



# Port Planning & Design Transformed

PORTS & MARINE TERMINALS



## Port & Marine Terminal Solutions

Ports and Marine Terminals are having more demands being placed upon them than at any other time in history. It is no longer just about handling bigger ships, and moving more cargo and passengers, but doing so in a socially and environmentally sustainable manner while facing increasing financial pressures. At Stantec we understand that to meet these challenges, and the successful realization of new objectives, requires a multi-disciplinary approach that addresses every aspect of a project. As a proven total-solutions partner, Stantec provides a wide range of professional and multi-disciplinary consulting services in the planning, design and construction of ports and marine terminals. Our core strength lies in the integration of the key skills required for master planning, feasibility studies, design, specialized geotechnical review, project management, environmental services, sustainability, social responsibility, procurement and construction administration. Our teams of planners, architects, engineers, scientists and economists work together seamlessly to ensure your objectives are met.

With this focus Stantec has grown to over 22,000 staff located in 350 offices worldwide. We are currently ranked as the No. 1 integrated Architectural/Engineering Firm by Building Design + Construction, and a Top 10 Global Design Firm by Engineering News Record.

With more than 60 years of experience worldwide in the planning, permitting and design of ports and marine terminals, our teams combine specialized, global knowledge, experience and expertise with local project delivery. From enhancing port and terminal profitability to integrating port activities with innovative information systems, we are focused on economical, socially responsible, bottom-line solutions. Having a global presence, Stantec serves a wide spectrum of public and private clients, including government agencies, transportation advisors, owners, operators and tenants of ports and marine terminals. Because your success is our success, we always do what is right for your projects and your organization.

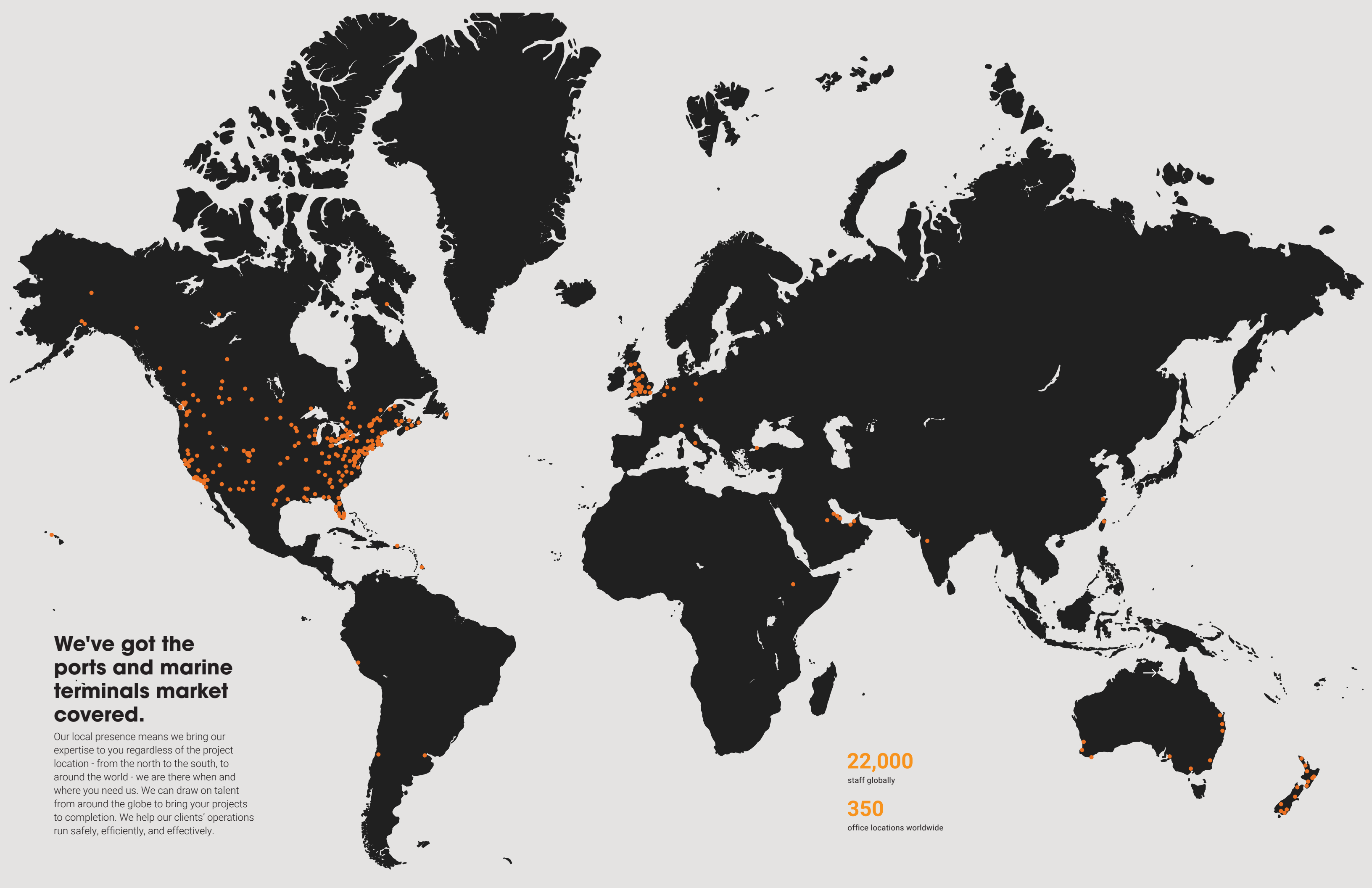


**Our ports and marine terminals practice is not just about designing port infrastructure – it's about understanding our client's operations, the overall shipping industry and supply chain, to enhance their customer's experience.**

Harold Westerman, P. Eng.  
Sector Lead, Ports & Marine Terminals



Centerm Container Terminal Expansion D-B Tender Design  
Vancouver, British Columbia



**We've got the  
ports and marine  
terminals market  
covered.**

Our local presence means we bring our expertise to you regardless of the project location - from the north to the south, to around the world - we are there when and where you need us. We can draw on talent from around the globe to bring your projects to completion. We help our clients' operations run safely, efficiently, and effectively.

**22,000**  
staff globally

**350**  
office locations worldwide

## Sustainable Port Infrastructure

Across the globe aging port infrastructure, and even new facilities, are struggling to meet the needs of the communities that they serve in a balanced and sustainable way. With increased public scrutiny, the need to collaborate with surrounding communities on the upgrade of port infrastructure and development of new is greater now more than ever. Reducing emissions, mitigating impacts on the natural environment, social responsibility and equality are all considerations when planning and designing upgrades to, and new, infrastructure.

At Stantec, we understand that the successful realization of projects for Ports and Marine Terminals requires this new thinking, and an all-encompassing approach to ensure all projects are delivered in a sustainable manner that will benefit the local, and global, community for years to come.

