



THE CEDAR BOOK

Inspiration for the use of Western Red Cedar

WESTERN RED CEDAR LUMBER ASSOCIATION | WESTERN RED CEDAR EXPORT ASSOCIATION

volume 6

THE CEDAR BOOK - volume 6

Inspiration for the use of Western Red Cedar

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DESIGN:

Hunter Consulting International Inc.

COVER:

Textile Clothing Footwear and Leather Building

PHOTO CREDIT:

Trevor Mein

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WESTERN RED CEDAR – Sustainable by Nature

The 6th version of the Cedar Book profiles stunning and award winning architecture from inspired architects around the world. These architects continue a trend that was started centuries ago when native peoples of the Pacific Northwest recognized the value of using this very unique wood species. Western Red Cedar's natural durability, performance characteristics and versatility made it the preferred choice for building ocean-going canoes, post-and-beam houses and lodges. Today's discerning architects and builders enhance their projects with this beautiful, versatile and sustainable building material. Nature still knows best. Despite all efforts at imitation, no man-made product can match the beauty, performance and longevity of Western Red Cedar.

Western Red Cedar is one of nature's truly remarkable materials. It produces fewer greenhouse gases, generates less water and air pollution, requires less energy to produce than alternatives and comes from a renewable and sustainable resource. More than ever before, we must find ways to reduce the pressure on our planet's environment and finite resources. By choosing products with a light carbon footprint and by reducing waste, we can have a real impact on climate change now, and into the future. As part of their commitment to transparency, Western Red Cedar producers now have Environmental Product Declarations available for siding/cladding and decking products.

We hope this book will inspire you to consider Western Red Cedar for your next project. Need help selecting, specifying or sourcing the right Western Red Cedar product? Contact the Western Red Cedar Lumber Association via email to info@wrcla.org and we will be glad to assist.

Thank you for your interest in Western Red Cedar.



LOCATION:
Courtenay, BC, Canada

PROJECT TYPE:
INSTITUTIONAL

Courtenay City Hall Renovation

The building that now houses Courtenay City Hall began life as a car dealership in 1948. Located on the east side of the main street, it was designed in a Moderne style with large curved showroom windows, decorative pilasters, and a flat roof. In the 1970s the building was converted to a two storey office building and the architectural quality of the original building was lost.

In 1995 the adjacent municipal hall was destroyed by fire, and the City took over the building with the intention of occupying it only until a new city hall could be built. However, 16 years later with no new premises in sight, the City decided to undertake a comprehensive upgrade of both structure and envelope to make the building suitable for long term use. The City wanted the project to showcase local materials, especially native woods, nurture community pride, and set a standard of excellence for renovations in the City.

Seismic considerations limited both the area of new openings permitted and the weight of any new materials used. Structural repairs and upgrades included replacing rotten framing, improving the floor and roof to wall connections, and improving the internal stiffness of the building. The exterior stucco, which was leaking badly, was removed and the building envelope was upgraded to a rainscreen system to combat the effects of wind-driven rain on a building with no roof overhangs to protect its walls. Windows were removed then reinstalled.

PROJECT CREDITS

Client:

City of Courtenay

Architect:

Martin Hagarty Architect Ltd.

Structural Engineer:

Bates Engineering

General Contractor:

Muchalat Projects Ltd.

Photography:

Sarah Kerr



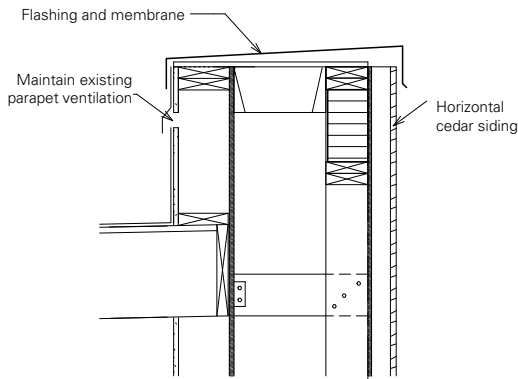
West Elevation



North Elevation



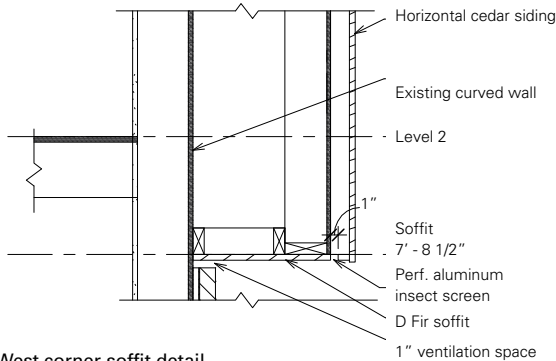
South Elevation



The exterior of the building is finished in a variety of durable materials, most of them locally sourced. Horizontal Western Red Cedar cladding is complemented by split stone, concrete panels and Douglas fir screens supported by aluminum frames. The cedar tongue and groove siding is installed with the square edge facing out to achieve a continuous flat surface in contrast to the deeply textured stone.

