



# Industrial design with community in mind.

OPERATIONS AND MAINTENANCE FACILITIES

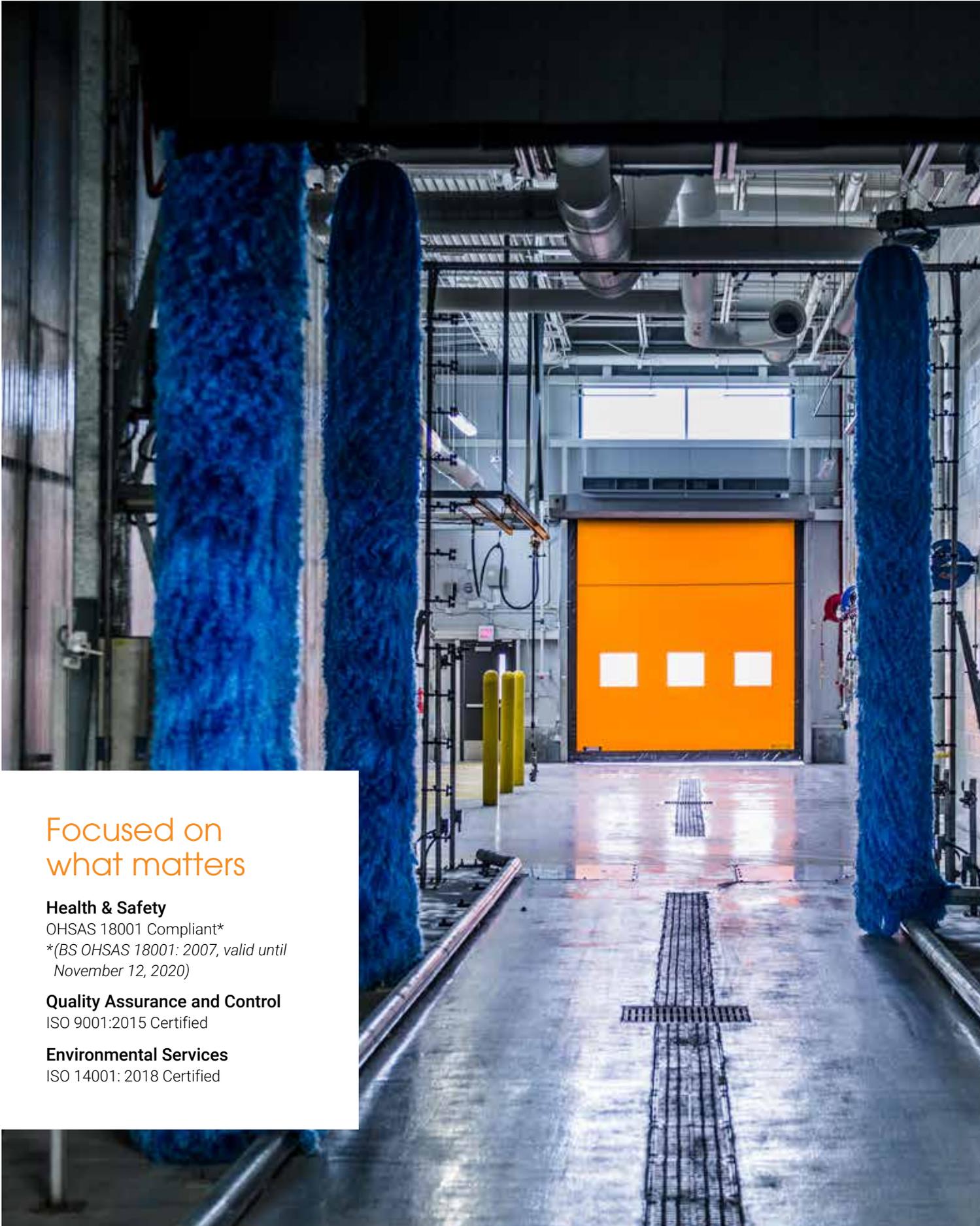


**Regional Municipality of Wood Buffalo  
(RMWB) Landfill Administration Services  
and Fleet Building**  
*Fort McMurray, Alberta*





We know the right operations facility plays a key role in supporting the business objectives and overall success of our clients. That's why we take every step together—from functional planning and program development, to facility design and project execution—we find the right solutions to help you achieve service, reliability, safety, and quality.



## Focused on what matters

### **Health & Safety**

OHSAS 18001 Compliant\*

*\*(BS OHSAS 18001: 2007, valid until  
November 12, 2020)*

### **Quality Assurance and Control**

ISO 9001:2015 Certified

### **Environmental Services**

ISO 14001: 2018 Certified



## **St. John's Metrobus Maintenance and Storage Facility**

*St. John's, Newfoundland*

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

From municipal utilities and transit, to industrial maintenance and operations, to aircraft hangars and airside maintenance, every facility has unique operational, building, site, community, and environmental obligations. We understand how each of these requirements contribute to the operational effectiveness of the industrial community and the health of your organization.