Stantec was recently ranked as the fifth most sustainable company in the world, and first in North America, by Corporate Knights.

## Envision®

In delivering sustainable projects Stantec has embraced the adoption of Envision. Envision is a design framework developed by the Institute of Sustainable Infrastructure built to incorporate sustainable elements into holistic infrastructure development including ports and marine terminals. We have built Envision into the way we approach and carry out design for your projects to satisfy these key elements: improving quality of life; demonstrating sound leadership in infrastructure design; better allocation of our natural resources; building alongside the preservation and restoration of our natural world; and managing climate risks. In doing so dozens of Stantec's professionals have achieved their Envision certification and many have gone on to be Envision trainers.



**Low Level Road Project Lead Consultant**

Port of Vancouver, British Columbia

First Envision Platinum Transportation Project in North America



## Focused on what matters

### Health & Safety

ISO 45001:2018 Certified

### Quality Assurance and Control

ISO 9001:2015 Certified

### Environmental Services

ISO 14001: 2018 Certified

## Delivering service, reliability, safety, and quality to our clients

Our cohesive team speaks your language. We collaborate across all major architecture, engineering and environmental disciplines and industries to make port and marine; infrastructure, buildings, water resource, and energy projects happen.

### How we work

#### Focused on our clients

As a committed total-solutions partner, our clients are at the core of what we do. Because your success is our success we always do what is right for your projects and your organization.

#### Depth, breadth, and geographic reach

Uniting more than 20,000+ employees working in over 350+ locations, Stantec has the unique ability to connect to resources on a local and national level to advance the quality and success of projects across the globe.

#### Focused on what matters

Our company's reputation centers on quality, safety and integrity. A commitment to what matters is evident in everything we do, from our health and safety culture, to professional excellence in our project work to taking responsibility for projects within our communities.

#### A history of performance

Achievement at every level begins and ends with a firm commitment to being the best in-class for our industry. For the past 60+ years, we've committed to this goal by creating strong and lasting relationships and providing quality projects to our clients.

### Our areas of expertise

- Container Terminals
- Logistics Parks
- Auto Ports
- LNG and LPG Facilities
- Dry Bulk Terminals
- Liquid Bulk Terminals
- Public Waterfronts
- Naval Facilities
- Small Craft Harbors and Marinas
- Ferry and Cruise Terminals
- Shipyards
- Intermodal Facilities
- Rail and Roads
- Quays, Wharfs, Piers and Jetties
- Navigation Channels and Ship Basins
- Coastal and Shoreline Protection
- Breakwaters
- Dredging and Disposal
- Infrastructure and Coastal Resiliency
- Risk Mitigation
- Operations, Labor and Maintenance Facilities

# Our services to the port and maritime industry

## Planning & Simulation

- Port & Terminal Master Planning
- Simulation
- Supply Chain Analysis
- Concept Planning & Feasibility Studies
- Capital & Operating Costs

## Coastal, Navigation & Dredge Engineering

- Coastal & Shoreline Protection
- Breakwaters
- Numerical & Physical Modelling
- MetOcean Analysis & Studies
- Coastal Resiliency & Rehabilitation
- Wetlands & Beach Restoration
- Ship Channel & Basin Design
- Dredge Design & Disposal
- Land Reclamation

## Marine Structures

- Caisson Wharfs & Breakwaters
- Pile & Deck Wharfs, Piers & Jetties
- Steel Sheet Pile Bulkheads
- Locks & Barriers
- Vessel Motion, Berthing & Mooring Analysis
- Fender Design
- Seismic Analysis & Design
- Inspection & Assessments
- Rehabilitation & Repair

## Terminal Facilities

- Pavement Analysis & Design
- High Mast & Low Level Lighting
- Power Supply & Distribution
- Dry Bulk Materials Handling
- Architectural & Buildings Engineering
- GIS / Geomatics
- Storm Water Management
- Roads, Bridges & Overpasses
- Site Drainage, Services & Utilities
- Piping & Mechanical
- Storage Tanks & Pump Stations
- Perimeter Security, Detection, Alarms & Access Control
- Landscape Design & Architecture
- Shore Power
- Rail, Track & Signals Design

## Project Management & Project Delivery

- Construction Engineering & Inspection
- Commissioning & Testing
- Project Management & Engineering
- Program Management
- Project & Cost Control
- Document Management & Control
- Risk Assessment, Mitigation & Management
- Design-Bid-Build, Design-Build & P3 Delivery
- Tendering & Procurement
- Contract Administration
- Construction Management

## Geotechnical Engineering

- Site Investigations
- Field Drilling Programs
- Foundations Design
- Soil-Structure Interactions
- FLAC Analysis
- Slope Stability
- Land Reclamation

## Environmental Services

- EA / EIS Programs
- Field Studies (bird, fish, terrestrial, aquatic, air, etc.)
- Contaminated Sites
- Project Permitting
- Aboriginal & Stakeholder Engagement
- Hydrodynamics
- Oceanography
- Wetlands Restoration
- Project Impact Mitigation (noise, light, etc.)

## Sustainability

- Sustainable design
- LEED certification
- Envision certification
- Sustainability guidelines





## Port Planning & Simulation

In today's integrated economy, smooth and efficient global supply chains are critical. These worldwide logistics networks rely on 1000s of facilities including over 1400 deep-sea container terminals to handle the movement of goods, cargo and passengers between land and sea. A terminal must not only be functional with efficient operating plans—it must also integrate reliable, resilient infrastructure that is both sustainable and timely in order to meet growing demands.

Stantec's Ports & Marine Terminals team offers our client's decades of experience in the early planning of new or expanded facilities including master planning, existing operations analysis, throughput simulation, feasibility studies, permitting requirements, early infrastructure design, capex, opex, risk assessment and financial review.





### HONOLULU HARBOR 2050 MASTER PLAN

Honolulu, Hawaii

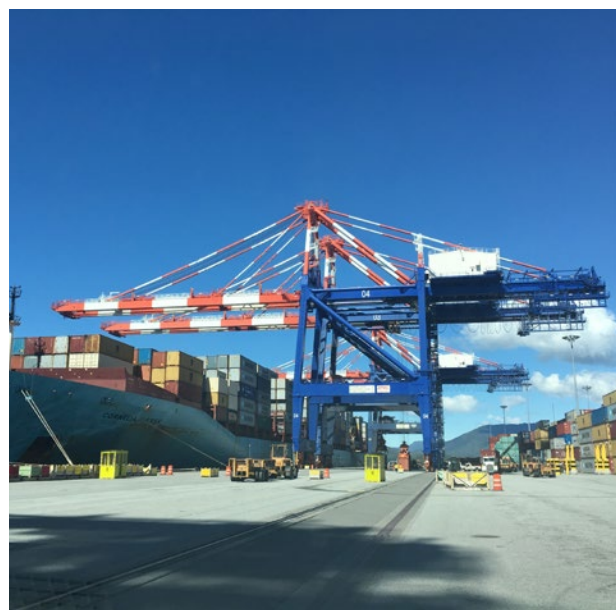
To ensure that the primary port-of-entry into the state is prepared to meet the future needs of the Hawaiian Islands and of the maritime industry, the Department of Transportation, Harbors Division embarked on creating a 30-year master plan to accommodate growth of the container, auto, break-bulk, cruise and refined petroleum sectors. The plan will consider current requirements and challenges and will anticipate user needs and projections to guide new development and harbor usage until 2050. Stantec is providing port capacity and operational analysis, simulation, land use planning, strategy planning, master planning and design, navigation and sustainability services using research and benchmarking as a guide.



