In this issue

New 91 CEF building at 9 Wing Gander built for efficiency

Complex renovation of historic urban building nears completion

Atlantic Region's first modified design-build a success

Multiple benefits flowing to DND from energy-management project

Subscribe

About DCC At Work

DCC at WORK | *Learn more about current DCC projects and events*

FEBRUARY 2015 / VOLUME 13, ISSUE 6

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Read more

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Read more

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Read more

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Last Modified: 3-11-2015

In this issue

New 91 CEF building at 9 Wing Gander built for efficiency

Complex renovation of historic urban building nears completion

Atlantic Region's first modified design-build a success

Multiple benefits flowing to DND from energy-management project

Subscribe

About DCC At Work

DCC at WORK | *Learn more about current DCC projects and events*

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The new $6.6 million, 1,300-$m^2$ construction engineering building is a one-storey headquarters for 91 CEF containing administrative, training, workshop and warehouse areas. The reserve-heavy construction engineering unit at 9 Wing Gander performs construction projects for both 9 Wing Gander and for the community.

Unlike its 50-year-old predecessor, this new, state-of-the-art building contains many LEED-type green technologies that will make the building healthier to work in, more energy efficient and less expensive to operate.

The new 91 Construction Engineering Flight (CEF) building at 9 Wing Gander serves the training, construction and storage needs of the CAF and the RCAF at 9 Wing Gander. The $6.6 million, 1,300-$m^2$ state-of-the-art building is a one-storey building that contains many LEED-type green technologies.

For example, the mechanical system in the new building is a geothermal unit that functions much like a ground-source heat pump. The groundbreaking heating and cooling system relies upon 10 wells, each measuring 152 metres deep, and almost a kilometre of piping that runs in and out of the wells and up to the mechanical room. The room itself has an array of equipment, not the least of which comprises four 10-tonne heat pumps.

Geothermal heating and cooling alone is considered to be the cleanest source of electricity and heat on earth and produces fewer emissions than any other energy source.

Also included in the new building is a 4' x 80' solar wall that is part of the geothermal system. The solar panel wall collects and pre-heats the air coming into the building. Other elements of

the mechanical components include dust-collection, air exchange, paint room exhaust, an oil separator for the wash bay, heat-recovery and occupant sensors that turn on and off depending on traffic inside the rooms.

“If we were to use an oil or burner system in the new 91 CEF building the cost would be significantly higher than operating the geothermal system we have in there now,” says Paul Leavitt, DCC Coordinator, Construction Services at 9 Wing Gander. “The initial costs are higher but the savings in the long run are definitely there.”

Leavitt managed all phases of the construction project at 9 Wing and worked hand-in-hand with the contractors, Wing personnel and 1 Canadian Air Division.

“The project overall went according to the design and everybody worked well together," says Leavitt. "We had excellent communication right off the bat. Open communication and collaboration with all the stakeholders and the contractor definitely assisted in the success of the project.”

In this issue

New 91 CEF building at 9 Wing Gander built for efficiency

Complex renovation of historic urban building nears completion

Atlantic Region's first modified design-build a success

Multiple benefits flowing to DND from energy-management project

Subscribe

About DCC At Work

DCC at WORK | *Learn more about current DCC projects and events*

FEBRUARY 2015 / VOLUME 13, ISSUE 6

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Steven Denault, Team Leader, Construction Services (left) with Julien Wong, Coordinator, Construction Services, two of the DCC staff who worked on the renovation and seismic upgrade of the Seaforth Armoury on the west side of Vancouver's busy Burrard Street Bridge.

Despite the complexities, completion of the challenging and sensitive renovation of the historic Seaforth Armoury on the west side of Vancouver's busy Burrard Street Bridge is drawing near.

"It's certainly not typical for what we do," said Steven Denault, DCC Team Leader, Construction Services of the four DCC staff who have worked on the upgrades and construction since the beginning.

The Seaforth Armoury was built in 1935–36 to house the Seaforth Highlanders reserve unit. While it has been maintained and undergone a few upgrades over the past 80 years, it was in need of significant structural upgrades to meet today's high seismic standards.

"There's always a lot of unknowns when you're renovating an existing building of this age," said Denault, talking about the hidden areas, nooks and crannies, and unrecorded renovations that developed over years of maintenance.

The stone building, designed as a Scottish castle, is a recognized heritage building by the City of Vancouver, which means that city bylaws also have to be considered as they undertake the structural and functional upgrades including wiring, mechanical, heating and cooling.

"We do have a lot of people comment and ask questions as they walk by," said Denault about the high attention paid to construction on a beloved landmark in a city centre.

Also underway is the relocation of Jericho Garrison to a new 22,000-m^2 building, including a four-level parkade, on the Seaforth Armoury property. Because the Garrison building will be a post-disaster facility, it requires additional planning, materials and personnel to construct – only adding to the complicated nature of this project.