The new two storey high bay window in the council chamber, with its tinted glass, coloured panels, and stained fir soffit and liners provides a visual connection between the elected officials and the people they serve.

North-West corner parapet detail



North-West corner soffit detail





WRC SPECIFICATIONS

- Grade: A and Better Clear, kiln dried
Profile: Tongue & groove - square edge and smooth face out
Size: 19 x 140mm (milled from 1 x 6in)
Fastening: 6mm (0.25in) crown staples, blind nailed
Applied Finish: Three coats Cloverdale Sunfast exterior wood finish



LOCATION:

Brackendale, BC, Canada

PROJECT TYPE:

INSTITUTIONAL

NORTH SHORE CREDIT UNION

Environmental Learning Centre

The Environmental Learning Centre is the first building in a master plan designed to repair an important ecosystem compromised by previous development and frequent flooding. Set in a lush river valley in the Coast Mountains of BC, the building will provide a tactile context for learning at the heart of the North Vancouver School District's rural campus.

The intent of this project was to create an experiential educational environment that would blend natural, human and building ecologies. The sustainable vision for the building was to demonstrate how a structure located in an ecologically sensitive setting could respond appropriately to its site and environment.

The facility includes a welcome space that incorporates a nature gallery and exhibition area, a multipurpose hall, dining hall, commercial kitchen, two flexible learning spaces, administrative offices and washrooms. Recognized by the Holcim Awards for its comprehensive planning approach, the building has been designed to minimize environmental impact and dependence on outside sources of energy.

Following the path of the valley and river, the building assumes a narrow linear form, raised on posts above the forest floor - its underside set at the datum of the 200 year floodplain. The structure is carefully slotted between stands of mature conifers - preserving trees and forest floor alike. Visitors can find themselves unexpectedly amid the forest canopy, with direct access to the area beneath the building. This area provides generous cover for outdoor activities and is surrounded by the flora and fauna of the forest floor.

PROJECT CREDITS

Client:

North Vancouver School District #44

Architect:

McFarland Marceau Architects Ltd.

Structural Engineer:

Equilibrium Consulting Inc.

General Contractor:

DGS Construction

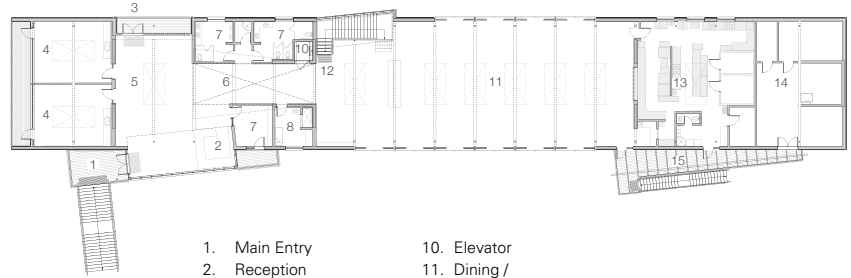
Photography:

Michael Elkan



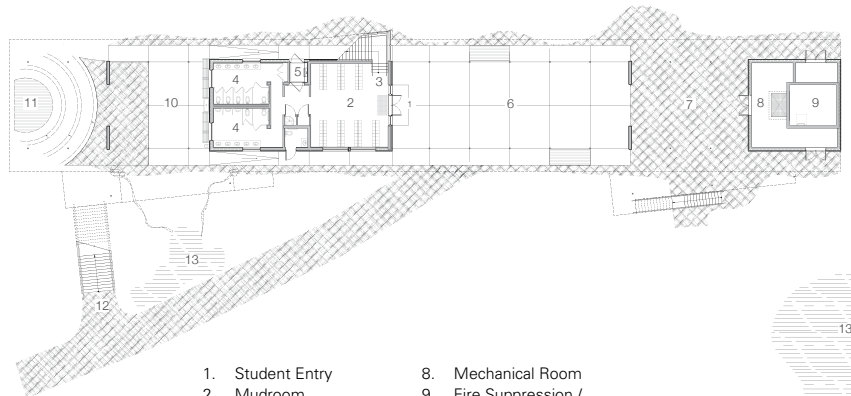
North Elevation

Daylight floods the interior, where the exposed wood structure evokes a sense of familiarity and comfort for the students and teachers. Externally, a rainscreen cladding system of vertical Western Red Cedar slats (fastened to cedar battens in preference to pressure treated ones) is finished with a natural preservative that will allow the building to weather gradually, taking on the qualities of the surrounding trees.