### LAURENTIA CONTAINER TERMINAL

Quebec City, Quebec

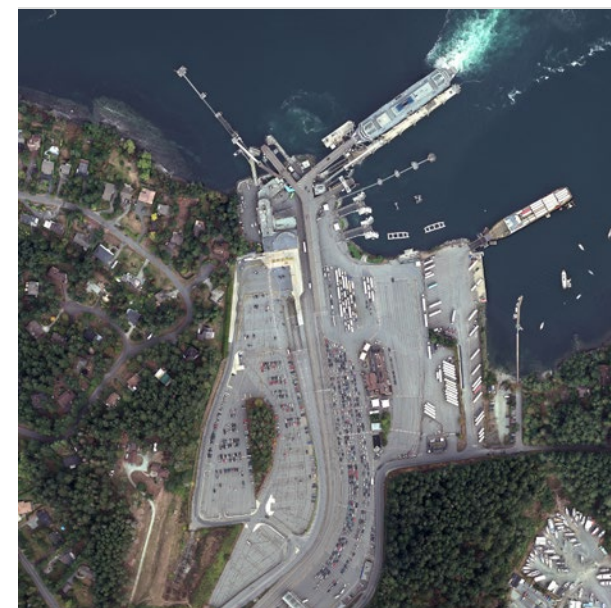
The Quebec Port Authority announced its intention to construct a new container terminal in the Port de Quebec and retained Stantec to undertake a feasibility study and preliminary design of the proposed development. The project will be completed in two phases: Phase 1 will be a single berth terminal able to accommodate 13,000 TEU vessels while Phase 2 will be a second berth raising capacity to over 1.5M TEU per annum. It is expected that 85% of the terminal's throughput will be handled by rail. Stantec developed multiple plans of potential operating scenarios and terminal layouts along with a rail operating plan to accommodate 16,000 ft trains within the congested urban location. A capex and opex was prepared of the preferred master plans that included quay crane rails, container yard services and pavements, RTG runways, CRMG IY including crane beams, power and lighting, substations, reefer towers and plugs, operations and labour building, maintenance and repair building, equipment parking, staff and labour parking, off-terminal rail yard and new road access connections and overpasses.



### FAIRVIEW CONTAINER TERMINAL PHASE 2 EXPANSION

Prince Rupert, British Columbia

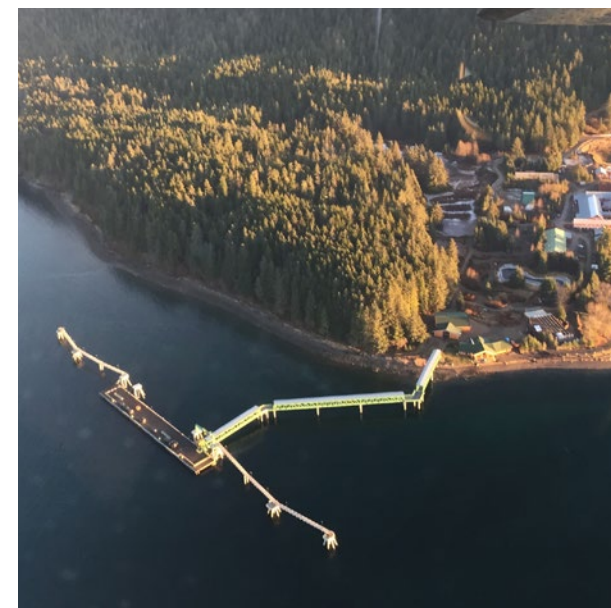
For nearly a decade our team of port specialists has been supporting DP World and the Prince Rupert Port Authority with the development of the Fairview container terminal. We began studies and preparation in 2012 for the Phase 2 expansion environmental application, securing all federal and provincial regulatory approvals and permits. In 2016, we developed a dozen concepts to meet the goals of the Phase 2B of terminal expansion which includes a third 400 m berth, 20 ha terminal expansion including new container yard, 36,000 ft intermodal yard reconfiguration and new terminal buildings with parking and ancillary facilities. We then completed a feasibility study and final master planning that included real-time peak terminal simulations and detailed master plans of the preferred alternative for the operating layout to achieve a throughput capacity of 2.45M TEU p.a.



### SWARTZ BAY FERRY TERMINAL MASTER PLAN

Swartz Bay, British Columbia

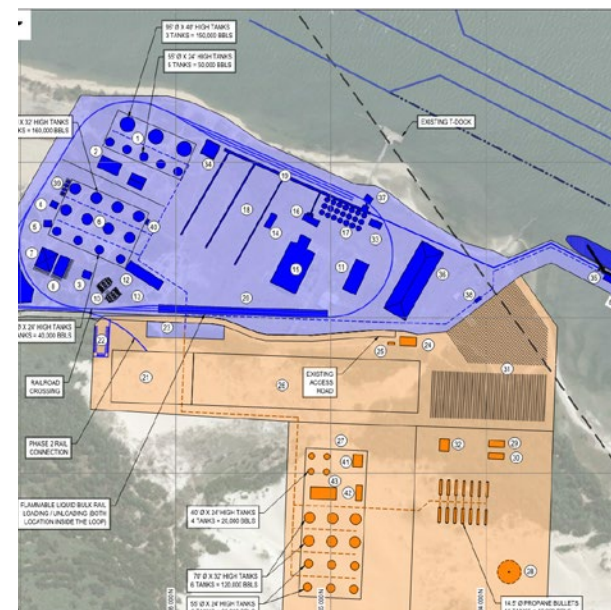
BC Ferries commissioned Stantec to prepare a Terminal Development Plan for the 12.1 ha, five berth Swartz Bay terminal with the intent to create a clear and viable plan based on sound evidence and analysis, considering opportunities, and challenges. The objective included an optimal plan that addressed a wide range of issues related to increasing terminal capacity including warehouse relocation and expansion, revamping foot passenger facilities, replacing vehicle passenger facilities, more compound and parking lot capacities, commercial trucking services, consolidation of administration, improved site safety and security, site services and amenities, marine upgrades and design and implementation strategies.