"It's definitely been a challenge – the DCC team has been on this since day one – and now we're seeing the end," said Denault, citing a completion goal of August 2015. "We're looking forward to seeing the project completed and we know the military units are looking forward to

getting in here too.”

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Last Modified: 3-11-2015

In this issue

New 91 CEF building at 9 Wing Gander built for efficiency

Complex renovation of historic urban building nears completion

Atlantic Region's first modified design-build a success

Multiple benefits flowing to DND from energy-management project

Subscribe

About DCC At Work

DCC at WORK | *Learn more about current DCC projects and events*

FEBRUARY 2015 / VOLUME 13, ISSUE 6

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The 12,000-m^2, two-storey building accommodates dispatch functions, administration, shops and training facilities. These were all previously located in eight buildings around the base, some dating to before the Second World War.

DCC is increasingly using the MDB approach for new construction projects. It takes much of the administrative burden and related costs out of the construction process, and rolls several steps of project delivery into one.

It also means that the contractor leads the design phase of the project and carries out a portion of the project delivery system. As a result, DCC staff can spend more time on-site carrying out quality assurance and control activities.

"Design coordination and project management is a large portion of our work," notes Dean MacMullin, Coordinator, Construction Services, at DCC Halifax. He and fellow coordinator Jeremy Shaw were responsible for the TEME project. "By having the contractor take over some of the administration, DCC can then play an important check and balance role," he notes.

While there were some challenges adjusting to this new approach, MacMullin says, DCC caught some glitches early on and worked with the contractor to solve them.

"We were very cognizant of the Client-Partner's specifications, and were able to carry out a more critical review," MacMullin says.

This helped ensure a finished building with a good design and layout, and that is well built. More than that, the finished structure, which was designed to meet the LEED Silver standard has potentially enough points to be certified LEED Gold. (The submission is currently in progress.)

In this issue

New 91 CEF building at 9 Wing Gander built for efficiency

Complex renovation of historic urban building nears completion

Atlantic Region's first modified design-build a success

Multiple benefits flowing to DND from energy-management project

Subscribe

About DCC At Work

DCC at WORK | *Learn more about current DCC projects and events*

FEBRUARY 2015 / VOLUME 13, ISSUE 6

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In the photo, 8 Wing Base Commander Col Lowthian receives the cheque from Hydro One Director Graham Wilson. Also on hand were DCC´s Siva Gnananayakan and Mélinda Nycholat (second and third from left) and Jeff Lamer and Joseph Newton (second from right and far right), along with various 8 Wing, Hydro One and municipal representatives.

Managing energy costs with as much care and attention as a construction project is netting considerable benefits for DCC's Client-Partner at 8 Wing Trenton.

DCC and the Department of National Defence (DND) launched a dedicated energy management program in late 2012, as a way to help 8 Wing achieve its targets under the Federal Sustainable Development Strategy.

To do so, DCC's Joseph Newton, Technical Specialist, Project Management, encouraged DND to capitalize on financial incentives being offered by Hydro One and Union Gas to decrease energy use.

The financial incentives paid for a DCC employee to work directly with DND to design and manage energy-saving initiatives. Jeff Lamer, Technical Specialist, Real Property Management, now plays that role.

"We've had two successful years of meeting the goals for the program, providing over 600 kW of energy reduction projects at 8 Wing—enough to run 438 homes for a year. We also conducted a base energy examination and are targeting energy reduction projects, including replacing old, inefficient lighting fixtures with sustainable LEDs," says Lamer. Over the 10-year program, DND hopes to save $3 million to $5 million in electricity costs.

The program's success so far has meant that Hydro One has delivered $309,000 to 8 Wing for their energy efficiency projects. In recognition of various gas-related initiatives, the base received $144,000 from Union Gas.

DND is also benefitting from having its utility bills reviewed, Newton notes. “We always have coordinators on the $100,000 projects,” Lamer says. “It just makes sense to have someone equally dedicated to a $10-million annual utility bill.”

Looking ahead, Lamer and Newton will be involved in a project to install and then analyze data from individual utility meters on the base to pinpoint opportunities for further savings.

Lamer now sits on the all-wing board on sustainability issues. He is also developing an energy-efficiency toolbox that focuses on how to find and apply for energy incentives.

All this work has raised the profile of energy management not only at 8 Wing but also across 1 Canadian Air Division and DCC. “We’re definitely gaining traction and awareness,” Lamer says. “I get a call once a week from someone wanting to know more about the program.”

In this issue

New 91 CEF building at 9 Wing Gander built for efficiency

Complex renovation of historic urban building nears completion

Atlantic Region's first modified design-build a success

Multiple benefits flowing to DND from energy-management project

Subscribe

About DCC At Work

Subscribe

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In this issue

New 91 CEF building at 9 Wing Gander built for efficiency

Complex renovation of historic urban building nears completion

Atlantic Region's first modified design-build a success

Multiple benefits flowing to DND from energy-management project

Subscribe

About DCC At Work

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