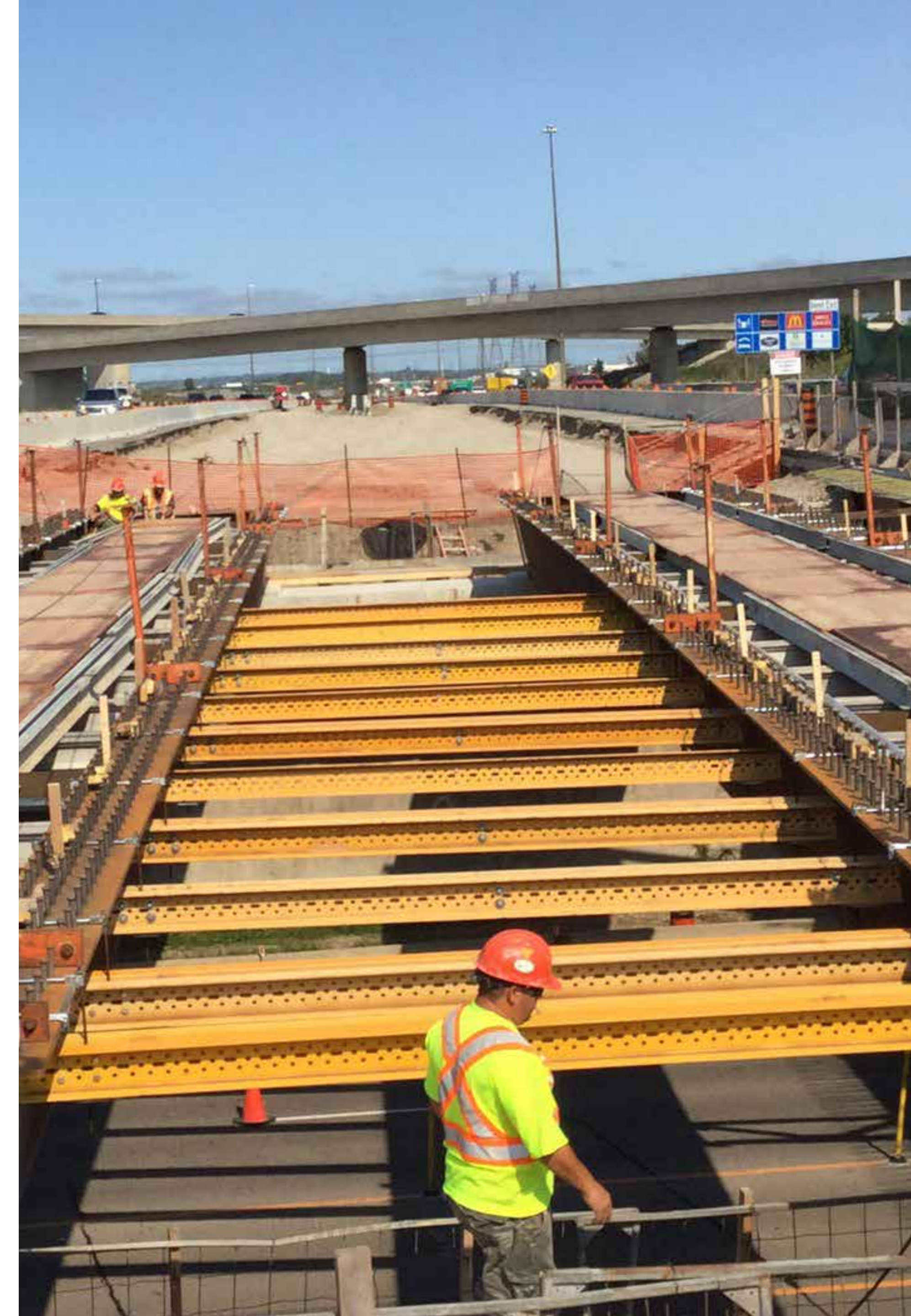
Project value: \$616 M CAD

Dates: 2015-2021

Services:

- Contract management
- Support during Planning and Procurement Phase
- Support during Construction and Commissioning
- Transition support to the Operations Phase

As part of a Joint Venture, we provided Technical Advisory services for the Highway 427 Expansion. This project includes a new 6.6-kilometre extension from Highway 7 to Major Mackenzie Drive and a 4-kilometre road widening from Finch Avenue to Highway 7. The expansion of Highway 427 involved various modifications of the existing infrastructure. This corridor serves the Canadian Pacific Railway Vaughan Intermodal Facility, international gateways via Toronto Pearson International Airport and Highway 407, 401, 409, QEW and downtown Toronto via the Gardiner Expressway. Our team's services commenced during planning and procurement and continued throughout design and construction. We provided RFP/ RFQ support, contract management, document control, design and construction submittal review and management, quality oversight and audit, environmental monitoring and reporting, site activity and schedule monitoring and reporting, and commissioning management.