### ICY STRAIT POINT MASTER PLAN

Hoonah, Alaska

Stantec prepared a master plan and hosted workshops for Icy Strait Point, a picturesque cruise destination with great natural resources for ecotourism. The location includes the historic cannery buildings used for shops, retail and restaurants and other existing site enhancements. Key project program elements for the master plan included creating a new arrival area for guests at the pier area, a possible new welcome center and related amenities at the pier area, transportation "hub" to transfer guests from the pier to excursions or the main cannery area, new landscape and hardscape improvements as may be needed, and a review of pedestrian access in the pier area. Other enhancements included additional retail / restaurant locations, kiosks opportunities, docking opportunities for water taxis and other watercraft and recreational activities. Stantec also assisted with a plan to add a second cruise pier with additional guest experience additions.



### NORTH SPIT MULTI-USE TERMINAL MASTER PLAN

Coos Bay, Oregon

The Port of Coos Bay retained Stantec to prepare the concept planning and feasibility study for the North Spit Multi-Use Terminal to evaluate the development of a multi-use terminal on the North Spit in Coos Bay. This proposed multiple terminal zone will include the potential movement of different commodity types such as liquid bulk, dry bulk, special cargo and break-bulk and multi-modal container commodities. The project will be completed in two phases. Phase 1 is envisioned to include a liquid bulk and dry bulk offshore dock of 1,045 ft, liquid bulk tank storage capacity of 400,000 bbls, dry bulk storage, and extension of the existing CBRL North Spit Subdivision Track and port facility rail spur trackage. Phase 2 will be a second berth and all the associated facilities.

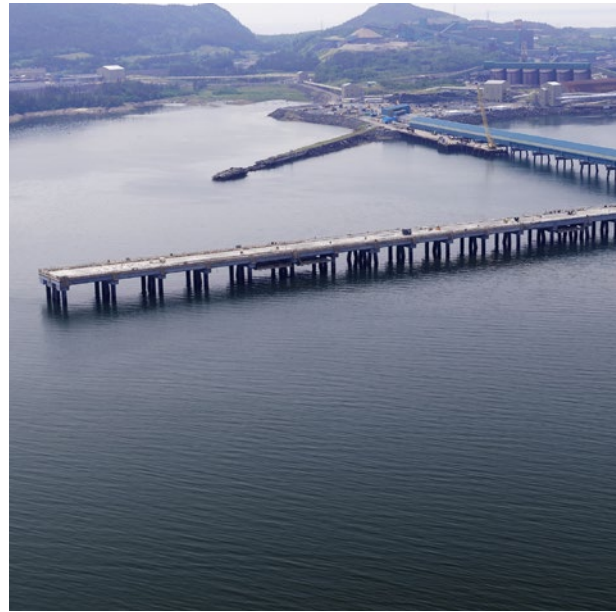




## Marine Structures

Stantec's marine structures engineers have extensive experience planning, designing and overseeing the construction of all types of marine structures including piers, wharfs, dolphins, breakwaters, jetties, block walls, bulkheads, seawalls, crane railways, shiploader foundations and floating moorings. Design and analysis are performed utilizing state of the art 3D structural analysis and design software to satisfy environmental and operational loading criteria including storm event, seismic and sustainability criteria. With experience in the design and construction of slip-formed concrete box caissons, pile and deck, sheet pile bulkheads (U, Z, HZ and PipeZ), concrete block, crib-walls, cellular sheet pile bulkheads and steel jackets we optimize each project through selection of the most appropriate solution.

 **USS Constitution Pier Structural Repairs**  
Charlestown, Massachusetts



### PORT OF SEPT-ÎLES - MULTI-USE WHARF

Sept-Îles, Quebec

The multi-user wharf in Sept-Îles is a deep-water terminal able to accommodate the largest dry-bulk ships in the world; 400,000 DWT Chinamax. To deal with the rapid growth of the iron ore industry in northern Quebec and Labrador, the Sept-Îles Port Authority needed new shipping infrastructure to raise its shipping capacity to 70M tons a year, an increase of 50M tons per year. Stantec designed two major structurally independent facilities: the main wharf and the approach bridge. The wharf has two separate berths and handles iron ore loading; the approach bridge is an access road, linking the shore to the main wharf, and is used for traffic and operations vehicles as well as the iron ore loadout conveyor.



### SOUTH RIDING POINT, BERTH 2 REPAIR

East Grand Bahama, Bahamas

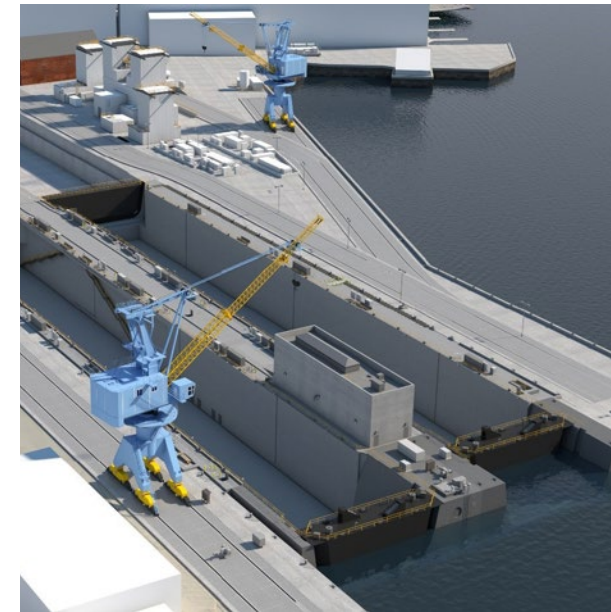
As the prime consultant, Stantec's role on this project included the design of replacement breasting dolphins and access catwalks for structures that were lost or damaged at this terminal by Hurricane Matthew in 2016. The new breasting dolphins are in water depths of up to 30 m (100 ft) and are designed to accommodate tankers up to Aframax (120,000 DWT) and Suezmax (190,000 DWT) classes. The foundations consist of large diameter pipe piles, which are socketed and grouted into pre-bored holes drilled into the seafloor bedrock. The structures are somewhat unique since the use of large-displacement cantilevered dolphins for the given water depth and design vessels is unconventional. Shortly after construction completion the facility received a direct hit from Hurricane Dorian, a Category 5 storm, with no damage being incurred by the new marine infrastructure.



### LNG CANADA MATERIALS OFFLOAD FACILITY & LOADOUT BERTH

Kitimat, British Columbia

LNG Canada, lead by Shell, has embarked on the first phase of construction for a gas liquefaction facility and marine export terminal. At \$40B this project will be the first LNG export facility, and largest private capital investment ever, in Canada. Stantec was retained as lead designer by the BJM joint venture (BAM International, JJM Construction and Manson Construction) who were contracted by the EPC lead (JGC Fluor JV) to design and build the materials offload facility (MOF). The MOF is a 550 m long, 18 m high Pipe-Z combi-wall bulkhead wharf used to berth heavy lift vessels delivering materials and 8000t modules for the project. Stantec was then retained by BeSix Canada and Vancouver Pile Driving to jointly design the primary LNG loadout berth consisting of a continuation of the MOF bulkhead plus several integrated piled berthing dolphins, piled mooring dolphins and the pile supported loading platform to accommodate Qmax LNG carriers.



