

# Collaborative Effort

Edmonton's new Remand Centre will be the largest in Canada. BY CHERYL MAH



**A** small army of contractors are busy building a new secure, state-of-the-art correctional facility in the north end of Edmonton.

The massive project involves the construction of a 650,000 square foot multi-building complex, designed to accommodate an inmate population of 1,944 (male and female).

With a footprint equivalent of eight CFL football fields, the new Edmonton Remand Centre will be the largest facility of its kind in Canada and is currently one of the country's largest infrastructure projects.

Construction manager Stuart Olson Dominion Constructors (SODC) broke ground in 2007. Rob Gomizelj, project manager, reports construction is going well and expects manpower to peak at just over 600, "the sheer magnitude of this project and the schedule itself is incredible."

To put the project size in perspective, he says the necessary site services (water, gas, sanitary) for this facility alone is equivalent to building a 10,000 person town.

"The kitchen will do 9,000 - 10,000 meals a day," he adds.

Spanning five years, the Remand Centre is a long and complex project but through team work and collaboration, the project team has risen to the challenge.

According to Gomizelj, the complex is now enclosed and the focus for the rest of this year will be on completing interior finishes (painting, flooring etc).

Originally slated to cost \$620 million, the project is significantly under budget with the last report at \$568 million. After various cost saving solutions, Gomizelj estimates total construction cost to be \$485 million.

"We will be turning over our first building in the fall of 2011. The project will be turned over by fall 2012," he continues.

One of the time saving construction solutions used was to tender multiple packages, in essence breaking down the project into smaller pieces in order to accelerate the work.

"To speed the project up, we've gone to 41 tender packages. That's not normal. It's a lot more

effort on everybody's part but it gets things done. It also reduces escalation," says Gomizelj.

Collaboration on development of the design and construction schedules has helped to meet a fast track delivery process.

"The only way to get this project done is to fast track it," he says. "The biggest challenge is time. Although we're two years out, there's still so much to put together on this project."

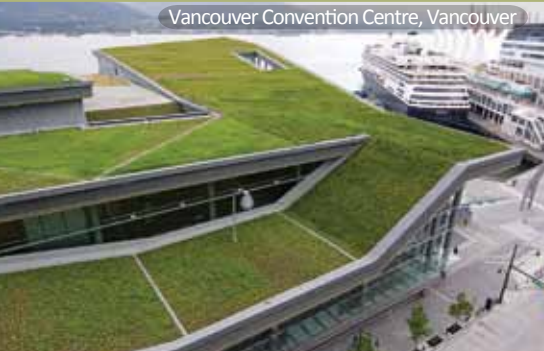
The horizontal two-storey development sits on a site that's approximately 40 acres. A total of nine buildings are being constructed. A central administration building is connected to seven pods through a two level link system. The pods consist of five general population pods, one segregation pod and one healthcare, mental health pod. A large utility building is also being built.

Each pod consists of four units. With the exception of the specialized healthcare pod, each unit consists of three levels with 12 cells on each level for a total of 36 cells per unit. Designed to accommodate future expansion, three more pods can be added on the south side for a total of 2,808 inmates.

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Situated adjacent to wetlands, the site presented various challenges including unstable soil conditions. A continuous flight auger (CFA) piling system was selected to stabilize the soil and support foundations.

More than 2,500 piles were installed, with pile diameters ranging from 406 mm to 914 mm and pile lengths ranging from approximately 5.2 m to 18.8 m.

“The continuous flight auger piling system is incredible,” says Gomizelj. “By employing that system, we actually saved about seven months off our original schedule.”

The sprawling steel and concrete structure required approximately 30,000 cubic metres of concrete, in excess of 3,000 tons of steel and 7.5 km of grade beam. SODC self performed all the concrete work (slabs, grade beams) and roof carpentry.

“It took one and a half years to do the grade beams alone,” notes Gomizelj.

The traditional design approach for this type of facility is to use primarily concrete and masonry. However, due to the size and scope of the project, finding enough skilled workers to complete the job would’ve been nearly impossible. Steel and repetitive module cast-in-place concrete was used to save time and manpower.

