stephenson ENGINEERING
A SALAS O'BRIEN COMPANY

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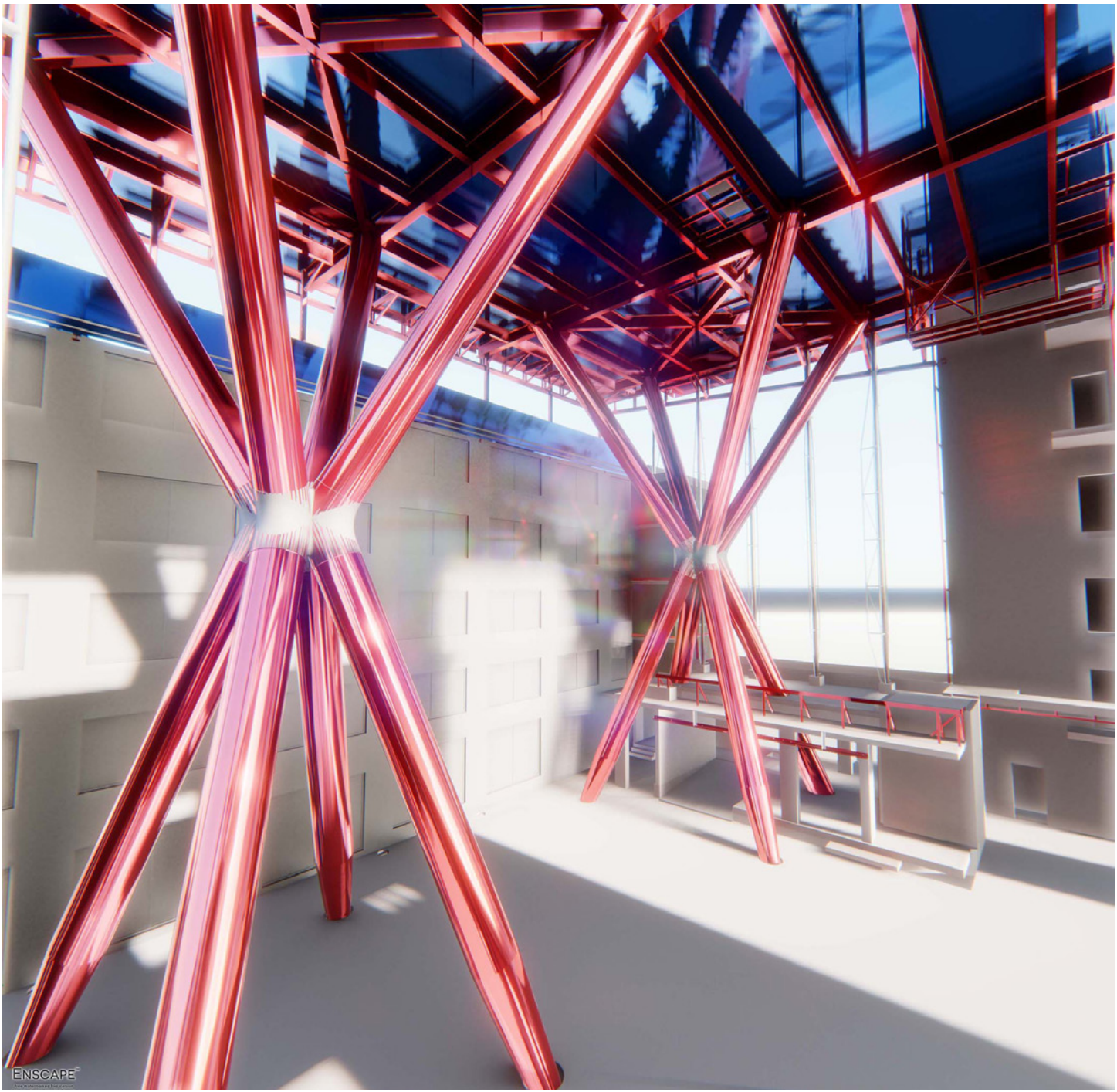
ENSCAPE

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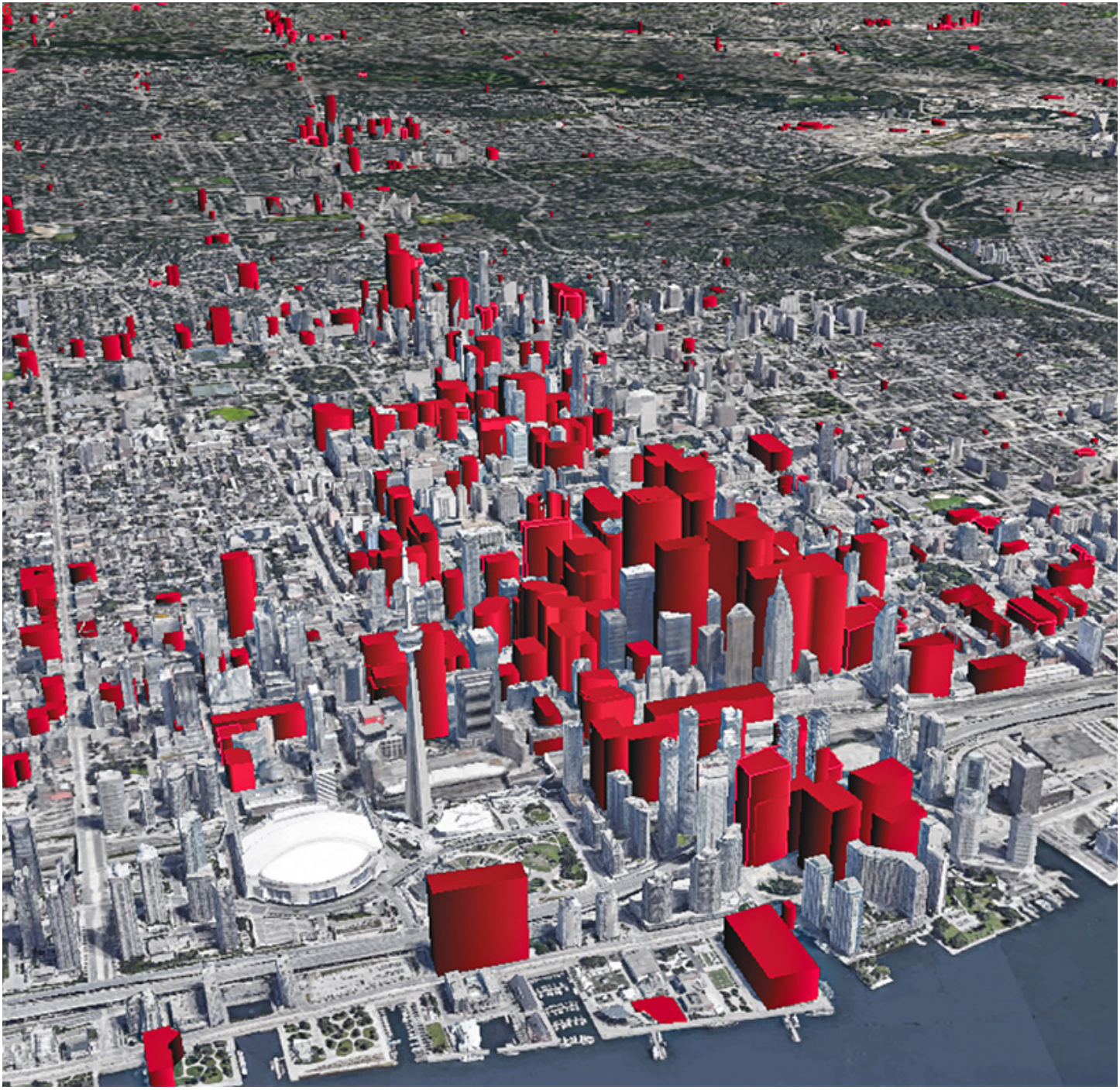
Firm Overview | 01



STEPHENSON ENGINEERING

ENGINEERING YOUR SUCCESS FROM THE GROUND UP

For over 50 years Stephenson Engineering has teamed with architects, developers, owners, government, communities and other stakeholders to help them achieve their vision by providing proven structural engineering expertise, a collaborative approach and innovative thinking–resulting in projects that are functional, economical, sustainable and completed on time and on budget.

One of the first structural engineering consulting firms in Canada to champion the use of Building Information Modeling (BIM) to promote better understanding, coordination and constructability of projects, we remain at the forefront of technological advancements, enabling us to offer our clients creative, leading edge solutions to even the most complex structural challenges.

With over 8,000 projects completed over the last five decades, we have the proven ability to engineer durable and practical structural solutions that are both successful and cost-effective. Our steadfast commitment to quality and unparalleled client service is the reason we have been so successful at building structures–and relationships–that have stood the test of time.

BREAKING NEW GROUND SINCE 1969

Stephenson Engineering has been in business for over 50 years, providing structural engineering expertise with responsive and personal service to a broad range of clients. Today, we continue to be dedicated to the same principles, delivering projects from our Calgary, Toronto, and Ottawa offices.

The firm is wholly owned by Principals and maintains a staff of approximately 130, including Professional Engineers, Technicians, BIM Modelers and Support Staff. Stephenson Engineering is a proud member of the Ontario Society of Professional Engineers, Consulting Engineers of Ontario, Ontario Building Envelope Council (OBEC), Canada Green Building Council (CaGBC), Toronto Construction Association, and many other Professional Associations.

FIELDS OF SPECIALIZATION

- Structural Consulting
- Building Envelope
- Restoration
- Physical Condition Assessments
- Special Artistic Projects
- Contract Administration
- Structural Investigations
- Pre-Design Reports
- Expert Witness Services

STRUCTURAL

SERVICE SECTORS

- **Commercial**
  - Office Towers
  - Suburban Office Parks
  - Corporate Headquarters
  - Retail
- **Residential**
  - Condominiums
  - Student Residences
  - Retirement Residences
- **Institutional**
  - Educational Buildings
  - Correctional Facilities
  - Emergency Services
- **Industrial**
  - Data Centres
  - Distribution Centres
  - Manufacturing
  - Automotive
- **Health Care**
  - Hospitals
  - Medical Office Facilities
  - Longterm Care Facilities
- **Culture/Entertainment**
  - Community Centres
  - Sport Centres
  - Libraries
  - Theatres

BUILDING SCIENCE

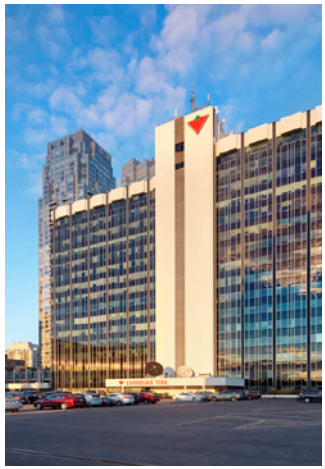
At the core of Stephenson Engineering's Building Science Services Division lies expertise based on years of experience within the building science industry. Extensive knowledge of building science principles, systems, and components provides clients with cost-effective, innovative and durable design solutions.