Our cohesive team speaks your language. We specialize in planning, design, safety, work flow optimization, and implementation to meet your needs from concept to completion.

## **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 400+ 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 Expertise

### Functional Planning

Stantec helps clients achieve high performance in safety, quality, and cost efficiency for operations and maintenance facilities. We work closely with clients to develop safe and productive processes, efficient space allocation and layouts, and appropriate equipment performance specifications to meet your business and operational needs.

Understanding and defining the operating concept for a new or expanded facility is a critical component of successful facility design. Transitioning to a new or expanded facility is an ideal catalyst to review fundamental operating methods and increase efficiency, productivity, and profitability.

Stantec employs a systematic process to gather and disseminate information from clients and develop a proposed path forward including facility layout options, estimated costs, and schedule implications.

A well-defined functional program provides our clients with a clear definition of the goals and needs of a project, and provides a framework for establishing priorities and making decisions. We can determine whether reconfiguration and expansion of an existing facility is needed, or if consolidation into a single, new or renovated facility is the best solution.

Key elements that drive our designs are rooted in value stream mapping, cycle time analysis, and LEAN design philosophies which include effective and efficient work flow and reduction of work in process, raw material, and finished product inventory. We provide a facility that promotes flexibility/adaptability/resiliency.



**\$1 million**

under budget delivered for the TransLink SkyTrain Operations Maintenance Center expansion project.



Canada  BRITISH COLUMBIA

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SkyTrain



**Surrey Biofuel**  
**Processing Facility (P3)**  
Surrey, British Columbia



## Discrete Event Stimulation (DES)

Precision? Check. Efficiency? Check. Big picture thinking? Check. Stantec's technology is ahead of the curve, both in the office and in the field, and is proud to use FlexSim software for discrete event simulation. Discrete event simulation software is commonly used in the study and improvement of people, vehicle, and material work flows which include high degrees of randomness, variability, and interdependent processes. The key benefit of DES: the ability to design, analyze, and experiment with real-world scenarios within a virtual environment.

By utilizing data provided by our clients or collected during time and motion studies, we can use statistical distributions paired with discrete event simulation software to compose a life-like representation of operations. This virtual model of the operation can then be used to experiment with a wide variety of inputs (e.g., staffing levels, hours of operation, process changes, automation, layout changes) to understand the impacts on the system. This results in the opportunity to arrive at better design solutions early in the design process, with improved stakeholder buy-in, and stronger business cases.

## Facility Design Solutions

At Stantec, we excel at integrated service delivery, and we're one of the only industry-leaders that offers professional services in planning, engineering, architecture, interior design, landscape architecture, surveying, environmental sciences, and project management throughout the entire project life cycle.

Our significant experience in the full life cycle of operations, maintenance, and storage facilities—as well as our unparalleled experience in alternative procurement project delivery (design-build, P3, DBFM/O)—offers a unique perspective. Our view allows us to balance facility, operations, and business initiatives to provide cost-effective solutions based on capital and operating costs

Our facilities design team also provides comprehensive services through construction including:

- Capital Cost Estimates
- Permitting and Applications
- Public Consultation Support
- Construction and Procurement Documents
- Tendering Support
- Construction Contract Administration

## A Natural Advantage

Stantec's sustainability team goes beyond the common approach to develop ideal results for our clients and their range of challenges. Our portfolio of over 400 certified LEED projects spans many different building types and locations, including operations and maintenance facilities. Stantec designed the first facilities in North America to be certified Net Zero Energy, LEED® Platinum, LEED® Gold, and LEED® Silver.

Stantec's sustainable design approach considers energy use, water use, wastewater volumes, workplace environment, safety, public acceptance and financial performance—all of which have positive impact on the operational resiliency and ability to respond quickly to change. Our focus is not limited to environmental initiatives. Our team works closely with our clients on design solutions that address issues of social equity and employee wellbeing, vital for and industry suffering from an increase in chronic job-related illnesses. Above all, our goal is achieving a facility that is functionally and financially resilient, cost effectively delivered, and that elevates employee satisfaction, retention and recruitment.

Additionally, our 2,500 environmental staff cover 20 technical specialties and know what to look for. We are knowledgeable at helping our clients with regulatory compliance, brownfield/development, site greenfield remediation, and water resource management.

## Vehicle Fueling & Charging Systems

Stantec's fuel systems and charging systems engineering teams work across North America, and specialize in the design of traditional and alternative fueling facilities and charging system infrastructure—we are helping to guide the future of the industry.

Our engineers have comprehensive experience in the design of fleet, aviation, CNG, and other specialized fuel dispensing and storage facilities. We've designed over 150 car, truck, and aircraft fueling and vehicle maintenance facilities in the United States and Canada. We've also designed or consulted on numerous unique fueling applications, including: performance-based designs; multi-level fueling facilities; deployable fueling systems (for the United Nations); marine fueling depots; alternative fuel facilities; and lighthouse fuel systems.