Finch West LRT

Technical Advisor

Location: Toronto, Ontario, Canada

Owner: Metrolinx

Client: Metrolinx

Delivery model: Alternative Financing and Procurement

Project value: \$1.2 B CAD

Dates: 2013-2023

Services:

- Rail Systems, train control and telecommunications
- Architecture and Civil Design
- Environmental Assessment Services
- Planning and Consulting
- Program Management/Construction Management

Award: Silver for Project Financing in CCPPP's 2018 National Awards for Innovation and Excellence in P3s

The \$1.2 B Finch West Light Rail Transit (LRT) is part of Metrolinx's rapid transit projects infrastructure investment across the Greater Toronto and Hamilton Area. The new LRT line is approximately 11.17-kilometres with 17 surface stops, one below grade station, and one underground station. The line will also have LRT maintenance and storage facilities.

We are leading the Technical Advisory Services team in an Alternative Financing and Procurement approach through design and construction. This includes development of the Reference Concept Design, Project-Specific Output Specification, as well as supported the RFP/PA schedules. Our team will also provide various procurement services during the In-Market period. We provided modelling, rail systems work, guideway development, station design, architectural, structural, mechanical and electrical engineering, cost estimating, environmental assessment, stakeholder engagement, utility services, geo-environmental engineering, surveys, and maintenance and storage facility design.



Disco Road Source Separated Organics Facility

DBFOM Team Lead

Location: Toronto, Ontario, Canada

Owner: City of Toronto Solid Waste Management Services

Client: City of Toronto Solid Waste Management Services

Delivery model: Design-Build-Finance-Operate-Maintain

Dates: 2010-2014

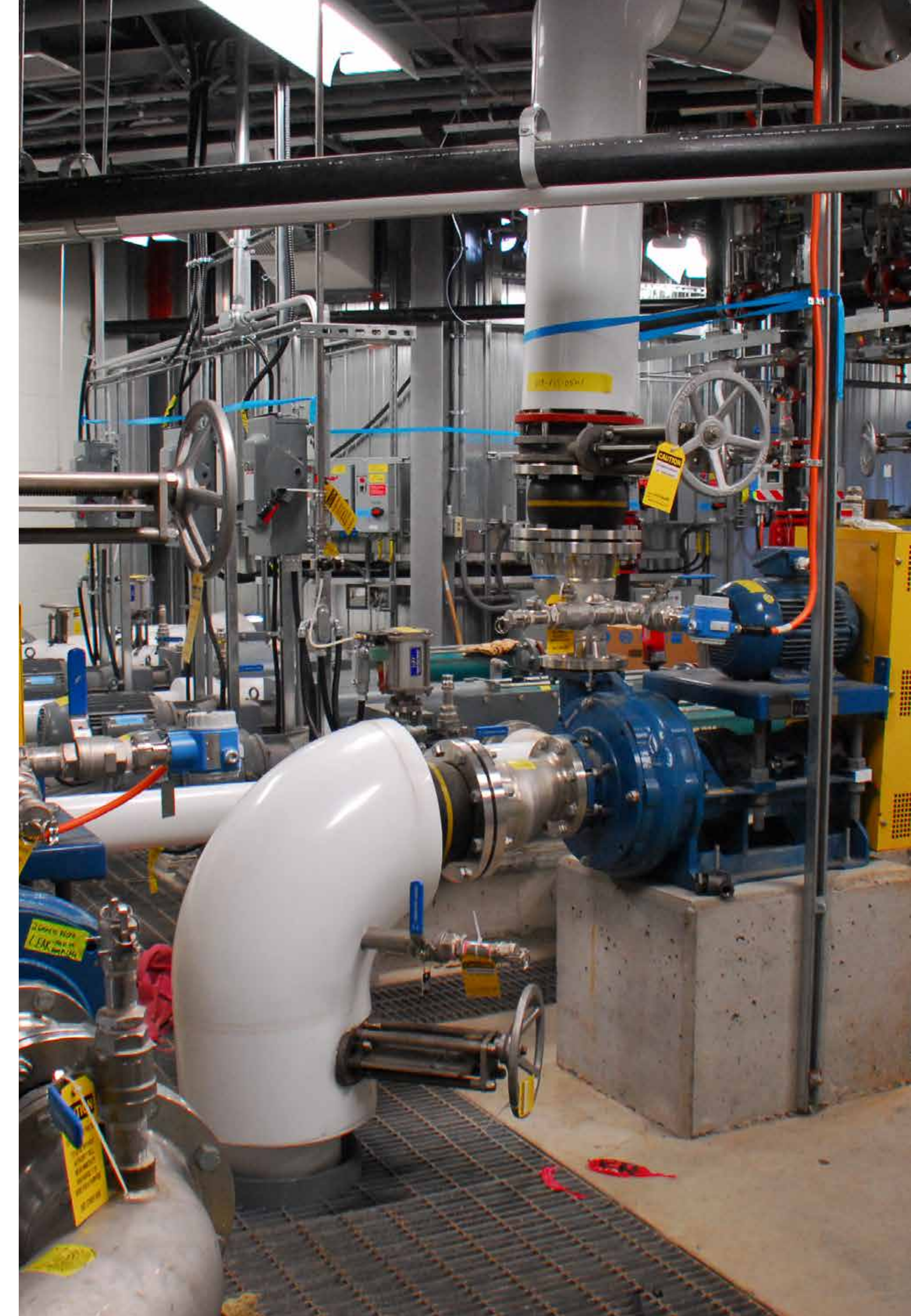
Services:

