HHAngus





OVERVIEW

HH Angus and Associates Limited was founded in 1919 and today is one of Canada's largest private engineering firms. Since its inception, HH Angus has been providing consulting engineering services to a broad range of clients in the healthcare, technology, commercial and energy system sectors. We have earned a reputation for delivering superior engineering design and innovative building solutions to industry leaders, both in Canada and internationally. While we have over 100 years of impressive experience, we continue to strive for excellence and to remain at the forefront of design through leading edge technology, standards and practices. HH Angus' ability to provide technical support, design and project management for building services projects offers our clients a comprehensive range of services from concept to commissioning.

CLIENT FOCUS

Our designers and engineers are passionate problem solvers. It's not enough for them to find a good solution to your engineering design challenges; they're focused on finding the right solution – the one that addresses your site, your facility, your budget, and your business goals. They excel at seeing the big picture, and then drilling down to the details of making it work for you.

INNOVATION

Our research and development teams are constantly exploring new ideas and technologies, including low carbon energy solutions, digital twinning, 3D image scanning, virtual reality construction coordination and more. Sharing this knowledge provides a greater understanding of all available engineering options for new or existing facilities, including impacts on operating and lifecycle costs.

GLOBAL REACH

HH Angus continues to explore and develop tools that enable our organization to deliver robust engineering solutions anywhere. Tools that allow our people to work with our clients and project partners through multiple channels, to intelligently connect in real time to achieve common business goals. These tools allow us to successfully serve clients across Canada and around the globe.

ACCOUNTABILITY

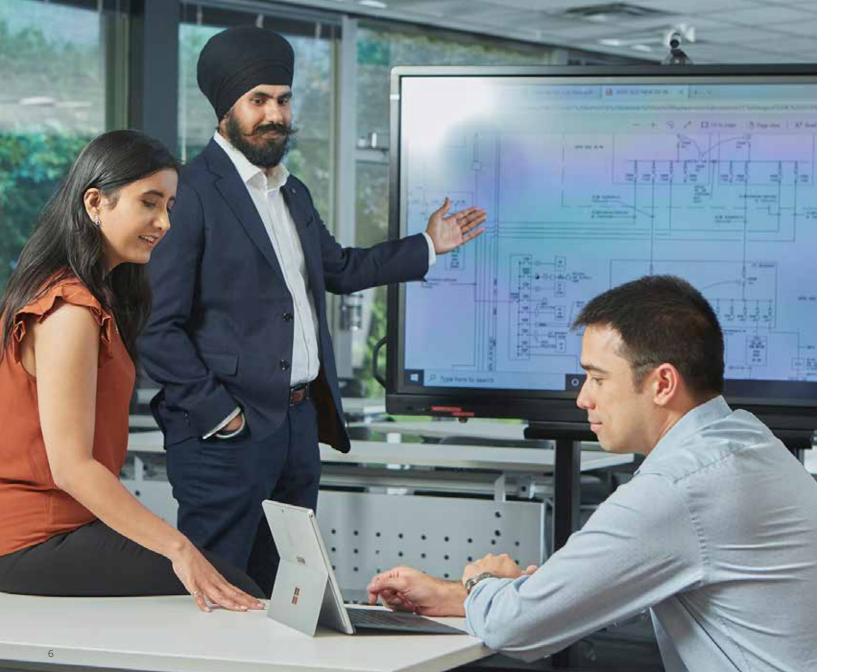
Each client is assured of a Single Point of Contact overseeing their project. This senior staff member works closely with the Division Director, who serves as Principal in Charge of your project. These two key members of your HH Angus project team will ensure that your business needs are clearly understood by the entire project team and that they are effectively met with solutions that deliver value.

EXPERIENCE

At HH Angus, we put our 100+ years of experience and expertise to deliver engineering solutions tailored to your project. As participants in CSA standards committees, we are already setting the framework for facility design of the future. As your consulting engineering partner, we have the right solutions to your business and design challenges. Choosing HH Angus' community of design experts enables the best custom solutions.

LOYALTY

We're proud that over 70% of our portfolio comes from repeat clients, some of whom have worked with us for over 70 years. We believe this is the hallmark of HH Angus - to be a trusted advisor to our valued clients, while allowing our creative design team to push the boundaries of innovation and excellence. We're also proud of our stable workforce, who provide our clients with continuity, account expertise and brand equity.



APPROACH

Challenging convention is the prism through which HH Angus examines our industry, our company, our community and our future. We encourage our employees to ask questions, to foster creativity, to improve process, to promote inventiveness, to envision change. Opening the door to new solutions starts with asking the right questions, having the right discussions and building the right connections in order to provide our clients with the right advice. By doing so, we create a workplace that endorses fresh ideas and that challenges employees to embrace new and creative ways of working together to better serve our clients. The result is strong relationships that endure for years because they're built on a foundation of mutual trust and mutual respect.