- | | |
|-------------------------------------|----------------------------------|
| 1. Main Entry | 10. Elevator |
| 2. Reception | 11. Dining / Multi Purpose Area |
| 3. Future Entry to Elevated Walkway | 12. Student Stair to Lower Entry |
| 4. Classroom | 13. Kitchen |
| 5. Lobby | 14. Mechanical / Electrical Room |
| 6. Student Gallery | 15. Utility Deck |
| 7. Office | |
| 8. Medical Room | |
| 9. WC | |

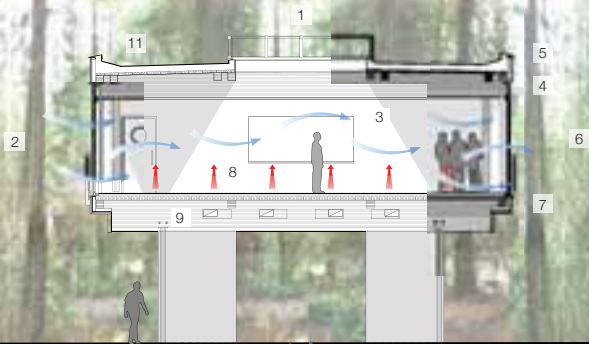
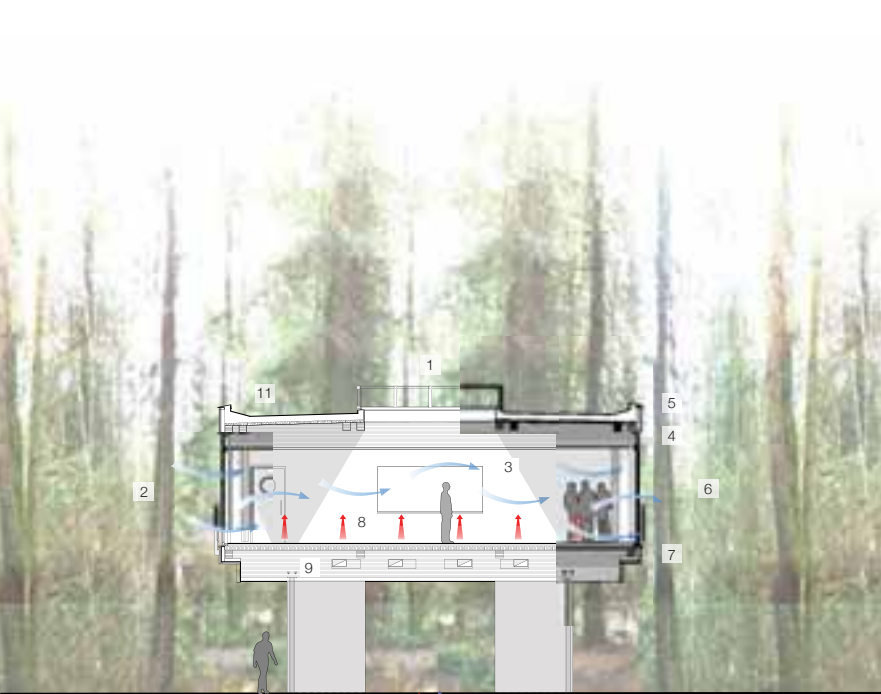
Main Floor



- | | |
|---|---|
| 1. Student Entry | 8. Mechanical Room |
| 2. Mudroom | 9. Fire Suppression / Greywater Reservoir |
| 3. Stair to Dining / Multi-Purpose Area | 10. Outdoor Classroom |
| 4. WC | 11. Amphitheater |
| 5. Elevator | 12. Main Entry Stair |
| 6. Student Gathering Area | 13. Stormwater Raingarden |
| 7. Canoe Storage | |

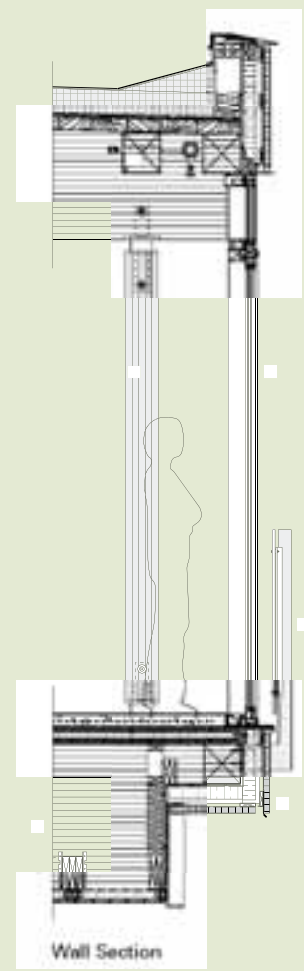
Ground Floor





1. Daylight Harvesting
2. High Performance Glazing
3. Occupancy / Daylight Controlled High Performance Lighting Fixtures
4. FSC Glulam Structure (Douglas Fir)
5. Reclaimed Timber Roof Structure (3x16 Douglas Fir on flat)
6. Natural Ventilation
7. CLT Solid Wood Floor Construction (Beetle Kill SPF)
8. Radiant Floor
9. Displacement Ventilation
10. Open Loop Ground Source Geothermal
11. Rainwater Harvesting

