KF CENTRE FOR EXCELLENCE

by NATALIE BRUCKNER

Not only is the KF Centre for Excellence aviation exhibition and conference centre in Kelowna, B.C., a magnificent feat of engineering and design, but it is also proof of how dreams can become reality.

The vision for the Centre's iconic aircraft structure started with a simple napkin sketch by Barry Lapointe, KF Centre for Excellence founder and aviation enthusiast; Paula Quinn, executive director, KF Aerospace Centre for Excellence, explains: "Barry took me out for lunch one day and told me about his vision, and said, 'Nobody knows me better than you and I think you can build this for me.' He borrowed a napkin and a pen and drew how he envisioned the building to look like, with a fuselage and wings either side. It was just a scribble, but I have it now in the exhibition because it really showcases how it all began."

Lapointe had two stipulations: the building should be made with local wood and look and feel like an airplane. No easy feat. The lightbulb moment came for Quinn one day when she found herself staring at an old wooden wing spar from a 1914 biplane that she had purchased for Lapointe years earlier. "It was then I knew exactly how the interior should look."

To fulfil such a vision would require a team of brilliant minds, which included Meiklejohn Architects Inc., Sawchuk Developments, and StructureCraft.

The site on which the Centre is located also required some innovative thinking. "The site slopes down, from West to East, and faces the Kelowna International Airport [YLW] runway. In order to gain the best view of planes taking off and landing, we needed to ensure our second floor gathering space had the correct elevation to overlook the existing airside hangars," explains Kevin Imthorn, VP, Sawchuk Developments. "To facilitate this, we flew a drone vertically on the site, and photographed its elevations every half metre. We had to find the right balance between increasing costs to build up and meeting the desired view requirement."

The team also had to be mindful of YLW's Obstacle Limitation Surface (OLS) – the airspace around the aerodrome that must be free of obstructions.

Meiklejohn adds that the slope and building required an unconventional approach in other ways, too. "Often we try to merge buildings into the landscape, but for this project we contrasted the sloping site against the level apron by creating a raised and retained circular base that clearly separates the building from the landscape and presents it as an 'object.' We also used the grade change created by the base to engage people arriving to the site to drive [and walk] under the fuselage of planes on the apron as they approach the main entry. This feeling and scale of this approach is almost magical as it's uncommon to get beside, and under, such large aircraft," explains Meiklejohn.

To create the shape of the building, state-of-the-art construction techniques were employed that included the use of cross-laminated timber (CLT) and glulam timber trusses – in fact the entire wood structure was sourced from 100 percent B.C. local timber, mostly Hemlock and Douglas Fir.

A striking element is the large glazed, hydraulically operated hangar doors. With a 115-foot clear span they allow aircraft such as the Convair CV580 and the DC10 to enter the hangars. "They weigh over 100,000 pounds, open vertically, and are absolutely amazing," says Quinn.

Walking into the building has a similar look and feel to walking into a flight lounge. From there on in, the experience is truly immersive. Every tiny detail has been considered: from the reception desk, made out of a DC 10 Cowling plane, to the boardroom table made from combat flaps with actual landing gear as legs.