- Cost estimating
- Project Management and Construction Management
- Architecture
- Process optimization
- Structural, Mechanical, Civil and Process Engineering
- Start-up and commissioning

We were retained by the City of Toronto to provide a new, highly complex, process facility to collect source separated organics (SSO) waste and separate, treat, and harvest the organic material for beneficial reuse. The facility was the first of its kind in North America.

Delivered as an AECOM-led DBFOM, the SSO facility was constructed complete with truck offloading, SSO processing facility, new administration building and on-site lab, and associated auxiliary process areas. Toronto started its Green Bin program for Source Separation of Organic waste in 2002 and today the program covers single family dwellings and multi-family dwellings including apartments and high-rise condo buildings.

Being the first full-scale plant in North America to use anaerobic digestion technology for processing SSO waste, this project delivers significant environmental benefits, including reduced methane gas emissions and energy recovery. The facility's central location not only minimizes trucking kilometres, the bio-gas generated at the plant will be used to power the City's garbage collection vehicles.



Union Pearson Express Air Rail Link

Design Lead and Engineer of Record

Location: Toronto, Ontario, Canada

Owner: Metrolinx

Client: AirLINX Transit Partners

Delivery model: Design-Build-Finance

Project value: \$139 M CAD

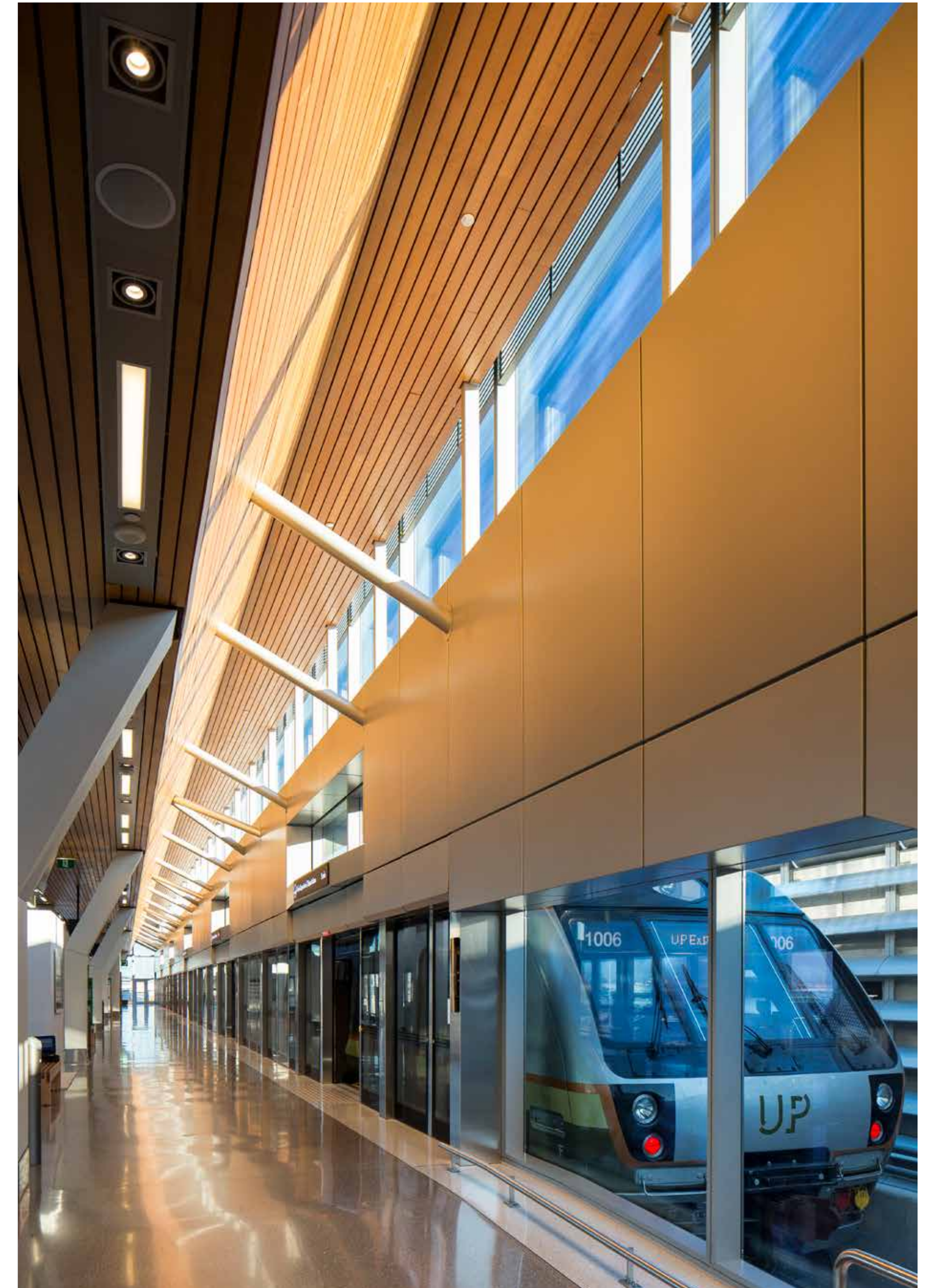
Dates: 2011-2016

Services:

- Design architect
- Architect of Record
- Mechanical, electrical and structural engineering

As a member of a joint venture team, we were the lead engineer/designer for the airport rail link spur connecting GO Transit's Georgetown South Corridor to the Toronto Pearson International Airport. Our team was responsible for 100% design, including design alternative decisions and the utility relocation plan, as well as providing quality assurance during construction. We provided full design services, including architecture, engineering (structural, mechanical and electrical), and landscape architecture.

The UP Express spur alignment is elevated on a guideway for its entire 3-kilometre length and connects to the Terminal 1 Station in-line with the existing Automated People Mover. This is the first elevated guideway with direct fixation of a continuous welded rail in Ontario. The design challenges were outweighed by the increase in aesthetic appeal and functionality. The innovative solution yielded a cost savings of approximately \$100 million.