Building Cross-Section



1. High Performance Skylight
2. Reclaimed Douglas Fir Timber (on flat)
3. FSC Glulam Beam
4. FSC Glulam Drag Struts
5. FSC Glulam Columns
6. Radiant Floor Concrete Topping
7. CLT Solid Wood Floor Assembly
8. Mechanical Interstitial Space
9. Galvanized Steel Perimeter Channel
10. Radiant Floor Concrete Topping
11. 38 x 38 Vertical Cedar Cladding
12. Glazed Guard and Galvanized Steel Supports
13. High Performance Sliding Doors

Wall Section

WRC SPECIFICATIONS

- Grade: NLGA 'A' grade
- Profile: Square
- Size: 38 x 38mm (from 2 x 2in)
- Fastening: Cross toe-nailed using stainless steel brads
- Applied Finish: 3 coats of Valhalco LifeTime Wood Treatment to all sides prior to installation

**LOCATION:**

Gambier Island, BC, Canada

PROJECT TYPE:

RESIDENTIAL

Gambier Retreat

The character of the wooded site, steeply sloped and overlooking a small private stone beach, suggested the switchback organization of the building program. This organization is combined with a newly created meandering path that purposefully links the architecture of internal rooms and outdoor spaces, orchestrating discoveries of the site's varied landscape features.

One-third of the floor area, made up of guest rooms, an office and the main entrance, is located at the lower level next to the base of an existing one story rock embankment. The overhanging mass of the building and its angled wall defines the main entrance and creates a covered space for unpacking and packing – a familiar cabin ritual associated with those important moments of arrival and departure. A vertical strip of glazing at the entry and lower stair landing frames the view of a lone arbutus tree.

PROJECT CREDITS**Client:**

Name withheld

Architect:

BattersbyHowat Architects Inc.

Structural Engineer:

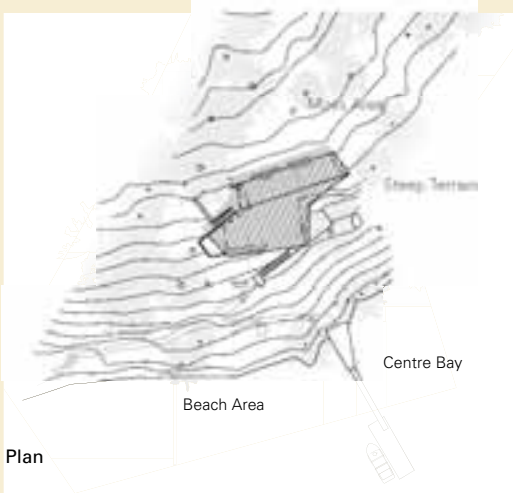
Bevan-Pritchard Man Associates Ltd.

Photography:

Sama J. Canzian

Family spaces are located on the upper level. The internal staircase rises up alongside a central concrete wall that extends the rock embankment into the internal landscape of the house. This wall rises up to support cantilevering roof rafters which in turn support the ridge above the hall that leads to sleeping quarters. Windows and sliding doors in the upper communal family areas provide ventilation and frame the deck area with expansive water views to the southwest. Closer to hand, one sees the foliage of the adjacent arbutus tree, and the texture of a steep rock bluff that rises from an outdoor terrace at grade.

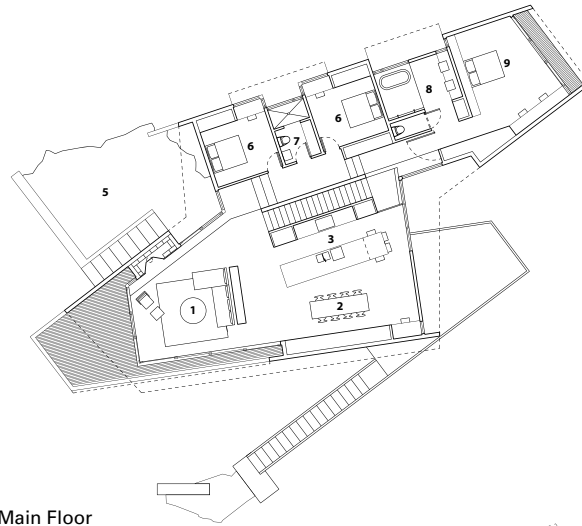




Site Plan

The switchback pathway continues up to the children's bedrooms with their intimate views into the rocky hillside and finally to the master bedroom with its glazed end wall and overhanging roof and walls framing the fragile landscape of a moss and wildflower covered clearing.

Amid the rocks and trees of this demanding coastal environment, the aesthetic qualities and proven durability of Western Red Cedar made it a natural choice for the exterior cladding of this house.

