

C - Two Page Project Highlights

The Fredericton East End Development is a transformational project for downtown Fredericton that utilizes existing vacant land in the city core. This integrated development consisting of a convention centre, office building and parking garage is centrally located between Queen Street and King Street beside the Fredericton Playhouse and adjacent to the Centennial Building and Beaverbrook Crowne Plaza hotel. The facilities are centrally located to serve Fredericton's business and public communities. The project objectives are to provide Fredericton with a venue for hosting regional and national conferences and conventions and to act as a stimulus for development of the urban core. The need for this project had been debated for many years with little progress until the City took the initiative to proceed as the Developer. The project is a joint initiative of the City, the Province, and the Federal government.

Beginning in 2005, the **exp** team assisted the City in developing the project by preparing a Master Program for the facility and Master Plan for the surrounding area, including studies of the potential impacts on traffic, infrastructure and parking and a concept design based on the City's vision. It was determined that this area of the City could support new development, by paying careful attention to planning and aesthetic considerations. A tightly integrated development with well-defined and exciting spaces, and a comfortable human scale would be a stimulant for drawing people downtown.

Some of the key considerations of the design are:

- Convention centre linked to the Playhouse presents opportunities for shared use;
- Offices linked to a convention centre would require meeting rooms;
- Additional parking was required in downtown Fredericton;
- Hotel connected directly to convention centre would enhance both properties;
- Inter-connectivity and shared uses creates potential for becoming an event space with good connectivity to downtown Fredericton;
- The design should have strong streetscape and be readily accessible for all.

Detailed design began early in 2008 when a contract for design and construction was signed between the City and ADI Systems Inc. The project team included ADI International as Construction Manager, **exp** Project Services Inc. as Project Manager, and the Consultant team lead by **exp** Services Inc. Our team worked

closely with the City to design this major project to achieve the City's vision for downtown development. **Exp** Architects Inc., in association with Cannon Design, were the architects for this project. The engineering consultants were **Exp** Services Inc. (structural, mechanical, electrical and civil engineering), Val Ron (Convention Centre structural), Reid Jones Christoffersen (Parking Garage consultants), and RJ Bartlett Engineering (fire protection).

The new facilities consist of a three (3) storey, 10,239 m², steel framed convention centre facing onto Queen Street designed to host conventions, conferences, and banquets for over a thousand guests; a six (6) storey, 19,916 m², cast-in-place concrete office building; and a 458 vehicle, pre-cast parking garage facing King Street. Provision is also being made for a potential new hotel development and a connecting pedway linking the new facility with the existing Crowne Plaza Hotel.

Design and construction of the foundations presented several challenges due to soil conditions and the protected wellfield status of the site. The insitu soils consist of a 4m deep layer of sand over a deep layer of compressible clay protecting the aquifer that provides the City's water source. Also, the underside of the excavation was to be approximately 1m below the water table. With the new construction extending to the property line, sheet piling was required to protect adjacent property from damage and dewatering was necessary for constructing the foundations. A 1m thick reinforced concrete raft foundation over 500mm of compacted crushed stone was chosen to minimize the overall and differential settlements. One level of underground parking was provided to help reduce the imposed loading on the soils.

An area of particular concern was the east wall of the Lunar Rogue restaurant where the new parking garage was constructed tight against the existing concrete block wall, which was supported by a conventional strip footing. Here the excavation undercut the existing foundation by 2.5m. For this area, braced steel H piles with wood lagging was used, as vibrations from driving sheet piling risked damaging the existing structure.

Construction of the foundation rafts involved multiple large scale concrete placements with over 1,000m³ being placed continuously in a day. During the winter the heat of hydration was sufficient for curing when the surface was covered with insulated tarps. In summer, ice was required to keep the concrete from overheating. Thermo couples were used for monitoring the internal temperatures to ensure proper curing.

In keeping with the City's "Green Matters" initiatives, the project was designed to LEED® Silver standard, incorporating energy efficient boilers, chillers and lighting systems, water recycling, a well insulated building envelope, and daylighting for the office spaces.

To realize some efficiency of scale, a central physical plant is located in the office building penthouse. This rooftop location was chosen due to risk of flood waters entering the lower level of the building during spring freshet. The central plant provides heating and cooling water for the convention centre, office building and Playhouse. For energy efficiency, a condensing boiler was selected for base load heating and chillers with multiple Turbocor magnetic bearing compressors were chosen for better matching of compressor capacity to cooling load. Energy meters are used to measure the energy consumption for each building. Energy modelling suggests that energy consumption will be 42% less than if designed to the Model National Energy Code.

The central plant also includes a diesel fired emergency generator that supplies emergency power to the convention centre and office building. The generator was sized to enable activities at the convention centre to continue uninterrupted in the event of a power failure.