Northeast Anthony Henday Drive

Design Lead

Location: Edmonton, Alberta, Canada

Owner: Alberta Transportation

Client: Capital City Link General Partnership

Delivery model: Design-Build-Finance-Operate

Project value: \$1.8 B CAD

Dates: 2011-2016

Services:

- Project management (design team)
- Roads
- Bridges
- Drainage
- Landscape architecture
- Public communications

Awards:

- 2013 Silver Award for Project Financing
 - Canadian Council for Public-Private Partnerships (CCPPP) awards for Innovation and Excellence
- Consulting Engineers of Alberta, 2017 Award of Excellence for Transportation infrastructure - roads, interchanges, airports, mass transit and ports category

"The successful commercial and financial close of the Northeast Anthony Henday Drive project is the largest single contract entered into by Alberta Transportation, as represented by the Minister of Transportation and Infrastructure. The contract valued at \$1.81 billion (2012 dollars) provided a value for money of \$370 million (17%) compared to the Province's cost estimate to perform the work traditionally. In the wake of the 2008 financial crisis, the Province views this project as one of the most successful P3 procurements to date, showing very positive value for money." -Tom Loo, P.Eng., Executive Director, Alberta Transportation

We were the lead design firm for the Northeast Anthony Henday project that is the final leg of the ring road around Edmonton. It consists of 18 km of reconstructed six-lane and eight-lane divided freeway, 9 km of new green field six-lane and eight-lane divided freeway, 9 service interchanges, 7 grade separations and a twin river bridge structure. There are over 189 lane kilometers of new roadway.

Utility work was a significant component of the work, with hundreds of utilities to protect and relocate. Coordination of the stormwater management system design with the roadway and environmental aspects of the project was key to the project success. The stormwater management system for the project was a significant challenge, and required detailed stormwater modeling, construction of over 15 storm water ponds with inlet ditching, outfalls and related piping.



Regional Connector Transit Corridor

Planning and Engineering Services

Location: Los Angeles, California, United States

Owner: Los Angeles County-Metropolitan Transportation Authority (MTA)

Client: The Connector Partnership - Joint Venture

Delivery model: Design-Build

Project value: \$1.2 B USD

Dates: 2010-2022

Services:

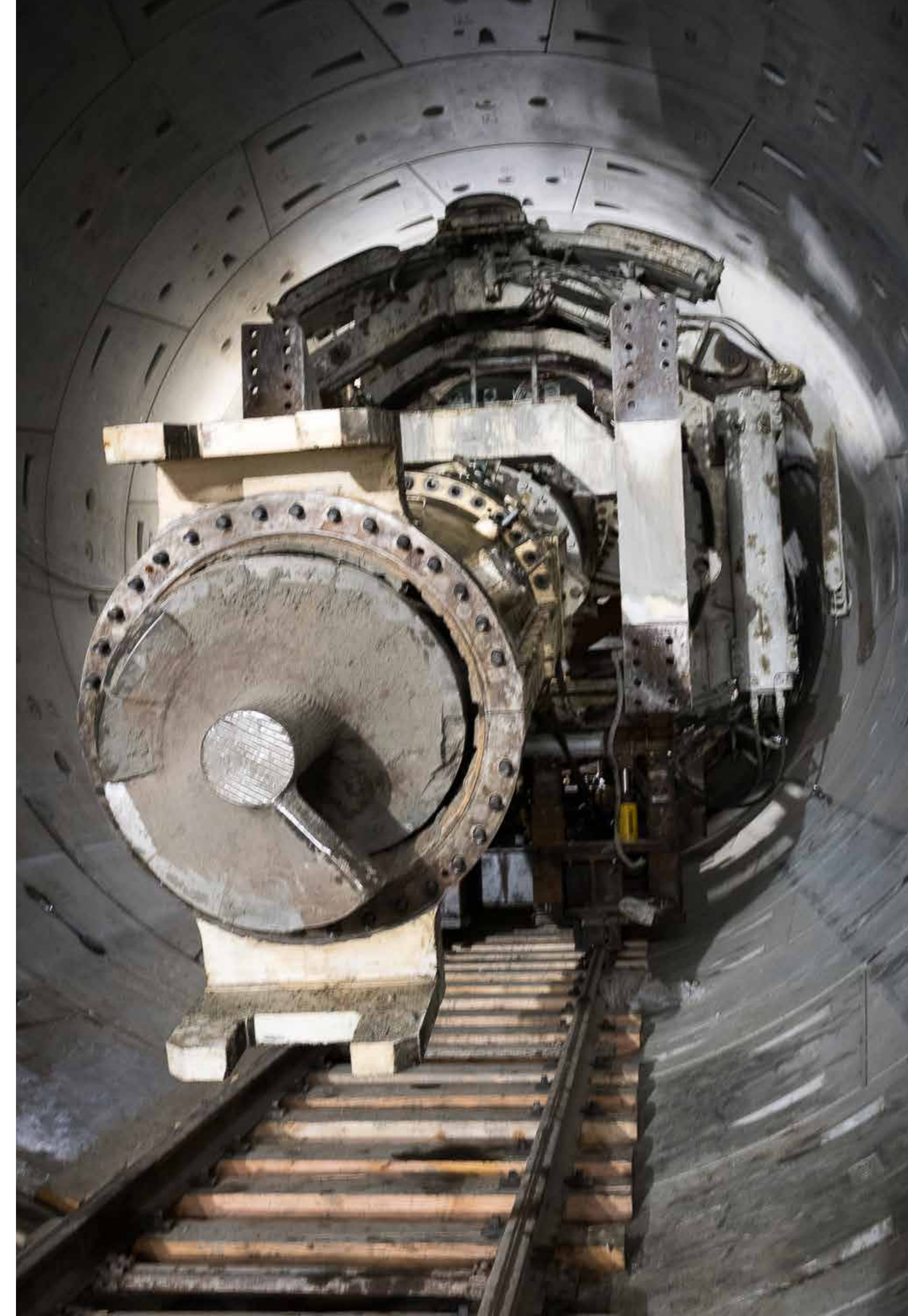
- Architecture and Design
- Engineering
- Environmental Services
- Planning and Consulting
- Risk Management & Resilience

Awards:

- 2020 UCA of SME Project of the Year, Society for Mining, Metallurgy, and Exploration
- ITA Tunneling Awards 2019, ITA Project of the Year Between €50M and €500M, Presented by the International Tunneling and Underground Space Association
- 2014 National Environmental Excellence Award - Public Involvement/Partnership, National Association of Environmental Professionals

Our team, in joint venture, is providing planning and engineering services for the Regional Connector Transit Corridor, a transit link that will connect three light rail transit (LRT) systems in downtown Los Angeles. The project includes a 1.9-mile underground light-rail system with three new stations. This complex tunneling project navigates an extremely tight urban corridor filled with major buildings like the Disney Concert Hall and also crosses a fault line.

We provided advanced conceptual engineering and preliminary engineering, including preparation of technical documents and development of contract documentation. Our team designed solutions to critical issues including improving passenger flow, and adjusting the tunnel alignment to minimize construction impacts. This included developing solutions for traffic, noise mitigation and visual impacts. We are currently providing design services during construction. Future options in the contract include rail activation support.



Second Avenue Subway

Engineering and Design

Location: New York City, New York, United States

Owner: Metropolitan Transportation Authority

Client: DMJM+Harris Arup, a Joint Venture

Delivery model: Design -Build

Project value: All 4 phases: \$17 B USD, Phase 1: \$4.5 B USD

Dates: 2001-2017 (Phase 1)

Services:

- Conceptual/preliminary engineering
- Final engineering
- Architecture
- Construction services

Awards:

- ACEC Engineering Excellence Awards National Grand Award, 2018
- ACEC NY Chapter Empire Award, 2018
- ACEC NY Chapter Diamond Award, Transportation, 2018

- ACEC NJ Chapter Honor Award, Large Project, 2018
- ASCE Outstanding Civil Engineering Achievement Award, 2018
- ASCE Metro Section Construction Achievement Project of the Year, 2017
- Engineering News-Record Best of the Best Airport/Transit Project, 2017
- Engineering News-Record NY Region Project of the Year, 2017
- Engineering News-Record NY Region Best Airport/Transit Project, 2017
- British Const. Industry Awards International Project of the Year Finalist, 2017
- International Tunneling Association Major Project of the Year, Highly Recommended, 2016
- NY/NJ Concrete Industry Board Corbetta Awards Annual Award Winner, 2013
- U.S. Environmental Protection Agency Green Building Design Award, 2004

"AECOM provides NYCT the skill sets that not only address all technical aspects of the project, but also support the external interface and coordination with stakeholders and agencies that are so critical to completing the EIS, obtaining a Record-of-Decision and advancing the project." – Joseph Siano, PE, Vice President – New York City Transit.