The facility was designed by ONPA Architects, an Edmonton firm with extensive experience in designing correctional facilities. ONPA designed the original Edmonton Remand Centre in 1979.

Security and safety concerns for staff, the public and inmates were the primary focus of all de-

## With the project targeting a LEED Silver certification, state-of-the-art mechanical electrical systems ensure low energy consumption.

sign decisions, according to ONPA partner-in-charge Jason Said.

Early in the design process, it was decided that an innovative exterior steel wall system and also an interior grout filled metal security wall system would be used for the cells.

“This has allowed us to spread the construction into other trades thereby helping the project stay on schedule,” says Said.

The metal security wall system for the cells is comprised of a 2.5 inch prefabricated steel panel and electrical and mechanical systems.

“It’s the largest detention wall system project in North America,” says Gomizelj.

State-of-the-art technology includes a security detention system that controls more than 3,300 doors and 1,500 digital cameras; video court system, third party visiting kiosks, iris scanning — all on separate networks.

“We will also be outfitting the facility for wireless LAN. The number of antennas we have to put in is phenomenal because of the amount of concrete and steel,” says Kevin O’Brien, Alberta Infrastructure. “One of the biggest challenges is the technology we’re putting into this jail because it’s very complex.”

It is also constantly changing, requiring modifications to the design to accommodate new systems that were not available previously.

“Technologies in corrections are changing almost daily. This in of itself has made designing the facility a challenge as the project is spanning over five years,” says Said. “The key is for our team to anticipate these changes to make sure that the facility can adapt well into the future.”

As for architectural feature materials, the exterior finish of the facility utilizes relatively inexpensive yet highly durable metal finishes.

“At the front of the facility where staff and the public will enter the building, we will be utilizing more architectural masonry in order to create a welcoming yet authoritative presence,” says Said.

With the project targeting a LEED Silver certification, state-of-the-art mechanical and electrical systems ensure low energy consumption.

Hemisphere Engineering did the mechanical design including HVAC, plumbing, fire protection and natural gas distribution. Energy efficiency was a key criteria resulting in the use of high efficiency boilers, condensing hot water heaters, radiant heating and a heat recovery



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...construction waste management efforts are successfully achieving an average of 91 per cent.

system. The building envelope is also highly energy efficient with R-54 walls.

“We’ve utilized the latest technologies in the facility for heating. We’re recovering energy from all exhaust air systems including the kitchen which is not usually done,” says Doug Cargill, Hemisphere senior project engineer. “Our initial calculations show natural gas savings at about 60 per cent less than the national benchmark.”

The mechanical design also demanded attention to the safety and security issues.

“The most important consideration was safety. We had to ensure portions of the building can’t be used as weapons and that there are no places to conceal contraband. All devices are suicide resistant,” notes Cargill. “For example a

grill on the wall — you can’t even fit a cigarette through the opening.”

Each building has its own separate mechanical plant, affording ease of operation and minimal disruption. A central heating plant would’ve been too prohibitive for a project of this size, says Cargill.

During construction, sediment has been prevented from running off into the adjacent wetlands area while construction waste management efforts are successfully achieving an average of 91 per cent.

Clerestory windows and security glazed courtyard walls introduce natural daylighting into the unit areas.

“It makes for a calmer environment for inmates and staff while reducing the amount of artificial lighting required during daylight hours,”

says Jessica Roder, ONPA LEED designer. “An exterior Infrared security systems will not only save electricity compared to typical flood lights but will preserve the night sky view for surrounding communities and nocturnal species.”

The large grounds will be planted with native species that will require little or no maintenance and will also act to slow and filter all storm water on site before it is fed into the neighbouring wetland.

Gomizelj attributes the success of the project so far to good communication and team work.

“Everybody’s very proud of how we’ve come together to work as a team and resolve issues,” he says.

The new facility will replace the aging and overpopulated Remand Centre in downtown Edmonton. **CB**

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