BUILDING INFORMATION MODELING (BIM)

We were early adopters of BIM and are using database-structured BIM software, such as Revit® MEP, as our primary design tool. HH Angus has the ability to work in the latest version of Revit, and is well-versed in the BIM standards and protocols outlined in the AIA Standards. We carry 100+ licences for mechanical and electrical staff who are trained to design and model building systems in Revit, including HVAC, plumbing, electrical distribution and lighting. We are also well versed in the Autodesk suite of design products, in addition to other relevant third party database and analysis software.

For any project, our goal is to identify and deliver on the particular BIM needs of the client's facility. This often involves finding innovative ways to use Revit, using other BIM-driven software, using 3D scanning techniques or 360 cameras, or creating a customized approach to analyzing, processing and managing data through the Revit API and Dynamo. We have the flexibility to meet your needs at every phase of your project's lifecycle, including facilities management.

Early adopter of Revit 100+ licences and trained staff Over 5 million ft2 of REVIT modeling

"

Anything else you're interested in is not going to happen if you can't breathe the air and drink the water. Don't sit this one out. Do something. You are by accident of fate alive at an absolutely critical moment in the history of our planet. Carl Sagan

TELEVIS

Toronto Dominion Centre Infrastructure Renewal - Toronto ON

CLIMATE CHANGE AND SUSTAINABILITY

There is a climate challenge that will require both local and global efforts to overcome. The AEC sector can influence positive change and HH Angus is well positioned to work with designers, contractors and building owners to provide low carbon and energy efficient solutions. The green building industry has transformed the market place over the last twenty years and with over ten million square feet of LEED projects behind us, HH Angus has been a key player in this transformation.

Resilient, durable and energy efficient design solutions are core elements of building systems that:

- are powered, heated and cooled by low carbon sources
- consume less energy (efficiency and conservation)
- have a long life (resource conservation)
- minimize pollution and waste (environmental impact), and
- provide a healthy and productive environment (indoor air quality and comfortably-lit spaces)

At HH Angus, we recognize that there is no one silver bullet that delivers sustainable performance; it requires myriad building systems to work together in an efficient manner. To arrive at an energy efficient and low/no-carbon outcomes, systems to be considered include:

- Alternative Fuel Systems
- Wind
- Geo-exchange
- Battery Storage
- Natural Waste Treatment

- Cogeneration
- Photo Voltaic (solar)
- Passive Heat Recovery Systems
- Water Conservation
- Light Harvesting

We have deep experience designing building systems that meet or exceed industry benchmarks such as:

- LEED NC, EB&OM, CI
- Net Zero

- WELL
- Living Building Challenge



LOOKING TO THE FUTURE TO DESIGN FOR TODAY

If there's one constant, it's change. Tomorrow's world will be different than today's in a multitude of ways. HH Angus has been in business for over 100 years because we foster an environment where innovation thrives so we can help our clients anticipate and prepare for today and the future.

Research

Design codes do not always account for new challenges. The research we undertake helps us better understand how to adapt our designs to future challenges such as climate change, changing infrastructure needs and new technology. Some of our current research includes such areas as low carbon energy solutions, smart building solutions and digital twinning.

Innovation Hub

We actively seek ideas from all our people – regardless of location, role and level of experience – and support promising initiatives. Staff can submit ideas at any time through our online portal and through charrettes held during the year. This approach nurtures innovation and cultivates collaborations with clients and other partners in our industry.

Technology

We constantly evaluate new technologies that can help every client's project achieve its potential. We're exploring exciting technologies such as parametric energy modeling, virtual reality construction coordination, 3D image scanning, digital twinning, new battery storage methods, machine learning, and more.



SECTORS Commercial Cultural Education Energy + Utilities Healthcare Hospitality + Entertainment Industrial Laboratories + Research Facilities Mission Critical Facilities Public Sector Sports + Recreation Transportation



SERVICES

- Mechanical Electrical Lighting Tenant Fitout IMIT
- Audio-visual
- Communications
- Security
- Smart Buildings
- Information Technology
- Network Design

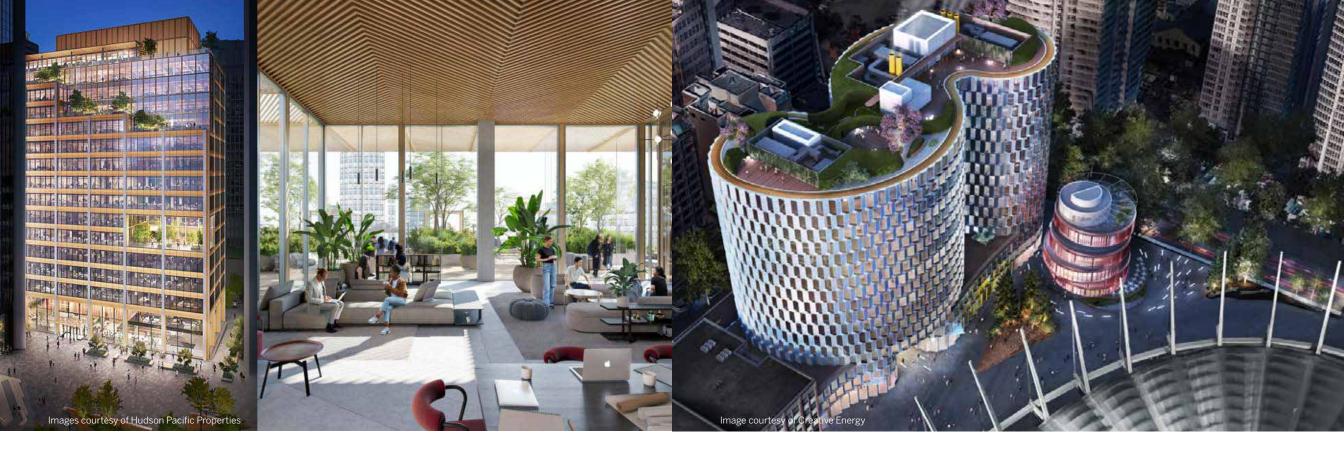
Commissioning Vertical Transportation BIM Development and Management Energy Modeling and Simulation Sustainability Other Services

