

# National Arts Centre (NAC) Redevelopment

by SUSAN PEDERSON

The National Arts Centre (NAC) in Ottawa has been called many things: a national landmark; a fortress for the arts; and, less flatteringly, a heavy pair of corduroy pants, or the box that the Chateau Laurier came in. A major renovation and addition now in progress not only kicks those monikers to the curb, but also when they're completed in 2019, will see NAC owning the phrase "Canada is our stage." As part of the redo, the new NAC even has a new address.

Carl Martin, director of communications for NAC says, "We announced the change of address earlier this year, after we changed the main entrance from 53 Elgin to 1 Elgin. One Elgin is a key address in our nation's capital."

Canada's 150th marked phase one of the three-phase project, and also included the newly relocated box office and more than double the amount of washrooms. October will see a new stage, coffee shop and multifunction rooms completed. An additional \$114-million refresh and enhancement of existing performance spaces wrap in 2019. Also incorporated is a patterned ceramic frit into the glass of newly-renovated sections to greatly reduce the potential of bird strikes. But it's the tower boasting an array of LED screens on four sides, capable of broadcasting performances from inside and anywhere in Canada, that is the talk of the nation.

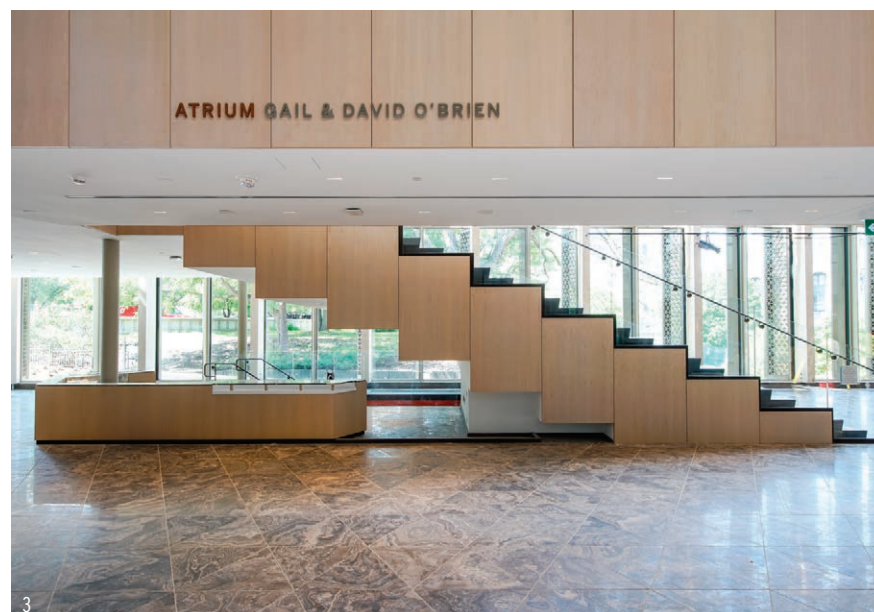
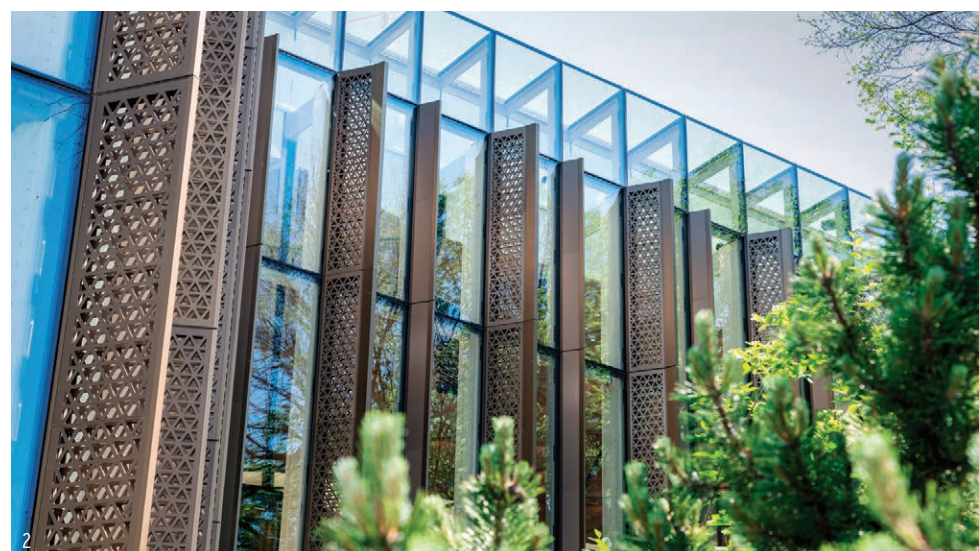
"It is emergent technology that has been used for retail and travelling rock shows. This is a different interpretation of that technology, and a vehicle to link the arts across the country in more of a national communication," says Jennifer Mallard, senior associate with Diamond Schmitt Architects.

Martin Van Dijk, senior consultant and partner with Engineering Harmonics Inc., is the main audio visual designer for the entire project. He says the types of video walls used by bands such as U2 were intended for touring, with too much visibility-reducing structure for this application, but after research and further

development, NAC now houses the only screen of its kind in Canada.