As part of a joint venture, we provided engineering and design on the Second Avenue Subway, including conceptual design and preliminary engineering work for all four phases, as well as final design for Phase 1. The line runs underground for its entire 8.5 mile length. Phase 1 included three new stations and the rehabilitation and expansion of a fourth station.

Our team designed the 24-foot-diameter, 100-foot deep tunnel. Our alignment and station alternatives met project objectives while minimizing potential environmental, social and operational impacts. We have provided innovative solutions to a variety of project aspects including financial/contracting strategies, reduction of impacts, station design, station control areas, sustainable design strategies, utilities, tunneling, mined stations, community involvement and outreach, constructability, security and safety.

METRO Green Line

Design and Construction Services

Location: Minneapolis-St. Paul, Minnesota, United States

Owner: Metropolitan Council

Client: Metropolitan Council

Delivery model: Design-Build

Project value: \$1.86 B USD

Dates: 2012-2025 Design complete, under construction

Services:

- Prime Consultant
- Vehicle consultant responsible for preliminary engineering, final engineering and construction services
- Transit engineering and track
- Civil engineering
- Structural engineering
- Traffic engineering
- Systems
- Utility
- Drainage
- Landscaping
- Stakeholder engagement

The \$1.86-billion METRO Green Line Extension will link downtown Minneapolis and St. Paul, improving connectivity for area residents, reducing traffic congestion and providing better access to employment opportunities. We are the prime consultant for the 9.2-km double track LRT extension that includes 15 new stations, one deferred station, 35 structures (freight rail, light rail, roadway and pedestrian structure), two LRT tunnels (0.6-mile length) and an O&M facility for 47 new LRVs.

We provided design and construction services, including running conducting extensive traffic modeling. Our structural team designed solutions to rehabilitate the Washington Avenue Bridge to accommodate light rail. We engaged with stakeholders early to address different priorities, evaluate routes, corridor constraints, and cost. Working closely with stakeholders, we developed innovative designs that created development opportunities and saved money.

Hudson-Bergen Light Rail Transit System

Joint Venture Lead Partner

Location: Hudson County, New Jersey, United States

Owner: New Jersey Transit

Client: New Jersey Transit

Delivery model: Design-Build-Operate-Maintain

Project value: \$2.25 Billion USD

Dates: 1996-2020

Services:

- Stakeholder coordination and consultation
- Development of financing plan
- Engineering, design and procurement
- Procurement for over 100 contract packages
- Managing subcontractors
- Civil and architectural work on LRT stations
- Rail systems
- Systems integration, start-up, and commissioning.
- Operations and Maintenance under a 20-year contract

Awards:

- 2012 – OSHA VPP Star Site.
- 2006 – New York Construction Project Award – Best of 2006 in Mass Transit
- 2006 – ASCE (American Society of Civil Engineering) – New Jersey Section – Project of the Year Award
- 2003 – New Jersey Society of Professional Engineers’ Award for Outstanding Achievement.
- 2003 – Quality Merit Award for outstanding achievement in transportation construction.
- 2002 – Globe Award Honoring U.S. Transportation Construction Industry Excellence in Environmental Protection and Mitigation.
- 2000 – Innovation Award from the American Public Transportation Association (APTA).

The Hudson-Bergen Light Rail (HBLR) transit system consists of 15.9 miles of track and 24 stations serving seven cities in Hudson County. It is the largest public works program in New Jersey history as well as the first and largest completed DBOM transit project in the United States. The alignment is built on private rights-of-way, city streets, and elevated structures in a tightly constrained corridor.

As the JV-lead partner, we provided engineering, design, and construction services for the track, rehabilitation of an existing tunnel, passenger stations, park and ride facilities, light rail vehicles, a maintenance complex, tunnel safety systems, and bridges and elevated structures. Key challenges were procurement, materials storage, working in constrained sites, environmentally sensitive areas, coordination with active rail lines, traffic management and utility relocation.



