

# WHISTLE BEND CONTINUING CARE FACILITY

WHITEHORSE | YUKON | CANADA

2020 CANADIAN CONSULTING ENGINEERING AWARDS SUBMISSION



**BUSH, BOHLMAN & PARTNERS LLP**  
consulting structural engineers

"WHISTLE BEND CONTINUING CARE FACILITY IS THE LARGEST INFRASTRUCTURE PROJECT EVER COMPLETED IN YUKON.

IT WAS DESIGNED TO BE A COMMUNITY WITHIN A COMMUNITY, AND IS OUR COMMITMENT TO HELPING YUKONERS AGE IN PLACE."

GOVERNMENT OF YUKON



## PROJECT SUMMARY

### A PLACE FOR COMMUNITY AND CARE

Bush, Bohlman & Partners LLP was the structural engineering firm for the new state-of-the-art Whistle Bend Continuing Care facility located in Canada's northern city of Whitehorse, Yukon.

The new care facility provides 150 beds to meet the critical need for specialized care in the Yukon. By implementing several innovative solutions, including modular construction, we met an aggressive construction schedule in one of the world's most extreme climate environments.

Lobby and Waiting Area



## INNOVATION

Located in Yukon's capital city of Whitehorse, the \$146M Whistle Bend Continuing Care Facility (Whistle Bend Place) stands as one of the largest capital projects in the history of the territory. Bush, Bohlman, and Partners worked as part of the Design-Build team of PCL Constructors and HDR-CEI Architecture. The project demonstrates how modular construction and a steel structural system contributed to the success of this important care facility for Yukoners.

The 200,000 sq ft facility is designed to accommodate residents with dementia and support all levels of care for seniors. The layout of the facility includes four residential "neighbourhoods" with a central Village Centre that serves as the main entry and as a connecting link to a future project phase. The facility also houses specialized spaces, including a 12-bed palliative care unit and a 12-bed specialized mental health unit.

In response to the challenges of building during extreme winter weather conditions and the subsequent narrow window for construction in Whitehorse, the structural team employed an innovative solution that included modularizing the facility's residential wings to expedite the erection of the super structure. The use of offsite steel fabrication also accelerated the construction of the facility.

The new facility is built to post-disaster standards and will remain operational in an emergency, providing much-needed disaster resilience to the Whitehorse region.






## COMPLEXITY

The project's aggressive construction schedule in a city with frigid and prolonged winters where the temperatures can drop below  $-35^{\circ}\text{C}$  was the primary challenge for the team. Modular construction allowed the team to utilize off-site fabrication in a controlled environment, reducing on-site manpower and temporary heating. With 90 percent of the entire facility made of steel, concrete was used only for the substructure and the crawl space below the resident wings, the steel structure was modularized with both three and two-dimensional modules.

The steel super structure and modularization of the resident wings allowed the construction to continue throughout the winter. Steel was ready for erection on site by the time the foundation works were complete. PCL was able to erect the structural framing for part of the facility before the arrival of winter which provided them with a hoarded and heated space for interior work to continue during the winter season.

Utilizing an integrated design process including input from the steel fabricator using 3D Revit modelling, the entire structure was modelled in 3D and the models were shared between the consultants and the steel fabricator for coordination. Clash detections were carried out to reduce the number of changes between structure and services during construction. BIM was also employed to review shop drawings to fast track the process.



3D Module being Lifted into Place



## **SOCIAL AND ECONOMIC BENEFIT**

Whistle Bend Place provides its residents with a comfortable, welcoming and non-institutional environment that feels like home and contributes to a resident's smooth transition from independent living to living with care. The small residential units and private bedrooms with ensuite bathrooms provide a quiet and more home like family environment. The entire facility has also been designed to accommodate residents with dementia while supporting multi levels of care.

The care facility is also well integrated into the community, exposing residents to a range of events and activities. Residents have easy access to landscaped outdoor courtyards, gardens and ample daylight and views. The large First Nations' population in the Yukon is reflected in the design through the inclusion of a healing lodge, wood interiors, and local art. These features not only reflect the cultural identity of the community but serve to soften the institutional nature of the facility.

## **ENVIRONMENTAL BENEFITS**

Wood was featured in several common areas of the facility such as the main entry porte cochere, lobby, healing room, canopies and the bus shelter. Large exposed locally sourced log posts and beams were used in the porte cochere and lobby area to provide a natural look and a welcoming first impression for the residents and the visitors. Extensive use of wood in the healing space provides a naturally calming effect and a sense of warmth in the space.

Modular construction reduced waste and travel to the site. More work was completed in large fabrication shops which reduced the amount of temporary heating required on site and reduced the overall construction schedule. Modular units were shipped by barge from the city of Vancouver which was much more energy efficient than trucking.



First Nation Healing Room



## MEETING CLIENT'S NEEDS

The Yukon government aspired to build a world class facility to meet the increasing demand for long term care in Yukon. Bush, Bohlman & Partners LLP has worked with PCL Constructors and HDR-CEI Architecture on numerous design build projects and the success of Whistle Bend Place is a result of our excellent relationship. The structural materials and the method of construction were carefully selected at an early stage of the project to suit the northern location, cold climate, and the need for an expedited construction schedule. The project has been an enormous success for the territory, offering residents' comfort and care while providing a meaningful place for Yukoners.