Stantec is also at the forefront of zero-emissions technology by helping transit agencies plan and design for zero-emission bus fleets. Stantec has worked on over 20 bus and vehicle projects for various agencies, associations, and private companies across North America to assist with electric bus charging infrastructure and smart power technology planning and design. This gives our team unique insight into the operational and maintenance needs of fleets of varying sizes and capacities.

Stantec's proprietary software, ZEBDecide, also calculates total power requirements, formulates the ideal technology mix of zero-emission buses to help transit agencies decide what is the best fleet mix and calculates total cost of ownership for all scenarios.



Sacramento Municipal Utility District  
East Campus Operations Center  
Sacramento, California





## **Municipal and Public Utility Operation Centres and Works Yards**

**Municipal utilities are committed to providing cost-effective, high quality, professional services to their residents. And so are we.**

Works yards and related municipal infrastructure play an important role in achieving this commitment to communities. At Stantec, we deliver designs and solutions that lay the foundation for clients to provide these practical and valuable services to residents.

From feasibility studies through detailed design and commissioning, our teams have the right experience and proven project management that you need—no matter what the challenge.

We've provided multi-disciplinary services for works yards in addition to associated infrastructure; and our services in functional planning, efficiency layouts, production engineering, asset management, facility design and engineering, industrial safety, material handling, and related utilities operations will help you achieve success, without compromising quality or safety.



**SMUD EAST CAMPUS OPERATIONS CENTER**  
Sacramento, California

When the Sacramento Municipal Utility District (SMUD) outgrew its 3.6 hectare maintenance yard, the organization wanted a new facility that would not only accommodate future growth, but also set an example for energy efficient building design. The District turned to Stantec and Turner Construction to put together a design-build team and develop a new 33,603 square-meter east campus operations center on a 20 hectare site. The campus includes offices, equipment repair shops, maintenance and warehouse buildings, storage space, and parking for fleet and employee vehicles.

As one of the largest NetZero energy projects in North America, producing as much energy as it consumes, our approach to meeting the District's net zero energy goals included design techniques for low energy heating, cooling, and lighting that reduces energy consumption by 40%. Less energy use means a lower upfront cost for solar panels, since fewer were required. Alternative energy sources provide the remaining energy with power grid back-up.

In total, the building has annual savings of over 3.7 million kilowatt hours in electricity—that's enough electricity to power 413 homes. The SMUD East Campus also contributed to two 2013 Consulting Engineers of Alberta Showcase awards for Stantec, including one for sustainability. And, as the icing on the energy-efficient, growth-accommodating cake, the project received LEED® Platinum Certification.



**REGIONAL MUNICIPALITY OF WOOD BUFFALO (RMWB) SOUTH OPERATIONS CENTRE**  
Fort McMurray, Alberta

The RMWB and Stantec set a new standard for municipal projects through open communication and creative design and the RMWB's South Operations Centre combines a wealth of impressive sustainable features that aren't expected in a budget-conscious project.

Designed to coordinate, support, and manage maintenance activities, the operations centre will accommodate the personnel and maintenance vehicles needed to effectively maintain municipal infrastructure in Fort McMurray and surrounding communities. The RMWB envisioned a facility that would set a standard for future municipal projects and feature an elegant facade and sustainable features. Our experts came on board to fulfill this vision without compromising the budget.

Stantec provided architectural, mechanical, electrical, structural, civil, and specialized LEED® services to meet LEED® Gold certification requirements. The site contains an administrative building, mechanic bays, fleet storage, vehicle wash stations, and trade shop areas. We designed the site to connect to a future district energy system that will reduce operating costs by lowering utility bills and minimizing the risk of fluctuating energy prices. Energy consumption will be reduced by up to 40%, and up to 7% of the energy requirements will be met with an onsite photovoltaic array. We are also utilizing a nearby retention pond to create an outdoor space where staff can unwind and enjoy a leisurely stroll without leaving the site.



## **BRUCE POWER CENTRE OF SITE BUILDING SOLUTIONS PROGRAM**

Tiverton, Ontario

When Bruce Power LP refurbished its Bruce A nuclear power generating facility, extending life requirements by 35 years, the company realized several supporting buildings were nearing the end of their own life cycles. In response, the energy producer developed a Centre of Site Building Solutions Program encompassing six projects: a steam plant replacement; the B31 Bruce Learning Centre; the B06, Bruce A technical building; a new warehouse for critical parts storage; a new health physics lab; and a new centre of site operations and maintenance centre. This new training facility includes operations training simulator rooms, several classroom and offices areas, and a large industrial shop space for technical training, mock-ups, repairs, and maintenance.