- Compliance Consulting
- Data Management
- Infrastructure Renewal
- Equipment Procurement
- Factory Witness Testing
- Feasibility Studies
- Inspection
- Lifecycle Costing
- Master Planning
- Operations Training
- Peer Review
- Photo Voltaic
- Photometrics
- Project Management

WESTERN CANADA

Royal Inland Hospital New Patient Care Tower - Kamloops, BC Client: EllisDon Sponsor: Interior Health, BC | Partnerships BC Role: Mechanical & electrical engineering Completion Date: Phase 1: 2022 Phase 2: 2024 Architects: Parkin Architects Limited | Kasian Architecture

courtesy of EllisDon and Kasiar



Burrard Exchange (Bentall Centre, 1025 Dunsmuir) - Vancouver, BC

Client: Hudson Pacific Properties | Blackstone Property Partners

Role: Mechanical & electrical engineering Fire protection

Energy modeling

ICAT consulting

Completion Date: To be confirmed

Architect: Kohn Pedersen Fox, Design Architects, Adamson Architects, Architect of Record

Expo Boulevard Steam Plant - Vancouver, BC Client: Creative Energy Role: Mechanical engineering Plumbing design Fire protection Completion Date: Scheduled for 2023 Architect: WSP



Northern Alberta Institute of Technology (NAIT) - Edmonton, AB

Client: Northern Alberta Institute of Technology (NAIT)

Role: Stakeholder engagement Desktop studies Strategy & roadmap development

Completion Date: To be confirmed

The Cooperators Canada Tenant Fitout - Regina, SK

Client: The Cooperators Canada Role: Mechanical & electrical engineering Audio-visual design Communications design ICAT design Completion Date: 2020

Project Partners: HOK, JLL and PCL



Penticton Regional Hospital, David E. Kampe Patient Care Tower - Penticton, BC

Client: EllisDon

Sponsor: Interior Health, BC | Partnerships BC

Role: Mechanical & electrical engineering Vertical transportation design Energy modeling ICAT consulting

Completion Date: Phase 1: 2019 Phase 2: 2021

Architect: Parkin Architects Limited

Royal Columbian Hospital Redevelopment - New Westminster, BC

Client: Fraser Health Authority | Partnerships BC

 Role: Owners compliance engineer including site utility master planning and Phase 2/3 Business Case Mechanical & electrical engineering Energy modeling Nurse call & security Vertical transportation Commissioning authority
Completion Date: Phase 1: 2019 Phase 2: 2024 Phase 3: 2026

Architect: Phase 1 - CannonDesign (Compliance Architect) Phase 2 - IBI



North Battleford Mental Health and Corrections Facility - North Battleford, SK

Sponsor: Sask Builds

Role: Security & communications systems compliance consultant Audio visual systems compliance consultant

Completion Date: 2018

Architect: CannonDesign (Compliance Architect)

Lions Gate Hospital Power Plant Replacement - North Vancouver, BC Client: DIALOG Sponsor: Lions Gate Hospital Role: Mechanical & electrical engineering IMIT consultant Completion Date: 2020



Royal Jubilee Hospital, Patient Care Centre - Victoria, BC

Client: Acciona Lark Joint Venture

Sponsor: Vancouver Island Health Authority | Partnerships BC

Role: Mechanical & electrical engineering IMIT engineering Vertical transportation design Security design consultant Energy Modelling Lighting design