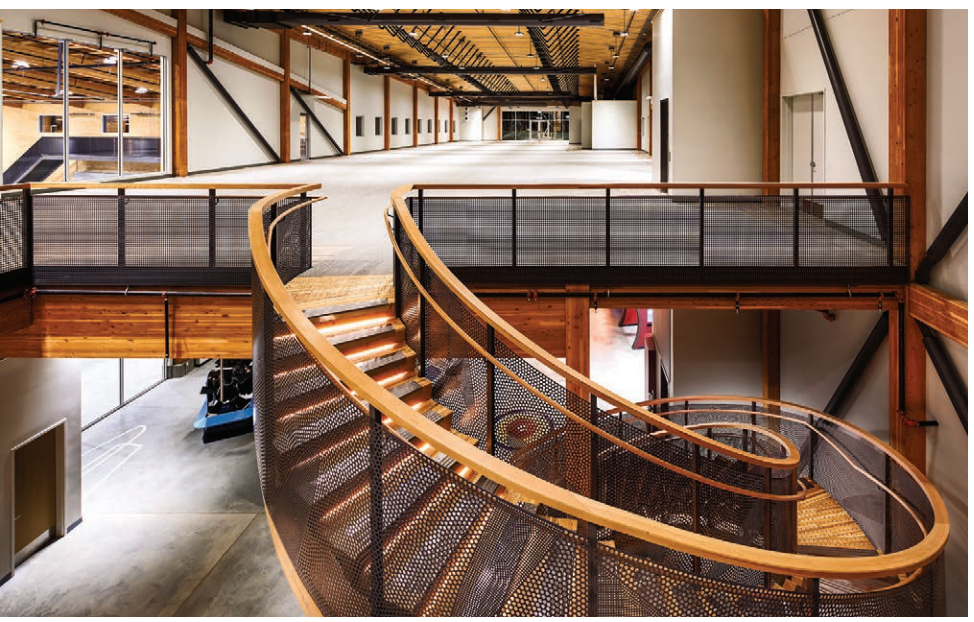
PHOTOGRAPHY BY SHAWN TALBOT/COURTESY KF AEROSPACE CENTRE FOR EXCELLENCE ASSOC.

But perhaps a pièce de résistance is the feature stair. "Walking toward the reception area you are automatically struck by the 23-foot-tall spiral stair. That took longer to make than the whole building," says Quinn.

Fabricated from glulam by StructureCraft, the feature stair is believed to be the largest self supporting mass timber spiral stair in the world. "We used a sheet steel guard punched with two diametres of holes to create a rotating pattern of propellor forms that suggest movement using a 'stop motion animation' technique as one moves on the stair," says Meiklejohn, who adds that it also features a concealed intermediate landing.

The extensive use of wood inside creates a cosy ambiance, despite the openness of the building with its 36-foot ceilings. "The warmth of the wood beautifully contrasts with the sleek painted metal on the aircraft they contain," says Meiklejohn. "A key design features was creating objects and boxes out of all the functional rooms contained within. Washrooms, offices, storage, and meeting rooms are all treated as 'objects' in the space that the roof and floors float over."

PHOTOGRAPHY BY SHAWN TALBOT/ COURTESY KF AEROSPACE CENTRE FOR EXCELLENCE ASSOC.



Up on the second floor Quinn says visitors will encounter a huge open expanse of space with a patio out the back – the "tail" of the building.

For the roof, Imthorn explains that the hub consist of two-by-four Dowel Laminated Timber (DLT) spanning over 60-foot clear, adding that "the roof systems of our two symmetrical 14,600-square-foot hangars are constructed to replicate aircraft wings, complete with spar truss' at the leading edges to span over the doors."

Impressively, the 500,000-feet of locally sourced, dimensional lumber that was incorporated into the build is estimated to reduce carbon by 1,753 metric tonnes.

To say this build was a challenge, is an understatement. Not because of the intricacies involved in the design and the systems used, but because of the pandemic, the Coquihalla Highway being completely washed out by an atmospheric river, forest fires that restricted material transport permits, a heat dome, global labour, and material shortages.

In spite of this, the skilled and passionate team managed to pull it all together and opened the doors to the Centre on August 31. "This was an exceptional client, a world-class building, and was completed through unprecedented times. It's a legacy for Barry and everyone at KF," concludes Imthron. **A**

LOCATION
5800 Lapointe Drive, Kelowna, B.C.

OWNER/DEVELOPER
KF Aerospace Centre for Excellence Assoc.

ARCHITECT
Meiklejohn Architects Inc.

CONSTRUCTION MANAGER
Sawchuk Developments Co.

STRUCTURAL CONSULTANT
StructureCraft

MECHANICAL CONSULTANT
Rocky Point Engineering Ltd.

ELECTRICAL CONSULTANT
Smith + Andersen

CIVIL CONSULTANT
Urban Systems Ltd.

LANDSCAPE ARCHITECT
Outland Design Landscape Architecture (now Ecora)

TOTAL SIZE
65,000 square feet

TOTAL COST
Undisclosed