Stantec was selected to work with Bruce Power on program development and schematic design. We held user group sessions to determine requirements for each project. In the schematic design phase, requirements were broken down into two key deliverables: a project definition report, which provided an overview of the program and the program development and design activities; and a building standards report, which was developed to create a consistent approach to building and site development

From conceptual drawings, to strategies for heating steam replacement, to costing estimates, our work helped Bruce Power make informed and appropriate decisions about the best way to move forward with the Program. Together, we set an ambitious but achievable energy use target, developed a preliminary program schedule, and provided an overview of proposed program elements over a five-year period.



## **DENVER CENTRAL PLATTE CAMPUS OPERATIONS & MAINTENANCE FACILITY**

Denver, Colorado

Through a two-phase design competition, the design-build team of Pinkard Construction/Stantec was selected to create the new Central Platte Campus for the City and County of Denver's Public Works Department, including space for the Streets, Solid Waste, Traffic, Right-of-Way, and Fleet Maintenance divisions. Included in the campus are a Fleet Maintenance building, Office/Warehouse Building, Fuel and Wash facilities, covered and heated vehicle storage, Salt and Magnesium Chloride storage, and associated parking and circulation space. Future build out includes doubling the Office/Warehouse and Fleet Maintenance buildings and creating multi-levelled parking decks to accommodate the additional vehicle storage.

Located along the South Platte River at I-25 and Alameda, the site is very visible, making design aesthetics as key as functionality. In addition, the project was designed to a LEED® Gold certification level, featuring extensive photovoltaics, daylighting, solar orientation and water saving strategies.



## **LOUISVILLE CITY SERVICES FACILITY**

Louisville, Colorado

Louisville, Colorado is consistently ranked as one of the top cities to live in the nation. The city takes immense pride in its commitment to providing superb parks, trails, open space, clean streets, and a community that celebrates the seasons, holidays, and special events. To maintain their high standards and commitment to their citizens, the City of Louisville prioritized the need for a new service center to replace its early 1970s-era facility and meet a 20-year growth expectation for staff, vehicles, and equipment.

Their new service facility is designed to provide operational efficiency, functional excellence, energy conservation, and resilience to the extreme weather patterns of Colorado's Front Range. The design team performed site feasibility studies to help the City develop a 7.6-acre parcel in the Colorado Technology Center and conform to the business park's stringent design requirements. Stantec served as the prime consultant to for this project and delivered architecture, interior design, lighting design, and sustainable design.





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## Transit Facilities

**You want a safe and efficient facility that meets regulations and works with your budget. We design solutions that keep our clients on track.**

From greenfield design to facility upgrades, our unique team—consisting of architects, engineers, sustainability specialists, community planners, and more—will work with you to find the best solutions for your transit facility needs. We'll uncover your project's strengths, opportunities, and constraints, and chart a path to operational success.

Our experience with transit facilities includes the full range of asset management activities, from inventory collection, inspections, scheduling of repairs, and maintenance, through to replacement. In addition to bus and light rail, commuter, and freight trains, Stantec's services also consider assets such as tracks and signals, bridges and roadways, and related buildings.

Specific to transit facilities, our extensive work with North America's leading transit authorities has readied our team to support clients looking to expand networks, increase support infrastructure, and upgrade maintenance and storage capabilities via our ideal facility solutions.

With safety and community top of mind, our team uses our creativity and comprehensive expertise to lower operating costs, energy consumption, and emissions, while increasing facility efficiency, complying with regulatory requirements, and doing it all on-schedule and within budget.



**Whitby Rail Maintenance Facility**

*Whitby, Ontario*

*Client: Bird/Kiewit Joint Venture*

*End Client: Metrolinx*



### **ST. JOHN'S METROBUS OPERATIONS & MAINTENANCE FACILITY**

St. John's, Newfoundland

As Newfoundland's largest and fastest-growing urban center, the City of St. John's had to find a way to keep up with an increasing number of commuting customers. As a result, the St. John's Transportation Commission decided it was time for a new home and an updated facility for its Metrobus transit service. That's where Stantec enters the picture, providing integrated design for architecture, interiors, and mechanical and electrical engineering for the new facility.

Involved with the project from the early stages, our design team worked closely with the Commission and Metrobus to create an energy-conscious space that embodies the client's focus on green transit. The new building was designed to LEED® Silver certification standards, and, among other green highlights, features rainwater harvesting technology for the bus wash systems, a geothermal heat pump that capitalizes on the earth's natural energy, and high recycled content building materials.

This 10,765 square-meter building has been designed to grow with Metrobus. The operational facility houses up to 60 buses, hosts a high-bay repair garage, provides a heated indoor storage garage with dedicated exhaust, offers maintenance and repair space with skylights to maximize natural daylight, and includes office and training areas for the local public transportation commission.



### **OLIVER BOWEN LIGHT RAIL MAINTENANCE & ADMINISTRATION FACILITY**

Calgary, Alberta

Built to provide extra capacity for light rail vehicle (LRV) maintenance and operations in Calgary, Alberta, the Oliver Bowen Maintenance Facility project was executed using fast-track construction management delivery methods. After all, getting from Point A to Point B quickly is what transit is all about.