SERVICE SECTORS

- Commercial
- Residential
- Institutional
- Industrial
- Government
- Heritage Buildings

BUILDING SCIENCE SERVICES

- Restoration & Rehabilitation
- Asset Management Services
- Small Projects
- Consultation & Design Services
- Building Envelope Commissioning
- Sustainable Solutions
- (LEED) Durable Building
- Energy Consultation and Design
- Building Envelope Services
- Building Systems and Components
- Procedure



OFFICE LOCATIONS
39 OFFICES ACROSS CANADA AND USA

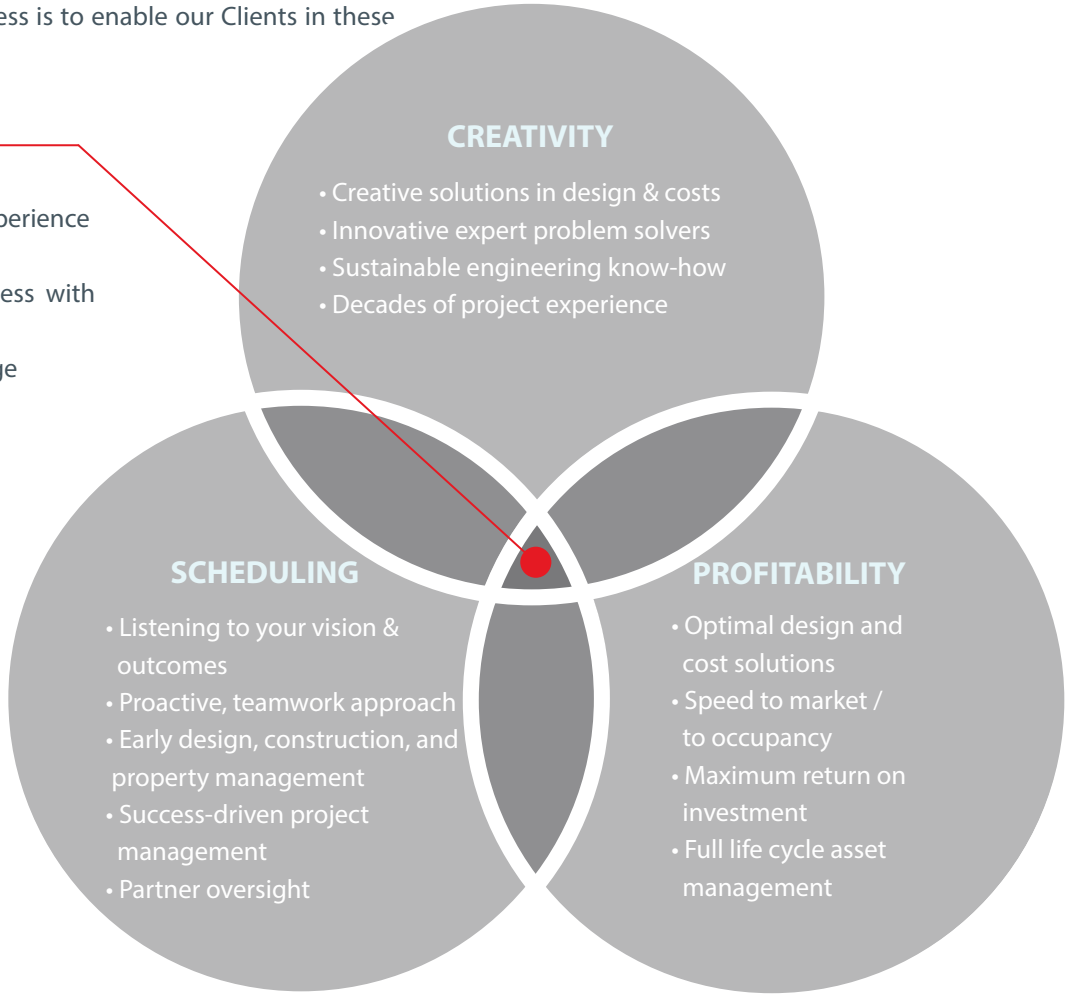
Calgary, AB
Ottawa, ON
Toronto, ON
Vancouver, BC
Atlanta, GA
Austin, TX
Baton Rouge, LA
Bethesda, MD
Boston, MA
Bozeman, MT
Chicago, IL
Cincinnati, OH
Columbus, OH
Concord, CA
Corona, CA
Dallas, TX
Denver, CO
Eau Claire, WI
Granville, OH
Houston, TX
Irvine, CA
Madison, WI
Monterey, CA
New Orleans, LA
Oakland, CA
Oklahoma City, OK
Orlando, FL
Phoenix, AZ
Raleigh, NC
Rochester, MN
Richardson, TX
Richmond, VA
Sacramento, CA
San Diego, CA
San Jose, CA
San Luis Obispo, CA
Santa Ana, CA
Seattle, WA
Twin Cities, MN
Washington, DC - (affiliate office)

OUR APPROACH TO CLIENT OUTCOMES

Our Experience and Research show that where Creativity, Scheduling, and Profitability are important, we can help you win better than anyone else. That is our "Sweet Spot." The reason we are in business is to enable our Clients in these three areas.

"Sweet Spot"

- Vision assurance
- Rewarding project experience
- Peace of mind
- Easy to conduct business with
- We help you win!
- Competitive advantage



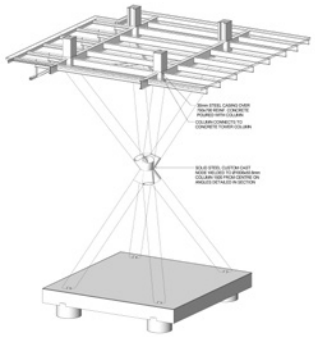
Creative Solutions 02

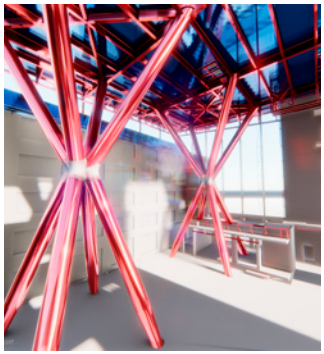
MEGA DELTA FRAME "JACKS"

The ability to preserve historic buildings while allowing for the construction of high-density development in urban environments is an important current issue in the industry.

The Queen Richmond Centre West is an example of the ability of the construction industry to balance heritage and development. This distinctive building in Toronto is a eleven storey office building floating above existing four and five storey masonry and timber heritage buildings.

To support the building above, we created a unique "Mega Delta Frame" structure utilizing a central node of steel casting. The Mega Delta Frame can be visualized as two space frame pyramids stacked on each other with the upper one inverted such that the points of the two pyramids join at a central node. The configuration of the structure enables the Mega Delta Frame to contribute to the lateral stiffness of the building under wind and seismic loading in addition to supporting the gravity loads of the columns above. The end result of the "Mega Delta Frame" is a visually pleasing architecturally dynamic structure which has become the signature of the building.





Queen Richmond Centre West has received numerous awards, including: the 2015 Canadian Consulting Engineering Schreyer Award rewarding a project that best demonstrates excellence and innovation, the 2017 Toronto Urban Design Awards Award of Excellence for Private Buildings - Tall, the 2017 OAA Design Excellence Award, the 2013 Innovation Award by the Toronto Construction Association, a 2016 CISC National Design Award, a 2015 Award of Excellence in Engineering from the CISC Ontario Steel Design Awards, a 2015 R+D Award for Architectural and Engineering Solutions and Innovations from the Journal of the American Institute of Architects, and the 2015 Canadian Urban Institute Brownie Award for Best Overall Building.

VIERENDEEL TRANSFER TRUSSES

For the two-tower Four Seasons Hotel & Residence, innovative design was crucial to address multiple structural challenges. Due to the height of the main tower, a 'tube within a tube' structure was used to handle lateral loads, thereby minimizing walls and columns within the floor plate and facilitating flexibility of layout. For transfer trusses in the 26-storey hotel/condo tower, conventional Warren trusses were nixed in favor of floor-to-floor height Vierendeel trusses to accommodate floor circulation and mechanical distribution.

LINK STRUCTURE

When faced with the challenge of designing a floating steel structure intended to connect two high-rise towers 15 storeys in the air, Zoran Tanasijevic (at the time with another firm) proposed two alternatives.

The first scenario proposed using variable depth king post trusses, located below the Level 15 suspended structure, to create an unusual "spine effect". The trusses would be vertically supported on the tower structure and laterally separated from one of the towers with a sliding bearing assembly.

An alternate design proposed linking the towers with a three-storey high hanging structure, suspended at the roof level by a steel truss system.

THE "ZIPPER"

When constructing large institutional buildings that meet post-disaster criteria, conventional practice dictates the use of an expansion joint through the centre of the building, necessary due to the length of the building.
In circumstances such as Brampton Civic Hospital where the design called for a 600 foot long Inpatient Building, the proposed traditional expansion joint would have been approximately eight inches wide in all floors, walls and ceilings, as well as in pipes, ducts, conduits and gas lines.
Stephenson Engineering set a goal to determine a method that would eliminate this costly and unsightly requirement.

Our team-based approach to problem solving led to the development of what we have traditionally referred to as the "zipper", whereby the building is constructed in two "halves" which are connected or "zipped" together once the building has reached temperature equilibrium.

This innovative design brought construction cost savings on the Brampton Civic Hospital project of several millions of dollars and allowed for greater architectural freedom, resulted in a superior final structure.

SUSPENDED WALL – HISTORIC FAÇADE

For this new 17-storey apartment, the heritage rotunda and bank façade was retained within the new construction.
This project involved suspending the wall of an historic bank building above the five-storey excavation with a combined shoring and suspension system. It permitted construction of the parking garage on a "tight" site to maximize the parking count. It also permitted the retention of the declared historic façade. Complex steel framework and hydraulic flat jack technology allowed the construction of six levels of underground parking directly under the eleven meter tall heritage façade.

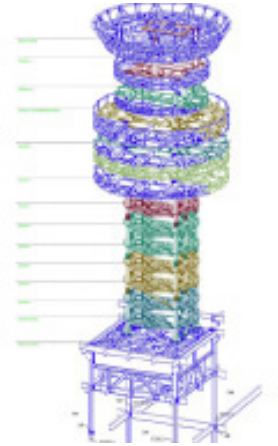
PRECAST CONCRETE "LEGO" BLOCKS

With the Toronto South Detention Centre, we were faced with the challenge of a large complex project with an extremely tight time frame for design and construction. Our solution to meet these demands was a precast concrete framed detention building utilizing precast cells, columns, beams and floors. The precast cells act as an integral part of the building structure.

To facilitate the repetitive nature of cells in a detention centre we utilized a precast system for the building structure. The cells were formed as six sided boxes which were integrated into the building and became the building's lateral and gravity bearing structure. The use of precast cells allowed for greater quality control versus cast-in-place concrete or masonry cells. This precast solution allowed for the off-site fabrication of components and significantly accelerated the construction schedule. Precast cells also have the additional benefit of requiring minimum ongoing interior and exterior maintenance.

The design of the Toronto South Detention Centre, built entirely from prefabricated pieces, including hundreds of precast cells delivered to site complete with windows, wiring and plumbing, is a first for Canada.

TUNED MASS DAMPER AND PREASSEMBLED CONTROL TOWER SECTIONS



Due to the logistics of working within the confines of a fully operational international airport as well as the massive size and weight of the steel structure, off-site prefabrication was important in the design and construction of the Lester B. Pearson Airport Apron Control Tower.

Structural framing and position of the columns were designed to accommodate 360 degree visibility of all operational surfaces. Located above the roof of the terminal building, 2.5 metre deep steel girders were used as a transfer structure. The Tuned Mass Dumper (weighing 30 tonnes) was located in the depth of the roof cornice truss to alleviate horizontal vibrations caused by wind.

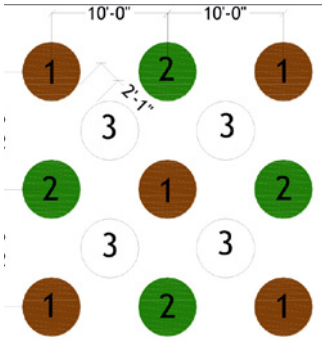
The preassembled two-storey tower sections (weighing 25 tonnes each) were delivered and erected in one day per segment. This project was completed by Zoran Tanasijevic as Project Engineer (with previous employment).

MONTREAL SOIL CONDITIONS

Challenging soil conditions have been experienced on the Premium Outlets retail centre site in Mirabel, Quebec, and the new North Simcoe Secondary School for the Simcoe County District School Board.

The saturated clay and liquefiable soils were consolidated with a Rapid Impact Compaction method (RIC).
This method was proposed to avoid deep foundation systems and achieve significant savings in structural construction costs.

Consolidation of the soil condition also improved the seismic categorization from Class “F” to Class “D” resulting in cost savings of the project superstructure.



