

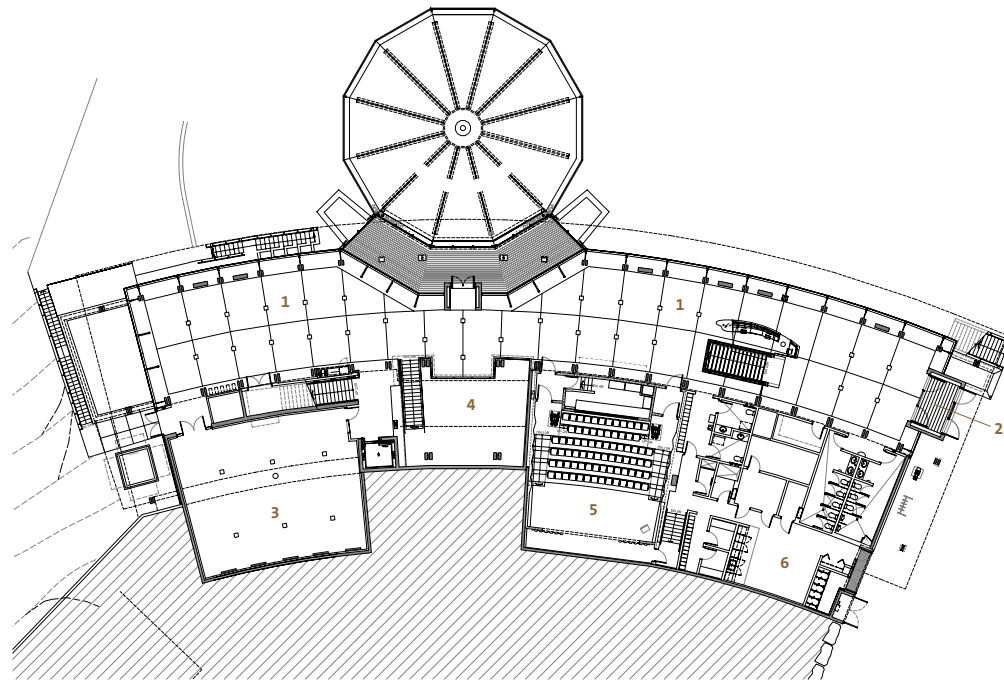
A CONTEMPORARY SHOWCASE
FOR ABORIGINAL CULTURE

SQUAMISH LIL'WAT CULTURAL CENTRE





Squamish Lil'Wat Cultural Centre



KEY

- 1 Great Hall
- 2 Main Entrance
- 3 Exhibition
- 4 Open to Below
- 5 Theatre
- 6 Staff Lounge

ARCHITECTURE

THE SQUAMISH AND LIL'WAT NATIONS have coexisted respectfully as neighbors since time immemorial. They have thrived on the bounty of the ocean, the rivers and the land, living in close relationship with the world around them. Their cultures are grounded in rich, ancient traditions, and continue to grow and evolve in a modern world.

The Squamish Lil'wat Cultural Centre was created to preserve their cultures and share them with others. The building is designed to evoke the longhouses of the Squamish people and the Istkens (traditional earthen pit houses) of the Lil'wat people, with a modern architectural interpretation.

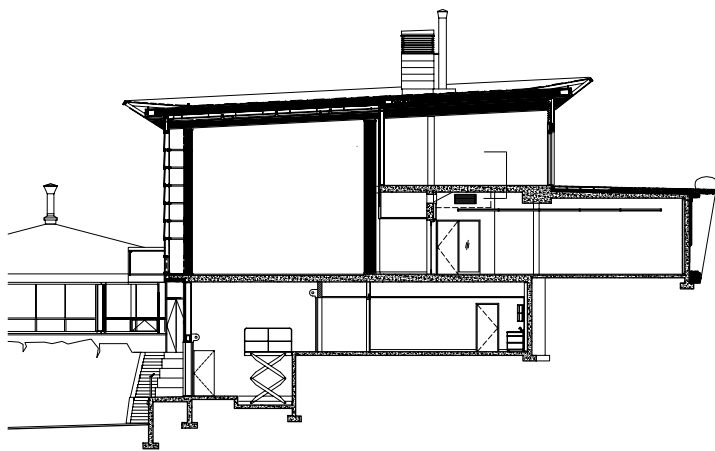
The building is three storeys in height and radial in plan. On the exterior, local ledge stone forms a plinth beneath a window wall along the north side, while prefabricated, western red cedar-siding panels, clad the other elevations. The main entrance, with its intricately carved western red cedar doors, is located to the east, and leads

"The Squamish Lil'wat Cultural Centre has been designed as a world-class attraction, appropriate for representing Aboriginal culture in a world-renowned tourist destination."

ALFRED WAUGH, DESIGN ARCHITECT

visitors directly into the light-filled 'Great Hall'. This dramatic, double-height space features dugout canoes and massive, western red cedar spindle wheels suspended from the ceiling beams. This main exhibition level also contains a theatre, a *Class A* gallery space and washrooms.