Completion Date: 2010

Architect: CannonDesign

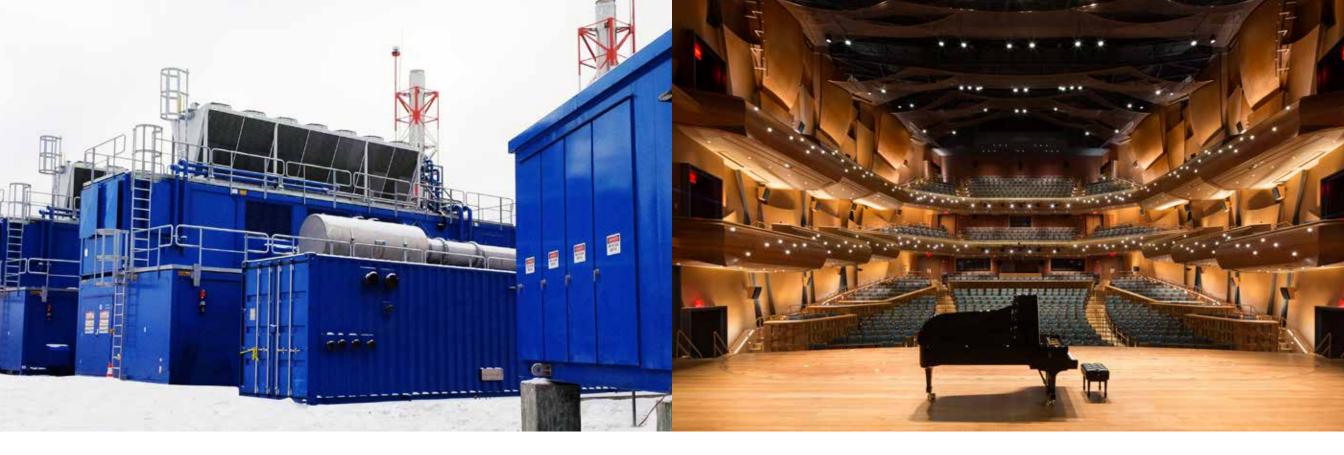
Super Internet Data Centre - Kamloops, BC

Client: TELUS Canada

Role: Owner's representative through commissioning

Owner's representative for Uptime Institute On-site Tier III accreditation audit

Completion Date: 2012



Yukon Energy Gas Drive - Yukon Client: Yukon Energy Role: Electrical engineering Completion Date: 2015

Mount Royal University, Conservatory and Performance Hall Facilities - Calgary, AB Client: Mount Royal University Role: Mechanical & electrical engineering Telecommunications & security engineers Completion Date: 2015 Architect: Pfeiffer Partners Architects Inc.



Jasper Activity and Aquatic Centre - Jasper, AB

Client: The Town of Jasper Role: Mechanical & electrical engineering Energy modeling Lighting design

Completion Date: 2011

Architect: Toker + Associates

Fort St. John Hospital and Peace Villa - Fort St. John, BC

Client: Acciona, Stuart Olson Joint Venture
Sponsor: Northern Health Authority | Partnerships BC
Role: Mechanical & electrical engineering

 IMIT & security consulting

 Vertical transportation design
 Lighting design

Completion Date: 2012

Architect: CannonDesign

ADDITIONAL WESTERN CANADA EXPERIENCE

Translink, Commercial Broadway Station | Vancouver, BC Lighting design for the new station platform at Translink's busiest station.

Interior Health Authority | Kelowna and Vernon, BC Electrical compliance engineering on 3 separate P3 packages with Interior Health Authority at their Kelowna and Vernon sites. The three buildings total nearly 700,000 ft2.

Jack Ady Cancer Centre | Lethbridge, AB

Mechanical engineering services for new addition of the Cancer Centre and 22,000 ft2 of renovations at the Chinook Regional Hospital.

Taylor Family Digital Library, University of Calgary | Calgary, AB

Vertical transportation design for the 265,000 ft2 facility considered to be one of the most innovative and technologically advanced libraries in North America

West Fraser Timber Cogeneration Plant | Slave Lake, AB Electrical engineering services for a new 9 MW bio-gas fed cogeneration facility

Lakeland College Cogeneration Plant Feasibility Study | Vermillion, AB

Feasibility study for a gas powered cogeneration unit in the existing heating plant at Lakeland College

O.S. Longman Office Building | Edmonton, AB Prime consulting, mechanical and electrical engineering services for a major retrofit of a 100,000 ft2 government office and laboratory building Edmonton Federal Building and Centennial Plaza Redevelopment | Edmonton, AB Vertical transportation services for a 325,000 ft2 government office building

Grey Nuns Hospital Maternal Newborn | Edmonton, AB

Mechanical engineers for the complex renovation and expansion of the Grey Nuns Community Hospital including New Neonatal ICU and LBRP rooms.

Calgary Courts Centre | Calgary, AB

Vertical transportation services for a 1,000,000 ft2 government courts and office complex spanning two 20-storey + towers

Epcor Tower | Edmonton, AB

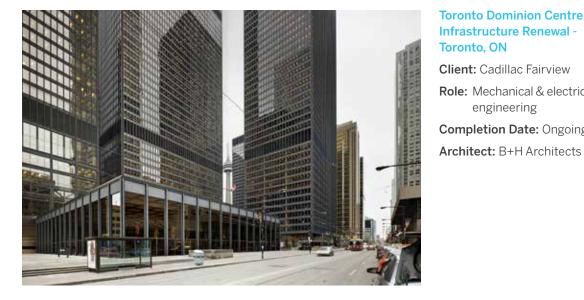
Vertical transportation services for a 624,000 ft2, 28-storey office building

LRT Extension | Calgary, AB

Mechanical and electrical engineering services for eight passenger stations of the original C-Train Northeast line consisting of traction power substations and track power/signalling services

COMMERCIAL







Toronto Dominion Centre Infrastructure Renewal -Toronto, ON

Client: Cadillac Fairview Role: Mechanical & electrical engineering Completion Date: Ongoing