### PNSY P381 DRY DOCK #1 MODERNIZATION

Portsmouth Naval Shipyard, Kittery, Maine

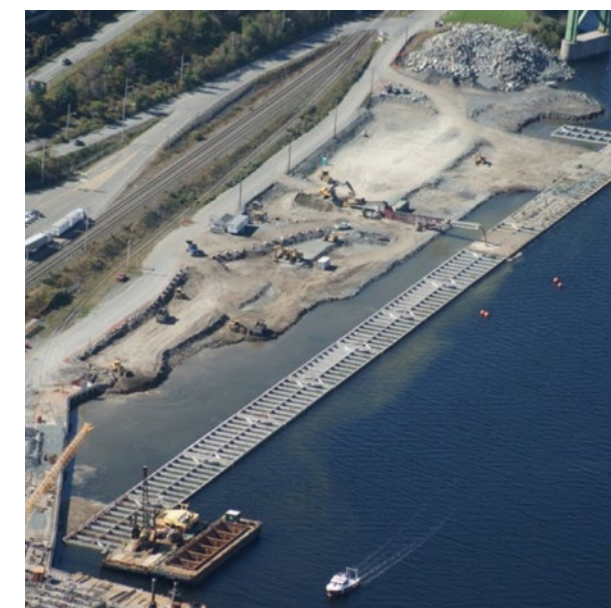
The P381 project will construct a multi-functional addition to Dry Dock #1, creating a three dry dock complex consisting of two new dry dock positions (DD#1 North and DD#1 West) and the existing dock (DD1# East), all to support maintenance overhauls and refueling operations for Los Angeles and Virginia Class submarines (SSN). This project is the first new US Naval dry docks to be constructed in decades as part of the US Navy's \$20B+ SIOB modernization program at its four naval shipyards. Stantec is the prime consultant responsible for: project management, architecture, civil engineering, structural engineering, industrial engineering, electrical/instrumentation & controls engineering, mechanical engineering, geotechnical engineering, process mechanical engineering (pump systems), hydraulics engineering, cost estimating, and scheduling. Key features include rock dredging, piled foundations, float in caissons, steel drydock gates, crane rails, utility buildings and multiple services and utilities.



### HYANNIS FERRY TERMINAL SLIP IMPROVEMENTS

Hyannis, Massachusetts

The Steamship Authority, a long-time client of Stantec, added a passenger ferry boat to serve vacationers. To accommodate this new service, the Steamship Authority asked our team to design a dedicated slip (a docking facility to receive ferries) with a passenger drop-off area. Major components include a new ferry Slip No. 2, a vehicle transfer bridge, new ferry Slip No. 3 (new timber wharf and fender system), and a large handicap accessible floating dock. The project also consisted of major site improvements to traffic circulation, significant improvements to the landscaping, site lighting, storm drainage, and a fueling system.



### PIER 9C EXPANSION

Halifax, Nova Scotia

To accommodate growth in break-bulk cargos the Halifax Port Authority retained Stantec to provide environmental permitting and geotechnical engineering services for an expansion of the Richmond terminal while our senior marine structural engineers completed the design of the new berth. The expansion includes the forming and placement of multiple concrete box caissons and steel sheet pile bulkheads to form the berth face for the new facilities. The terminal was then backfilled with dredged material. Challenges included deep bedrock at one end requiring deep rock mattresses while insufficient overburden for sheet pile installation at the other, relocation of two large diameter sewer outfalls and approvals for rock blasting and an onshore containment cell for surplus materials.

## Coastal, Navigation & Dredge Engineering

The understanding of ocean and sea states, and the design of infrastructure where land meets water, is often fundamental to many port and marine terminal projects whether it be coastal protection and resiliency, breakwaters or navigation channels. It is also these projects that are often the most challenging to permit given sensitivities around the natural marine environment. Stantec has proven experience in providing our clients with integrated ocean and coastal engineering, environmental and permitting services for ports, marine terminals and coastal infrastructure projects. The ability to innovate and design within permitted project areas, while also being sure to attain timely regulatory approvals, is an essential piece to the completion of projects, and one in which we have demonstrated significant ability through a wide range of assignments.

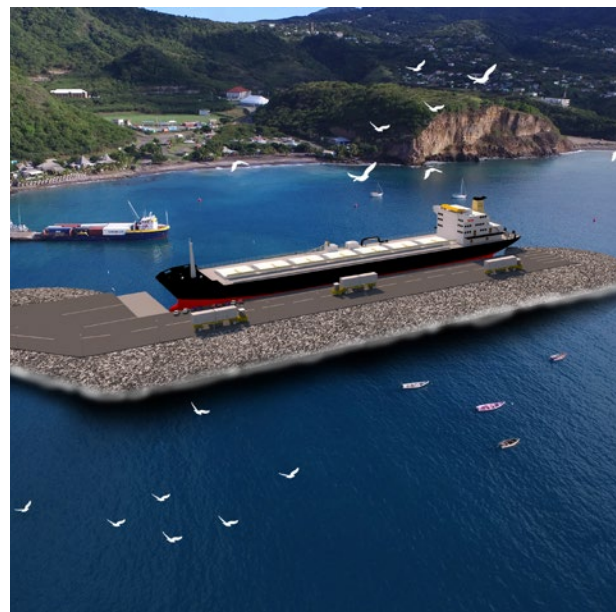
Our team provides complete services to clients, including numerical modeling using advanced sea states software (Mike21, Delft3D, etc.), physical modeling, field studies and measurements (ADCP), site evaluations, technical and policy reviews, regulatory assessments, permitting, design, monitoring and compliance audits.



### **GUNNING COVE BREAKWATER**

Gunning Cove, Shelburne, Nova Scotia

This project included the design of a major breakwater extension, dredge spoil disposal cell, modifications to the existing breakwater structure and minor adjustments to the marginal floats. Stantec's marine structural engineers, geotechnical engineers and coastal engineers completed the concept design, detailed design, drawings, specifications and cost estimating. A special procedure was developed to allow construction of the new breakwater over a relatively thick organic silt layer, which involved extensive computerized slope stability analysis. A computer analysis was subsequently provided to allow for the design of the guide piles for the marina floats to be installed in the newly completed protected harbour.



### **MONTSERRAT PORT DEVELOPMENT PROJECT**

Little Bay, Montserrat

This project includes a 200 m long breakwater with an integrated 160 m long wharf, ro-ro ramp and connecting filled causeway with roadway to the existing port facilities. The existing ship basin will be dredged to -9.0 m chart datum. In Phase 1 the wharf is designed to accommodate the future breakwater's 20+ t concrete armour units as well as direct impact of 12 m high hurricane generated waves and 0.9 m sea level rise. The filled causeway will comprise general fill excavated from the nearby bluff with concrete unit and rock shoreline protection along the seaward and leeward sides of the causeway to support the two lane roadway, utilities and lighting. Stantec was selected as the most qualified firm to undertake the role of Owner's Engineer providing planning, design, tendering and construction supervision for this design-build project following the public review of 23 competitive submissions.