Storm water management was provided by constructing a cistern for collecting rain and snow melt from the roof drains. This water is used for flushing toilets to reduce water consumption. Additional potable water efficiency is realized through the use of low flow fixtures throughout the buildings. Not only does this reduce the consumption of potable water, but also the flow of waste water is reduced.

Data and communications systems have been installed for full wired and wireless functionality throughout the facility. State of the art digital signage was provided for wayfinding and event schedules; in fact, the facility has already been nominated for a digital signage award.

Audio visual systems are an essential component of any convention centre. An integrated audio system with individual room volume control and in-room access points has been provided. The boardroom has been equipped with built-in video conferencing system and an integrated AV/ lighting control system that will automatically set room lighting and activate AV equipment to several pre-set programs.

The ballroom was designed to sit up to 1,000 people for a banquet or 1,500 people for a lecture or concert. A 6m clear height ceiling with over 80 rigging points will provide flexibility for setting up a wide range of events. Built-in power supplies for sound and light equipment are provided. Room acoustics have been addressed through the use of sound absorbing wall panels, and the lighting levels can be adjusted automatically to pre-set scenarios for various events. This room can also be subdivided into four smaller ballrooms using noise reduction air wall panels.

The parking garage is constructed of pre-cast concrete. Pre-cast concrete was selected both for initial cost effectiveness and also for its high standard of quality control that can reduce maintenance requirements and extend the useful life of the facility.

Sequential tendering and construction management were selected for project delivery due to an aggressive 32 month construction schedule. Over 60 tenders were issued to Atlantic Canada based contractors. The work of the trade contractors was managed by ADI's Construction Manager.

D - Full Project Description

Fredericton East End Development (FEED)

Submitted by:	Exp Services Inc.
Owner:	City of Fredericton
Contractor:	ADI Systems Inc.
Project Manager:	Exp Project Services Inc.
Architects:	Exp Architects Inc. and Cannon Design
M & E Engineers:	Exp Services Inc.
Structural Engineers:	Exp Services Inc.; Valron Engineering & Reid Jones Christofferson
Fire Protection:	R J Bartlett Engineering
Substantial Completion:	January, 2011
Construction Cost:	\$65,000,000
Owner's Representative:	Greg Cook, Executive Director Capital Projects
Project Manager:	David Beattie, P.Eng. – Exp Services Inc.
Project Architect:	Stephen Skinner, AANB – Exp Architects Inc.
Construction Manager:	John McDonald, GSC – ADI Systems Inc.

The design objective for the Fredericton East End Development was to design a master plan integrating over 30,000 m² of new destinations - infilling at an appropriate scale a site that had been used primarily for surface parking.

The concept uses the historic city grid and St. John River to establish planning structure, extending the functional criteria of “connections and flow” beyond the site to the attractions within the Precinct. The design connects disparate existing elements of government, commercial and cultural architecture and activities within the City's historic Institutional Precinct, restoring vibrancy in a cohesive urban composition.

FEED is comprised of three buildings:

The 10,239 m² **Convention Centre** includes a wide range of adaptable facilities from the Grand Ballroom that can seat 1,000 to breakout rooms for small meetings organized along the formal King-Queen concourse, with fluid pre-function areas along the Queen Street cultural/commercial streetscape. Windows frame view corridors focusing on the City's natural and built features. A ground level link to the 700 seat Fredericton Playhouse provides direct access for conferences, and the Convention Centre provides additional coat check, washrooms, lounge space and set up for black-box theatre space for Playhouse programs in the Grand Ballroom. Provisions are in place for a second storey link to a future hotel.

The 19,916 m² **Office for the Provincial Government** connects three buildings from different eras – Legislative Assembly Building (1882), Departmental Building (1888) and Centennial Building (1967), respecting their distinctive uses, geometries and materials. The new six storey Office reflects the massing and articulation of the Centennial Building, defining an avenue along King Street. The building circulation was designed with a strong north-south axis highlighting entrances at each end, re-creating the historic Chancery Lane, or King-Queen Mall for pedestrians by way of an interior concourse extending the axis of the Centennial Building through the entrance of the new Office to the entrance to the Convention Centre. The new Office is designed with core adjacent to the Convention Centre, an open office plan and glazing to maximize natural daylighting and views.

The 458 vehicle **Parking Structure** provides additional parking for intensified use and replaces acres of surface parking, consolidating vehicles in a centralized off-street location in a reduced site area. With only 1 level possible below grade due to the water table, the scale of the 6 level structure is tempered by its siting within the context of the Office and Convention Centre. Street traffic flow will be changed to facilitate public transit and tour bus movement for all attractions in the precinct, and Camperdown Lane is reinstated as a mid-block vehicular route for parking access and deliveries.

The FEED master site plan design (initiated in 2005), was one of the first projects in Canada to apply the draft CaGBC LEED guide for Campus and Multiple Buildings to reduce the environmental impact of building by approaching sustainable design in a broader context, taking a holistic approach to developing the three very different building types. The complex is a candidate for LEED Silver certification.