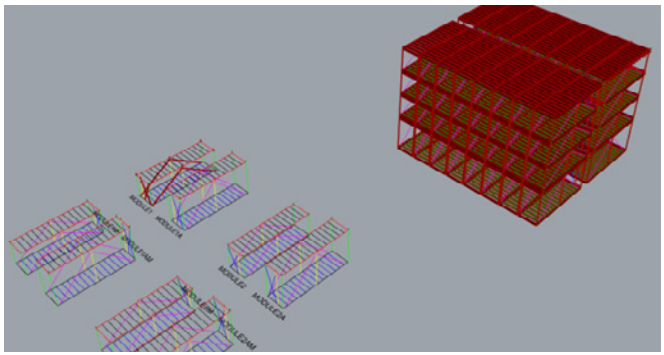
Parametric Design 03

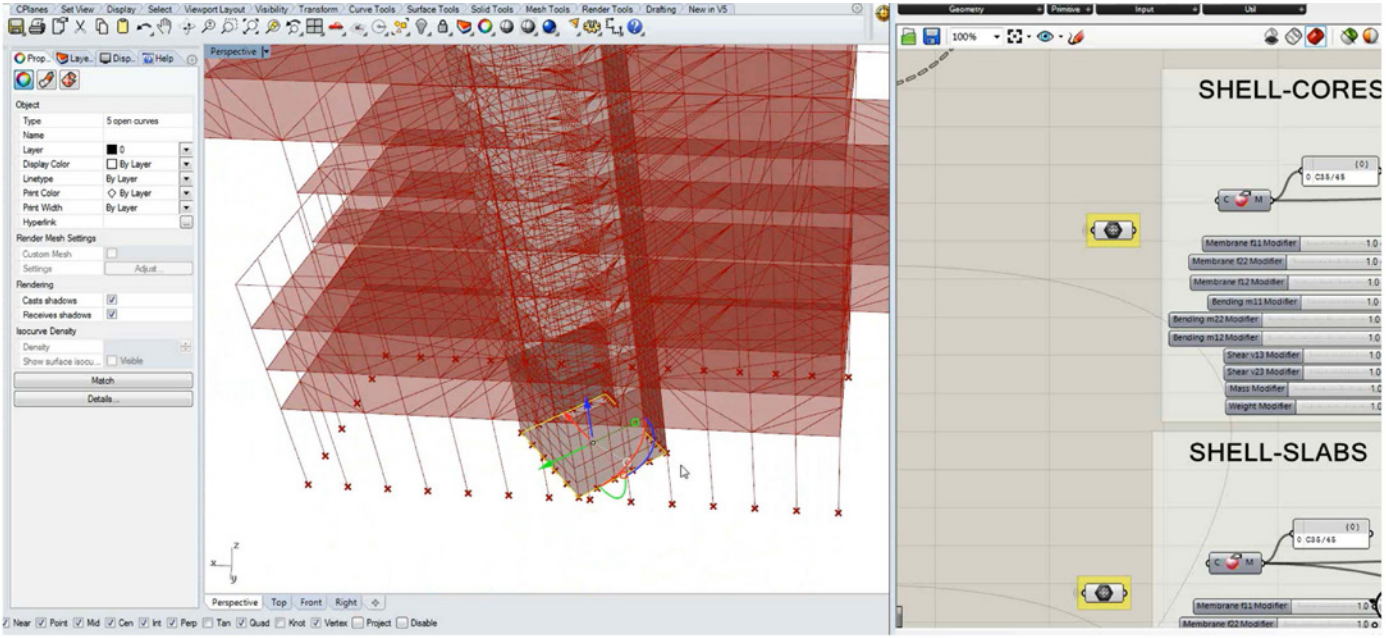
PARAMETRIC DESIGN

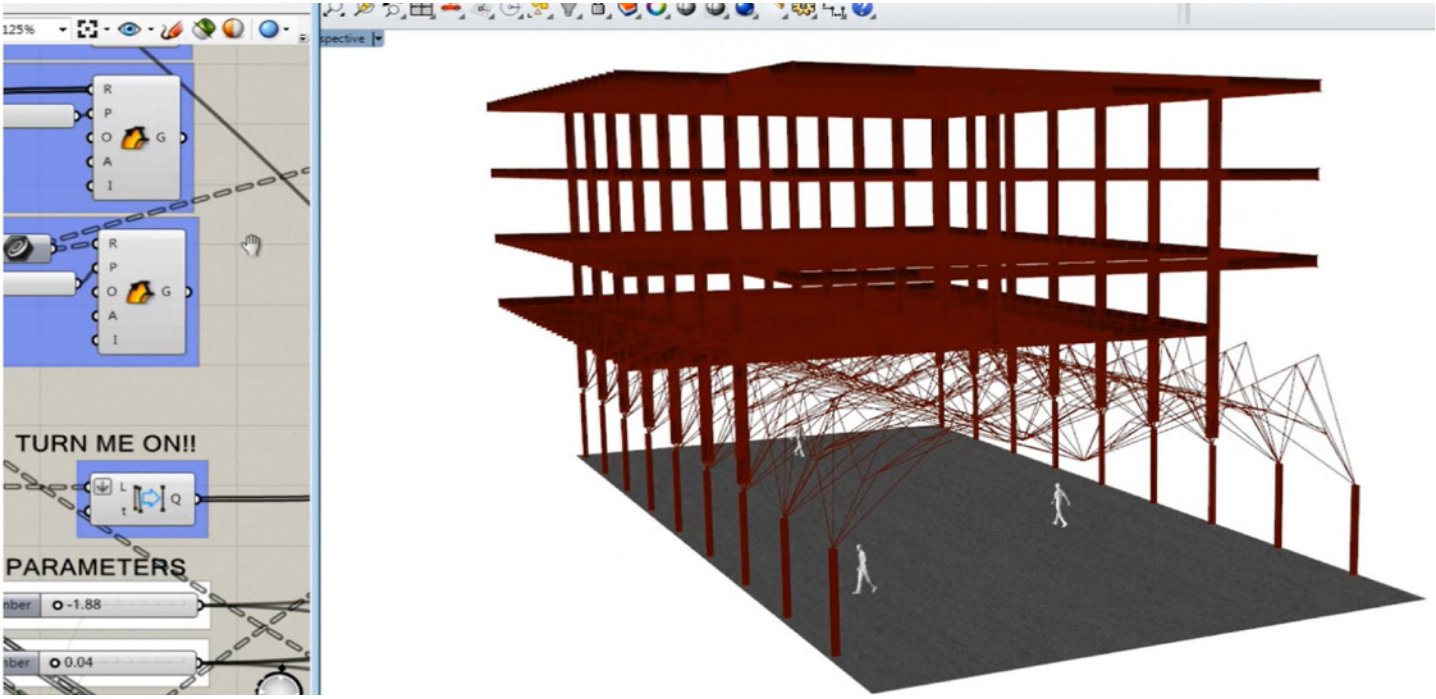
Advances in design technology have allowed for the design of buildings that have become much more complex. Schedules are more restrictive, requiring engineers to respond to these challenges in new ways to achieve the desired building while maintaining the various project and budgetary constraints.

Stephenson has developed unique processes which enhance the traditional design approaches allowing for more creativity, faster building system exploration, and true optimization of challenging engineering systems.
Using software such as Rhino 3D and Grasshopper, a parametric tool, Stephenson has developed unique tools for the efficient study of engineering solutions to complex architectural forms in real time to ensure the architectural intent is always achieved.
The results of the applications of these processes have proven to provide exciting designs and opportunities not possible with traditional methods. These innovative developments have been used for many unique applications. Multiple high rise structural systems are tested and optimized regardless of geometric complexity or material early in the concept phase, allowing the design team to move forward with confidence of a sound and efficient design. Powerful optimization algorithms for complex long span structures analyze thousands of permutations of possible structural systems to converge on a truly optimized and efficient system.

Most importantly, Stephenson strives to recognize the creative and budgetary ambitions of every project.Through our integrated design process, our understanding of the client's needs allows us to provide unique solutions which deliver the desired vision of the design, and a maximum ROI for our client.




SHELL-CORES
SHELL-SLABS


TURN ME ON!!
PARAMETERS

Building Information Modeling (BIM) 04

USE OF BIM

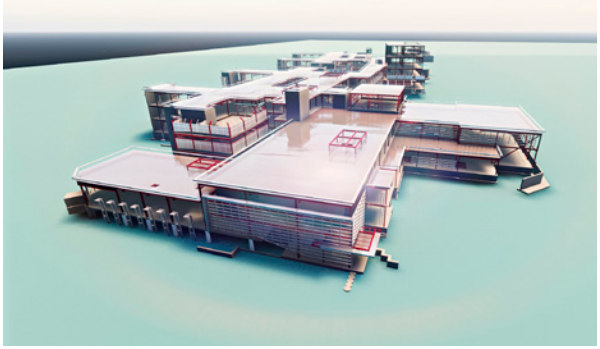
Stephenson Engineering has been using Building Information Modeling (BIM) for the last eleven years. Modeling in the REVIT platform is integrated with structural design software such as ETABS, SAP and RAM.

We see BIM and REVIT as a collaborative tool shared between design and construction teams. The use of BIM / REVIT allows for the production of complete and accurate structural drawings. Innovative ideas can be tested, allowing the team to provide workable solutions to design challenges and meet the requirements of the client and community, while reducing waste and inefficiency by identifying problem areas early in the process.

Early co-ordination and collision detection results in significantly fewer RFI requests and costly change notices, saving time and money. Performance predictions and accurate cost estimates allow team members and owners to have a clear overall vision of the project.

BENEFITS OF USING BIM

- Geometry
- Innovation (create new field of imagination)
- Communication (between design and construction teams)
- Coordination
- Quantities
- Visualization (presenting to client)
- Workflow (modeling - design)
- Construction Sequencing (construction methods)

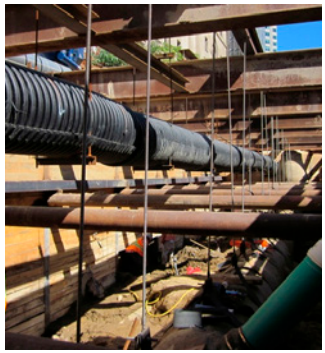


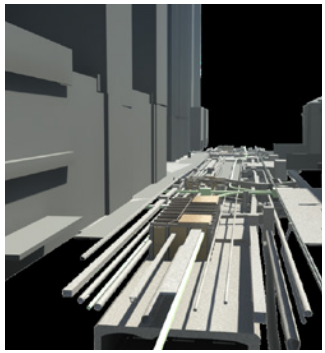
APPLICATION OF BIM

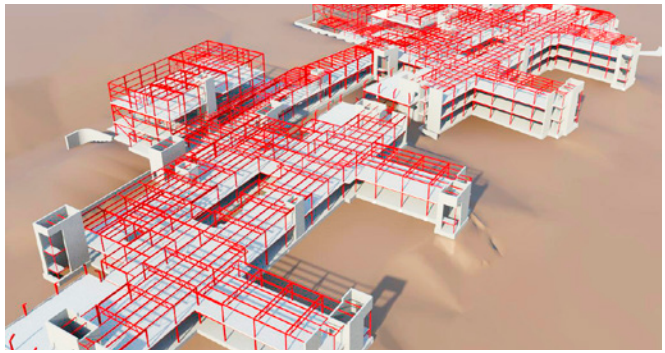
The use of parametric Building Information Modeling (BIM) tools confers great benefits to the construction process and, as an early adopter of this pioneering technology, Stephenson Engineering has successfully utilized this toolkit in novel and exciting ways to execute a number of high profile projects.

One example of interest is how our firm has leveraged BIM technology through the Union Station Secondary Platform project. This large infrastructural renewal project involved a significant number of design problems, which our strategic use of BIM enabled us to solve. For example, the background information associated with this project incorporated over a century's worth of documents detailing utility location and existing subterranean tunnels and building foundations. The resultant BIM Model employed and consolidated satellite geo-spatial data; 3D site surveys; legacy drawing files; and photos and parametric model elements comprising utilities, proposed building elements, existing tunnels, and soil strata. By utilizing a parametric approach, existing utilities were able to be readjusted to their as-built locations with a minimum of time and effort once survey data was received from the field. Shoring elements could be reconfigured as soil data was received from new boreholes. By including new construction elements, Stephenson Engineering was able to avert several major conflicts between existing and new features below grade.

By using the BIM model as a data clearing house for all project information, we were provided with a single access point for all material that would influence and impact the final design, mechanical layouts, and coordinating precast concrete panels with steel and concrete structures. Through careful and economical design, the use of steel was minimized, reducing costs and streamlining the construction process. Waypoint was completed on time and on budget and is now occupied.







Project Experience: High-Rise Commercial 05.1

EY TOWER
100 ADELAIDE STREET WEST

This commercial redevelopment, includes a 978,000 SF 40-storey office tower with five levels of underground parking. The striking faceted-glass tower will target LEED Platinum certification.

The architectural vision of KPF Architects from New York incorporates inclined columns to achieve "façade wings" and sloped facades. The top of the building is a 66 ft clear height of enclosed garden in the form of a "lantern", which is achieved with architectural exposed steel.

The historic 16-storey Concourse Building Art-Deco facade will be maintained and integrated into the base of the new tower.

Stephenson also provided modifications of the existing building for end tenants such as EY and OMERS.

Client: Oxford Properties Group
Location: Toronto, Ontario

STEPHENSON ENGINEERING

ONE YORK & 90 HARBOUR STREET MIXED-USE

This new mixed-use development consists of two residential towers of 66-storeys and 70-storeys (90 Harbour), as well as a 37-storey commercial office building (One York). One York consists of a 37-storey LEED Platinum commercial office building with a GFA of approximately 800,000 SF. The commercial retail development contains a 4 level podium representing approximately 300,000 SF of prime retail space, restaurant and public space, as well as a 4 level underground parking garage. Significant challenges on this project include control of ground water as the project is situated in reclaimed land beyond the original Toronto harbourfront. The project is nestled just below the Gardiner Expressway and the Air Canada Centre at the base of Toronto, a prime location with easy access to Union Station. 1 York/90 Harbour was awarded a 2018 Ontario Concrete Award for Structural Design Innovation.

