



Annacis Island Wastewater Treatment Plant – Cogeneration Backup Power System

FEATURE PROJECT

Project Requirements

Located in Delta, British Columbia, the Annacis Island Wastewater Treatment Plant treats approximately 175 billion litres of wastewater each year for over 1 million residents in 14 municipalities.

The existing Cogeneration Backup Power System is approximately 20 years old. This upgrade is part of the Stage V plant-wide expansion. The Cogeneration system is essential to the facility as it provides some of the power and heating required to run the plant.

The scope of this upgrade contract includes:

- Relocation of existing underground services
- 47 jet grout columns to 10 m deep for ground densification
- Four owner-supplied Cogeneration units, and two Standby Diesel Generators, and concrete foundations for SDGs
- 85,000 L diesel fuel storage tank
- Two owner-supplied arc resistant 12.47 kV Switchgears, two 600 VAC Uninterruptible Power Supply, and four 600 VAC Motor Control Center
- Upgraded mechanical system including four new Air Handling Units and five exhaust fans
- New mechanical piping, 29 new centrifugal, HVAC pumps, and two 1,000 kW Adsorption Chillers

- Modifications to building power and lighting

Work also includes the testing and commissioning of all constructed facilities. Integrating the Cogeneration system with the existing plant requires thorough planning and coordination with the Engineers, plant operators, and subtrades to achieve a successful handover to the Owner.

This project is very important for Metro Vancouver and its sustainability principles. Electricity and heat generation are drawn from plant byproducts via a Cogeneration system. In this way Annacis Island Wastewater Treatment Plant reduces its greenhouse gas emissions and function in an environmentally-friendly and cost-effective manner, while the Standby Diesel Generators offer a source of reliable standby power to meet its regulatory requirements," said Zeno Farinelli, Senior Project Engineer, Project Delivery for Metro Vancouver. "After a few years of planning and design, I am looking forward to a successful completion of this project.

Construction began in November 2017 and is scheduled to be substantially completed by June 2019.

Roles & Responsibilities

Owner: The Greater Vancouver Sewerage and Drainage District
Primary Consultant: ABV Consultants (AMEC/Black & Veatch Canada Inc.)
Excavation, Site Services, Yard Piping, Formwork & Concrete Finishing: Gravity Construction Inc.
Demolition: Amec Cutting & Coring Ltd.
Reinforcing Steel: Harris Rebar, a division of Harris Steel ULC
Electrical: Status Electrical Corporation
Mechanical: Aarc-West Mechanical Insulation (2013) Inc.
Structural Steel & Metals: Westeel Fabrication Ltd.
Concrete Supply: Lafarge Canada Inc.
Curtain Wall & Glazing: Semiahmoo Glass Ltd.
HVAC: Crosstown Metal Industries Ltd.
Roofing System: Raven Roofing Ltd.
Landscaping: Westwood Landscapes Inc.

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Annacis Island Wastewater Treatment Plant – Cogeneration Backup Power System

FEATURE PROJECT

Project Scope

Contract Services: Stipulated Lump Sum

Concrete: 1,025 m³

Formwork: 490 m²

Steel: 120,000 lbs.

Design Features:

- Cogen Units sized to consume all the available digester gas produced at the plant.
- Four new CAT Generators (Cogen Units); each producing up to 2.0 MW of electricity power output. The generators will be connected to a Waste Heat Recovery System which will be used to supplement the facility heat and HVAC needs. Approximately 2.6 MW of high quality thermal heat can be recovered per cogeneration unit.
- Adsorption Chillers will operate off the waste heat recovered from the cogeneration system to produce chilled water for process and HVAC cooling in the summer months. These

chillers are essentially maintenance free as they contain no moving parts inside the hermetically sealed portion of the chiller.

- Cogeneration Heat Recovery System will transfer heat via a 50/50 mixture of water and ethylene glycol.

Key Challenges:

- Working in an operational plant with minimal interruption to plant operations.
- Strict allowable settlement and vibration limits for structures and adjacent soil during jet grout column installation.
- Tie-ins and coordination with existing systems; there are 111 tie-in points.
- Commissioning cannot be done during peak disinfection season from late April to late November.
- Coordination and installation of owner supplied equipment.

Team Kenaidan

Project Director: Derek Steinke

Project Manager: Bob Adedayo

Site Supervisor: Lee Evans

Mechanical Project Manager:

James Parco

Mechanical Foreman: David Lucyk

Project Engineer:

Mohammad Kamyabnejad

Estimators: James Smith, Steve Burt

Health & Safety Advisor:

Samuel Livingstone

Building Information Modeling

(BIM) Support: Dorin Nita

Project Administrator: Margarita Cardona

Preconstruction Manager: Alan Pringle

Preconstruction Administrator:

Yolanda Banks

Project Scheduler: Hanna Yacoub

Kenaidan Wins Silver at Canada's Safest Employers Awards!