A mezzanine contains secondary gallery space, workshops and access out to a replica longhouse and Istken located on the high south side of the site. Stairs down from the Great Hall lead to the function level, with the gift shop, cafeteria and curatorial and administrative spaces.



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- Completed in 2008, the project is a showcase for the cultures of the Squamish Nation and Lil'wat Nation which have coexisted peacefully in this region for centuries
 - Architecturally, the 38,000-ft² (3,350-m²) building is a contemporary reinterpretation of the traditional longhouses of the Squamish people, and the Istkens or pit houses of the Lil'wat people
 - Under the National Building Code of Canada, the building is classified as an 'A' (Assembly) occupancy, which allows heavy timber construction
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STRUCTURE

THE BUILDING IS CUT INTO THE HILLSIDE on the north edge of the steeply sloping site, with the lower level being a reinforced concrete retaining structure on the south side, but glazed on the north. Projecting from the curved north façade on an existing bluff is the Istken-like cafeteria, circular in plan with its conical, green roof supported on inclined log posts.

Above, the double-height Great Hall is a contemporary interpretation of the traditional Squamish post and beam longhouse structure. Because of the radial plan, the structural grid has a spacing of 10 ft 6 in (3.2 m) on the north side of the building and 9 ft 2 in (2.8 m) on the south side. Paired Douglas-fir glulam columns support Douglas-fir glulam beams; the beams in turn support prefabricated

roof panels that taper in plan. Each bay contains two panels, each approximately 20 ft (6 m) in length. Prefabrication of the panels was done to accelerate the construction schedule, and the entire roof was installed in just one week.

The glazing system for the north-facing window wall is a unique interpretation of the overlapping western red cedar-plank cladding that was traditionally used on Squamish longhouses. A T-shaped horizontal glazing bar enables each glazing unit to be installed at a slight incline so that the base of each unit projects beyond the top of the unit below. The entire assembly is suspended on pre-tensioned steel cables bracketed off the glulam posts.



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- Because of the interconnected floor space (atrium) configuration, Code equivalencies were achieved through the localized use of water curtains
 - The post and beam construction comprises paired glulam columns and beams. Efficient, composite action reduces the member sizes for the columns and makes for a more slender and elegant structure
 - Supported off the perimeter columns, the innovative suspended glazing system replicates the lapped plank appearance of traditional western red cedar-clad longhouses
 - Prefabricated roof panels, which incorporate wood I-joists, reduce the overall construction schedule and speed up installation
 - During construction, a mother bear and her cub wandered through the building. In First Nations culture, this is understood to mean that the bear blessed the building, an auspicious sign for those families who live here and for those who visit the building
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WOOD AND SUSTAINABILITY

AS ANCESTRAL STEWARDS OF THE LAND and its resources, Canada's First Nations have positioned themselves at the forefront of the environmental movement. It is appropriate, therefore, when commissioning this facility, that the Squamish and Lil'wat First Nations should espouse the principles of green building, and embrace the use of leading-edge environmental technology.

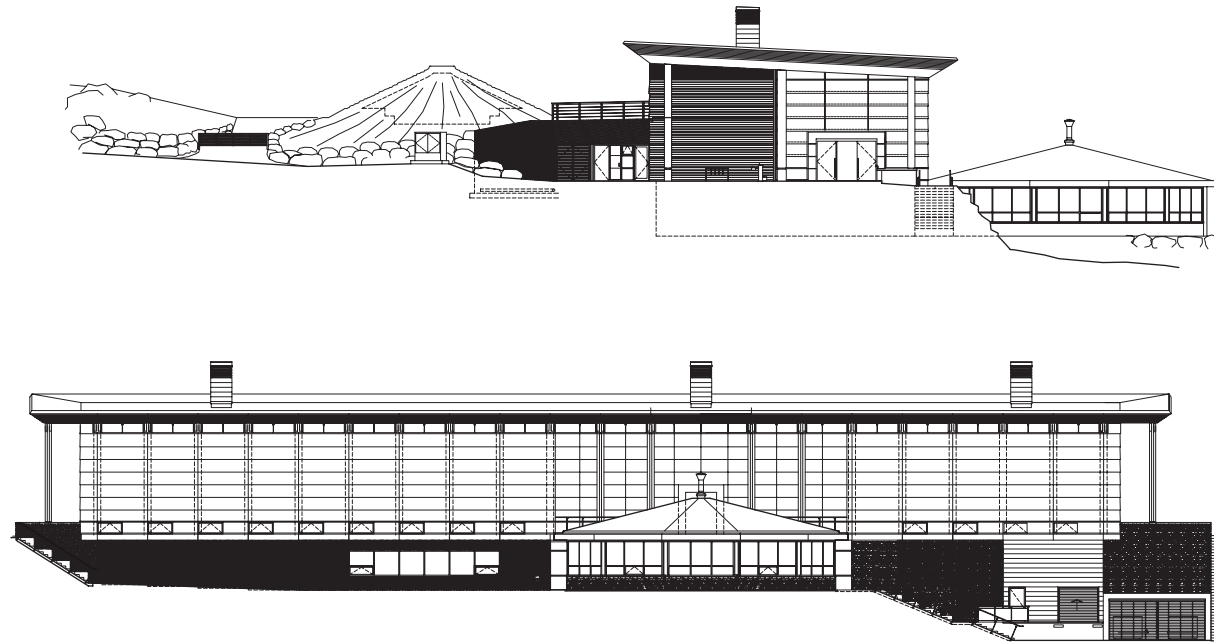
Located at the edge of a now urban-forest, close to Whistler Creek, the site has been treated with respect, with the building located on the northern side of the property, leaving the forested area mostly untouched.