Metro Orange Line San Fernando Valley Bus Rapid Transit

Design Lead

Location: Los Angeles, California, United States

Owner: Los Angeles County Metropolitan Transit Authority

Client: Los Angeles County Metropolitan Transit Authority

Delivery model: Design-Build

Project value: \$349 M USD

Dates: 2002-2005

Services:

- Preliminary Alignment Design Plan
- Profile and Section Design
- Preliminary Drainage Design
- Preliminary Design of Utility Relocations
- Geotechnical and Hazardous Waste Investigation Report
- Project Cost Estimates
- Bus Rapid Transit Design Criteria Development
- Technical and Performance Specifications
- Final Design of Los Angeles River Bridge

As lead designer, we completed the 14-mile, US\$349 million Orange Line BRT system and developed the public information plan for the Los Angeles County Metropolitan Transit Authority. This design-build contract included a dedicated corridor consisting of two lanes, 14 stations, 34 street crossings and six park-and-ride facilities. This dedicated roadway has reduced traffic congestion and bus travel time by approximately 30 minutes, including stops. The project is the first of its kind in southern California and represents an innovative solution whereby transit buses operate on mostly exclusive guideways unimpeded by surrounding traffic.



Euclid Avenue HealthLine

Conceptual Design and Engineering Services

Location: Cleveland, Ohio, United States

Owner: Greater Cleveland Regional Transit Authority

Client: Greater Cleveland Regional Transit Authority

Delivery model: Design-Build

Project value: \$250 M USD

Dates: 2013-2015

Services:

- Project management
- Transportation planning
- Conceptual engineering
- Environmental services
- Environmental clearance
- Construction phase assistance

Our team provided conceptual design and engineering services for the Greater Cleveland Regional Transit Authority's (RTA) US\$250 million HealthLine BRT along the Euclid Avenue Corridor. We also assisted with obtaining FTA approval for environmental clearance and provided construction phase assistance to RTA. Improvements consisted of a busway down the center of Euclid Avenue, bus transit zones with BAT lanes for distribution downtown, improvements to two garages and two new transit centers. Landscaped medians and sidewalk streetscape designs improved the physical appearance of the corridor and the overall image of transit as well. Special low-floored buses were employed to reduce pollution and noise, facilitate faster boarding, and to provide a distinctive, easily identifiable appearance.



Bank Station Capacity Upgrade

Design Lead

Location: London, England, United Kingdom

Owner: Transport for London

Client: Dragados

Delivery model: Design-Build (Innovative Contractor Engagement)

Project value: £600 M (\$782.2 M USD)

Dates: 2012-2022

Services:

- Project management
- Design management and assurance
- Civil, structural, geotechnical, mechanical and electrical engineering
- Tunnelling
- Pedestrian flow modelling
- Planning
- Environmental services

We are the lead design consultant for the major Bank underground station capacity upgrade project, one of London's most complex infrastructure schemes. The major upgrade will greatly improve passenger access, circulation and interchange in one of the largest and most complex underground railway stations in the world.

Our team is delivering a wide range of multidisciplinary services, including project management; design management and assurance; civil, structural, geotechnical, mechanical and electrical engineering; tunnelling; pedestrian flow modelling; and planning and environmental services. AECOM's designs will include a new Northern line southbound-running tunnel that will create more platform space, interchange tunnels and an additional station entrance. Tunnelling will take place under iconic landmarks such as the Bank of England and Mansion House. The station will remain operational throughout the construction.