SPECIAL ANNOUNCEMENT



Kenaidan is extremely pleased and honoured to be recognized again as one of Canada's Safest Employers. The silver award, in the Building and Construction category, was presented to Kenaidan at the Canada's Safest Employers Awards Gala held on October 18th in Toronto.

Kenaidan is committed to ensuring that practical and effective measures are in place to protect the health and safety of all workplace parties. Our policy and program promotes the active participation of our organization, from senior management to each and every worker. This achievement reflects the dedication and commitment by Team Kenaidan to create and maintain a strong health and safety culture.

Launched in 2011, Canada's Safest Employers awards recognize companies from across Canada with outstanding accomplishments in promoting the health and safety of their workers. Companies are judged on a wide range of occupational health and safety elements, including employee training, OHS management systems, incident investigation, emergency preparedness, and innovative health and safety initiatives.

Recently Awarded

Gate 193 Expansion – WP3A Arrivals Corridor South, Toronto Pearson Airport, GTAA

CDF Improvements & Glycol Storage Tank, Toronto Pearson Airport, GTAA

T1 Gating Modification, Toronto Pearson Airport, GTAA

Newcastle UV Disinfection System Upgrades, Durham Region

Annacis Island WWTP New Outfall Site Preparation, Metro Vancouver

Bramalea GO Station and Parking Structure – Design Build

FEATURE PROJECT

Project Requirements

This Kenaidan led design build project will transform the existing Bramalea GO station into a modern mobility hub, providing much-needed connectivity to different modes of transportation and improved service for the surrounding Brampton community.

The scope of work includes a parking structure, expanded train platform to accommodate 12-car trains, and a new, fully-accessible station building with an improved and more convenient layout for patrons. The new station building will be larger and include amenities, such as elevators, washrooms, tickets counters, and waiting areas. It is designed and constructed to achieve LEED Gold certification.

A separate temporary off-set lot, with 716 spaces, is under construction to accommodate parking for Metrolinx patrons during the various stages of the construction in the main site limits.

The garage superstructure will be a six-level, pre-cast concrete structure offering a total of 2,022 parking spaces, and will be integrated with the new station building. Kenaidan will be self-performing the concrete and formwork, as well as all mechanical installations for the project.

Surface lot reconstruction will provide bus canopies and associated bus unloading/loading zones to accommodate more GO Transit buses, a separate bus loop for Zum/Brampton Transit, a new Kiss n' Ride drop-off lane, and improved station accessibility for bikes and pedestrians. Bramalea Road will receive a new signalized intersection and an additional driveway, south of the existing driveway to improve station bus access.

Work has begun on the side platform improvements and extension of the island platform to accommodate 12-car trains, a snow-melt system, platform canopies, and heated shelters.

The west pedestrian tunnel, under Tracks 1 & 2, was installed four hours ahead of schedule within a 48-hour shutdown window granted by CN and

Team Kenaidan

Project Director: David Murray
Project Manager: Ben Alves
Site Supervisor: Orlando Gutierrez
Assistant Site Supervisor: Jordon Sousa
Mechanical Project Manager: Donny DiZio
Assistant Project Manager: Jeff Mottashed
Site Foreman: Tom Butler
Team Leader Construction Surveyor: Claudiu Ban, Igor Melnik
Health & Safety Advisor: Arthur Musisi
Estimator: Steve Burt
Project Administrator: Sandra Piccini
Design Manager: Brian Jorge
Preconstruction Manager: Mark Nanfara
Preconstruction Administrator: Yolanda Banks



Metrolinx. CN freight and VIA commuter trains were diverted onto Track 3 in close proximity to the tunnel installation work zone.

The scope of the shutdown included managing the detailed design and approvals; forming, casting, waterproofing, and grounding the push-in-place tunnel; installing temporary shoring around the existing west tunnel/stair and new elevator/electrical rooms; bulk excavating tunnel launch and tunnel final location pits; relocating

utilities; removing platform curbs and asphalt; removing 90' of Tracks 1 & 2; jacking the tunnel in place; installing subdrains on both sides of the tunnel; backfilling tunnel excavation; and reinstating tracks including sub-ballast and ballast.

The new station and amenities are scheduled to be open in 2021. The facility will remain fully operational throughout the duration of the contract.

