

North Shore Wastewater Treatment Plant Conveyance Project

FEATURE PROJECT



Project Requirements

The North Shore Wastewater Treatment Plant Conveyance Project, located in Vancouver, British Columbia, involves the design and construction of the new First Narrows Pump Station and related conveyance piping. The design-build contract was awarded to North Shore Conveyance Partners, a joint venture between Kenaidan Contracting Ltd. and Michels Canada.

Our contract provides pumping and conveyance of sewage to and from the new Lions Gate Wastewater Treatment Plant (LGWWTP) and the existing ocean outfall system. The new plant, which is currently under construction, will be situated west of the Lions Gate Bridge and services the North Shore municipalities of West Vancouver, the City of North Vancouver, the District of North Vancouver and Squamish Nation. Our project, and the new LGWWTP, will bring GVS&DD into compliance with the new federal

regulations with respect to wastewater treatment effluent requirements.

The new pump station, sized to pump 110 ML/day peak wet weather flow and 22 ML/day peak dry weather flow, collects sewage and pumps it to a tie-in point near the new treatment facility. The conveyance pipe network involves influent and effluent piping, ranging from 900 mm to 2,100 mm, consisting of gravity and forcemain piping using open-cut and micro-tunneling methods.

“First Narrows Pump Station is the key component of the North Shore Wastewater Treatment Plant Conveyance project, awarded to North Shore Conveyance Partners,” said Joan Liu, Senior Project Engineer, Project Delivery, North Shore Wastewater Treatment Plant. “Kenaidan (a consortium to the NSCP group) is

responsible for the design and construction of the new pump station. We appreciate Kenaidan’s diligence that attends to details and pursues quality throughout the project. The staff exhibit levels of knowledge and expertise during the design development and construction. We look forward to seeing the commissioning of the new pump station.”

Key Challenges

- Drilling secant piles into coarse soil with large cobbles
- Managing high groundwater levels that vary with tides due to very porous ground conditions
- Controlling groundwater leaks through the secant wall to maintain a dry work area once excavated
- Permit issues with discharging excess ground water to the Burrard Inlet
- Design requirements for a 160-year design life and a one in 2,474-year earthquake seismic event resulted in extremely dense reinforcing steel
- Thermal control of mass concrete foundation and perimeter walls

Roles & Responsibilities

- Owner:** Greater Vancouver Sewerage and Drainage District
- Primary Consultant:** WSP Canada Inc.
- Mechanical:** Trotter and Morton Building Technologies
- Electrical:** Western Pacific Enterprises Ltd.
- Miscellaneous Steel:** Westeel Fabrication
- Concrete & Formwork:** Tom Wood Contracting Ltd.
- Excavation and Backfilling:** Gravity Construction Inc.
- Secant Piles:** Henry Drilling
- Shotcrete Liner:** LRutt Contracting Ltd.
- Architectural Pre-cast:** Surespan Structures Ltd.
- Reinforcing Steel:** Tycon Steel
- Masonry:** Thunderstone Contracting Ltd.

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Technical Exchange Program

POINT OF INTEREST

In 2012, Kenaidan developed a technical exchange program with our parent company, Obayashi Corporation in Japan. The program gives Kenaidan staff the opportunity to learn more about Obayashi's technologies and to evaluate their practical implementation in Canada.

The goal of the exchange program is to further develop our working relationship; to exchange ideas, methodologies and best practices; and to ultimately utilize our combined experience to further strengthen our respective knowledge, and capabilities.

Rida Abdullah, our most recent participant, started with Kenaidan in 2012 as a co-op student. She joined us full-time in 2014 as a Project Engineer and is now an Assistant Site Supervisor. She is also a recent graduate of Kenaidan's three-year Construction Leadership College.

In December 2019, Rida spent one-month in Tokyo and was fully immersed in the Obayashi and Japanese culture. Here are some of her reflections and insights on her experience:

"During my time in Japan, I was welcomed with open arms by the people at Obayashi – both at the head office and on multiple job sites. During the four weeks, I worked with various departments at Obayashi and learned about different technologies that are implemented on site.

"It was nice to put faces to names and connect on a personal level with so many different people. We were able to exchange information and methodologies between the two companies and learn from each other. For example, Obayashi's Design Department was very interested in our Trafalgar project, and I was able to explain why elliptical shafts were used versus the typical square shafts.