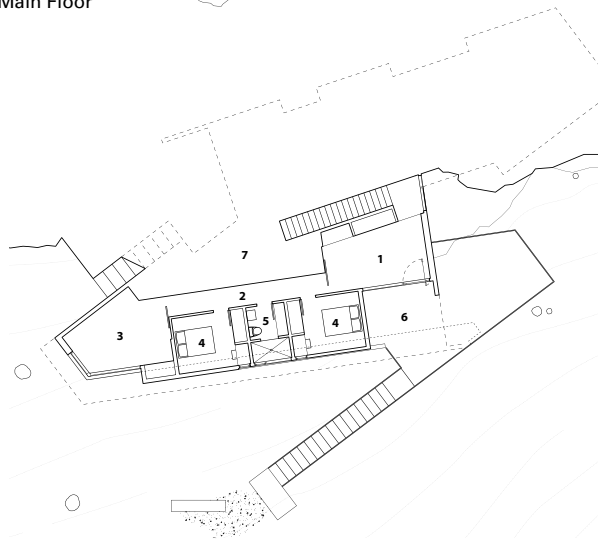


1. Living Room
2. Dining Room
3. Kitchen
4. Deck
5. Terrace
6. Bedroom
7. Bathroom
8. Master Ensuite
9. Master Bedroom

Main Floor



1. Terrace
2. Hall
3. Master Bathroom



1. Entry
2. Hallway
3. Study
4. Guest Bedroom
5. Guest Bathroom
6. Terrace
7. Mechanical Room

Lower Floor







WRC SPECIFICATIONS

Siding – Pattern #1

- Grade: Tight knot combed face
- Profile: Board and batten
- Size: Milled from 25 x 200mm (1 x 8in) boards;
25 x 75mm (1 x 3in) battens
- Fastening: Simpson 316 stainless steel siding nails
driven by hand
- Applied Finish: Broda Pro-Tek natural oil finish,
ebony color

Siding – Pattern #2

- Grade: A and Better Clear
- Profile: Shiplap
- Size: From 25 x 100mm (1 x 4in)
- Fastening: Simpson 316 stainless steel siding nails
driven by hand
- Applied Finish: Cabot Stains bleaching oil

Soffits

- Grade: A and Better Clear
- Profile: Tongue & groove
- Size: From 25 x 152mm (1 x 6in)
- Fastening: 15 gauge stainless steel nails driven by nail gun
- Applied Finish: Cabot Stains bleaching oil



LOCATION:

Atlanta, GA, USA

PROJECT TYPE:

RESIDENTIAL

Greenland Residence

This house is sited on the high side of an undulating wooded property on the outskirts of Atlanta, close to, yet set apart from, the surrounding mixed-use neighborhood.

Conceived as a home for three generations, the house is arranged in an open plan made up of discrete public and private spaces. Careful attention was paid not only to the design of the spaces for each generation of occupants, but also to the thresholds and interfaces between them.

Organized as two volumes slipping past one another, the building creates a series of indoor and outdoor rooms with each zone open to framed views in multiple directions.

Substantial effort has been made to reduce the carbon footprint of the house. Oriented along an east-west axis, the building incorporates multiple low-tech sustainable features, including rainwater harvesting and solar shading. The home also integrates more high-tech systems such as geothermal heating and cooling, argon gas-insulated glazing, recycled content and high-efficiency appliances.

The entry approach is a long, private driveway, from which the house reveals itself as solid white volumes connected by planes of cedar and glass, set beneath a low-sloped roof. Separated by clerestory glazing, the pair of alternating roof planes hover high above the second floor.

PROJECT CREDITS

Client:

Stephen and Kim Flanagan

Architect:

Studio One Architecture Inc.

Structural Engineer:

Quinn & Associates

Civil Engineer:

Pyramid Engineering and Development LLC

General Contractor:

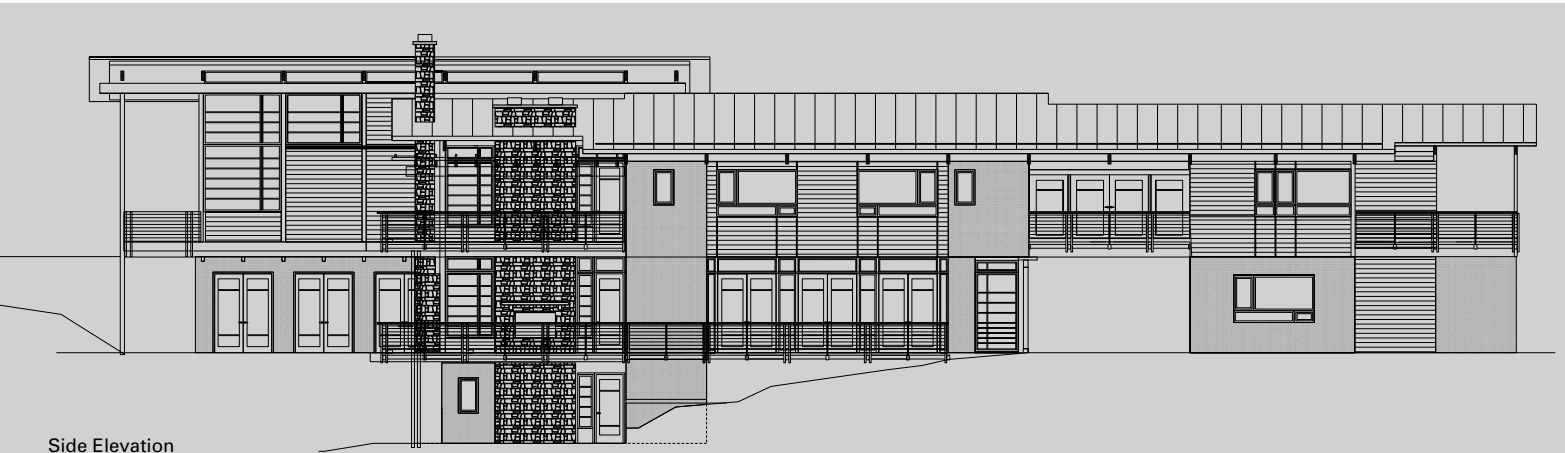
Pinnacle Custom Builders

Photography:

Rion Rizzo, Creative Sources Photography

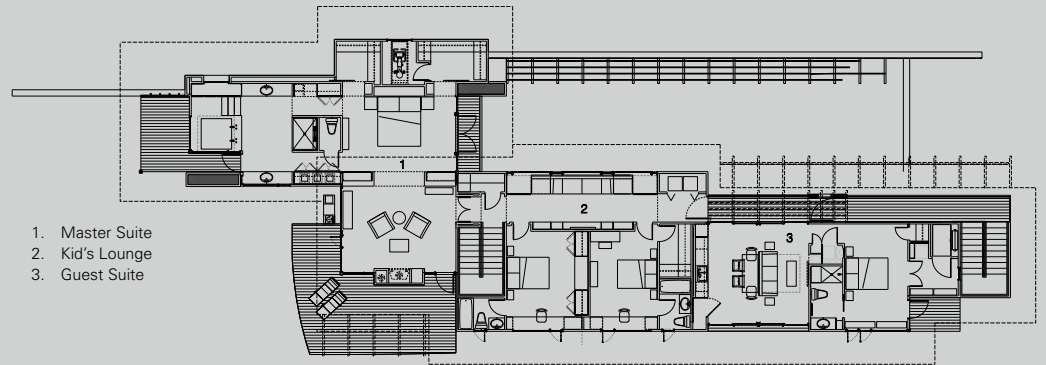


Taking cues from both the natural surroundings and the somewhat disparate preferences of the husband and wife; wood became a critical element and common denominator in developing a material palette and architectural language for the house. The use of Western Red Cedar on the exterior fulfilled multiple design criteria: blending with the surrounding site; creating a warm and inviting atmosphere essential to the wife; and evoking memories of the Rocky Mountain cabins of the husband's youth.