Ernst & Young, 100 Adelaide Tower, Multi-Floor Fitout - Toronto, ON **Client:** Ernst & Young Role: Mechanical & electrical engineering Lighting design Completion Date: 2018 Architect: HOK





eBay - Toronto, ON Client: eBay Role: Mechanical & electrical engineering Completion Date: 2014 Designers: Valerio Dewalt Train Associates | Sirlin Giller & Malek Architects

180 Wellington Street West Refresh - Toronto, ON

Client: RBC/CBRE Role: Mechanical & electrical engineering Completion Date: 2013

Architect: Stantec





TD Bank Group - Project Lego - Toronto, ON

Client: TD Bank Group Role: Mechanical engineering Completion Date: 2015 Project Partners: EllisDon Designer: HOK

Teknion - Toronto, ON

Client: Teknion Role: Mechanical & electrical engineering Lighting design Completion Date: 2016 Designer: SGH Design

ADDITIONAL COMMERCIAL EXPERIENCE

Scotiabank Ecosystem Program | Toronto, ON Mechanical, electrical, audio-visual and communications engineering services for a 'refresh' of Scotiabank's office space in and immediately around Scotia Plaza in downtown Toronto

Co-Operators Office Building | Guelph, ON Mechanical and electrical engineering services for the 250,000 ft2 base building and fitout

The New Oshawa Clinic | West Whitby, ON

Mechanical and electrical engineering services for the 120,000 ft2 offices, clinic space and retail pharmacy

Uber | Toronto, ON

Mechanical and electrical engineering services for Uber's office fit-out in downtown Toronto

Holt Renfrew Head Office Renovation | Toronto, ON

Lighting engineering services for the renovations of the headquarters of iconic Canadian retail fashion brand Holt Renfrew

Steeles technology Campus | Toronto, ON

Electrical and communications engineering services for the design and construction of a 2,000,000 ft2 commercial office development which included office space, call centre, network management centre, conference and training centre, fitness facility, dining hall, and various retail spaces

GE Gas Engine Manufacturing Plant | Welland, ON

Mechanical, electrical, security, communications, IT, vertical transportation and lighting engineering services for GE's most advanced state-of-the-art, 450,000 ft2 gas engine plant which is the first of its kind in Canada

INTACT | Toronto, ON

Mechanical, electrical, communications and lighting engineering services for a 200,000 ft2 renovation and fit-out for INTACT Financial in downtown Toronto

City Hall Renovations | Toronto, ON

Mechanical, electrical, communications, security and audio-visual engineering services for the renovation of the iconic Toronto City Hall building

Bay Adelaide Centre West Elevators| Toronto, ON

Vertical transportation engineering services for this 51-storey, 1, 160,000 ft2 commercial high-rise tower

Penguin Random House Tenant Fit-out | Toronto, ON

Mechanical, electrical, communications and lighting engineering services Penguin Random House's office fit-out in a downtown commercial high-rise building

Kohler Signature Store Tenant Fit-out | Toronto, ON

Mechanical and electrical engineering services for Kohler's signature luxury showroom

TD Centre Towers 1-3 High Voltage Electrical Distribution Upgrade | Toronto, ON

Prime consultant and electrical engineering services to replace existing transformers at Cadillac Fairview's TD Centre property

Canary Wharf Canada Square Tower | London, UK

Electrical engineering services for the 50-storey, 1,248,000 ft2 office tower in London's Canary Wharf

HEALTHCARE

46







Centre hospitalier de l'Université de Montréal (CHUM) - Montréal, QC

Client: Construction Santé Montréal

Role: Mechanical & electrical engineering Security design consulting

Completion Date: Phase 1 - 2017

Architect: CannonDesign

Mount Sinai Hospital -Phase 3 Redevelopment -Toronto, ON

Client: Mount Sinai Hospital Role: Mechanical & electrical engineering Completion Date: 2022

Architect: Stantec



St. Michael's Hospital -Peter Gilgan Patient Care Tower - Toronto, ON

Client: St. Michael's Hospital | Infrastructure Ontario (IO)

Role: Mechanical & electrical compliance engineering

Completion Date: 2019

Architect: Diamond Schmitt Architects

Michael Garron Hospital, Patient Care Tower -Toronto, ON

Client: Michael Garron Hospital | IO

Role: Mechanical & electrical compliance engineering Vertical transportation Design compliance ICAT/IMIT compliance

Completion Date: 2023 Architect: CannonDesign





Joseph Brant Hospital -Burlington, ON

Client: Joseph Brant Hospital

Role: ICAT strategy Mechanical & electrical compliance engineering

Completion Date: 2018

Oakville Trafalgar Memorial Hospital - Oakville, ON

Client: EllisDon

Sponsor: Halton Healthcare

Role: Mechanical engineering Vertical transportation Commissioning

Completion Date: 2015

Architects: Parkin Architects Limited | Adamson and Associates Architects



ADDITIONAL HEALTHCARE EXPERIENCE

Holland Bloorview Kids Rehabilitation Hospital | Toronto, ON

Mechanical, electrical, IT, communications and lighting engineering services for the 5-storey, 343,000 ft2 rehabilitation inpatient/outpatient facility