Client: Menkes Developments Ltd.
Location: Toronto, Ontario

QUEEN RICHMOND CENTRE WEST

This unique 300,000 SF eleven-storey LEED Gold office building is suspended over two existing heritage masonry and timber buildings using a structure of "Mega Columns" and steel "X" braces.

To support the building above we created a unique "Mega Delta Frame" structure utilizing an enormous central cast steel node. The Mega Delta Frame can be visualized as two space frame pyramids stacked on each other with the upper on inverted such that the points of the two pyramids join at a central node. The configuration of the structure enables the Mega Delta Frame to contribute to the lateral stiffness of the building under wind and seismic loading in addition to supporting the gravity loads of the columns above. The end results of the "Mega Delta Frame" are a visually pleasing architecturally dynamic atrium structure which has become the signature of the building.

Stephenson has also provided modifications of the existing building for end tenants such as Sapient Toronto, Entertainment One, and Wirtz Beverage.

STEPHENSON ENGINEERING

Client: Allied Properties REIT
Location: Toronto, Ontario

WATERFRONT INNOVATION CENTRE

The Waterfront Innovation Centre consists of two buildings with total area of 540,000 SF.

The west building is a 9-storey office building with a structural steel structure and composite floors. The building is supported by three V-shaped columns at level 3 and a space truss system at the upper floors, which enables it to cantilever more than 20 meters beyond the V columns. The east building is 10-storeys high with a conventional concrete flat slab system and concrete columns and cores.

The buildings are connected to each other by a 6-storey high atrium spanning over Dockside Drive and four pedestrian bridges at levels 3 to 6.

Client: Menkes Developments Ltd.
Location: Toronto, Ontario

LCBO LAND MIXED-USE DEVELOPMENT

This grand-scale new redevelopment on the LCBO Lands. The development includes a 26-storey, 600,000 SF office tower, 300,000 SF of commercial retail space, and a new residential community. This new community will be anchored by a two-acre park located on the north side of Queens Quay East, between Freeland and Cooper Streets. The redevelopment includes a combined 4,300,000 SF of residential, office, retail, and parking space in four blocks.

In Block 4, three residential towers (90, 87, and 77 storeys) with a combined 3,245 units are proposed for the area currently occupied by the LCBO's head office and warehouse. Block 2 features two residential towers (65 and 70 storeys) with each of the towers rising from individual podiums. LCBO will be a major tenant of the proposed new office.

Client: Menkes Developments Ltd.
Location: Toronto, Ontario

STEPHENSON ENGINEERING

THE TELUS CENTRE
25 YORK STREET

This 1,000,000 SF facility includes 29 storeys of office space and three levels of below grade parking, with a 40 foot high glass parapet feature at the top of the building.

The project was built immediately adjacent to active rail lines, requiring the design of a crash wall to withstand the force of a locomotive being derailed.

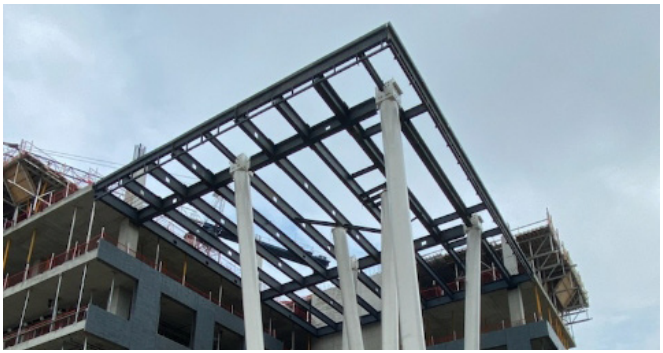
The design incorporated vibration isolation and made provisions for construction of a future subway line. Additional design challenges included a below grade truck loading dock and access for Union Station delivery trucks to pass through the underground garage. To accommodate all the above mentioned provisions and services, one 37 ft bay with 14 ft cantilever span were required at the east end of the 3rd, 4th and 5th levels, which supports a green roof. Post-tensioned beams were designed to achieve such spans under heavy loads and, in the meantime, minimize impact to usable space on these levels. This award winning project is LEED Gold Certified and achieved BOMA BESt Platinum certification with a record score of 95 percent.

Client: Menkes Developments Ltd.
Location: Toronto, Ontario

BREITHAUPT BLOCK BUILDING 3

Breithaupt Block - Building 3 will be an 11 storey, 318,000 SF Class A LEED Gold office building located in Kitchener, Ontario. The structure is reinforced concrete featuring 12m x 9m interior spans with perimeter columns offset 3m from the edge of the slab for a total of 15m of space from the core to the edge of the slab. The structure also features six (6) storey clear spanning structural steel columns supporting an additional 5 levels of concrete structure which overhangs the main entrance vestibule. The steel columns are inclined to suit the aesthetic architectural intent. A steel truss pedestrian bridge will connect the new 11 storey tower with an existing building. The new bridge will span 20m over Breithaupt Road.

Client: Perimeter Development Corporation
Location: Kitchener, Ontario



STEPHENSON ENGINEERING

FOUR SEASONS HOTEL AND RESIDENCE

The Four Seasons project consists of two towers located in the heart of the Yorkville neighbourhood. The 1,200,000 SF hotel occupies the bottom 20 levels of the 52-storey tower with the condo units located above a mid-mechanical level. A second residential tower is 27 storeys. Sway in both towers was kept to a minimum despite an open and virtually wall-free floor plate. The towers have prominent 27-foot penthouse level glass screens, providing a view of the Toronto skyline. To accommodate a grand ballroom, fitness centre and pool, spa, banquet facilities and ground floor high-end retail stores, the nine-storey amenity facility connecting the two towers features 18 m long spans.

Conventional Warren trusses were overthrown in favor of floor-to-floor height Vierendeel trusses to accommodate floor circulation and mechanical distribution.

Client: Menkes Developments Ltd./Four Seasons
Location: Toronto, Ontario

Project Experience:

Mid-Rise Commercial 05.2

AEROCENTRE V

This award winning $50 Million LEED Gold commercial project includes five floors of office space consisting of approximately 225,000 SF of office space above an exposed parking deck. The building features a three-level, above grade, open exposed parking deck, cast in place and precast construction with raised access flooring and exposed concrete soffits. The project received a "Structural Design Innovation Award" from Ontario Concrete Awards for creative use of precast and cast-in-place concrete on this project. The mixed use of these materials helped facilitate an accelerated schedule and minimize the impact to the surrounded areas. The areas where the precast was erected at the end of the project were used throughout the construction as a lay down area. In addition to the creative use of materials, we utilized expansion joints in the above grade open air cast-in-place structure yet innovatively eliminated these joints in the 126m (413ft) long office building above.

STEPHENSON ENGINEERING

Client: HOOPP Realty Inc.
Location: Mississauga, Ontario

BMW CANADA HEADQUARTERS

The BMW headquarters is a 69,000 SF four-storey office building, designed with a steel frame and hollowcore precast slab. The open concept design includes an automotive showroom, cafeteria and presentation areas and a four-storey feature staircase. The mechanical and electrical systems are distributed below access flooring and the hollowcore structure is exposed. The building is designed with an eccentric core to facilitate day lighting. The executive core creates certain design challenges with regard to seismic and wind torsions on the building. In addition the building is constructed of structural steel and precast with the precast soffits being exposed as a ceiling to the floors below. Exposing the structure requires careful detailing to ensure the architectural vision is met. This building is LEED silver certified.

Client: BMW Canada
Location: Richmond Hill, Ontario

URBACON HEADQUARTERS

This award-winning urban redevelopment project converted an abandoned warehouse into a 46,000 SF corporate headquarters for Urbacon. This design showcased the company's commitment to architectural sustainable design and attention to detail.

The building, with natural wood claddings and sun shades, and a high performance glazing system, is situated prominently along Lakeshore Boulevard in downtown Toronto. Recycled aggregates were used, allowing for an affordable and sustainable design. The building features a Building Automation System (BAS) with lighting and power saving technologies to ensure the lowest possible energy consumption levels.

This warehouse redevelopment project was awarded the ARIDO's Award of Merit for Workplace design.

Client: Urbacon Ltd.
Location: Toronto, Ontario

STEPHENSON ENGINEERING

BIOVAIL CORPORATION HEAD OFFICE

This corporate head office head office features a stunning four storey atrium, designed to suggest the shape of a chemistry flask. Two office wings surround the main atrium, which is accessed by a granite-clad bridge.

This office building, located in the Meadowvale North Business Park was awarded with the 2003 Mississauga Urban Design Award of Merit for Architectural Innovation and Business Execution.

In 2008, a three-storey addition was added, including 30,000 SF of offices, meeting rooms, and public spaces.

Client: Biovail Corporation International
Location: Mississauga, Ontario

7685 HURONTARIO OFFICE BUILDING

7685 Hurontario Street is a 7-storey, 70,000 SF commercial office space in Mississauga with green roofs, indoor bike parking, lockers and showers, and parking for over 300 cars.

The project was awarded the 2012 'Most Promising Project' award by the City of Brampton Urban Design Awards and is LEED Gold certified.

Client: Kallo Developments
Location: Mississauga, Ontario

STEPHENSON ENGINEERING

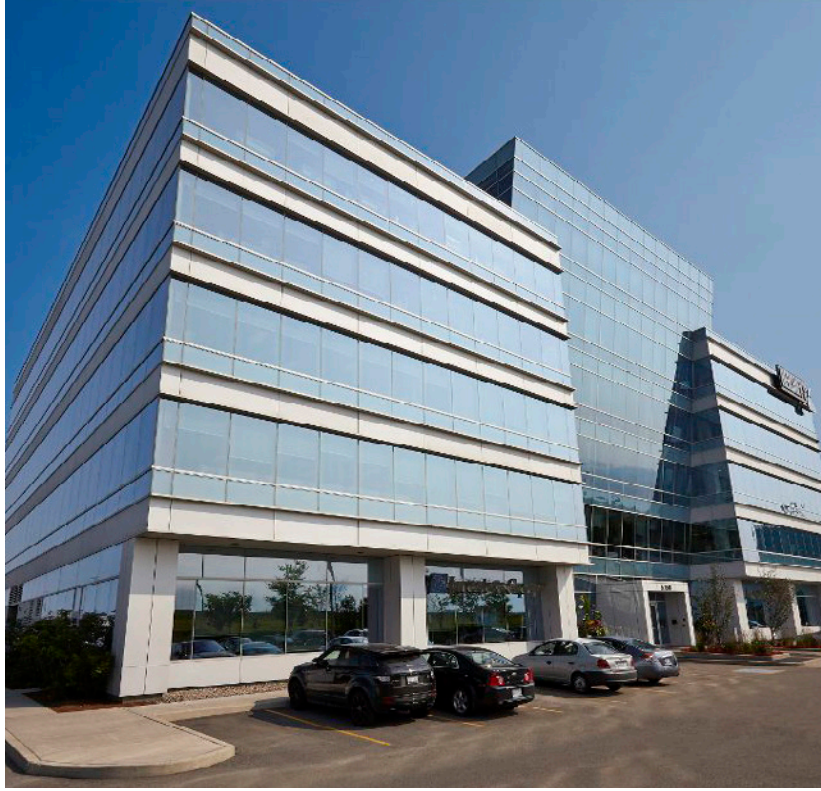
SPECTRUM SQUARE OFFICE BUILDING

Spectrum Square Phase 1B consists of a 6-storey office building with the mechanical penthouse on the roof.
The building also boasts ground floor retail space. The interior of the building contains an exposed concrete structure with 30 foot spans in each direction supported on the concrete columns with tapered drops and high quality concrete surface finishes. Also of note is the 15 foot cantilevered concrete slab around the perimeter at each floor.
Spectrum Square's office building resembles Aerocentre V – an award winning office also designed by Stephenson Engineering - which boasts numerous employee-friendly features; 11-foot floor-to-ceiling windows, collaborative workspaces, raised-floor HVAC for constant fresh air and individually controlled temperature vents.