### **TOTTENVILLE SHORELINE PROTECTION**

Staten Island, New York

This project addresses the impacts of coastal flooding and shoreline erosion, while restoring and enhancing ecosystems, improving waterfront access and engaging with the community through educational programs directly related to the coastal resiliency actions. It is being managed through Stantec's on-call contract with the Dormitory Authority of the State of New York with the end client being New York State Governor's Office of Storm Recovery and the NYC Parks Department. The goal is to reduce wave action and coastal erosion along the shoreline in Tottenville while also enhancing ecosystems and shoreline access and use. These goals will be achieved using a layered approach consisting of a series of measures — including wetland enhancement, eco-revetments, hardened dune systems, shoreline plantings, maritime forest restorations, and earthen berms.



### **HMCS DISCOVERY SHORELINE PROTECTION**

Vancouver, British Columbia

The shorelines of HMCS Discovery located on Deadman's Island were experiencing erosion. Stantec was commissioned by HMCS Discovery to assist with the development of a design of shoreline stabilization for the eroding shoreline segments. The objectives were to understand the coastal processes causing the observed erosions and to prepare designs for the shoreline protection. Our scope included bathymetric surveys, wind, wave and wake analysis, sediment transport studies, revetment stability and shoreline protection rock rip-rap design.



### **PRIME HOOK NATIONAL WILDLIFE REFUGE MARSH RESTORATION & SHORELINE RESILIENCY**

Milton, Delaware

When disaster struck and critical habitat was destroyed, USFWS retained Stantec to help find a resilient solution. This wildlife refuge provides critical stopover sites for migratory birds and habitat for many species of fish and wildlife. The Refuge wetlands have been hit hard over the past decade. Most recently, it underwent significant changes due to Hurricane Sandy. As a result, the United States Fish and Wildlife Service tasked us to complete a coastal engineering analysis. Stantec evaluated the physical impact of Hurricane Sandy and recommended an estimate of sand volume needed to build a protective beach barrier system that would protect the freshwater habitat from future storm events. We determined the sand volume by conducting a topographic and hydrographic survey of the Refuge including the marsh area, barrier beach, and breached dunes.



### **HARBOR HEIGHTS WATERWAYS MAINTENANCE DREDGING**

Charlotte County, Florida

The Harbor Heights waterway system includes approximately 3.5 mi of residential canals with seven access channels extending into the lower Peace River. Charlotte County required an evaluation of access channels and upland staging sites to restore optimal navigation depths, design and permitting, and construction phase services. Stantec was retained to conduct and manage all required engineering, environmental, and surveying tasks as well as a review of historical dredging documentation, site evaluation and data collection of existing site conditions to prepare accurate plans, specifications and permit applications.



Paul J Conly Container Terminal 5 Year On-Call Services  
Boston, Massachusetts



## Terminal Facilities

From a majestic cruise center where passengers begin their journey to conveyors handling coal or iron ore to yards where containers await loading to ship, terminal facilities are the heart of any port or marine terminal operation. It is here where all Stantec's multi-disciplinary skills truly come together to provide a fully integrated and coordinated team that can deliver a terminal on-budget and on-time. Our planners, architects, civil, electrical, mechanical, rail, pavement and buildings engineers work in unison with our project managers to develop clearly understood designs that offer resiliency, operational efficiency and value. We have developed long-term, trusted relationships with clients around the globe in the container, dry bulk, general cargo, oil and gas, naval, cruise and ferry industries. From cruise to containers, bulk terminals to naval facilities, Stantec understands terminal facilities planning, design, construction administration and project management.



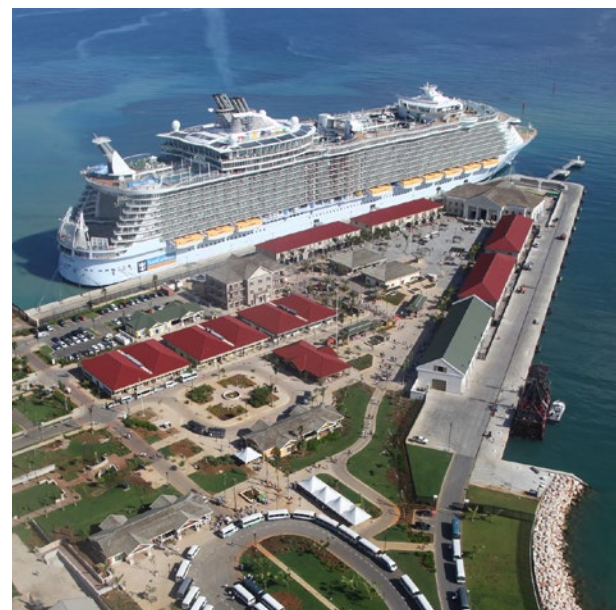
**FAIRVIEW CONTAINER TERMINAL PHASE 2 EXPANSION**  
Prince Rupert, British Columbia

For nearly a decade our team of port specialists has been supporting DP World and the Prince Rupert Port Authority with the design and development of the Fairview container terminal. Following development of a final master plan to increase capacity from 1.3M to 2.45M TEU p.a., Stantec executed geotechnical investigations and preliminary design of the Phase 2B terminal expansion which includes a third 400 m berth, container yard expansion, a new 36,000 ft rail intermodal yard, relocated substation, new reefer towers, OCR truck gate and new three-storey, 120,000 ft<sup>2</sup> operations, labour and M&R terminal building with POV and equipment parking and fuel facility. We provided architecture along with structural, geotechnical, civil, rail and electrical engineering for every aspect of the terminal design along with tender ready drawings, capex and risk assessments.