Humber River Regional Hospital | Toronto, ON

Mechanical, electrical and vertical transportation engineering services for redevelopment and amalgamation of three hospitals, including over 150,000 ft2 of expansion and extensive renovations to existing buildings

Sunnybrook Health Sciences Centre | Toronto, ON

Providing mechanical and electrical engineering services to this client since 1945, including driving a program of major expansion and redevelopment to the 2,200,000 ft2 hospital and research campus

St. Joseph's Healthcare Perioperative Suite and Diagnostic Imaging Expansion | Hamilton, ON Mechanical, electrical engineering services for the 130,000 ft2 expansion

Royal Victoria Regional Health Centre | Barrie, ON

Mechanical, electrical and lighting engineering services for the hospital's major 300,000 ft2 renovation and expansion

North Bay Regional Health Centre | North Bay, ON

Mechanical, electrical, communications, vertical transportation and lighting engineering services for the 725,000 ft2, 275-bed acute care and mental health facility, one of the first LEED-registered healthcare buildings in Canada

Stronach Regional Health Cancer Centre | Newmarket, ON

Mechanical and electrical engineering services for a new 100,000 ft2 cancer care facility.

Family Health Centre | Bradford, ON

Mechanical and electrical engineering services for 11,000 ft2 renovation.

William Osler Health Centre | Brampton, ON Mechanical engineering services for the 620,000 ft2 Inpatient Wing

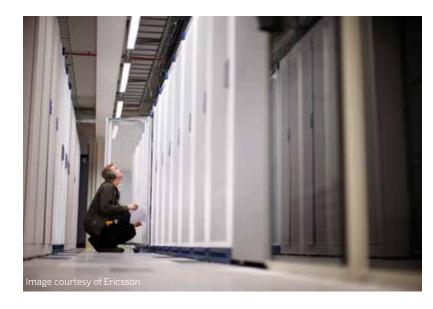
Cambridge Memorial Hospital Cogeneration | Cambridge, ON

Prime consultant, mechanical and electrical engineering for a 1500 kW containerized outdoor cogeneration facility

Lakeridge Health Combined Heat and Power | Oshawa, ON

Electrical engineering services to integrate a new indoor 4160 V cogeneration machine into the existing electrical system at Lakeridge Health with the goal of displacing utility electricity

MISSION CRITICAL LABORATOR ACIL





Global Information and Communication Technology (ICT) Center - Montréal, QC

Client: Ericsson Canada

Role: Prime consultant Mechanical & electrical engineering

Completion Date: 2016

Architect: WZMH Architects

Computer Centre Design and Expansion - Markham, ON

Client: HP Canada

Role: Prime consulting Mechanical & electrical engineering Strategic planning Commissioning

Completion Date: 1988 -2010





Peter Gilgan Centre for Research and Learning -Toronto, ON

Client: The Hospital for Sick Children

- Role: Mechanical & electrical engineering Vertical transportation design IT communications design Lighting design
- Completion Date: 2013 Architect: Diamond Schmitt Architects

Li Ka Shing Knowledge Institute - Toronto, ON

- Client: St. Michael's Hospital
- Role: Mechanical & electrical engineering
- Completion Date: 2011
- Architect: Diamond Schmitt Architects





MaRS II Building - Toronto, ON

Client: Public Health Ontario Laboratories

Role: Mechanical & electrical engineering Vertical transportation design Lighting design Communications & security Completion Date: 2014

Architect: Diamond Schmitt Architects

Forensic Services and Coroner's Complex -Toronto, ON

Client: Infrastructure Ontario

Role: Mechanical & electrical compliance engineering Communications design

Completion Date: 2013 Architect: WZMH Architects

ADDITIONAL MISSION CRITICAL + LABORATORY/RESEARCH FACILITIES EXPERIENCE

St. Michael's Hospital and Ryerson University Laboratory Fit-out | Toronto, ON

Mechanical, electrical, communications, IT and lighting engineering services for the fit-out of shared laboratory space for St. Michael's Hospital and Ryerson University

Toronto Zoo Wildlife Health Centre | Toronto, ON

Mechanical, electrical and lighting engineering services for a new state-of-the-art animal hospital, laboratory services and research centre

Queen's University Biomedical Research Facility | Kingston, ON

Mechanical, electrical, security, communications, vertical transportation and lighting engineering services for the renovation of animal vivarium and research facility

Canadian Centre for Inland Waterways Lab | Toronto, ON

Mechanical, electrical, communications, security, IT and audio-visual engineering services for the modernization of the Canadian Centre for Inland Waterways lab facility with the renovation focusing on energy efficiency and climate change improvements

Summerlee Science Complex | Guelph, ON

Mechanical and electrical engineering services for a new 4-storey, 360,000 ft2 (completed in two phases) science complex including teaching labs, research wet labs, greenhouse facility on the roof and extensive chemical storage area

Reactors Material Testing Laboratory | Kingston, ON

Mechanical and electrical engineering services for a new 8,000 ft2 reactor materials testing laboratory for Queen's University's Nuclear Materials Group