Client: HOOPP Realty Inc.
Location: Mississauga, Ontario

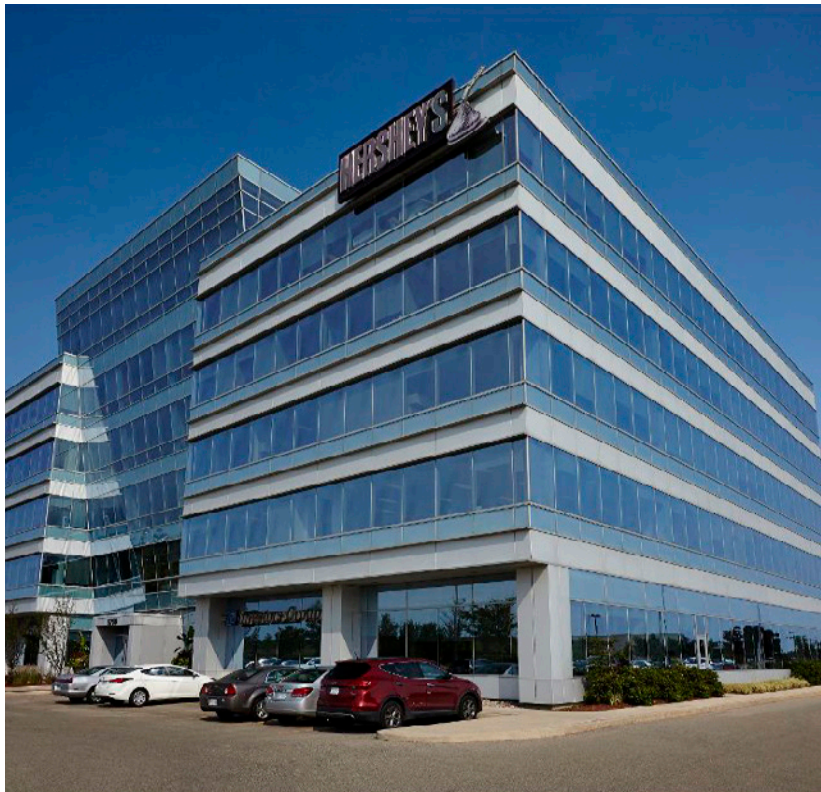
5750 EXPLORER DRIVE OFFICE BUILDING

This five-storey commercial Suburban 'A' Building features 120,000 SF of tenant space.
Certified LEED Silver, the efficient design includes full building back-up power and a bi-fuel generation system to reduce operating costs. Low-toxicity LEED compliant construction materials and enhanced natural lighting conditions were utilized to provide environmental benefits for tenants.



Client: Redcliff Realty Management Inc.
Location: Mississauga, Ontario

STEPHENSON ENGINEERING



99 ATLANTIC COMMERCIAL REDEVELOPMENT

This new 8 storey office building in the heart of Liberty Village, is to be integrated into a larger complex of adjacent heritage buildings.

The building comprises 167,000 SF of new office space and a 4 level underground parking garage. The architecture of the building is to reflect the heritage district in which it is located, while at the same time being a strong, modern presence in the heart of Liberty Village. Designed by WZMH Architects, the building will be connected to the heritage property located at 99 Atlantic Avenue, and will offer an outstanding view of the surrounding area.

The adjacent boiler house property, while not directly connected, will also be incorporated into the design of the finished project.

Due to the long history of the neighbourhood there are many challenges with existing easements and rights-of-way which will be incorporated into the structure, including cantilevering the entire north-west corner of the building over an existing laneway for 1 full structural bay in each direction.

Stephenson's design encompasses interior structural modifications and seismic upgrade of the existing office building, as well as the heritage boiler house with a tall masonry chimney.

Client: Kevric Real East Corporation
Location: Toronto, Canada

Project Experience:

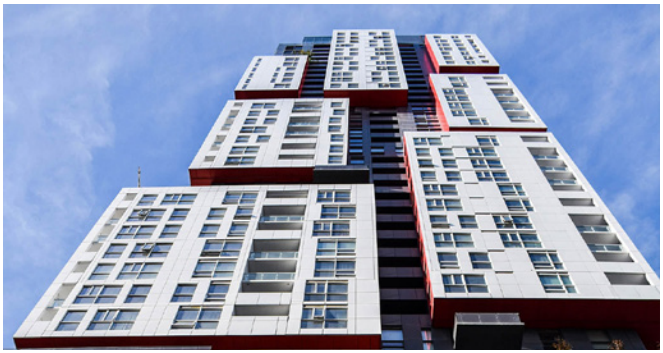
Residential 05.3

PICASSO CONDOMINIUM

Picasso on Richmond, a 39 storey mixed-use condominium project, occupies an iconic site in downtown Toronto. It lies to the north of Richmond St. West on axis with Beverley and Widmer Streets. A ten-storey podium defines and animates the street. Extending from the podium is a tower punctuated by white and grey volumes that shift outward. These are accentuated by a dramatic red cut creating a dynamic sculptural form. The many terrace roofs are planted with gardens, each with unique attributes.

Building amenities include an open-air lobby, bar, lounge and dining areas, a media lounge, and yoga, fitness and spa facilities. The outdoor terrace and roof tops have themed gardens planted at different elevations including a hot-water oasis.

Client: Mattamy Homes
Location: Toronto, Ontario



STEPHENSON ENGINEERING

90 HARBOUR STREET RESIDENTIAL TOWERS

This new mixed-use development consists of two residential towers of 70-storeys and 66-storeys with an adjacent 37-storey commercial office building.

The project is nestled just below the Gardiner Expressway and the Air Canada Centre at the base of Toronto, a prime location with easy access to Union Station.

In addition to the three towers there is a significant retail/commercial podium and a four level underground parking garage. Significant challenges on this project include sway control for the tall residential towers to ensure occupant comfort and control of ground water as the project is situated in reclaimed land beyond the original Toronto harbourfront. 90 Harbour was awarded a 2018 Ontario Concrete Award for Structural Design Innovation.

Client: Menkes Developments Ltd.
Location: Toronto, Ontario

LAGO AT THE WATERFRONT CONDOMINIUM

This 49-storey tower overlooks the Etobicoke Waterfront. The distinct geometric design of the tower maximizes the lake and city views with angling wrap-around balconies.

The building offers 500,000 SF of residential space and five levels of underground parking with a ground level three-storey podium.

Stephenson Engineering has completed other buildings in this waterfront development including the Voyager and Explorer towers, and the Nautilus tower.

Client: Mattamy Homes
Location: Toronto, Ontario

STEPHENSON ENGINEERING

THE LIVMORE CONDOMINIUM

This 703,000 SF, $130,000,000 residential tower is 45-storeys tall and contains 6 floors of underground parking, retail on the ground floor, and various amenities for residents.

The proximity of the existing hotel on the east side of the proposed development requires the design of both temporary and permanent structures for the loading surcharge of the existing foundation system.

The desired slanted façade of the building created a need for inclined columns to maintain constant thickness of the floor slabs.

Client: GWL Realty Advisors Inc.
Location: Toronto, Ontario

AQUABELLA AT BAYSIDE

Part of the Waterfront Toronto Bayside development, Aquabella at Bayside is a 420,000 SF 15-story residential complex with 4 underground parking levels.
The structural system of this project consists of a cast-in-place concrete construction with flat plates and shear walls. Transfer slabs are used on different levels of the project to accommodate architectural requirements. In-slab ecco ducts are extensively used in this project to provide the maximum possible ceiling height for the luxury units.

Client: Hines/Tridel
Location: Toronto, Ontario

STEPHENSON ENGINEERING

AQUAVISTA AT BAYSIDE

Aquavista at Bayside (Phases 3 & 4) is a 700,000 SF GCA, 14-storey residential complex and is part of the Bayside Development which, upon completion, will room 1,800 residences. Bayside Aquavista also has four levels of underground parking.

The unique shape of the building provides an unobstructed lake view and required a creative structural solution to minimize the transfer structure above the retail area. The structural design also accommodates a "submerged" parking garage below the lake level.

Client: Hines/Tridel
Location: Toronto, Ontario

AQUALINA AT BAYSIDE

This two-tower 400,000 SF residential condominium development is the first phase of the Bayside development. The two towers in Phase 1 range in height from 11 to 13 storeys and will be linked, creating a unique architectural expression. The ground floor features retail and restaurant space and the buildings all have interconnecting underground parking.

Client: Hines/Tridel
Location: Toronto, Ontario

STEPHENSON ENGINEERING

THE EGLINTON CONDOMINIUM

This 34-storey, 497,000 SF condominium is located near Yonge and Eglinton and boasts 444 residential units, 4 levels of cast-in-place underground parking for 191 cars, and retail space on the ground floor.

A 3,500 SF amenity terrace on the second floor offers large gardens and views of the city. The building utilizes green roof areas throughout the tower and incorporates a variety of cladding elements to realize the architectural vision. Large decorative screens at the roof conceal all mechanical equipment from view.

Client: Menkes Developments Ltd.
Location: Toronto, Ontario

GIBSON SQUARE CONDOMINIUMS

This 1,500,000 SF development includes two 42-storey towers with 937 residential units and a four level podium containing townhomes, live-work units, retail and amenities. Building amenities include a theatre, fitness centre, swimming pool and roof-top terrace.

The project is located on Yonge Street adjacent to the historic Gibson House. It includes five levels of underground parking and direct connections to the subway. The design features distinctive decorative roof top caps.

Client: Menkes Developments Ltd.
Location: Toronto, Ontario

STEPHENSON ENGINEERING

THE MADISON CONDOMINIUMS

This residential development includes two condominium towers, at 33 and 36 storeys, with a seven-storey podium featuring retail space, recreational facilities and condominium suites. The retail space features a two-storey Loblaws store on the second level along with miscellaneous stores on the ground floor.

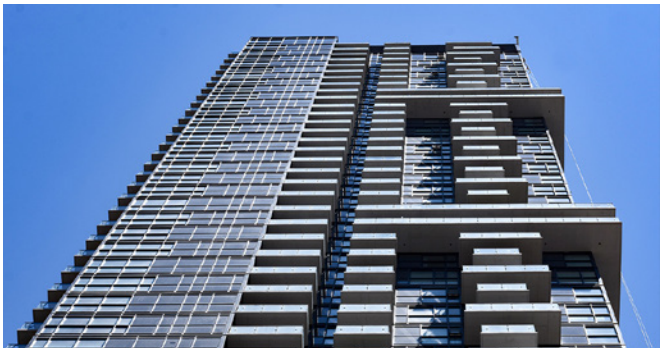
Amenities on the fourth floor include a saltwater lap pool and hot tub, with steam room and sauna, a large fitness centre with change room, billiards and game tables and a theatre.

Client: Madison Homes
Location: Toronto, Ontario

NOIR CONDOMINIUM AT 87 PETER STREET

This 49-storey condominium tower located in Toronto's entertainment district houses 550 units.
Building amenities include a gym/yoga area, a "wet-spa" with individual hot tubs, water massage beds, water walls and a co-ed steam room, three terrace areas, a party room, a billiards/games lounge, a dining room, two theatres and a small restaurant located along the north side of the building.

Client: Menkes Developments Ltd.
Location: Toronto, Ontario



STEPHENSON ENGINEERING

OMEGA ON THE PARK & OPUS

Opus and Omega on the Park condos are the latest addition to Concord Park Place in North York. The super structure comprises 36 (Opus) and 35 (Omega) storey towers, with a two level shared amenity podium, plus townhome units at the west side of the block. Underneath the super structure there are three levels of full parking floors and a fourth level of partial parking floor.

Client: Concord Adex
Location: Toronto, Ontario

FASHION HOUSE CONDOMINIUM

These two stunning glass and steel staircase towers include luxury condominium units, work lofts and exclusive penthouse lofts. The detailed platform design allows for large terraces and balconies and the floor plates vary with height resulting in many separate floor plans and designs.
A 16 meter truss was used between the ninth and tenth floors to allow for more open space on the upper levels.
This project combines new contemporary design with heritage restoration. The two towers were built immediately adjacent to a heritage three-storey brick building. The heritage building was restructured by Stephenson Engineering to accommodate a new restaurant. All existing columns were replaced to provide increased strengthening to the second floor beams. All work was completed from the inside to preserve the historic façade. Fashion House was awarded a 2015 Award of Excellence at the Toronto Urban Design Awards.

Client: Freed Developments
Location: Toronto, Ontario

STEPHENSON ENGINEERING

500 WELLINGTON CONDOMINIUM

500 Wellington Street West is located at Wellington Street West near Portland Street. It is developed by the Freed Developments and designed by the Core Architects.
It is a 10 storey building with only 17 units. These are luxurious lofts with each unit having its own private access to the elevator. The units are half or full floor lofts ranging from 2500 SF to 6000 SF. Each unit has nearly 10 foot ceiling with large terraces that are equipped with natural gas hook-ups. The kitchen features the most modern and the state of the art top brand kitchen appliances.
This development was awarded a 2015 Award of Excellence at the Toronto Urban Design Awards.

