VanDusen Botanical Garden Visitor Centre named Most Sustainable Building of the Year by World Architecture News

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The World Architecture News (WAN) recently announced that Perkins+Will’s VanDusen Botanical Garden Visitor Centre in Vancouver was named its Most Sustainable Building of the Year for 2014. This LEED-NC Platinum-certified project was also the first building in Canada to apply for the Living Building Challenge. Inspired by natural forms and organized into a petal-like floor plan, the building uses on-site renewable sources to achieve net-zero energy on an annual basis and treats 100% of its blackwater in an on-site bioreactor—the first of its kind in Vancouver.

The jury awarded the Visitor Centre its top honour based on the project’s holistic approach and exceptionally high building standards. The jurors were also “impressed by the centre as a design for the future that can be learnt from and used as a strategy for future sustainable building around the globe.”

Requiring extensive collaboration between the architecture practice Perkins+Will and the structural engineering firm Fast + Epp, the project’s most innovative feature is the dramatic free-form roof structure. Appearing to float above the building’s curved rammed earth walls, the roof form metaphorically represents undulating petals, flowing seamlessly into a central oculus and the surrounding landscape.

The design team pioneered a wood solution in the interests of economy, sustainability, innovation, and to meet tight time constraints imposed by a federal government stimulus funding program. While similarly complex building forms – like Spain’s Guggenheim Bilbao Museum or the Music Experience Building in Seattle, Washington – have been achieved through the use of steel or concrete, this is believed to be the first example of panelized wood use for such a geometrically complex form.

Curving along all three axes, the roof consists of 71 different panels, each with a different geometric form but similar framing system. Engineers were able to tackle a complex problem by breaking the project down into manageable pieces – trapezoidal-shaped roof panel modules that were typically within a 3.6-metre-wide by 18-metre-long shipping size. The units consisted of doubly curved glulam edge beams and sawn timber joists spanning between them. Part of the ingenuity of this simple panelized approach was using the curved glulams as a “jig” in the shop to frame the complex geometry.

All panels were prefabricated and pre-installed with thermal insulation, sprinkler pipes, lighting conduits, acoustic liner, and wood ceiling slats. Comprised entirely of FSC-certified Douglas fir, the roof structure supports an extensive green roof, carefully designed to include native plants and connect to the ground plane to encourage use by local fauna. The design team also collaborated to produce a novel, universal “one-size-fits-all” panel-to-column connection to accommodate unique geometric conditions at every support location.

The Visitor Centre previously won the top WAN Engineering Award in 2012, which honoured the project’s innovation and craftsmanship with wood.

The World Architecture News launched in 2005 and is now the world’s leading supplier of news to the global architectural community. This past year saw the level of entries rise to over 1,500 outstanding projects, making the WAN Awards the largest architectural awards program worldwide.

For more information, please visit http://backstage.worldarchitecturenews.com/wanawards/project/vandusen-botanical-gardens-visitor-centre/?source=search&keyword=vandusen&selection=winner