With Stantec providing project management, design, and engineering services for all phases of this project—including architecture, site planning and landscaping, geomatic surveying, civil, industrial, structural, mechanical, and electrical engineering and transportation planning—our team worked closely with the client to deliver future-forward solutions. We took into account the large amount of specialized equipment required at this new, flexible 60 car facility, such as wheel truing machines, an LRV washing facility, a distribution and vacuum system, overhead cranes, and hydraulic LRV lifts. These considerations led to the building organized as a drive-through shop. It's also set up as a three-floor system, allowing for activity on multiple levels.

Sustainability of the building's systems design incorporated the short- and long-term needs of several operations including: inspection; servicing; washing; light and heavy maintenance; and material shipping, receiving, and storage. We also identified short- and long-term staffing requirements for both existing and new facilities.



### **LOS ANGELES METRO DIVISION 14 RAIL OPERATIONS AND MAINTENANCE FACILITY**

Los Angeles, California

More than 9.6 million people live, work, and play within Los Angeles County Metropolitan Transportation Authority's (Metro) 3,683 square-kilometers service area. Metro plays a key role in connecting these communities and when it needed an updated operations and maintenance facility (OMF) to optimize efficiency and functionality for their Expo Line service, we stepped in.

Our site design contains components such as six storage tracks, a light maintenance and repair shop, administration facility, run-through wash building, interior car cleaning platform, and a traction power substation designed to maintain the Expo Line's fleet of 45 vehicles. The site also includes parking for staff and visitors with paved aprons, landscaping, perimeter security walls, and a 24/7 guarded entry.

The building's design integrates seamlessly into the surrounding neighborhood and reaches a noteworthy level of sustainability for transit facilities with its net zero energy readiness. By utilizing a triple bottom line approach—keeping environmental, economic, and social factors in mind—this building sets a new standard for innovative and sustainable transit facilities in the industry.



Metro Division 14 serves to optimize efficiency and functionality for transportation in one of the country's largest, most populous counties.



### **LOS ANGELES METRO DIVISION 13 BUS OPERATIONS & MAINTENANCE FACILITY**

Los Angeles, California

The LA Metro Division 13 Bus Operations and Maintenance facility in downtown Los Angeles was the first ground-up bus operations and maintenance facility for Los Angeles County Metropolitan Transportation Authority in nearly 30 years.

The design is highly functional, sustainable, and efficient creating an energetic, restorative facility that provides a healthier work environment and is considered a sought-after location for employees. Features such as photovoltaic system, 100% rainwater capture, green roof, naturally illuminated people spaces, vibrant and open interiors, and shared fitness studio all contribute to the triple bottom line principles of sustainability.

This facility that stands in stark contrast to the uninspired spaces that have become commonplace with most transit facilities. Division 13 is a sleek and modern addition to Downtown, and its environmental elements serve as a model for other buildings that celebrate both function and space.



## **SOUND TRANSIT OPERATIONS & MAINTENANCE FACILITY EAST**

Bellevue, Washington

To accommodate Sound Transit and the City of Bellevue's expanding Light Rail Vehicle (LRV) fleet, this new facility will provide space to maintain, store, and deploy up to 96 LRV's. The facility will also include a 14-bay vehicle maintenance shop, and facilities to support 250 employees.

Stantec is leading the design of this project providing design management; LEED facilitation; electrical/mechanical engineering; site design management; environmental permitting; and design for lighting, IT/communications, security, signals, SCADA, acoustics, and track integration.

The design optimizes the needs of the facility's program while creating unencumbered, marketable development opportunities allowing for approximately 111,484 square-meters of future transit-oriented development. The design included capacity for future additional power requirements and storage and maintenance capacity to accommodate additional fleets.

The project is targeting LEED® Silver certification and will be constructed to achieve a variety of sustainable goals to reduce environmental impact and optimize performance. Sustainable features include 50% reduction of outdoor water use, 35% reduction of indoor water use, installation of a 50-kilowatt photovoltaic system, use of low-emitting materials to reduce concentrations of chemical compounds, and a planned diversion of 75% of construction and demolition waste from the landfill.



## **WHITBY RAIL MAINTENANCE FACILITY**

Whitby, Ontario

Serving the Greater Toronto Area region of more than six million people, GO Transit requires efficient, organized facility solutions to keep its service on-track. That's why the design of its new, 28 hectare, Whitby Rail Maintenance Facility is so important to so many people.

Designed to achieve LEED® Gold certification, the facility consists of 46,451 square-meters of building space equipped to provide complete maintenance services to GO Transit's existing rolling stock as well as future electric multiple unit trains. As lead design consultant, Stantec worked closely with Metrolinx, Infrastructure Ontario, Bird-Kiewit (the builder), and Honeywell (the facility manager), to develop a cost-effective design for the life of the facility that meets myriad functional and operational requirements.