SOC - Operation Centre | Toronto, ON

Prime Consultant, master planning, feasibility planning, mechanical and electrical engineers, controls engineering design, factory witness testing and commissioning for the 300,000 ft2 computer centre

Citigroup European Headquarters Computer Centre | London, UK

Electrical and communications engineering services for a 30,000 ft2 server farm/computer centre and 42 floors of communications tech rooms supported by a 6-1600 kW rotary diesel UPS units for 9.6 MW of back-up power to critical operations

Confidential Client Data Centre Expansion

Mechanical and electrical engineering services for a significant data centre expansion which included a central cooling plant and emergency generation system, 3,750 ton VFD high pressure centrifugal chiller, three 750 ton induced draft cooling towers, and flexible design for future expansion capacity

Chemical and Physical Sciences Lab Renovation | Mississauga, ON

Mechanical and electrical engineering services for a complex 3,000 ft2 laboratory renovation at the University of Toronto Mississauga campus

McMaster University CL-3 BioContainment Animal Suite | Hamilton, ON

Mechanical and electrical engineering for a new 1,600 ft2 CI-3 facility

Centralized Intravenous Admixing Facility | Mississauga, ON

Mechanical and electrical engineering services for a Centralized Intravenous Admixing (CIVA) facility for Baxter Canada featuring state-of-the-art clean room technology and monitoring processes

Hydro One - Ontario Grid Control Centre | Barrie, ON

Mechanical and electrical engineering services for the grid operations centre

EDUCATION

a little and a





Leslie L. Dan Faculty of Pharmacy - Toronto, ON

Client: University of Toronto

Role: Mechanical & electrical engineering Lighting design Vertical transportation design

Completion Date: 2006 Architects: Foster and Partners | Moffat Kinoshita Architects

Mike and Ophelia Lazaridis Quantum-Nano Centre -Waterloo, ON

Client: University of Waterloo

Role: Mechanical & electrical engineering Security design Communications design Vertical transportation design Completion Date: 2013

Architect: KPMB Architects



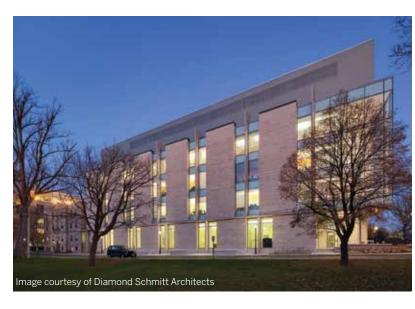
Terrence Donnelly Centre for Cellular and Biomolecular Research -Toronto, ON

Client: University of Toronto

Role: Mechanical & electrical engineering Vertical transportation review Communications & security design Completion Date: 2006 Architects: Behnisch Architekten | architectsAlliance

Student Welcome and Resource Centre - Toronto, ON

Client: Humber College Role: Mechanical & electrical compliance engineering Completion Date: 2017 Architect: Barry Bryan Associates (Compliance Architects)





Queen's University, School of Medicine - Kingston, ON

Client: Queen's University Role: Mechanical & electrical engineering Completion Date: 2006 Architect: Diamond Schmitt Architects

Centre for International Governance Innovation -Waterloo, ON

Client: University of Waterloo and Wilfrid Laurier University

Role: Electrical engineering Vertical transportation design

Completion Date: 2012 Architect: KPMB Architects

ADDITIONAL EDUCATION EXPERIENCE

Tyndale University College and Seminary | Toronto, ON

Mechanical, electrical and vertical transportation engineering services for a 370,000 ft2 renovation of an existing 1950s structure

Queen's University District Energy System | Kingston, ON

Mechanical and electrical engineering services for the design and implementation of a 15 MW cogeneration facility

New College Student Residence, University of Toronto | Toronto, ON

Mechanical and electrical engineering services for 8-storey, 130,000 ft2 student residence with multipurpose activity centre and common rooms

Humber College Backfill Project D | Toronto, ON

Mechanical, electrical, IT, communications, audio-visual and lighting engineering services for the renovation of an outdated laboratory space into a bright and lively teaching daycare

Combined Heat and Power Feasibility Study, University of Toronto | Toronto, ON

Reviewed heating and power usage of the St. George (downtown) campus to determine the return on investment for three options of natural gas turbines

Centre for Biological Timing and Cognition, University of Toronto | Toronto, ON

Mechanical and electrical engineering services for a new 3-storey, 22,000 ft2 addition which included a variety of lab spaces

Carleton University Behind-the-Meter Generation Study | Ottawa, ON

Provided a detailed engineering feasibility study requiring energy modeling, equipment sizing, power distribution, thermal distribution, exhaust stack, noise and emissions review, and preparation of CAPEX and OPEX evaluations to meet OPA requirements

Algonquin College Trigeneration Plant | Ottawa, ON

Prime consultant, mechanical and electrical engineering services for design and construction of a trigeneration plant

Wilfrid Laurier University - District Energy System Upgrade | Waterloo, ON

Mechanical and electrical engineering services for the campus District Energy System

TRANSPORTA-TION

60





Eglinton Crosstown Light Rail Transit - Toronto, ON

Client: Crosslinx Transit Solutions

Sponsor: Infrastructure Ontario/Metrolinx

Role: Mechanical & electrical engineering Communications & security design

Completion Date: 2021 Architects: NORR | IBI Group

TTC York-Spadina Subway Extension, Pioneer Village and Finch West Stations -Toronto, ON

Client: Toronto Transit Commission

Role: Mechanical & electrical engineering Completion Date: 2017 Architect: IBI Group





Bermuda International Airport - Bermuda

Client: Aecon

Sponsor: Bermuda International Airport

Role: Mechanical & electrical engineering

Completion Date: 2020

Architect: Scott Associates Architects Inc.