Fredericton Convention Centre front facade



Convention Centre front facade along Queen Street



Fredericton Convention Centre corner detail



Convention Centre front facade along Queen Street



Interior hallway and staircase



Interior hallway utilizing natural lighting



Interior hallway running parallel to the Fredericton Playhouse



Front desk at the main lobby



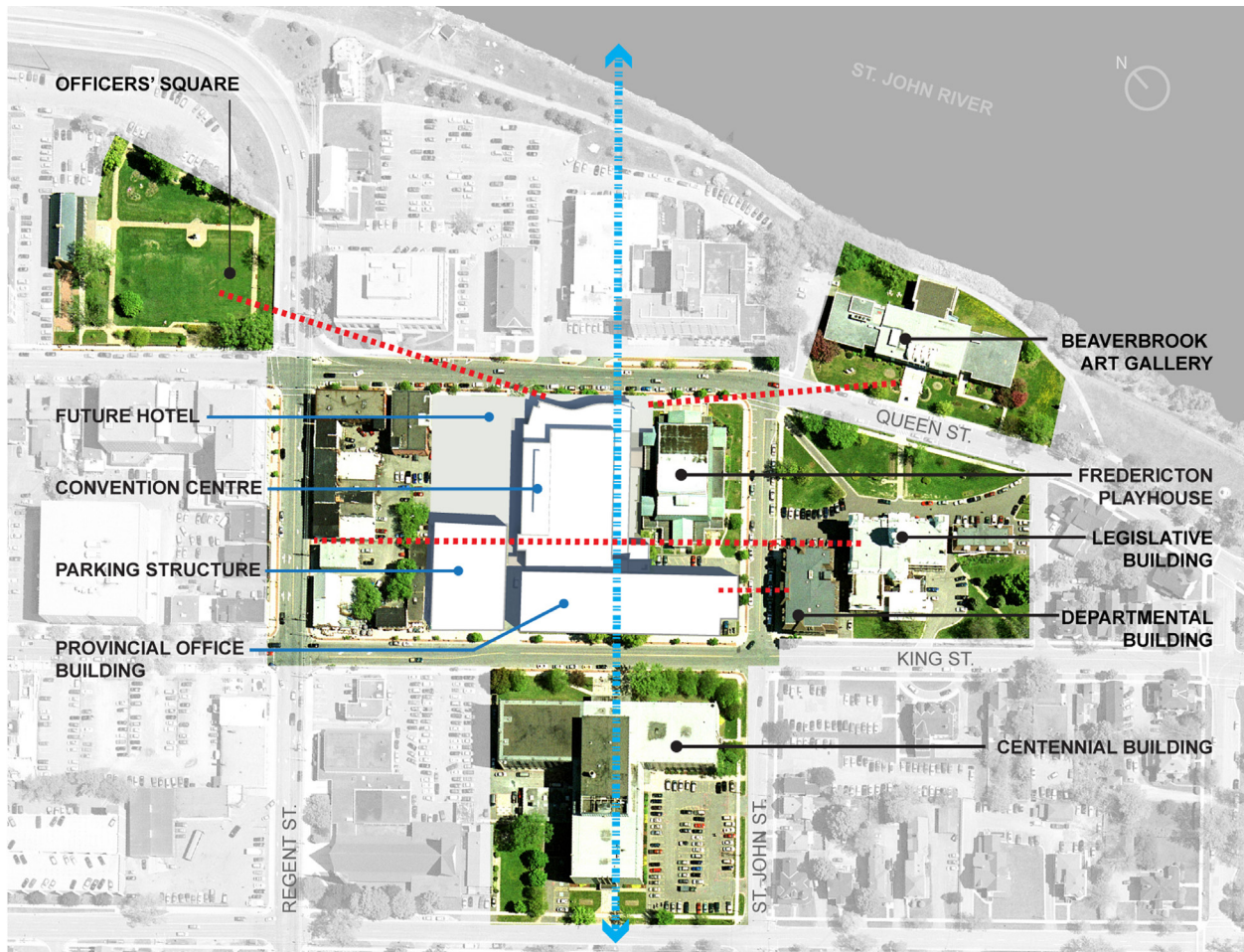
Upper concourse overlooking Queen Street and the Saint John River



Ballroom configured for up to 1500 seated guests



FEED project presence in downtown Fredericton



FEED in relation to Fredericton downtown grid and important downtown infrastructure



Fredericton playhouse (left) and Fredericton Convention Centre (right)



Convention Centre brightens the streetscape



Office Building corner detail at King and St. John Streets.



Office Building glazing in Relation to Centennial Government building



Office Building streetscape with Department Building in foreground



Parking structure and office building



Parking structure on King Street



Office building on St. John Street