Our role included design management, architectural, building engineering, landscape, civil, site, track, transportation, signal and yard control design services. As part of the design, we considered the current and future needs of the client; sufficient yard tracks were included for the daily storage and maintenance of up to 13, 12-car consists, and expandable to 22, 12-car consists in the future. Staff parking for up to 300 employees was also incorporated onto the site.

With several permitting agencies and approval authorities invested in the project, our team relied on our extensive experience, deep knowledge, strong relationships, and creative thinking to bring this facility to completion.



**MINNEAPOLIS METRO TRANSIT HEYWOOD II BUS OPERATIONS & MAINTENANCE FACILITY**  
Minneapolis, Minnesota

The Metropolitan Council has set a goal to achieve a 50% increase in ridership by 2020 and a long-range target for doubling transit ridership by 2030. To do this, they decided to construct a new building to accommodate their growing bus fleet and employees. That's where Stantec stepped in.

The Metro Transit division of the Metropolitan Council is developing a new bus operations and maintenance facility to support approximately 220 buses. Our design for this project includes maintenance, fueling, washing, bus parking, administrative offices, and employee parking over 11 acres.

This project is targeting Net-Zero Energy and will comply with the State of Minnesota Sustainable Building Guidelines (B3 Guidelines)—a sustainability tool that the state has adopted in place of LEED®. Our team's design challenge is to combine a highly functional facility design, with the client's desire for wellness within the administrative spaces, and integrate innovative arrangements of spaces and materials that address the urban context and public street.



**M-1 RAIL PENSKE TECHNOLOGY CENTER**  
Detroit, Michigan

A mostly curbside fixed-rail streetcar circulator system, Detroit's new QLine shuttles people through Midtown, to the river, past sports stadiums, and stops at 12 stations along the way. Opened to the public in May 2017, it has already seen a large amount of interest with 50,000+ riders in its first week of operations. So how did the city plan on maintaining its new investment?

"Q" the Penske Technical Center. We designed the 20,000-square foot facility to serve as the headquarters for M-1 Rail operators of the QLine, as well as the maintenance, washing, and storage center for the streetcars. On-site employee parking, parts delivery, and required utilities are concealed behind the building, all while sustaining the historic street front requirements.

The streetcars operate 60% off-wire and 40% on-wire, and can charge the battery down near the wheels at some of the stations or from the wires above the street. Because of this, the Penske Technology Center is also the nation's first vehicle storage and maintenance facility to operate completely off-wire.



## **EAST VALLEY BUS OPERATIONS & MAINTENANCE FACILITY**

Tempe, Arizona

Designing a sustainable transit operation & maintenance facility in the middle of the desert isn't just smart, it's necessary. With extreme summer temperatures and 300 days of sun, an energy efficient building was top of mind when considering design practices. Our goal with the City of Tempe's East Valley Bus Operations and Maintenance Facility was to minimize environmental impact and reduce energy consumption of buildings while contributing to the health of the occupants.

Some of the design elements used in the buildings include orienting the two major buildings along an east-west axis to take advantage of proper solar orientation, using highly-reflective roofing membrane, bus washing area that reclaims and reuses 100% of available water, and more. Because of the sustainable strategies used during construction, this project became the first bus maintenance and operations facility in the US to be certified as a LEED® Gold facility.

In all, the facility includes administrative offices, operations/driver facilities for over 500 bus operators, a 7,270 square-meter bus maintenance building.





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## Industrial Operations and Maintenance Facilities

**Operations and maintenance facilities are critical to the success of organizations with large fleets, including mining, and military. Each client has unique operational, building, site, community, and environmental requirements, but share the same goal: safe operations and maintenance facilities that create efficient work spaces and reduce energy and cost.**

Our cohesive team specializes in planning, design, workflow optimization, and implementation. We consider a number of factors when designing tailored operations and maintenance facilities for our clients, including: expanding fleets; new technology; storage optimization; material movement; functionality; sustainability; and health, safety, and environment.

Stantec looks beyond what is possible today to see what will drive success in the future. We support clients to project completion, including procurement, installation, and commissioning, and are proud of the long-term relationships we've built on our value-driven approach. The best complement we receive is repeat business.



Finning Canada New Maintenance Facility  
Fort McKay, Alberta



### **FINNING CANADA NEW MAINTENANCE FACILITY** Fort MacKay, Alberta

Everything's bigger in the Alberta oil sands. So when it came time for Finning Canada to expand its support infrastructure at the Caribou Energy Park in northern Alberta, the components were many.

Stantec's experts worked closely with Finning's team to ensure there was enough room for gigantic mining vehicles, copious tools and materials, and hundreds of employees and visitors at its new 18,600 square-metre service facility. We even implemented energy-saving technology to help reduce expensive utility bills.

In all, the facility comprises 16 maintenance bays, a warehouse, wash bays, a power systems building, and office and employee support spaces.