Expanded Air Terminal Building - Toronto, ON

Client: Billy Bishop Toronto City Airport

Role: Mechanical & electrical engineering

Completion Date: 2011 Architect: Scott Associates

Architects Inc.

ADDITIONAL TRANSPORTATION EXPERIENCE

Downtown Relief Line South | Toronto, ON

Mechanical and electrical engineering services for 30% schematic design for two key underground stations on the proposed new TTC Downtown Relief Line South

TTC Sheppard Subway Line, Bayview Station | Toronto, ON

Mechanical, electrical, communications for the design and construction of the TTC Bayview subway station

Bus Rapid Transit | Mississauga, ON

Mechanical, electrical, vertical transportation and lighting engineering services for the BRT stations on the 9 km line

Bus Maintenance Facility | Oshawa, ON

Mechanical, electrical, IT, communications, security and lighting engineering services for a greenfield maintenance facility for Durham Transit's fleet of buses

Pearson International Airport, Terminal 1 | Toronto, ON

Vertical transportation and lighting engineering services for all passenger conveyance devices (elevators, escalators and moving walks) in the 2,800,000 ft2 facility, as well as lighting in all spaces including the Grand Hall

Canary Wharf Docklands LRT Station | London, UK

Electrical engineering services for the Dockland LRT station located at the base of the One Canada Square tower in London's Canary Wharf

HOSPITALITY, ENTERTAIN-MENT, SPORTS, RECREATION + CULTURE





Pickering Casino Resort -Pickering, ON

Client: Great Canadian Gaming Corporation

Role: Electrical engineering Lighting design

Completion Date: Ongoing

Architects: Chris Dikeakos Architects Inc. | Climans Green Liang Architects Inc.

BMO Field Expansion -Toronto, ON

Client: Maple Leaf Sports and Entertainment (MLSE) Role: Mechanical & electrical engineering Completion Date: Phase 1 -2015; Phase 2 -2016 Architect: Gensler <image>

Rogers Centre - Toronto, ON

Client: Stadium Corporation Role: Mechanical & electrical engineering Completion Date: 1989

Architect: NORR

Sheraton Hotel - Toronto, ON

Client: Sheraton Hotel Role: Lighting design Completion Date: 2016 Architect: Architecture Counsel Inc.





Ricarda's - Toronto, ON

Client: DESCH Canada Ltd.

Role: Mechanical & electrical engineering Lighting design

Completion Date: 2016

Architect: Thinkform Architecture + Interiors

Stratus Restaurant -Toronto, ON

Client: Stratus Restaurant Role: Lighting design Completion Date: 2016 Architect: B+H Architects

ADDITIONAL HOSPITALITY, ENTERTAINMENT, SPORTS, RECREATION + CULTURE EXPERIENCE

Casino Rama Power Infrastructure Upgrade | Chippewas of Rama First Nation, ON

Prime consultant and electrical engineering services to analyze existing power distribution and design and install a 1.2 MW centralized uninterruptable power supply (UPS) that would protect the casino's equipment while minimizing downtime for the gaming systems

Ontario College of Art and Design (OCAD) Gallery | Toronto, ON

Mechanical, electrical and lighting engineering services for OCAD's professional gallery which includes its permanent art collection, Media Lounge, storage, administration, shipping and receiving areas

Richardson Stadium Revitalization, Queen's University | Kingston, ON

Mechanical and electrical engineering services for the revitalization of the 8,500 seat stadium

Ryerson University Pitman Hall Renovations | Toronto, ON

Mechanical, electrical, security, communications, fire protection and lighting engineering services for the renovation of the dining and kitchen facilities in the Pitman Hall residence

Fabbrica | Toronto, ON

Mechanical, electrical and lighting engineering services for the fit-out of the new Fabbrica restaurant on the concourse level of the TD Centre

Innisfil Public Library | Innisfil, ON

Mechanical, electrical and lighting engineering services for the renovation and expansion of the Innisfil Public Library Lakeshore branch

Living Arts Centre Lighting Renewal | Mississauga, ON

Prime consultant, electrical and lighting engineering services to refresh and upgrade the lighting design of this 225,000 ft2 performing arts facility

Engineering. Excellence.

555 Burrard St. Vancouver, BC V7X 1M8 Canada

T 604 229 3165 van@hhangus.com hhangus.com

Toronto

Montréal Vancouver

Dallas

Chicago