"You now have a video wall that allows the NAC to collaborate with different arts organizations to create artwork, and NAC can offer curated artistic content. It's not only a beacon to provide information, but more importantly, it's a new form of canvas for the arts community," explains Van Dijk.

"The technology revival and update undertaken in this phase really focused on architecture and making the spaces functional for gatherings, performance and art. The infrastructure is in place



to allow NAC to bring these venues together and integrate with the next phase of work. It sounds minor, but it is significant. The technology that we are putting in place today will allow NAC to capture and present future art."

"The new NAC honours the change in the way people experience the arts now. In the new public spaces, you can look in and see the creative activity from the street level. It is inviting you in. People who are walking by will feel welcome to go in and enjoy," adds Martin.

That's exactly the feeling the architects wished to capture. "We wanted to provide increased connection with NAC across the country, improve public accessibility

and improve the 'street to seat' experience for patrons," says Mallard.

With performances ongoing throughout the renovation, and an immovable deadline, creative strategies ruled.

"We looked at different strategies for completing the ceiling. We finally settled on prefabricated Douglas fir triangular coffers, which arrived prewired and assembled and were hoisted on site by crane. This informed the design and allowed us to deliver this project on time. They are visually stunning as well. The triangular geometry reflects the original geometry of the building."

William Loasby, structural consultant with Fast + Epp, says this method had the added advantage of allowing the prefabricated roof to move ahead while the rest of the on-site work was being completed. Still, it was not all smooth sailing.

"We had an immovable deadline combined with the unique geometry, where the new structure had to meet the existing structure. The existing walls may have been built two inches out of plumb here or there, for example," says Loasby. "When the first panel went in, it didn't fit as planned, and I was wondering if it's going to be like this for the rest of them."



Luckily, the rest of the panels went in almost like clockwork and the sleek, clean-lined roof was installed in two weeks.

"When you look up, you see the lovely architecture, with no evidence of any mechanical systems," says Greg Gebert, mechanical engineer with Crossey Engineering Ltd. "To provide that clean look throughout the building, we had to have the mechanical systems disappear."

That included using a radiant floor system, which utilizes slab embedded tubing carrying both radiant heating and radiant cooling. "We have a switchover mode when we go from heating to cooling, but it is more challenging because you have to be careful for condensation by controlling slab temperatures and monitoring space humidity levels, for

example. Also, the solar heat hitting the floor can be removed directly through the radiant floor system."

The large windows prevent any visible mechanical systems as well, requiring stealth placement of systems designed to not only be invisible, but to provide safety for patrons. In case of fire, a smoke exhaust 100,000 CFM system was installed to exhaust smoke from the main gallery space. Mechanically actuated windows and doors that open automatically on fire alarm signal provided makeup air to this system.

On the electrical side, the original building housed a main electrical "heart," with six substations. The renovations mandated a seventh substation, and a new main electrical "heart" which will facilitate future expansion to replace the

old electrical system. Lighting controls for the new spaces are through an integrated, programmable architectural lighting, theatrical lighting, occupancy and shading system interfaced with the NAC's audio visual system.

"It is a system of comprehensive lighting control incorporating DMX technologies for public spaces," Yilin Liu, electrical engineer with Crossey Engineering Ltd. says. "We have one lighting control system for both architectural lighting and stage lighting, which is very powerful and flexible, the DMX control technology applied to general lighting in public spaces allows each individual DMX controlled luminaire to be dimmed differently to create various scene settings that is very user friendly."

There is a very high level of audio visual systems that require huge infrastructure of conduits, and required extensive co-ordination with the construction manager.

It's all part of making the patron experience seamless and welcoming, so while a patron may not be aware of the bells and whistles that trick out their new NAC, they will no doubt enjoy an experience that speaks to the way they wish to experience the arts, whether it is taking in a performance or

#### LOCATION

1 Elgin Street, Ottawa, Ontario

#### OWNER/DEVELOPER

Government of Canada

#### ARCHITECT

Diamond Schmitt Architects

#### GENERAL CONTRACTOR

PCL Constructors Canada Inc.

#### STRUCTURAL CONSULTANT

Fast + Epp

#### MECHANICAL/

#### ELECTRICAL CONSULTANT

Crossey Engineering Ltd.

#### PERFORMANCE SOUND/

#### VIDEO COMMUNICATIONS/

#### DIGITAL SIGNAGE CONSULTANT

Engineering Harmonics Inc.

#### TOTAL SIZE

60,000 square feet of new space

#### TOTAL COST

\$110.5 million

exhibit, or simply drinking in the views of Parliament, the Chateau Laurier, the National War Memorial and the Rideau Canal from the new grand stairway.

"The view of the Parliament Building from the NAC's new Elgin Street entrance is our Champs-Élysées, our Washington Mall," Martin says. "I hope many Canadians come through here and enjoy it, just to read a book or work on their laptops, and share in this transformation." **A**

PHOTOGRAPHY BY ROY GOGAN COURTESY NATIONAL ARTS CENTRE