We designed the maintenance bays to house massive 793 and 797 mining trucks. The space also accommodates D11 dozers, 24M graders, and 988 loaders, along with their smaller counterparts. Additional support spaces include a tool crib and component storage, a fuel island, and an outdoor loading dock. Fenced-in staff and visitor parking features automatic sliding gates.

While enormous equipment was a sizable consideration, we put just as much effort into creating a functional and efficient space for the people who manage operations. That's why Finning's new administrative center includes convenient spaces like locker rooms and lunch rooms in addition to a computer lab, a conference area, and, of course, workspace. It's all designed to scale up for growth.



### **SUNCOR FIREBAG 3** Fort McMurray, Alberta

When Stantec sets to work on a project, we make sure we understand exactly what the client wants. That holds true from the smallest of contracts, to the largest of undertakings—including Firebag 3, a \$200 million portion of Suncor's \$7.6 billion Firebag Phase 3 upgrade and expansion.

As the design and build engineers for the project (continuing on from our role in Firebag 2), our multidisciplinary team ensured client specifications were embodied in the design solution and met targets based on budget and function. In addition to delivering buildable solutions, our design approach acknowledged labor and materials availability by maximizing off-site construction techniques, adopting standardized components, and drawing on economies of scale.

Featuring an administration complex split into two parts and delivered concurrently, Firebag 3's buildings total roughly 16,250 square-metres of space and include an administration building; a control building; a maintenance warehouse; a heavy fabrication workshop; a light vehicle maintenance workshop; chemical storage, a chemical laboratory; and a vehicle wash bay.

We credit our ability to truly listen to our client and draw on our integrated design resources across our many offices and disciplines as a key factor to our success in delivering the LEED® registered project on the fast track program.



**FLEET MAINTENANCE FACILITY (FMF) CAPE BRETON SHOP CONSOLIDATION PROJECT**  
CFB Esquimalt, British Columbia

One of the largest enclosed buildings on North America's west coast, the 39,000 square-meter Royal Canadian Navy FMF Cape Breton will handle every aspect of maritime maintenance – including fabrication, maintenance and repair, all to keep the Department of National Defence's west coast fleet operational.

Stantec designed a variety of complex multi-disciplinary systems and components for various functions and requirements of each work centre. The project scope included building additions, renovations to existing shop areas, relocating over 3,000 pieces of various shop equipment, climate controlled areas, abrasive blast and paint booths that can accommodate large ship hull components, extensive overhead crane systems, central warehouse, machining, large component repair bays, submarine equipment and periscope repair area, dyno and electrical generator testing, hydraulic and gas bottle functions, and extensive outdoor storage and work areas.

To minimize disruptions to users on site, Stantec developed a Construction Implementation Strategy that included the sequential completion of areas and relocation of equipment and shops.



**ELECTRICAL/MECHANICAL ENGINEERING & TRANSPORTATION FACILITY**  
CFB Trenton, Ontario

Completed for the Department of National Defence, this project included the development of a large airfield support vehicle maintenance facility to house the integrated operations of the Electrical/Mechanical Engineering and Transportation Squadrons at CFB Trenton. The 17,100 square-meter main facility includes a 46 maintenance bay area with multiple service reels, lifts and hoists, and an enclosed 40 bay vehicle parking area. Ancillary support spaces include machine shop, tire repair, electronics shops, equipment repair, engine repair, welding, and textile repair shops. Additional functions accommodated include tool crib, parts warehouse, wash bays, body repair, and paint booth.

Squadron personnel are supported by a central two level building component that includes offices, classrooms, cafeteria, locker rooms, physical fitness room, and meeting rooms connecting the two main squadron areas.

As the prime consultant, Stantec provided all architectural and engineering design services for concept validation, design development, construction documents, and services during construction.





## Aircraft Hangar and Airside Maintenance

**Aircraft hangar and airside maintenance facilities are all about safety and efficiency.**

We begin each design with functional layout and find creative solutions to meet your objectives in a reliable and cost-effective way. As one of Canada's largest providers of military and civilian aviation infrastructure design services, our extensive experience with aerospace-related projects throughout North America range from small-scale improvements to new, state-of-the-art facilities.

Stantec's specialized aviation team includes facility planners, architects, engineers, and project managers with the comprehensive knowledge needed to craft solutions for every aviation infrastructure need. From fueling depots to hangar storage, Stantec can call upon this team and our pool of thousands of professionals to perfect the safety and efficiency your project requires.

We have a deeply-rooted interest in the aviation industry, and our passion for the sector extends into our clients' projects. Our specialists have designed, or consulted on, numerous unique fueling applications, including performance-based designs, deployable fueling systems, and alternative fuel facilities. Stantec also has award-winning in-house environmental services capabilities to conduct environmental assessments, vegetation and wildlife hazard management plans, wetland delineations and mitigation, and natural resource inventories for airports big and small.