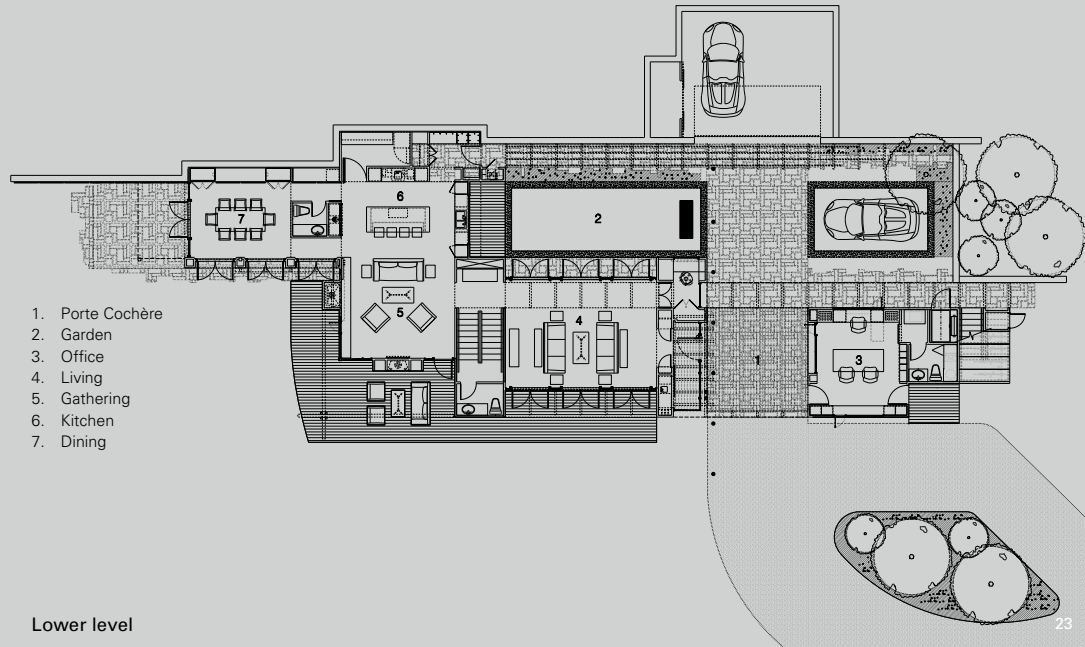
Side Elevation





1. Master Suite
2. Kid's Lounge
3. Guest Suite

Upper level

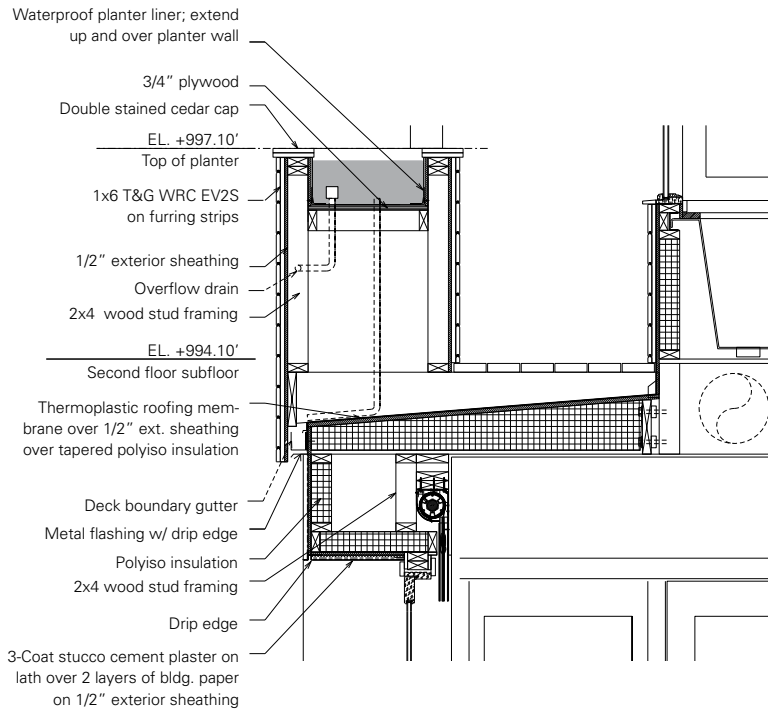


1. Porte Cochère
2. Garden
3. Office
4. Living
5. Gathering
6. Kitchen
7. Dining

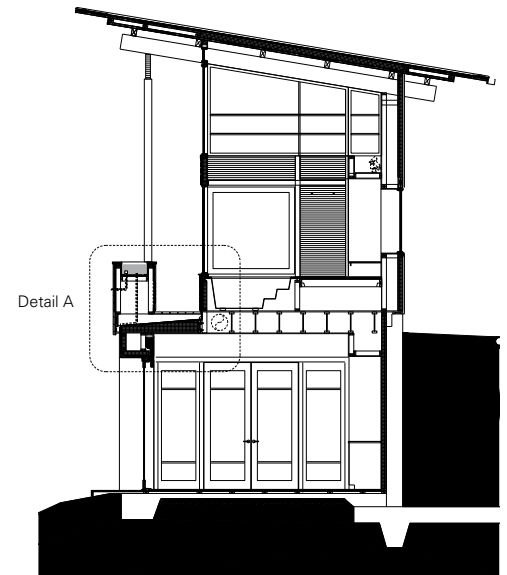
Lower level

Using a combination of Douglas fir and yellow pine elements for structure and finishes, the design sought to fuse clean, contemporary lines with traditional references in a composition that is expressive, authentic, indigenous, and warm.





Detail A



WRC SPECIFICATIONS

Grade: A & Better Clear
 Profile: V-joint tongue & groove
 Size: Milled from 25 x 150mm (1 x 6 in)
 Fastening: Stainless steel fasteners
 Applied Finish: Cabot Australian Timber Oil



LOCATION:
Mill Valley, CA, USA

PROJECT TYPE:
RESIDENTIAL

Hillside House

Nestled among the hills of Mill Valley, California - this house occupies an infill lot just across the Golden Gate Bridge from San Francisco. Carefully carved into the steep slope, and set amid towering oaks, the house is first and foremost a response to the site. The elegant simplicity of the design strikes a balance between modern and rustic, while the careful framing of views to the site and city skyline connect interior and exterior space.