Roles & Responsibilities

Owner: Metrolinx
Owner's Consultant: 4Transit
Architect: IBI Group
Structural Consultant: Read Jones Christoffersen
Mechanical & Electrical Consultant: Smith + Andersen
Concrete & Formwork: Kenaidan Contracting Ltd.
Mechanical: Kenaidan Contracting Ltd.
Excavation & Backfilling: H&S Equipment
Concrete Supply: Allmix Concrete

Caisson Wall Shoring System & Platform Caissons; Early Works (Platform) Drilled Pier Work: Earthline Foundations and Shoring Ltd.
Reinforcing Steel: Gilbert Steel Limited
Parking Structure Precast: Armtec
Steel Grillage & Concrete Precast Tunnel Installation: Western Mechanical Electrical Millwright Services Ltd.
Electrical & Communication Systems: Montana Electrical Contractors Ltd.
Structural Steel: IBL Structural Steel Limited

Project Scope

Contract Services: Design Build

Self-Performing:

- Mechanical
- Concrete: 3,810 m³
- Formwork: 8,063 m²

Project Features:

- 6-level parking structure
- New station building
- Two tunnel extensions
- Bus loops and associated canopies/ bus bays
- Entrance and parking lot modifications

- Plaza, Kiss n' Ride, and site landscaping features
- Rehabilitation of side and island platforms
- Construction of temporary parking lot and walkway

Key Challenges:

- Maintaining operations of the facility throughout construction
- Ensuring 1,786 parking stalls are always available to the public
- Maintaining rail services (CN, GO, and VIA) at all times – all tracks must remain in service

Our Company, Our People

ROAMING PHOTOGRAPHER



Kenaidan Foremen FEATURE CREW

(L to R): Dave Lucyk, Ron Hamersma, Stanley Susz, Tony Correia, Manuel Goncalves, Bill Crawford, Jacek Schabowski, Luke Walsh, Tom Butler, Donnie Ferguson, Cory Rodgers, Chris Cormier, Norm Crawford, Marcel Gagnon.

Absent: Anthony Clarke, Byron Estrada, Chris Urbanik, Wayne Martin.

Kenaidan Welcomes

John Di Florio, Project Engineer
Ed Kooistra, Site Supervisor
Ivan Moro, Assistant Site Supervisor
Nikos Koulouris, Assistant Site Supervisor
Brendan McDonald, Site Supervisor
Jordan Sousa, Assistant Site Supervisor
Kamal Tawaf, Project Engineer
Greg Briskin, Site Supervisor
Nicholas Ellis, Assistant Site Supervisor
Rebecca Gerrish, Project Engineer
Belal Kalaji, Project Engineer
Mani Patchayappan, Geosturctural Engineer
Abdoul Youssouf, Project Engineer
Matthew Stevens, Mechanical Project Engineer
Ali Salehi, Project Engineer
Paul Hartley, Design Build Coordinator
Marwan Zahra, Project Engineer
Adam Osmond, Project Engineer
Brieanne Thoman, Project Engineer
Yousef Shaheen, Project Engineer
Hussam Shehada, Project Scheduler

Kenaidan Welcomes Back

Drew Allin, Project Engineer
Herman Reinders, Project Manager

Congratulations To

Patricia Pereira on her promotion to Director, Health and Safety
Zainab Heddokheel on her promotion to Assistant Site Supervisor
Mohammed Kamyabnejad on his promotion to Assistant Site Supervisor
Jeff Mottashed on his promotion to Assistant Project Manager
Alex Maini on his promotion to Assistant Project Manager
Ali Sohrabirenani on his promotion to Preconstruction Manager
Ian Smith on obtaining his Gold Seal Designation for Owner's Construction Manager
Orlando Gutierrez on obtaining his Gold Seal Designation for Site Supervisor
Valeriy Kukovskyy on obtaining his P.Eng Designation
Pat Parente on his promotion to Mechanical Supervisor
Rida Abdullah on her promotion to Assistant Site Supervisor

Corporate Donations

Kenaidan recently made donations to:

- Canadian Cancer Society
- Association for Workplace Tragedy Family Support – Threads of Life
- Kids up Front Foundation

Upcoming Events

Kenaidan Annual Holiday Party, December 13th, 2018

Contributing Editors: Bob Adedayo Ben Alves Jeff Mottashed Sandra Piccini Patricia Pereira Marisa Nardini Andrea Howson



Kenaidan's Mission Statement:

- To provide responsible, quality construction services utilizing superior innovation and expertise.
- To develop and maintain long-term relationships with satisfied clients and suppliers.
- To create a safe, challenging and enjoyable work environment where employees share in corporate growth and success.
- To build on a sound financial base where future development is promoted over short-term gain.



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