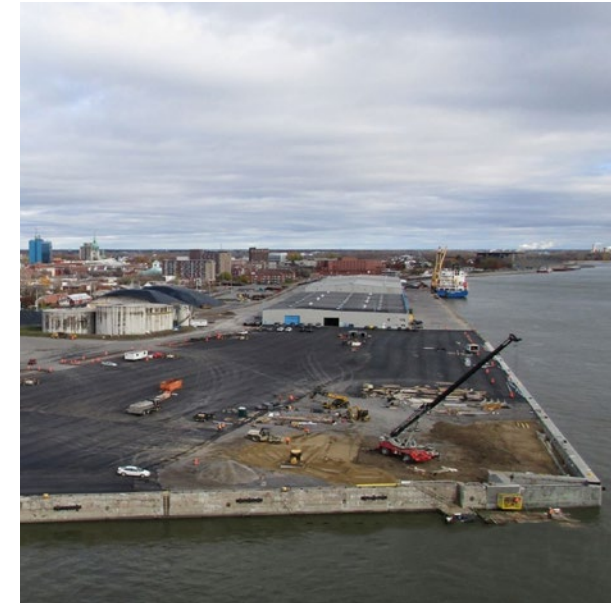
**FLEET MAINTENANCE FACILITY & B-JETTY**  
Canadian Forces Base Esquimalt, British Columbia

This Department of National Defence facility consolidated 67 permanent and 13 temporary maintenance facility shops for the Pacific Fleet into one building. Stantec was retained to provide mechanical and structural engineering for the project through design and construction. The new 430,000 ft<sup>2</sup> structural steel addition houses the ship repair operation in seven major work centers consisting of the electronic, metal fabrication, heavy mechanical, TSC for metal fabrication, light mechanical, electroplating and electrical. These centers contain specialty shops such as optic, underwater weapons systems, electronic combat systems, carpentry, warehousing, stores, painting, abrasive blast, welding, fiber reinforced plastics, and heat treatment. The support areas in the new facility includes administration, management and engineering functions, locker rooms, lunchrooms and cafeterias. Under separate contract Stantec also designed the adjacent new 270 m long B-Jetty to accommodate the navy's newest warships.



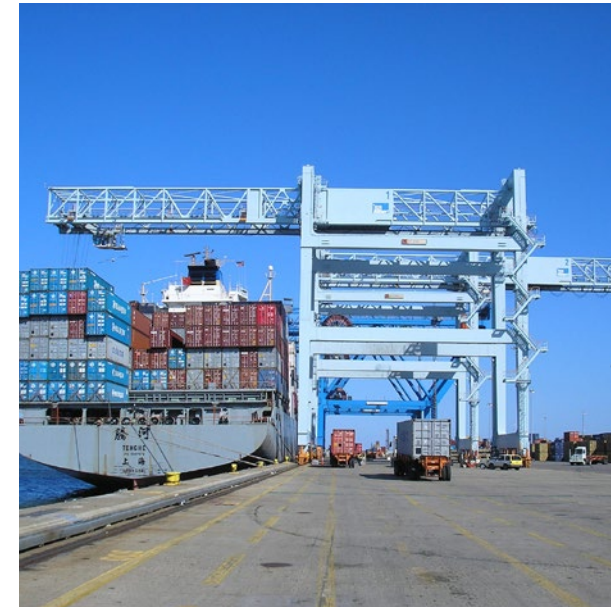
**HISTORIC PORT OF FALMOUTH**  
Falmouth, Trelawny Parish, Jamaica

Stantec provided planning and landscape architecture services for the development of a historic 40-acre wharf district as an extension to the Town of Falmouth, Jamaica. As the largest themed cruise port in the Caribbean, a main goal was to preserve Falmouth's unique heritage and culture while refurbishing the existing architecture and improving infrastructure for this multi-use site and strategically enhancing Jamaica's world-class cruise product.



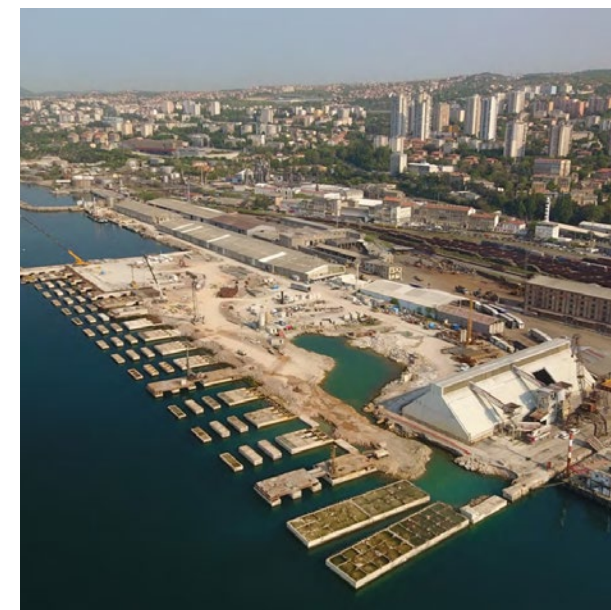
**MULTI-USE TERMINAL SECTOR 13-16**  
Trois-Rivières, Quebec

The Trois-Rivières Port Authority retained Stantec to carry out engineering services related to the major refurbishment of wharfs 19 and 20 at the Port of Trois-Rivières plus the full reconstruction of wharfs 13 to 16. The goal of the project was to increase the load capacity of the infrastructure to meet the standards for new harbour operations. This was accomplished by construction of new HZ steel sheet pile bulkhead walls in front of the existing degraded bulkhead. This also allowed the depth of water at the facility to be increased to 11 m in order to accept ships of greater tonnage, allow the use of a new MHC-115 mobile harbour crane and extend the useful life of the facility by 50 years. The terminal area was upgraded with the removal of old sheds, reconstruction of underground services and utilities, new lighting and a new liquid bulk manifold and delivery line. Heavy duty pavements were designed the heavy loads expected from break-bulk and project cargo operations.



**PAUL W. CONLEY CONTAINER TERMINAL**  
Boston, Massachusetts

Stantec provided engineering and construction phase services covering civil, structural, and electrical needs at the terminal, having delivered over 20 task orders under a five year on-call contract. Our work involved inspections, reports, studies, design and development of contract bid documents for wharf structures, pavement systems, site utilities and crane modifications. Some of the key task orders included new chassis repair building, RTG concrete runway and yard improvements, water system upgrade master plan, strengthening of two dockside gantry cranes, reefer storage racks and electrical infrastructure modifications.



**ZAGREB PIER CONTAINER TERMINAL**  
Rijeka, Croatia

The Rijeka Gateway Program is a development to improve the competitiveness of Rijeka as a port city and strengthen inland transport routes connecting the Mediterranean to Eastern Europe. As the last action of this program, the Port Authority of Rijeka commissioned the design and construction of a new 400 m wharf and container storage yard. Stantec, in collaboration with F&M Ingegneria, executed the entire design process from bidding to detailed design of the new container facility. The project involved the construction of the 22 ha facility including the new quay to provide a modern container terminal able to handle 500,000 TEU per annum.



## Geotechnical Engineering

At Stantec we strive to provide our clients with innovative solutions for waterfront and port facilities, coastal protection and restoration, and offshore infrastructure. Our geotechnical experts have worked in coastal environments across the globe and are fully integrated with our multidisciplinary ports and marine terminals practice. We bring to your projects a strong understanding of geotechnical engineering for built structures in the coastal environment. We offer the full range of coastal geotechnical engineering and design services, from feasibility studies and cost/benefit analysis to design, permitting, and construction monitoring.

## Environmental Services

Stantec's environmental team provides complete services to clients, including project and program management, field studies, site evaluations, technical and policy reviews, regulatory assessments, development of proposals and plans, design, permitting, monitoring, compliance audits, expert witness testimony, and technical training. Staff specialty groups work with Stantec's regional offices close to the project to provide a thorough and coordinated approach.