"As an Assistant Site Supervisor, it was a great opportunity to learn how project sites operate in a different part of the world. I had the chance to spend time at the Gaikan North Bound Shield JV – this shield tunneling project consists of a 16 m diameter tunnel boring machine which is used to create a new series of underground highways circling around Tokyo to alleviate congestion and improve traffic flow. The tunnel is well over 30 km

in length and consists of three different types of liners: concrete, steel, and composite panels.

"Obayashi is very similar to Kenaidan, in the sense that safety is a number one priority. On such a massive project, the site is cleaned weekly by all personnel on site; areas are designated by different coloured pylons; and subtrade meetings are held every morning and every day at lunch. CETA (Care Enough to Act) is a core value for Kenaidan, but it was also something that was very present in every aspect of Obayashi's operations.

"Understanding the Japanese culture helped me understand how cultural beliefs are reflected within the company – respect, integrity, and loyalty are strong values found within Obayashi. As different as Japanese and Canadian cultures are, deep down Obayashi and Kenaidan cultures are very much the same; both value loyalty and working with integrity.

"My firsthand experience allowed me to witness the immense respect for the work they do, as well as for each other. They are committed to new technology while respecting traditional ways; this is evident by marrying the old with the new, in both architecture and lifestyle. My time in Japan and with Obayashi was a once in a lifetime opportunity and I am very thankful for the experience."

Kenaidan would like to thank all Obayashi employees for their warm hospitality and willingness to share their knowledge and experience. We would also like to thank Rida for being a wonderful Kenaidan ambassador and for imparting her learned knowledge and experience that will benefit Kenaidan.



(L to R): Andy McLellan, Zainab Heddokheel, and Scott Brazeau

Congratulations to the Guildwood project team!

On December 4, the Guildwood GO Station was presented with a 2019 Ontario Concrete Award for the Infrastructure category. The award recognizes the talent and effort of the best designers, contractors, suppliers, and owners in Ontario. Members of Kenaidan, WSP, RDHA, and Metrolinx attended the presentation ceremony, along with some of our suppliers including Ontario Redimix.

At the end of the individual category awards, the association stated that there was one final

award presentation. They described that the TCA was selecting the top, overall project that would represent the local ACI chapter at the 2020 ACI Excellence Gala in October; a global competition amongst the concrete design and construction community. The competition is open to all entries that have won at a local level through an ACI Chapter. The Guildwood Project was selected to represent the Ontario Chapter of the ACI at this global competition! We are waiting news to find out if we will be moving forward in the competition.



Bloomington GO Station

PROJECT UPDATE



Project Requirements

The Bloomington GO Station, located south of Bloomington Road and west of Highway 404 in the Town of Richmond Hill, brings much-needed expansion services to commuters in Richmond Hill, Aurora, and Stouffville. The new station will extend the Richmond Hill GO rail line north from Gormley GO Station offering commuters living in York Region convenient, local access to GO Transit service.

This 29,288 m² flagship station has been designed to meet Metrolinx's new industry-leading standard of incorporating public spaces into commuter stations. The station includes an integrated three-storey, cast-in-place concrete, post-tensioned parking structure to accommodate 765 vehicles. The parking facility will have a car-counting system and bike lane with shelters that have direct access to the rail platform.

The station will be fully accessible and showcase boutique-style finishes, such as exposed architectural cast-in-place oblong concrete columns within a feature atrium complete with pedestrian access ramps and an 810 m² skylight. The structure links to the train platform and also includes a bus terminal. Construction is focused on reducing impacts to the surrounding ecosystem with rooftop solar panels and environmentally responsible building design. This project is designed and being constructed to achieve LEED Gold Certification.

Currently, concrete operations and post-tensioning at the parking structure and platform canopies are underway and scheduled for completion by Spring 2020. Atrium structural steel installations are ongoing with skylight glazing system installations to follow. Structural steel, framing, metal slat and curtain wall systems are in fabrication for installation by early Summer 2020. The station building framing is proceeding for close-in with finishes to follow. Mechanical and electrical system installations are ongoing throughout the project. The balance of exterior site works will be completed throughout the Summer of 2020.

