

TD PLACE STADIUM

2015 Canadian Consulting Engineering Awards Submission
Technical Building Category



Photo: Cannon Design

2015 CCE Award Submission

Submitted to Canadian Consulting Engineers

Submitted by Parsons Brinckerhoff Halsall

Project Information

Project Name: TD Place Stadium – Lansdowne Park Redevelopment

Project Location: 1015 Bank St, Ottawa, ON K1S 3W7

Completed By: 09 2014

Category: A. Buildings

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Summary

Part of Ottawa's Lansdowne Park Redevelopment Project, TD Place Stadium is designed to accommodate professional, university and community sports.

The design features a sinuous "veil" of glued-laminated Alaskan Yellow Cedar. This innovative use of wood creates an iconic image for the new stadium complex, setting it apart as a unique landmark, connecting it to the surrounding natural environment, and linking it to Ottawa's rich history as a timber town.

Stadium exterior
Photo: Cannon Design

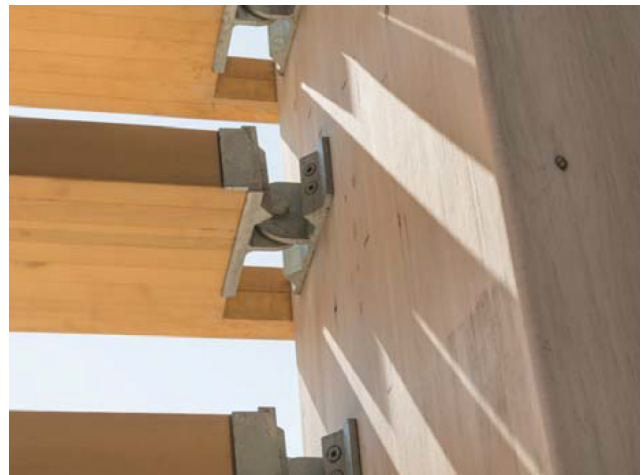


Innovation

The project demonstrates an innovative use of wood throughout the structure of the veil. Chosen for its durability and beauty as it ages, the glued-laminated Alaskan Yellow Cedar curved frames were shaped through bending processes to create the sinuous, contoured appearance of the veil. Structural engineers considered the stability of structural systems and the development of architecturally appealing connection details to enhance the appearance of wood structure.

The need to encourage water shedding called for technical excellence. To promote water shedding, all surfaces were sloped, connections were detailed to allow for drainage, and a structural system that allows for individual part replacement was developed. All of these aspects were incorporated to prevent water from ponding. Halsall and partners established design criteria and regularly reviewed it to ensure that it was consistently met throughout the project.

Detail of veil and
structural supports
Photo: Cannon Design



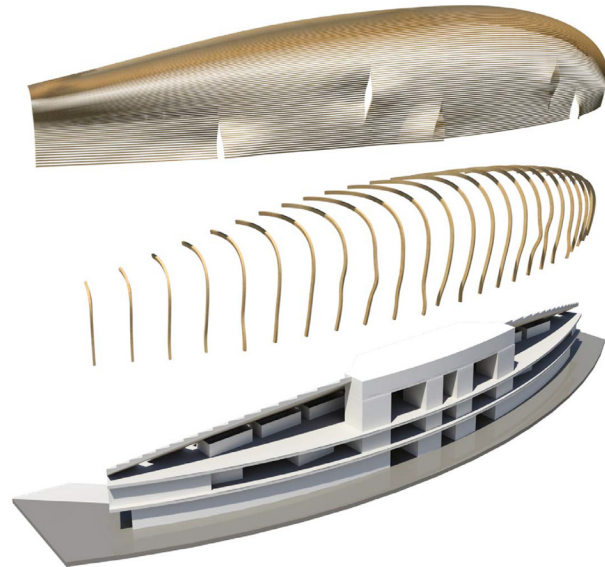
Complexity

The veil is a beautiful example of the complexity of the project and intricacy of the design. Before the Alaskan Yellow Cedar components could even be assembled, they were glue-laminated into the desired shapes and then shipped to Ottawa.