BANK

City Rail Link

Detailed Design and Construction Phase Services

Location: Auckland, New Zealand

Owner: City Rail Link

Client: City Rail Link

Delivery model: Alliance Delivery Model

Project value: \$3.9 B NZD

Dates: 2019-2024

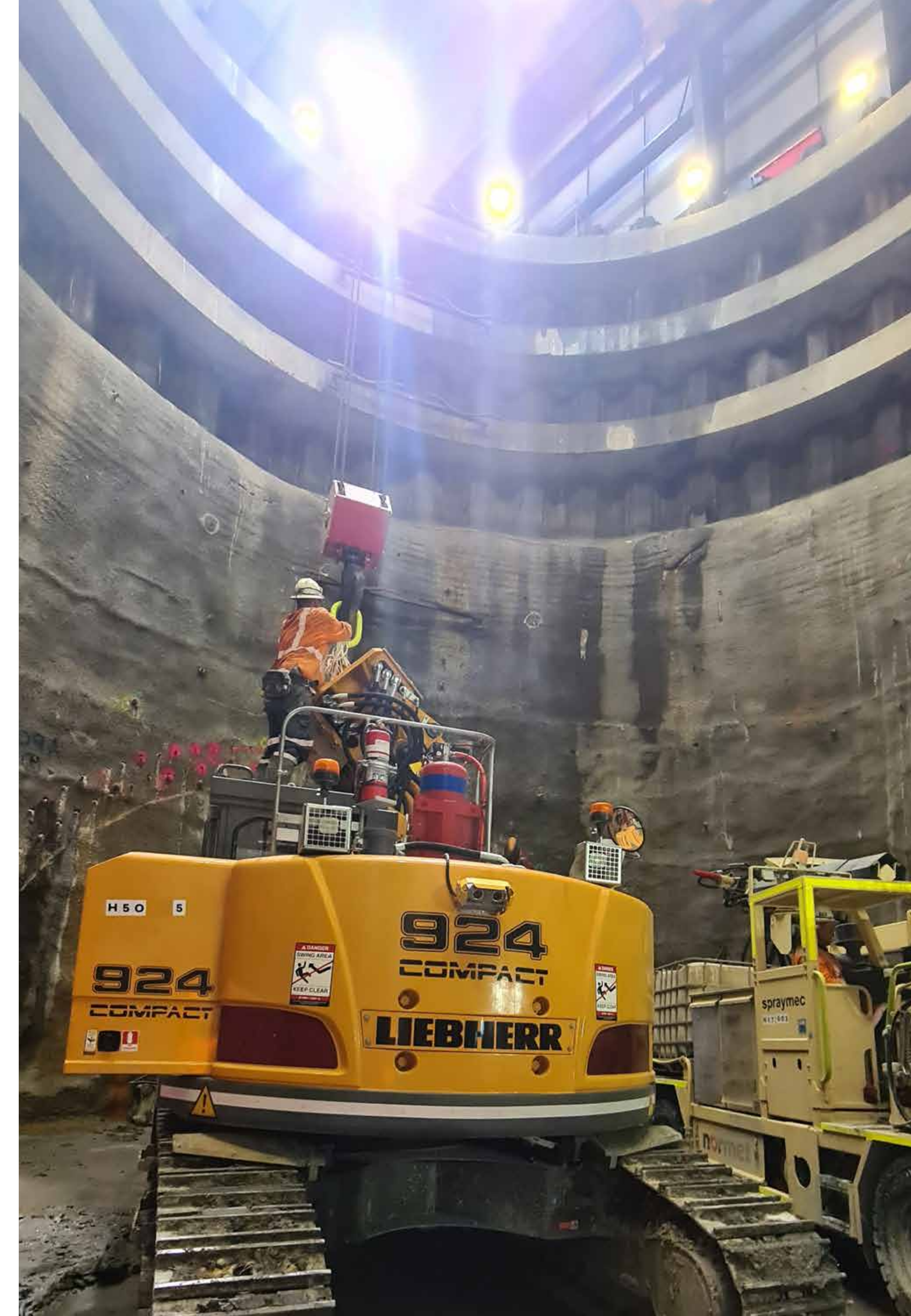
Services:

- Detailed design for all disciplines
- Permits and approvals
- Traffic management
- Construction phase services

Awards:

- 2019 World Architecture Festival WAFx, for cultural identity, most significant infrastructure project in Aotearoa, NZ
- 2018 Sustainable Business Network's Supreme Award, NZI Transforming New Zealand Award
- Large Energy User Initiative of the Year, Deloitte Energy Excellence Awards 2018
- Autodesk International AEC Award for Large Infrastructure Projects for delivery of design using BIM systems

The City Rail Link project extends an existing subway including a new 3.4-km tunnel below Auckland's city centre, two new underground stations, and a redesigned terminal station. It is delivered under an Alliance contract which is a collaborative model based on target price with pain share / gain share, no blame culture, and KPIs based on Key Results Areas. AECOM services include detailed design for all disciplines, permits, and approvals, traffic management and construction phase services. Building Information Modelling (BIM) enabled the team to collect, visualize and analyze constraints to minimize disruptions. Design improvements generated through Value Engineering resulted in significant time and cost savings. The digital engineering team is using a common data environment so over 200 project designers and engineers can work in a single online location using the latest updated designs.



Metro Tunnel – Rail Infrastructure Alliance

Design Lead

Rail Projects Victoria is currently delivering the \$11B Metro Tunnel project to ease congestion in Melbourne's City Loop, by taking the busiest train lines through a new tunnel under the city. We are the lead designer for the Rail Infrastructure Alliance which is delivering key works at the eastern and western entrances of the tunnel. We are providing a design that meets the timeframe, integration, connectivity and maintenance requirements. Our team designed the cut-and-cover tunnels and provided urban design that incorporates improved shared use paths, greater connectivity and increased and regenerated open spaces. The cost effective and practical design solutions were developed 'from first principles' to suit the brownfield environment. We're delivering the project digitally through the development of a 3D model that provides a 360° visualisation tool.

Location: Melbourne, Victoria, Australia

Owner: Rail Projects Victoria

Client: Rail Projects Victoria

Delivery model: Alliance

Project value: \$11 B AUD

Dates: 2018-2025

Services:

- Detailed Design
- Tunnelling
- Urban Design
- Digital Engineering

About AECOM

AECOM is the world's trusted infrastructure consulting firm, delivering professional services throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. On projects spanning transportation, buildings, water, new energy and the environment, our public- and private-sector clients trust us to solve their most complex challenges. Our teams are driven by a common purpose to deliver a better world through our unrivaled technical and digital expertise, a culture of equity, diversity and inclusion, and a commitment to environmental, social and governance priorities. AECOM is a *Fortune 500* firm and its Professional Services business had revenue of US\$13.1 billion in fiscal year 2022. See how we are delivering sustainable legacies for generations to come at aecom.com and [@AECOM](https://twitter.com/AECOM).