Roles & Responsibilities

Owner: Metrolinx / GO Transit
Consultant: AECOM
Design Consultant: IBI Group Architects
Concrete Formwork & Placement: Kenaidan Contracting Ltd.
Concrete Finishing: Structural Floor Finishing Limited
Electrical: Montana Electrical
Excavation: Pall-Con Construction Ltd.
Reinforcing Steel: Gilbert Steel
Structural Steel: United Structure Fabrication
Metal Fabrications: Brascon Stainless Steel Fabricators Inc.
Glazing Systems: Noram Glass
Drywall Systems: Oakdale Drywall & Acoustics Ltd.
Composite Panel Systems: Ontario Panelization
Elevator: Kone Elevators
Landscaping: Lakeridge Contracting Ltd.
MTO & York Region Roadworks: Dagmar Construction Inc, Gazzola Paving

Project Scope

Contract Services: Lump Sum
Concrete: 21,575 m³
Formwork: 66,353 m²
Key Challenges:

- Poor and varied soil conditions throughout the site
- Significant ground improvement solutions required
- Working in a live rail environment; daily coordination with subcontractors and CN Rail
- Extensive architectural finishes
- Environmental considerations: marshland, turtle pond, and wildlife

Design Features:

- Unique architectural features throughout
- Designed to achieve LEED Gold certification
- Integrated parking structure station building and bus loop
- Rooftop solar panels
- Environmentally designed to blend with the surrounding ecosystem



Congratulations to the 2019 Leadership College Graduates!

They completed their three-year program of study at the end of 2019, and were recognized on January 24, 2019 at a ceremony held at our Head Office. This is the eleventh graduating class since the college started in 2005.

(L to R): Simon Kirkland and Rida Abdullah.

Recently Awarded

Peel Region Salt Management Facility

GTAA – T1 Sectorization – WP-S1.1 & S3 Fitout

Our Company, Our People

ROAMING PHOTOGRAPHER



Kenaidan's Kids Holiday Fun Day took place on Monday, December 23, 2019 at Kenaidan's head office. We had a great turnout with over 50 kids in attendance. The event was filled with face-painting, balloon creations, a magician, movies, food and treats. The highlight of the day was when Santa's reindeer landed on our roof, and Santa came down the stairs to visit with each of the kids.

Kenaidan's Mingle & Jingle event, featuring a Carnival and Casino theme, took place on December 12, 2019. The event was filled with fun, food, and awards – including a special award to one of Kenaidan's cofounders, Aidan Flatley. He, along with the company, celebrated 45 years! In addition, we are proud of our staff for donating 407 lbs of non-perishable food for the Mississauga Food Bank.



On December 15, 2019, Kenaidan hosted a holiday event for Big Brothers Big Sisters (BBBS) of Peel. 25 kids took over our head office lunchroom to decorate gingerbread cookies and play pool and foosball. The grand finale of the event was sitting back and watching a movie, while munching on popcorn. We also received a thank you from Sue Kowalchuk, Program Director at Big Brothers Big Sisters of Peel. "We feel very lucky that you (Kenaidan) continue to believe in our mentoring programs and what we do and appreciate the support you continue to share with us."

Kenaidan Welcomes

Ming Dai, Project Manager
Julie Dorie, Business Development Administrator
Carrie-Ann Amyot, Human Resources Administrator
Mary Jane Encina, Payroll & Benefits Coordinator
Junaid Rehman, Project Administrator
Kristyn Byrne, Project Administrator
Anwer El Turk, Project Engineer
Randa Ahmad, Project Engineer
Cassandra Barbosa, Health & Safety Coordinator
Bashar Odish, Mechanical Coordinator

Kenaidan Welcomes Back

Sean Konopud, Project Engineer

Congratulations To

James Smith on his promotion to Estimating Manager

Corporate Donations

Kenaidan recently made donations to:

- Steps for Life
- Children Aid Society
- Hearts and Strokes Foundation
- Hill House Hospice
- Safe Haven

Upcoming Events (March, April, May)

Health & Safety Week, May 4 to 8

Charitable Matching Program

Kenaidan has recently matched employee donations to the following charities:

- Canadian Cancer Society
- Sick Kids Foundation
- Lung Cancer Canada

Contributing Editors: Bob Adedayo Patrick Hamlin Rida Abdullah Andrea Mrezar 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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