Client: Freed Developments
Location: Toronto, Ontario

ONE32 BERKELEY CONDOMINIUM

This new 10-storey rental mid-rise development, centrally located in downtown Toronto, offers 177 one, two and three bedroom units.

The building features many sustainability initiatives and is achieved Toronto Green Standards Tier 2. It is also LEED Gold certified.

Client: Concert Properties
Location: Toronto, Ontario

STEPHENSON ENGINEERING

EMPIRE MAVEN CONDOMINIUM

This new 7-storey luxury condominium has 115 residential units with a total GFA of approximately 167,000 SF, including 20,000 SF of ground floor retail. It also has two levels of undergrounding parking for 234 cars.

The stepping floor plates present design challenges to minimize transfers and the main transfer slab is at level 2 in order to accommodate the change in programming to commercial from residential. To avoid reducing clear height of units, transfer slabs at levels 3, 4, 6, and 7 are post tensioned. PT slabs are 225 thick.

Client: Empire Communities
Location: Toronto, Ontario

LIBERTY MARKET LOFTS
5 HANNA AVENUE

Found on the south end of Hannah Avenue in Toronto's Liberty Village neighbourhood, Liberty Market Lofts is an innovative development that combines classic soft-loft styles with modern urban convenience.

This modern eight-storey condominium building features 295 lofts with a mix of one and two-level units. The two-level lofts offer dramatic ceiling heights and light-filled spaces, while the open concept interiors allow homeowners excellent design flexibility. Every unit enjoys some form of outdoor space from private balconies to secluded rooftop terraces. And just outside your door, Toronto's Liberty Village has many interesting restaurants, cafes, and bars to explore, not to mention recreational centres and easy access to the Entertainment District and the Waterfront.

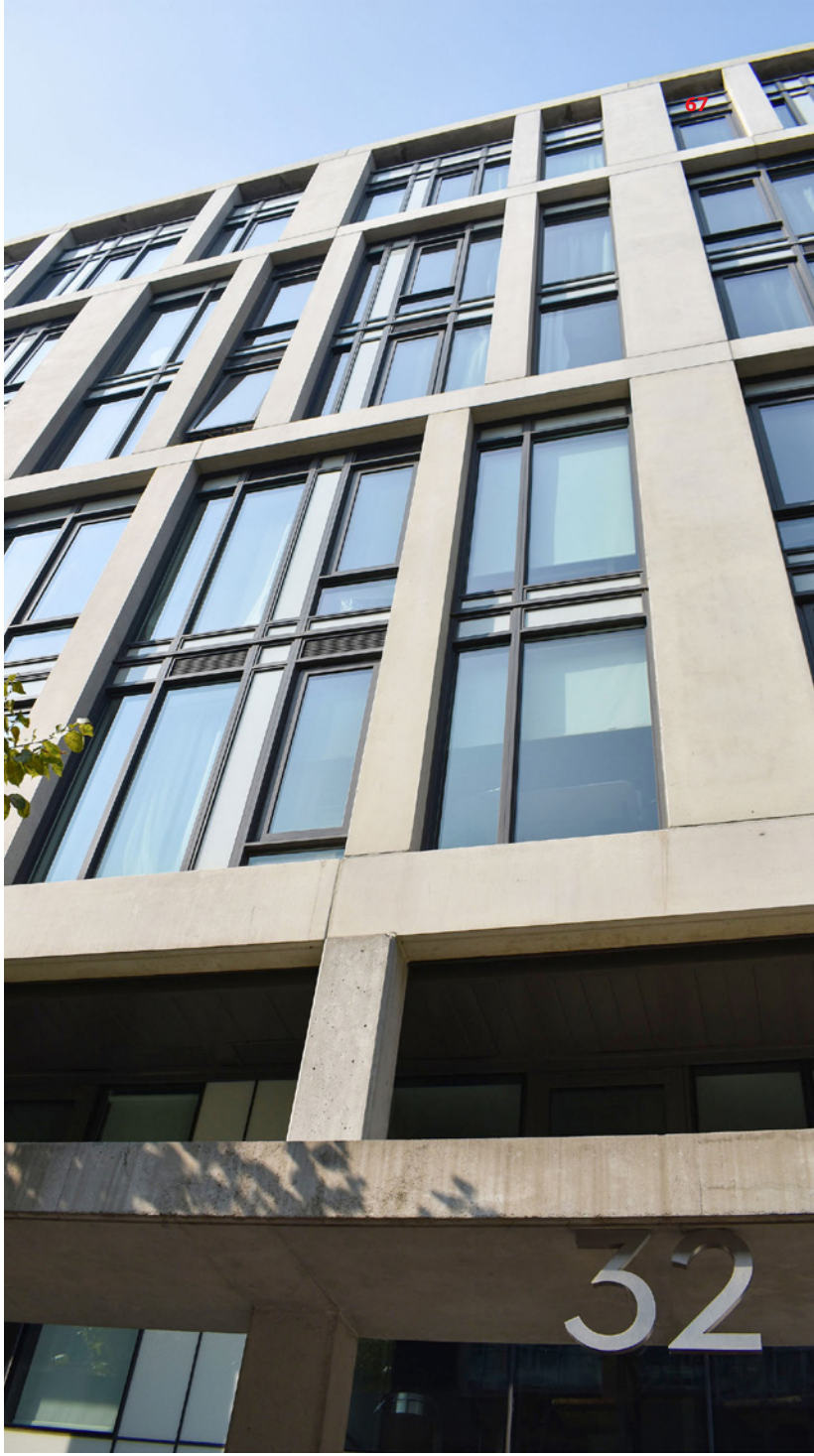
Client: Liberty Market Developments Inc.
Location: Toronto, Ontario

STEPHENSON ENGINEERING

THIRTYTWO CAMDEN CONDOMINIUMS

ThirtyTwo Camden is located in downtown Toronto, between Spadina Avenue and Bathurst Street.
This unique residential condominium consists of 87 suites with 9 foot height ceilings. Amenities include party room with kitchen, workout facilities, storage lockers, bicycle room and bicycle share for residents as well as an outdoor terrace. a small community space at ground level with a landscaped sidewalk elements has been incorporated into the project.

Client: Sorbara Group
Location: Toronto, Ontario



LESLIE NYMARK REVITALIZATION

In partnership with Tridel, Toronto Community Housing will replace a total of 121 rent-geared-to-income homes, and the developer will add 498 market condominium suites as part of the new 18-storey Scala condominium community. There will be 3 blocks, with a combined GFA of approximately 220,000 SF

Amenities include a new community open space feature with playground, indoor amenity rooms for residents, and enhanced access to the Don Valley Ravine.

Client: Tridel Corporation
Location: Toronto, Ontario

STEPHENSON ENGINEERING

LAKEVU CONDOMINIUMS

The LakeVu Condominium development consists of three 10 storey towers with a combined area of approximately 441,355 SF. There is also 3 storeys of underground parking garage with a total area of 159,450 SF.

The structures consist of structural precast concrete. The floor layout in the towers enabled the use of structural precast wall panels and hollow core slabs.

Client: JD Development Group
Location: Barrie, Ontario

Project Experience:

P3/DBFM **05.4**

OAKVILLE TRAFALGAR MEMORIAL HOSPITAL

Stephenson Engineering acted as the structural consultant in a joint venture for this new $1 Billion, 1,600,000 SF hospital. The design features a medium-rise main building with a ten-storey tower rising on the east side, accommodating diagnostic and treatment facilities, ambulatory care facilities, a cancer clinic, child and adolescent mental health services, rehabilitation and complex continuing care, as well as a variety of support departments. 80% of the 457 beds are designed as single patient rooms, as part of its enhanced infection control and patient care plan. The facility features integrated electronic tracking of patient information, laboratory robotics and wireless technology to provide a "silent" no-paging environment.

Client: DBFM for the Province of Ontario
Location: Oakville, Ontario

STEPHENSON ENGINEERING

PROVIDENCE CARE HOSPITAL

The new 270 bed Providence Care Hospital integrates long-term care and inpatient mental health care into the same building as complex care and physical rehabilitation. The $350,000,000 facility is 618,000 SF. All inpatient rooms are single rooms with a private accessible washroom and shower. The rehabilitation gymnasium includes an indoor walking track, as well as exercise therapy equipment and a heated therapy pool. All facilities are accessible to inpatients, out-patients, and even the general public.

Client: DBFM for the Province of Ontario
Location: Kingston, Ontario

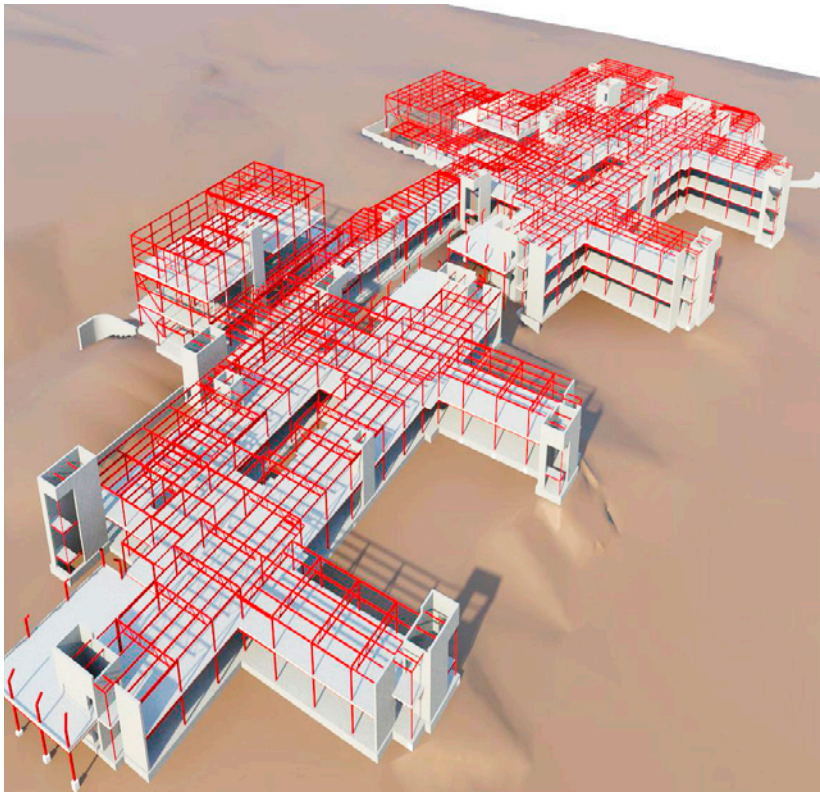
WAYPOINT CENTRE FOR MENTAL HEALTH

This new 350,000 SF mental health facility provides a safe and secure environment for patients needing mental health treatment. It replaced the existing 160-bed Oak Ridge Facility and the 20-bed Brebeuf Facility to consolidate Waypoint Centre into a more efficient, integrated building complex.

The facility, consisting of five buildings tied together into one structure, features long span structural steel trusses and full height interior light wells to maximize light penetration to the patient and support areas. An existing bridge abutment was incorporated into the design, eliminating the need to shore the entire structure and allowing for an existing access road to be maintained.

Client: DBFM for the Province of Ontario
Location: Penetanguishene, Ontario

STEPHENSON ENGINEERING



BRAMPTON CIVIC HOSPITAL

Stephenson Engineering provided structural engineering services for the inpatient building and parking garage, as well as a peer review for the Diagnostic and Treatment Building. This award-winning project was the first pure DBFM project in Ontario.

This 1,270,000 SF health care facility consists of a six-storey inpatient building, a three-storey Diagnostic and Treatment Facility and a seven-storey parking structure.
Instead of using a conventional costly and unsightly expansion joint, the 600 foot long inpatient building was built in two pieces, and then "zipped" together after cladding was complete and the building was brought up to a stable operating temperature. This allowed for a design without permanent expansion joints, giving more architectural freedom while satisfying the requirements of a post-disaster facility.

Client: DBFM for the Province of Ontario
Location: Brampton, Ontario

MICHAEL GARRON HOSPITAL NEW PATIENT CARE TOWER

The project involves the construction of a new nine-storey patient care tower and four/five-storey podium, as well as demolition of some existing wings and selected renovations to the existing hospital at the connection points.
Approximately 550,000 SF of the hospital will be redeveloped, including:

- Replacement of the oldest beds in the medical / surgical and rehabilitation unit;
- Replacement of the mental health inpatient units for adult and child/youth care;
- Consolidation of ambulatory care and ambulatory procedures;
- Creation of four levels of underground parking and a new main entrance;
- Accommodation of other administrative and support services needed to support the clinical services.