Department of National Defence 443  
Squadron Hangar Facility  
Patricia Bay, British Columbia



## **DEPARTMENT OF NATIONAL DEFENCE 443 SQUADRON HANGAR FACILITY**

Patricia Bay, British Columbia

As technology evolves, newer solutions arrive and older ones are retired. Such is the case at the Canadian Department of National Defence's 443 Maritime Helicopter Squadron in Patricia Bay, BC.

The six Sea King maritime helicopters that 443 Squadron currently supports were set to be replaced with nine new CH-148 Cyclones. During the transition to its new fleet, the base may be required to operate and provide maintenance support to both the Cyclone and the Sea King.

Working closely with the Department of National Defence, and with greater efficiency, effectiveness, and security in mind, our design consolidated all 443 Squadron operations into one facility. In keeping with the operational mandate, the facility is fully compliant with all building codes and airfield zoning regulations, and is designed to post-disaster standards.

The new 443 Squadron operations and maintenance hangar provides storage for five aircraft, two maintenance bays, an interior wash and maintenance bay, and maintenance shops. In addition to administrative and personnel support facilities, the hangar provides warehousing, shop, and work space for the in-service support contractor/aircraft supplier (Sikorsky). Exterior provisions include ramp areas, taxiway, rinse bay, and a refueling area, plus access to roadways, parking lots, and service.



## **SCOTTSDALE HANGAR ONE**

Scottsdale, Arizona

Designing a hangar with equal parts form and function was the objective for this Scottsdale, Arizona project. Winning Southwest Contractor's award for best private project over \$5 million tells us we met the mark.

More importantly, the client met its project objectives. We worked closely with the company and the architect (Swaback Partners) to develop the most useful yet aesthetically pleasing facility possible. Finding a way to retain storm water was a standout challenge, resolved by using 120 feet of 120 inch pipe positioned in the main entry between two underground parking garages.

We also used various types of pavements—including color concrete, Portland cement, and asphalt—for the aircraft parking apron. When finished, the site exemplified style and substance and featured two 40,000 square-foot parking hangars and 60,000 square-feet of office space.

From pre-design paperwork to handing over the keys, our comprehensive expertise and commitment to the client made this project a success.



## **AIRCRAFT REFINISHING AND MAINTENANCE FACILITY**

CFB Trenton, Ontario

Located at 8 Wing Trenton, this new facility replaces an older refinishing shop that lacked adequate infrastructure and support capabilities.

The project houses the Aerospace and Telecommunications Engineering Support Squadron (ATESS) operations to perform pre- and post-finishing for the CT114 Tutor and CT133 Silver Star aircrafts for Canada's military. The facility, which accommodates the simultaneous preparation and painting operations and refinishing capabilities of at least two aircrafts at a time, incorporates the latest mechanical air handling systems and was designed with sustainability and green values in mind.

Stantec provided full engineering and architectural design services for this new refinishing facility incorporating the latest environmental controls and technologies.

Our team completed the validation of the initial design concept including a full review of the facility programming, operational capability, and industrial process issues. Additionally, Stantec was responsible for providing site and civil design works, all building engineering design disciplines, and architectural design services.



## **WESTJET WIDE BODY HANGAR AT YYC**

Calgary, Alberta

WestJet engaged Stantec to develop a new light maintenance hangar for their incoming fleet of new wide body Boeing 787-9 airplanes, allowing the expansion of their overseas routes from the Calgary International Airport. The hangar is three times the size of a football field, and will be able to accommodate one 787-9 Dreamliner aircraft and two narrow-body 737s at the same time. The hangar is equipped to meet the functional needs of the aircrafts including the inspection and/or removal of specific parts using overhead equipment including cranes and swinging jib booms. The weight of the aircrafts is accommodated with floor slab thickenings as required, and a cost-effective building envelope.

Support spaces for the hangar include an attached two-storey office building that can accommodate 130 maintenance and operations staff. The two-storey office is an attractive and functional 'front face' to the hangar, clad in curtain wall and insulated metal panels and featuring direct access to the hangar through a two-hour fire-resistance-rated separation. An enclosed ground-level link between the west side of the new hangar and existing 737 hangar allows for convenient passage of large maintenance vehicles; as well, a link exists to the centralized stores warehouse for efficient retrieval and storage of aircraft components.

Due to its close proximity to the Calgary Airport, our team ensured that the new hangar didn't obstruct line-of-sight from the control tower to the nearest taxiway.

**“Services supported by operations and maintenance facilities improve the well-being of our community—whether it’s national security, transit, mining, airports, or municipal infrastructure. A well-designed facility is both responsive to the client’s needs and considerate of the neighborhood that it’s a part of.”**

—Michelle Blake, Vice President

## THREE C'S

### 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 care about the communities we serve—because they're our communities too. This allows us to assess what's needed and connect our expertise; to appreciate nuances and envision what's never been considered; to bring together diverse perspectives so we can collaborate toward a shared success.

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.



Design with community in mind