

## 2015 WOOD DESIGN AWARDS - WINNER

### Western Red Cedar

McFarland Marceau Architects Ltd.

Environmental Learning Centre - North Vancouver Outdoor School, Brackendale, BC



High resolution images available. Please e-mail [mmclaughlin@wood-works.ca](mailto:mmclaughlin@wood-works.ca)

The Environmental Learning Centre (ELC) is the first building of a master plan for the rehabilitation of the North Vancouver Outdoor School site in Brackendale, BC. The intent is to create an experiential environment that blends natural, human and building ecologies. It is the first building in a master plan that will repair an important ecosystem compromised by years of inappropriate development. Set in a lush river valley in the Coast Mountains of BC, the building will provide a critical context for learning at the heart of the North Vancouver Outdoor School's rural campus. The facility includes a welcome area with a nature gallery and exhibition space, a multi-purpose hall, dining hall, commercial kitchen, two multi-purpose learning spaces, administrative offices and washrooms. There are extensive covered outdoor teaching areas to support the school's goal of immersing students in outdoor learning.

In direct response to the linearity of both the valley and river, the building assumes a narrow linear form. The main floor is raised above the forest floor, on slender "pilotis", scribing the level of the 200 year floodplain and giving users the feel of a treehouse experience. The carefully proportioned form is slotted between stands of mature conifers - preserving trees and forest floor alike. Users occupy the unexpected raised vantage within the forest canopy while the area beneath the building becomes a 'found' program space, providing generous cover for outdoor activities in wet weather. This direct response to the forces of the site aligns the building within the larger element of the river valley, lifts the users into an intimate position within the canopy, preserves the integrity of local habitat, and renders the floodplain both evident and moot.

The choice of wood as the primary building material echoes the ecologically sensitive nature of the site and the sustainable design mandate of the school. The simple repetitive structural approach facilitated modular wood design, with the pre-fabrication of many building components. This reduced damage to the site by decreasing

the extent and duration of on-site construction, as well as ensuring the quality of the wood products and efficiency in material use. Wood used for beams, purlins, columns, and siding is a combination of reclaimed and new timbers sourced and was milled locally where possible to reduce transportation and other embodied energy use. The primary upper floor structure consists of glulam columns, beams and purlins (fabricated from FSC certified Douglas fir), providing the frame for the floor, wall and roof assemblies. Cross-laminated timber (CLT) floor panels are used to transfer large shear forces resulting from the long span of horizontal diaphragms required between shear walls, while simultaneously limiting the horizontal deflection of the diaphragm. The strength and stiffness of the CLT floor panels provides a valid alternative to concrete slabs and horizontal steel cross bracing.

The CLT was erected quickly, shortened construction time compared to concrete or steel systems, and reduced the size of other structural components due to its light weight. The roof structure, consisting of glulam beams, purlins and reclaimed Douglas fir timber laid flat as structural decking, is left exposed as the ceiling finish. The layering of beams and purlins allowed the discreet placement of mechanical and electrical services, keeping the visual focus on the wood structure and the beautiful surroundings outside. Exterior and interior walls are framed with Douglas fir 2x6 wood studs, with plywood sheathing, providing a simple and cost-effective solution for non-loadbearing walls. The exterior wall comprises a rain screen assembly, with 2x2 Western red cedar cladding spaced with vertical reveals over a black heavy duty roofing felt backing.

The result is a pleasing organic texture echoing the forest surroundings, and providing effective ventilation on all surfaces of the wood to improve its longevity. The finish on the 2x2 cedar is a one time, low impact preservative application, used typically by Parks Canada, which permits the cedar to silver with age - harmonizing with the aging forest itself.