The project also involves the renovation of approximately 100,000 SF of select areas within the existing hospital.
The project is expected to achieve LEED Silver certification.

Client: DBFM for the Province of Ontario
Location: Toronto, Ontario

STEPHENSON ENGINEERING

TORONTO COURTHOUSE

The new courthouse, designed by international award-winning architectural firm Renzo Piano Building Workshop and NORR Architects, is located steps from St. Patrick subway station, directly north of the courthouse at 361 University Avenue. It will bring together most of Toronto's Ontario Court of Justice criminal courts operating across the city. Amalgamation of justice programs and services will reduce operational and facilities costs, make court administration more efficient, and better serve the community.

The new courthouse's design will be modern and accessible with features such as:
- Video conferencing to allow witnesses to appear from remote locations and in-custody individuals to appear from detention facilities.
- Closed-circuit television to enable children and other vulnerable individuals to appear before the court from a private room
- Courtroom video/audio systems to allow counsel to display video evidence recorded in various formats and for the simultaneous viewing of evidence.
- A single point of entry with magnetometers, baggage scanners, continuous video surveillance, and separate corridors for judiciary, members of the public and the accused for security reasons.

Client: DBFM for the Province of Ontario
Location: Toronto, Ontario

ELGIN COUNTY COURTHOUSE

Officially named the Elgin County Courthouse upon its completion in February 2014, the new refurbished courthouse in St. Thomas consolidates services of the two existing St. Thomas courthouses, the Superior Court of Justice and the Ontario Court of Justice.

The two existing heritage facilities, the Elgin County Courthouse and the Land Registry Office, are featured prominently in the new consolidated redevelopment. Initially constructed in 1852, the Elgin County Courthouse was a three-storey, domed Palladian style building constructed of stone and yellow brick. It was gutted by fire in 1898 and was rebuilt and expanded to include flanking wings, entrance porches and a copper roofed dome.
The Land Registry Office was originally built in 1874 and has had two subsequent additions.

Client: DBFM for the Province of Ontario
Location: St. Thomas, Ontario

STEPHENSON ENGINEERING

TORONTO SOUTH DETENTION CENTRE

The Toronto South Detention Centre is an 846,000 SF LEED certified facility for Ontario's Ministry of Community Safety and Correctional Services. This project includes three seven-storey detention towers, an administrative building, support buildings and an Intermittent Centre.

We were challenged with a large complex project with a tight time frame for design and construction. Our solution to meet these demands was a precast concrete framed detention building utilizing precast cells, columns, beams and floors. The precast cells act as an integral part of the building structure. This precast solution allowed for the off-site fabrication of components and a significantly compressed construction schedule.

Client: DBFM for the Province of Ontario
Location: Toronto, Ontario

RUTHERFORD GO STATION

The Rutherford Go Regional Express Rail expansion is a $239 Million Project that includes the addition of a new 6 storey parking structure with integrated station building, a second heavy rail track, and improved pedestrian access to the platforms.

Stephenson is providing structural engineering design services for the station and platform expansion portion of this project. This includes the parking structure with integrated station building, at grade pedestrian crossing bridge, an overhead bridge from the parking garage to the new west platform, below grade connections to allow for pedestrian movement below the tracks, as well as canopies and shelters throughout the site.

This project provided many unique site challenges which included interfacing with Toronto and Region Conservation Authority protected lands, groundwater conditions, and varied geotechnical conditions on site which led to varying foundation options from rammed aggregate soil improvement to helical piers and raft slabs. The feature element of this project is a 55m span pedestrian bridge over the tracks which is comprised of exposed warren trusses. The bridge is integrated with the parking garage and canopy structures below.

Client: Infrastructure Ontario/Metrolinx
Location: Vaughan, Ontario

STEPHENSON ENGINEERING

WOODBINE ENTERTAINMENT GO STATION

This project involves the design and construction of a new modern integrated transit hub at the southeast corner of Woodbine racetrack property in Etobicoke, ON.
This will include a new GO station that will be operate on the GO Kitchener line. This includes a station building, about 1000 parking stalls, a pick-up and drop off area for approximately 50 vehicles, a bus loop to serve TTC and GO buses, and two overhead pedestrian bridges to facilitate pedestrian movement to and from platforms.
The project is an integral part of the future development components of Woodbine Entertainment's larger vision for the property known as Woodbine Districts.

Stephenson Engineering is providing the structural engineering design services for the new Station building, the canopies and shelters along the platforms and the site, and the overhead pedestrian bridges.

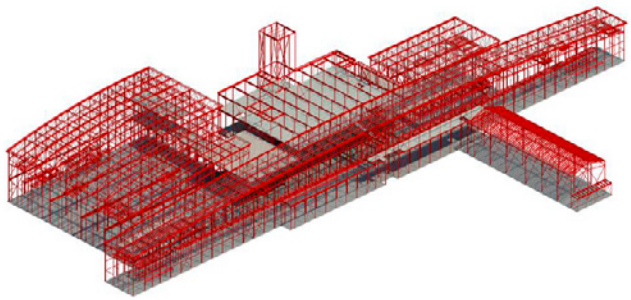
Client: Woodbine Entertainment Group
Location: Etobicoke, Ontario

EAST RAIL MAINTENANCE FACILITY

The East Rail Maintenance Facility for GO Transit is a 600,000 SF facility located in Whitby, Ontario that provides mechanical maintenance, body repair, and day-to-day cleaning and operational services – all essential functions in order to provide backend support for regional rail expansion.

Major features of the facility include:
- 18 storage tracks, and 6 maintenance bays (long span structure, 30-35m) for train inspection and maintenance
- Staff offices, track and yard control room, material storage warehouse
- 13 Overhead running maintenance cranes (from 5 to 50 Ton lifting capacities)
- 9 Ancillary maintenance buildings (paint shop, locomotive wash, consist wash, wheel shop, maintenance canopies, track maintenance, and gate house)

Client: DBFM for the Province of Ontario
Location: Whitby, Ontario



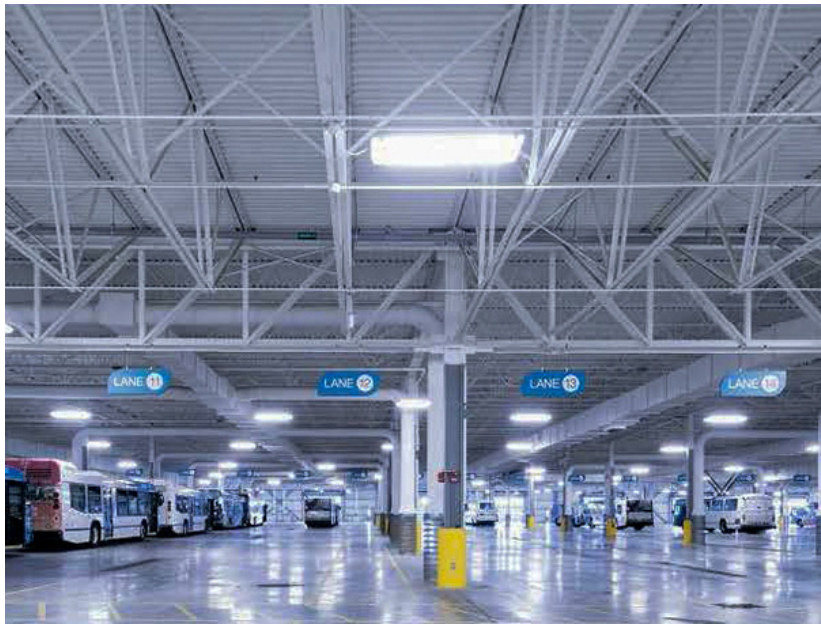
STEPHENSON ENGINEERING

SASKATOON CIVIC OPERATIONS CENTRE

The Saskatoon Civic Operations Centre is a 450,000 SF bus maintenance and snow management facility that has indoor storage for 224 buses, is LEED Certified and will acommodate the fleet expansion exected over the next 10-15 years. The Snow Management Facility has the capacity to store up to 1 million cubic metres of snow.

It is located on 180 acres in the Caswell Hill neighbourhood of Saskatoon. This project was developed in two phases, with an estimated cost of $128 million.

Client DBFM for the City of Saskatoon
Location: Saskatoon, Saskatchewan



Project Experience:

Light Industrial | 05.5

45 PARLIAMENT STREET DATA CENTRE

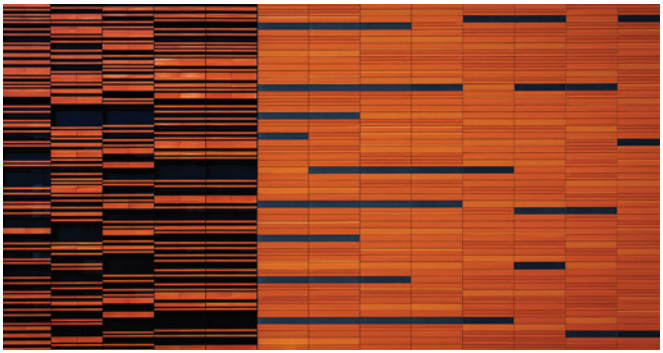
Stephenson Engineering provided full structural services for this new 244,000 SF data centre, prominently located in downtown Toronto.

The building features five storeys, a mechanical penthouse, and one basement level with a footprint area of 42,500 SF. The basement is split between parking and service rooms. The ground floor is divided between tenant offices, a loading dock and white zone. The three storeys above ground are fully utilized as a white zone, totaling 140,000 SF of area.

The 35,700 SF area of the fifth floor is dedicated to building services and a screen-enclosed rooftop penthouse provides additional area for mechanical units.

Poor soil conditions and the presence of a shallow water table necessitate the use of deep foundation "caissons" to support the heavily loaded structure.

Client: Urbacon Ltd.
Location: Toronto, Ontario



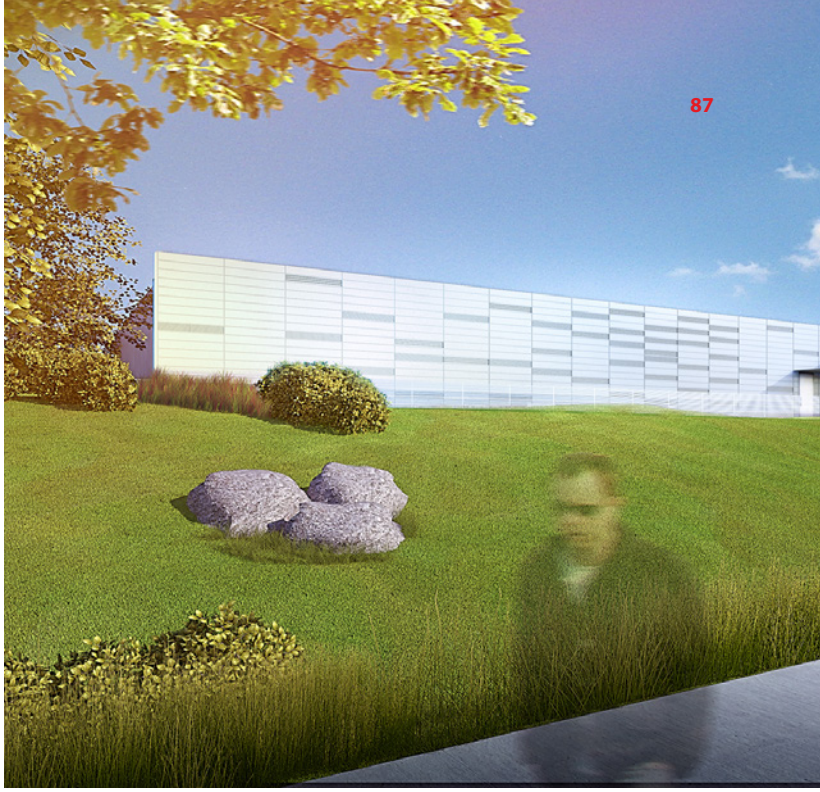
STEPHENSON ENGINEERING

BELL ALIANT DATA CENTRE

This $25 Million single-storey data centre consists of approximately 25,000 SF of floor space for the Data Hall and associated office and MEP. Given the significance of this structure, post-disaster importance factors were used in the structural design of the building.