The design has been implemented in accordance with the Leadership in Energy and Environmental Design (LEED®) program, and certification is expected in 2009. The site and the green roof over the Istken were planted with native species, and paved areas use permeable paving to facilitate the return of site water to the ground. A radiant floor system, low-E glazing and lighting controls are among the many measures that contribute to improved environmental and energy performance.

"Everyone here finds it easy to come to work. The daylight and views make all of us feel like we have a corner office. The wood gives the building a feeling of warmth—like a home away from home—and we get compliments about it every day from our visitors. Being in such a beautiful building makes our role as ambassadors for our culture that much easier."

WILLIE LEWIS, FRONTLINE MANAGER – SQUAMISH LIL'WAT CULTURAL CENTRE

The use of British Columbia Douglas-fir, western red cedar and regionally fabricated engineered wood products and assemblies capitalizes on the inherently sustainable properties of the material: including renewability and low embodied energy. In First Nations buildings wood also fulfills a need to carry forward custom and tradition into the 21st century. Simply put, wood helps to carry on the memory of the First Peoples' traditional connection to the land and all the spirits embodied in it.



Architecturally, the vision for this project was a contemporary interpretation of the traditional longhouse and pit house forms used by the Squamish and Lil'wat peoples since ancient times. Structurally, this vision translated into reinterpretations of post, beam and heavy timber roof elements, and the abstraction of the traditional, lapped, western red cedar-plank cladding system into a glass façade.

For lightness of appearance and efficiency in material use, as well as for concealing services such as rain water leaders and electrical conduits, it was decided to employ paired glulam columns in place of the traditional solid wood posts. The columns are joined by steel connectors secured with glulam rivets, with the space between the members becoming the neutral axis of a composite system. Currently the National Building Code of Canada does not recognize composite action in paired columns, and so the structural engineers had to demonstrate compliance through a buckling analysis and submit it under the 'Special Systems' section of the Code. Given the 1,500 lb/ft² (630 kg/m²) snow load, composite action was the only way in which the 33-ft (10-m) columns in the atrium could be realized.

The suspended glazing system for the north wall also posed technical

challenges. Because of the shrinkage across the grain, the suspension system could not be hung from the beams, but rather had to be bracketed off the columns. The stainless steel rods needed to be pre-tensioned to 1,500 lb (680 kg) between the bracket and the concrete slab, so that they would not stretch when the weight of the glass panels was added.

Bow trusses were introduced where the glazing system could not be fastened to double columns. The bow of the truss resists horizontal loads, while the elliptical steel section resists torsion forces. A slip joint at the top allows for vertical movement of the assembly.

The prefabricated roof panels consist of 12-in (300-mm) wood I-joists and plywood top and bottom skins with the internal voids filled with foam insulation. Although the spans vary from 9 to 20 ft (2.8 to 6 m), all the panels are the same depth. This was achieved by varying the gauge and spacing of the I-joist structure. A 6 in (150 mm) void was left along the edges of the panels to facilitate access for direct nailing to the supporting beams. The voids were then filled with spray insulation. The upturned eave disguises the parapet that is used to retain snow on the roof of the building.



“With the technology available to us today, we are able to design and build structures that are more elegant and more economical in their use of materials than their traditional precedents. The challenge is to capture the spirit of the past and reinterpret it in a contemporary way.”

ERIC KARSH – EQUILIBRIUM CONSULTING INC. STRUCTURAL ENGINEERS



SQUAMISH LIL'WAT

PROJECT CREDITS

CLIENT

Squamish Nation and Lil'wat Nation

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CONSTRUCTION ADMINISTRATION ARCHITECT

Toby Russell Buckwell + partners architects

STRUCTURAL ENGINEER

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MECHANICAL ENGINEER

Stantec

CIVIL ENGINEER

CJ Anderson Civil Engineering Inc.

ELECTRICAL ENGINEER

Acumen Engineering

LANDSCAPE ARCHITECT

Philips Wuori Long Inc.

CONSTRUCTION MANAGERS

Newhaven Construction Ltd.

BUILDING CODE CONSULTANT

Pioneer Consultants Ltd.

GEOTECHNICAL CONSULTANT

Thurber Engineering Ltd.

SNOW CONSULTANT

Snow Country Consultants Ltd.

MUSEUM CONSULTANT

Museum of Anthropology

GLULAM FABRICATOR

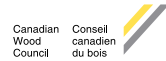
Western Archrib

PHOTOGRAPHERS

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