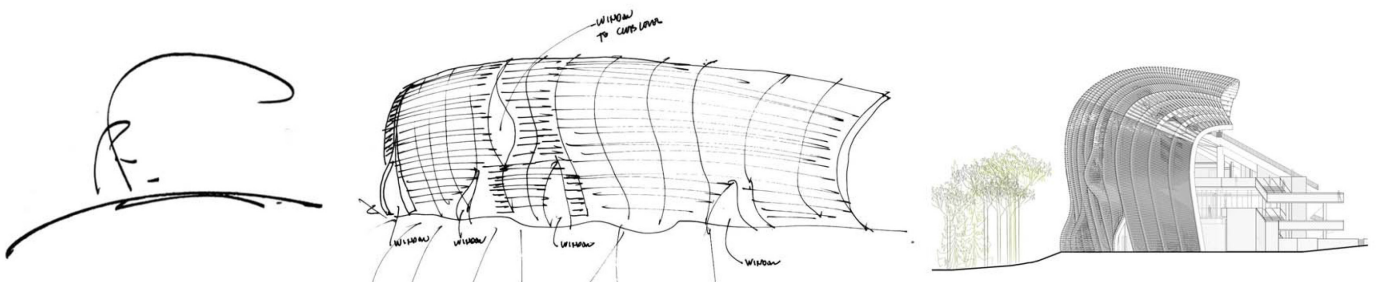
The veil is composed of 24 inverted L-shaped frames supported by round steel props, projecting like tree branches from the stadium's top level. The curved frames project vertically from the ground and bend more than 90 degrees towards the field, creating the structure's complex curvature. More than 1,800 purlins (secondary structural beams) extend between the primary supports. Each purlin has a unique and precisely cut notch that allows it to attach to the L-shaped frame. They provide rigidity and help to define the organic and sinuous appearance that distinguishes the veil. Containing more than 750,000 parts, the structure is 154 metres wide and 25.5 metres high at its tallest point. In addition to wood, the veil contains 350,000 pounds of steel and more than 3,500 bolts.

Accounting for weather was one of the project's main challenges. Alaskan Yellow Cedar glulam was selected as it is one of the hardest known softwoods in the world, and it is naturally durable. It is also resistant to rot and decay and does not require chemical treatment. Without any finish, the material is left to age naturally, developing a beautiful silvery sheen. This material choice was important to protect the structure from the natural elements and ensure its longevity.

Architectural renderings of the veil by Cannon Design



Architectural drawings of the veil by Cannon Design



Social and Economic Benefits

Lansdowne Park, a 40-acre site located in the heart of a thriving Ottawa residential community, was a sports, exhibition, and entertainment center owned by the City. The City wanted to revitalize the site and better integrate it within Ottawa's overall social fabric. The iconic stadium was visualized as a 'stadium within a park' that would be open to the public during non-sporting events and would reflect Ottawa's rich logging history.

With the hosting of its first football game on July 18, 2014, it was clear that TD Place Stadium has made, and will continue to make, a lasting impact on the community. The venue brings people together through the enjoyment of sport, including CFL, Grey Cup, FIFA Women's World Cup, and FIFA U-20 World Cup games. The venue also hosts concerts by such high-profile performers as the Rolling Stones, David Bowie and the Tragically Hip.

By integrating with its surrounding environment, the stadium is helping to make Lansdowne Park a desirable area. The stadium is surrounded by restaurants, shops and residences, and residents will begin moving into new condominiums in 2015. Communities and neighbourhoods will be connected across the space as new pathways are created.

The beautifully refurbished stadium is a striking landmark and an exciting destination for residents and visitors alike, providing entertainment and contributing to Lansdowne Park's stature as Ottawa's "Jewel by the Rideau Canal."

Architectural rendering of the veil and surrounding park by Cannon Design



Environmental Benefits

As a brownfield infill project, a number of environmental factors have been considered in the redevelopment of Lansdowne Park and the creation of TD Place Stadium.

Managing traffic and reducing the need for cars on site was a major priority for the development. Located along the Rideau Canal bike path, Lansdowne is connected to Ottawa's extensive bike path network. Ample bike storage is available both at grade and within the underground parking garage. The stadium also has supplementary bike storage during large scale events.

Lansdowne is located along two major bus routes with frequent service, connecting with major transit stations in both directions of travel. To encourage the use of public transportation, tickets to events at the stadium include free bus access. The stadium has also implemented free shuttle bus plans to major satellite parking lots for large events, reducing the distance drivers need to travel to get to the stadium and overall traffic around the stadium.

At-grade parking was removed and placed underground, reducing the urban heat island effect and increasing density. Polluted soils were remediated, improving the storm water impacts of the site.

Low VOC adhesives, paints, and sealants were used wherever possible. For each of the buildings, high levels of recycled content were targeted for the major materials, including steel, drywall, insulation, and concrete used across the site.

The site also benefits from the addition of a community garden and farmer's market. Particular attention was paid to sustainable street landscaping, which includes frequent recycling stations and trees along the sidewalks to help shade the street and improve storm water management.

Meeting Client's Needs

An Iconic Stadium Complex and Landmark

The undulating canopy of the veil more than achieves the goal of creating an iconic landmark. The covering rises up from and wraps over the south stands, resulting in a striking façade. Not only does it have a remarkable appearance from the outside, it is also visually interesting from the inside as it allows spectators to interact with internal and external environment.

Connectivity

Since the project's inception, the stadium was envisaged as an exuberant entity that would integrate itself dynamically to the park, rather than being a static monument in isolation from its immediate context. The veil takes its cues from the landscape, rising organically from an engineered berm and curving over the grandstands to provide shelter and shading for spectators and pedestrians. The veil is also open in some areas, connecting visitors with the natural environment.

Tribute to Ottawa's History

The extensive application of wood in the project serves not only as a reminder of the national capital's past as a logging and lumber town, but it also pays symbolic tribute to the adjacent Rideau Canal, which had an important role in facilitating the Ottawa River timber trade.

Aerial view of TD Place Stadium
Photo: City of Ottawa