Stephenson Engineering proposed clear spans of approximately twenty metres in the Data Hall, which provides the client with a great deal of flexibility in space planning and cabinet arrangement. The absence of interior columns simplified the raised access floor layout and design. Stephenson Engineering included provisions for future expansion of the structure by designing the foundations for future structural loads. This approach ensures the client a smoother construction sequence when future expansions are built.

Client: Bell Aliant
Location: Saint John, New Brunswick



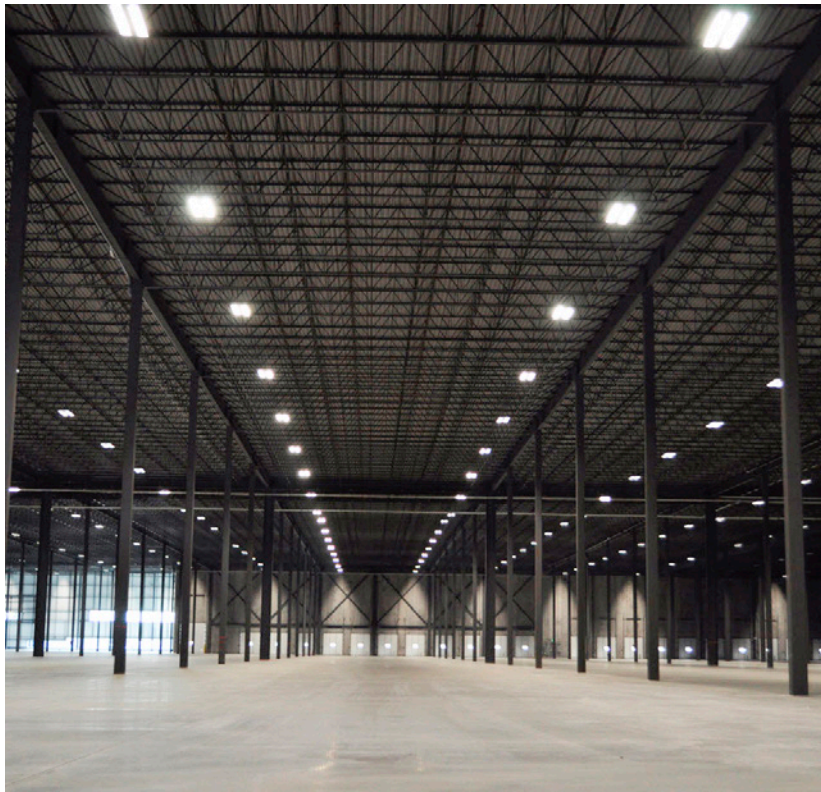
CANADIAN TIRE DISTRIBUTION PLANTS

This contract included approximately 25 separate projects over a multi-year timeframe.

Canadian Tire contracted Stephenson Engineering to complete renovations to a number of their distribution plants including modifications to new and existing conveyors and automated high-rise racking systems.

A critical part of our scope was working as closely as possible with the material handling vendor to ensure that the revised systems did not overload the capacity of the existing structure.

Client: Canadian Tire
Location: Various Locations Across Canada



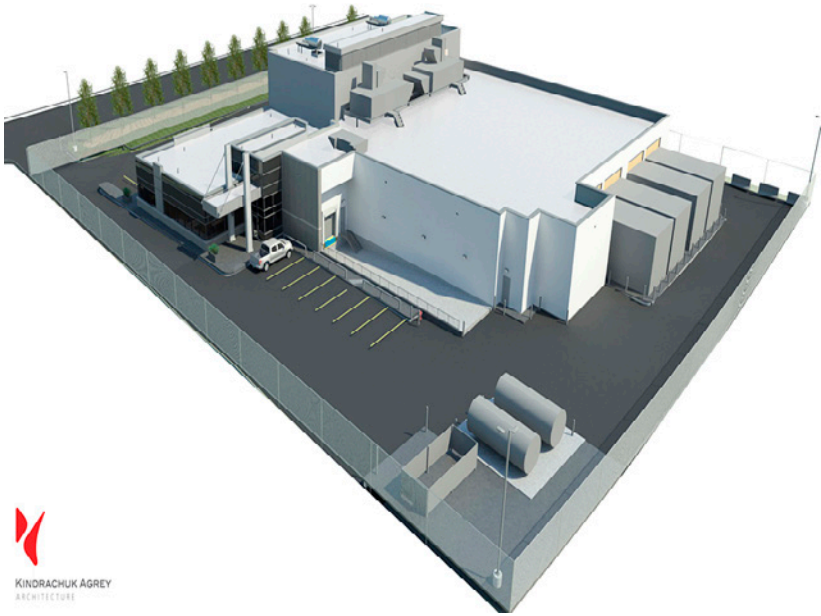
SASKTEL DATA CENTRE

Stephenson Engineering provided full structural services for this new 25,000 SF data centre. The building is predominantly a single story building with a 1,000 SF Mezzanine structure for Kyoto units. The building is divided between the Data Room, offices, electrical and mechanical equipment rooms. Due to the challenging soil conditions, the ground floor slab is suspended on drilled friction caissons.

The roof structure is split into two levels. There is a low roof over the offices and a high roof over the Data room, the Kyoto Mezzanine, electrical and mechanical rooms.

The steel structure for the roof consists of long span joists over the Data room to maimize the clear area and minimize the weight. There are steel beams and columns for the other areas. The roof supports two air handling units in addition to the hanging services.

Client: Urbacon Ltd.
Location: Regina, Saskatchewan



CANADA POST MAIL PRCESSING PLANT & MAIL DEPOTS

Stephenson Engineering has completed structural designs for a variety of renovations, additions and new facility construction for Canada Post mail depots across Ontario. These approximately 30,000 SF facilities generally serve as local sorting and pick-up points for mail carriers.

For renovation and addition work, facility condition assessments were also completed to determine whether any upgrades to the existing structures were required.

Additionally, a 100,000 SF extension to the west elevation of an existing Canada Post Mail Processing Plant was designed to house new state of the art mail sorting equipment. Although current mail sorting technology no longer requires numerous hanging conveyor systems, CPC standards call for the structure to be designed for the possibility.

Client: Canada Post Corporation
Location: Various locations across Ontario

RHL80/DC1 DATA CENTRE

Stephenson provided full structural services for this new 118,100 SF data centre. The building is a single storey divided between data halls, a loading dock, 5,000 SFof office space, and electrical and mechanical rooms.

The structure consists of steel beams and columns accommodating clear spans of up to 13.4m supported on circular reinforced concrete footings. The roof structure is split into two levels. There is a high roof over the office space and a low roof over the remainder of the structure. Outside the building envelope, generators and Kyoto Units are supported on floating slabs with provisions for future units.

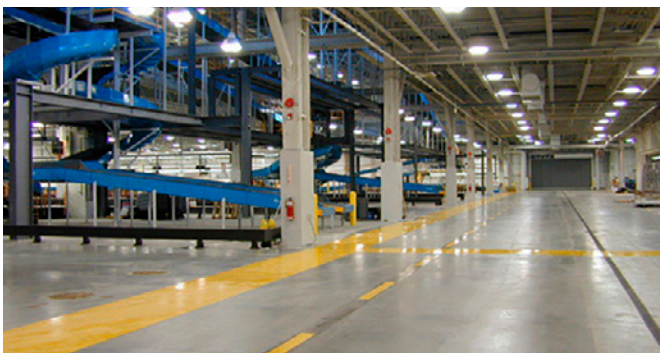
Client: Urbacon Ltd.
Location: Richmond Hill, Ontario

FEDERAL EXPRESS AIRPORT COURIER FACILITY

This 325,000 SF three-storey product handling, sorting and distribution facility on the GTAA property was constructed on a fast track schedule. The design featured 40 by 60 foot bay sizes and 25 foot floor to floor storey heights, allowing FedEx planes to unload directly into the facility using an extensive series of conveyor belts. Floors were designed for fork truck loading. 2,700 tonnes of structural steel were used in the design of this facility.

The facility includes an 80 metre concrete pedestrian bridge. The bridge is set high enough to allow trucks to pass underneath, allowing pedestrians to access the facility safely and promote the uninterrupted flow of transport traffic.

Client: Federal Express
Location: Mississauga, Ontario



STEPHENSON ENGINEERING

DR. OETKER FINISHED GOODS WAREHOUSE

This project consists of the construction of a new Dr. Oetker Finished Goods Warehouse facility located in London, Ontario. The Cold Warehouse, including the deep freezing storage, shipping areas, and the ancillary support spaces has an estimated gross floor area of approximately 50,000 SF.

The Cold Warehouse includes a high rise bay (approximately 25m clear span height) with permanent freezing storage maintaining a constant temperature of -26°C. Inside of the Cold Warehouse, a fully automated storage and retrieval system is implemented. A storage racking system, inside of the Cold Warehouse, is also used as the main structural system for the entire building and Stephenson Engineering is the Structural Engineer of Record. The cold areas of the warehouse facility are founded on the 1m deep raft slab to address challenging soil condition on the site.

A special layer of rigid insulation encases the cold storage room in order to prevent the soil from freezing and the internal temperature from dropping. The insulation is also located under the column base plates to form a continuous layer.

Client: Dr. Oetker Canada Limited
Location: London, Ontario

DC2 DATA CENTRE

Stephenson provided full structural services for this new 94,600 SF data centre. The building is a single storey divided between data halls, a loading dock, 5,000 SF of office space, and electrical and mechanical rooms.

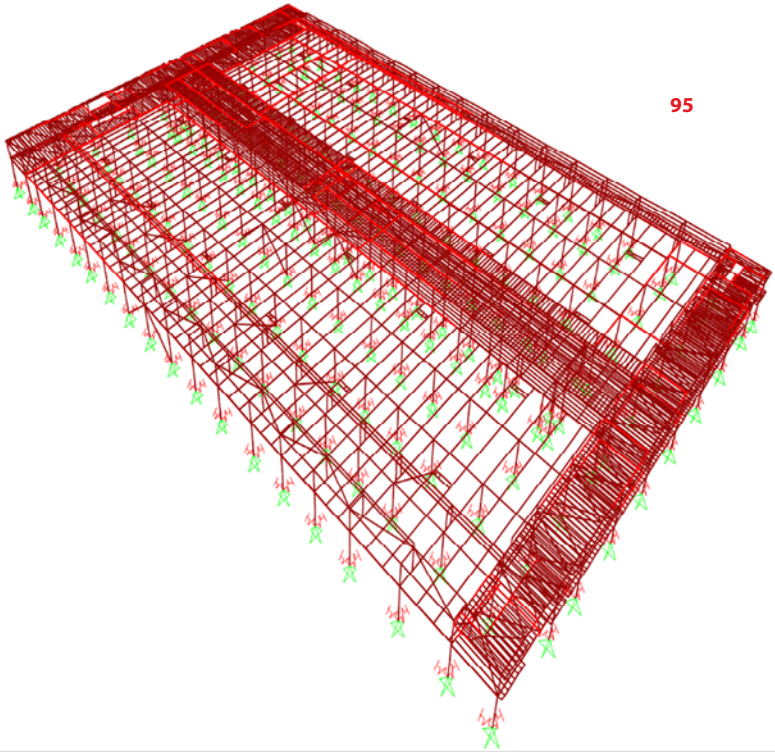
The structure consists of steel beams and columns accommodating clear spans of up to 13.4m supported on circular reinforced concrete footings. The roof structure is split into two levels. There is a high roof over the office space and a low roof over the remainder of the structure. Outside the building envelope, a suspended slab supported on circular footings was designed to support the generators. Kyoto Units were supported on a series of steel beams spanning between circular footings.
Provisions for future generators and Kyoto Units were incorporated into the design.

Client: Urbacon Ltd.
Location: Richmond Hill, Ontario

SOBEYS OCADO CFC VAUGHAN

Sobeys OCADO Distribution Center – CFC Vaughan consists of new 250,000 SF fit-out multi-level mezzanine structures supporting OCADO Smart Platforms (OSP) utilized as platforms for robotic operations of the Distribution Center. The challenge with this project was that the new multi-level mezzanines are being built within a 255,000 SF existing building shell that was not originally designed for the stringent lateral movement limits of OSP supporting structures. The OSP supporting mezzanine structures are designed to have independent structural and foundation systems for gravity and lateral forces with no connectivity to the base building structure. This project is the first application of this robotic technology in Canada.

Stephenson Engineering's team provides hands-on Canadian structural engineering expertise to the international team of Sobeys, OCADO and EirEng for the design conversion and construction of the Sobeys OCADO – CFC Vaughan Project, based on Canadian Code Standards.



Client: Sobeys Inc.
Location: Vaughan, Ontario

www.stephenson-eng.com