## Project Management & Delivery

Acting as the client's representative, Stantec can prepare and implement comprehensive programs to execute procurement contracts, develop effective equipment and material supply strategies, and control transportation and logistical functions, plus effective selection of general contractors. We help clients identify onsite requirements, develop procurement strategies for major equipment and materials at the beginning of a project and identify long lead-time items early by gathering preliminary and historical information.

Our value-added contracting strategies include package bundling, process development, and procurement schedule review against specific delivery durations on the master schedule and critical path. Through each phase of the project, we work to maintain client rights and vendor obligations. Whenever possible, we obtain pricing on a competitive basis and execute orders and contracts at the best financial value, without sacrificing technical and quality requirements.

Stantec has extensive construction management and contract administration experience to verify conformance of contractors work against design documents and adherence to contract conditions. We provide onsite inspections, review of HSE, budget monitoring, schedule adherence, review of contractor RFIs and shop drawings, monthly payment assessments, substantial and final completion punch list and certifications, claims assistance and resolution and change order management.



### PORT MANATEE BERTH 4 EXTENSION

Manatee, Florida

Stantec was retained by the Manatee County Port Authority to conduct an investigation of the preliminary engineering design, dredging and disposal options, construction schedule and costs, and environmental permitting for the extension of Berth 4 at Port Manatee. The purpose of this investigation was to guide the future design and permitting of the Berth 4 Extension project. The investigation included pre-project coordination with state and federal regulatory and commenting agencies to discuss impacts to marine resources, including seagrass, required for the extension of Berth 4 as well as the appropriateness of potential mitigation options. Stantec developed preliminary engineering designs for the berth extension and evaluated dredging and construction methods including dredge disposal alternatives.



### ROBERTS BANK TERMINAL 2 OWNER'S ENGINEER

Delta, British Columbia

To increase the capacity and efficiency of its existing terminals, the Vancouver Fraser Port Authority is proposing a three-berth container terminal at Roberts Bank in Delta, British Columbia. The Roberts Bank Terminal 2 project is a greenfield development that includes a 290 acre land reclamation, 4200 ft wharf, expected automated container yard, rail intermodal yard, OCR truck gate and numerous support facilities and buildings. There is also an expanded tug basin and widening of a 4 km causeway to accommodate additional road, utilities, and rail infrastructure. As a key member of the owner's engineer team, Stantec is providing multi-disciplinary engineering, architecture, surveying and geomatics, and sustainability expertise. This includes a sophisticated geotechnical modeling analysis of the caisson wharf undertaken to assess soil liquefaction potential and mitigation measures. This project is currently undergoing an environmental assessment, and requires environmental permits, regulatory approvals, and a final investment decision before it can proceed.



### TAMPA PORT AUTHORITY CONTAINER TERMINAL FACILITIES AND INTERMODAL ETHANOL RAIL TERMINAL

Tampa, Florida

Stantec provided site civil engineering, drainage improvements, paving, utility improvements, new rail extension and rail yards, permitting and construction support services for this \$75M, multi-year, multi-phased project incorporating approximately 140 acres of container terminal improvements and expansion at the south end Hooker's Point of Port Tampa Bay. The work includes site remediation, container berths, demolition of an existing warehouse, drainage improvements, utility improvements, fire protection, container yard facility, intermodal facility for bulk liquid and containers, heavy duty paving with rubber-tired gantry runways, site lighting, rail yard and extension, refer plugs, and approximately 800 ft<sup>2</sup> of wharf replacement with pile-supported gantry crane rails and auxiliary crane power supply.



### PACIFIC NORTHWEST LNG EXPORT TERMINAL

Lelu Island, British Columbia

Stantec completed environmental approvals and permitting for the Pacific NorthWest LNG natural gas liquefaction and export facility on Lelu Island within the District of Port Edward, British Columbia. The facility includes two LNG trains (each processes about 6M tonnes per annum of natural gas), two LNG storage tanks, materials offloading facility, a two-berth jetty, a 2.7 km marine trestle, buildings for safety and maintenance equipment, electricity infrastructure, buildings for administration and ancillary processes to support the liquefaction process. Stantec was engaged to develop and lead the entire regulatory approval process for the proposed three train, double berth, 18 mtpy LNG export terminal.



2019 ENR Top 25 Project Starts for Mid-Atlantic

### PAULSBORO PORT EXPANSION & INFRASTRUCTURE UPGRADES

Gloucester County, New Jersey

The project involves a 550 ft barge berth and two additional deep-water wharf extensions, over 1,500 ft of wharf, train rail trestle, vehicle trestle, with additional connections from the wharf to land. Also included in the scope are installations of remaining utilities (water, sanitary, electrical), storm water drainage, grading and paving, as well as the construction of additional buildings and warehouses. Stantec's project team was composed of several disciplines—project and agency construction management, marine structural engineering, coastal engineering, pile and steel reinforcing, and safety teams—from different office locations. After a positive previous experience with our firm, the client decided to retain Stantec thanks to our multi-disciplinary services provided under one roof.



### PORTONOVI MARINA

Montenegro

Stantec provided project management and tender design consultancy for the new Portonovi Marina in Montenegro. Services included the project management and design of dredging, pile foundations and quay structures, conducting a waterproofing systems and anti-corrosive concrete study and design of the berthing and moorings facilities for this ultra-modern and sleek yachting facility.





## Community

When we say community, we don't just mean the neighborhoods people call home. We mean everyone and everything with a stake in the work that we do, from our Stantec and industry colleagues, to the clients we collaborate with, and the people and places we impact.

Whether creating, sustaining, or revitalizing a community, we help people of diverse cultures and perspectives work together toward a shared success. Although our work helps to create physical communities, our ultimate goal is to create something far more meaningful—a sense of community.

## Creativity

For us, creativity is driven by purpose. Knowing that transformation is truly possible inspires us to approach every situation with a fresh perspective. Our innovative and collaborative approach to problem solving helps bring big ideas to life through creative solutions.

Whether our contribution is a design that strikes the perfect balance between function and aesthetics, a feat of engineering that redefines what's possible, or a project management approach that delivers results, we strive for outcomes that transcend the challenges they solve and shape the communities we serve for the better.

## Client Relationships

We're better together. This belief shapes how we collaborate with our clients, our partners, and our communities.

We listen so we can deeply understand our clients' needs, communicate with purpose so we maintain alignment, and remain open and flexible so we never miss an opportunity to strengthen a project and positively transform a community.



Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging. That's why at Stantec, we always design with community in mind.

We're designers, engineers, scientists, and project managers innovating together at the intersection of community, creativity, and collaboration. Balancing these priorities results in projects that advance the quality of life in communities across the globe. Stantec trades on the TSX and the NYSE under the symbol STN. Visit us at [stantec.com](http://stantec.com) or find us on social media.

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