The steep hillside site presented significant challenges in design and construction, and resulted in a solution that includes a series of connected spaces organized around a dramatic central stairwell. The design makes use of every square inch of space, and creates a genuinely indoor-outdoor dwelling in which every level features balconies, decks and covered terraces. For example, the modest master bedroom becomes expansive when window walls retract to include the large deck and outdoor tub. Both the kitchen and living areas open to adjacent outdoor rooms, nearly doubling the living space on the upper floor. The result is a home that feels much larger than its 196 square meters (2,116 square feet).

Designed to minimize its environmental impact, the house is oriented to optimize passive heating and cooling as well as solar exposure for its photovoltaic panels. The surrounding hillside provides the lower floors with natural insulation, solar power supplies electricity and hot water, and radiant floor heating and an air recirculation system condition the interior.

PROJECT CREDITS

Client:

Scott and Tracy Lee

Design Architect:

Scott Lee, SB Architects

Construction Documentation:

Arcanum

Structural Engineer:

Santos & Urrutia

General Contractor:

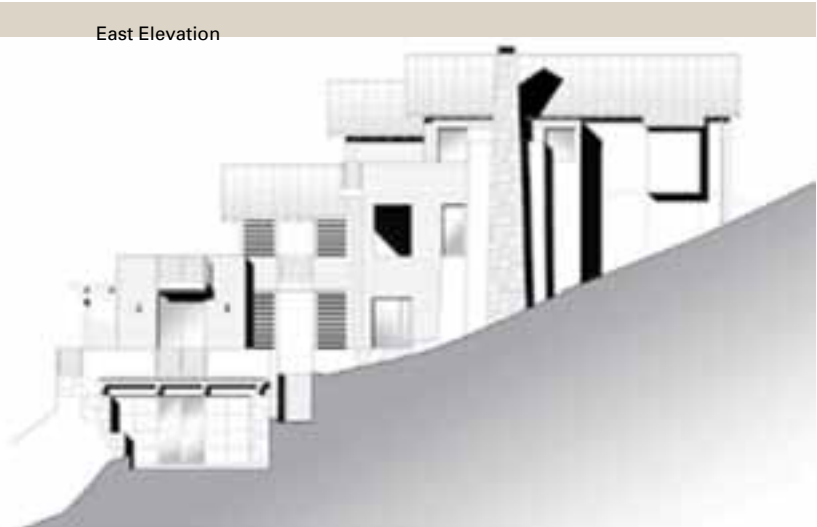
McDonald Construction

Photography:

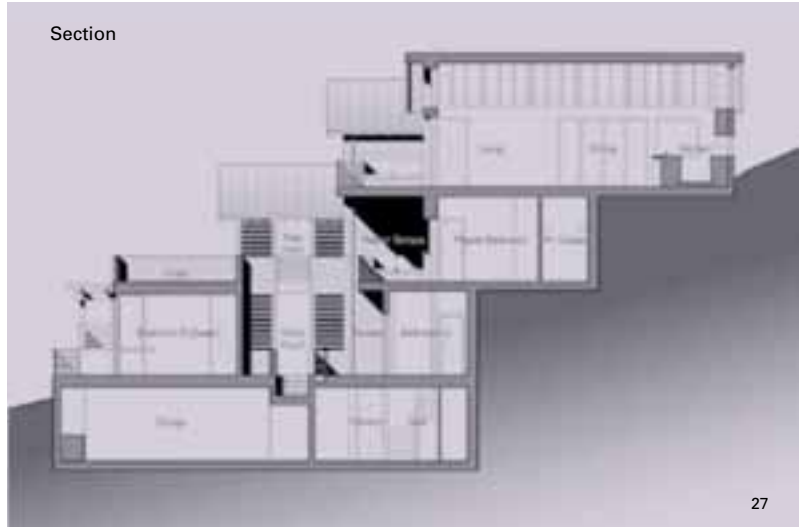
Mariko Reed and Matthew Millman



East Elevation



Section





Local availability, recycled content and sustainable production drove the selection of each material, product and detail. Western Red Cedar was the material of choice for siding of the exterior surfaces. It was chosen because it is the most authentically sustainable wood building material with the least environmental impact, and contributes to the clean, non-toxic standards of a healthy home environment. It also contributed to the contemporary rustic look that exemplifies this unique dwelling.





Level One



Level Two



Level Three



WRC SPECIFICATIONS

- Grade: A & Better Clear
- Profile: Shiplap custom milled from 25 x 152mm (1 x 6 in)
- Size: 19 x 140mm (0.75 x 5.5in)
- Fastening: Hexagonal head stainless steel screws countersunk
- Applied Finish: Sikkens Cetol

**LOCATION:**

Tongariro National Park,
New Zealand

PROJECT TYPE:

COMMERCIAL

Knoll Ridge Cafe

The Knoll Ridge Café is located at Whakapapa Ski Field on the slopes of Mount Ruapehu in the center of New Zealand's North Island. Mount Ruapehu is one of the country's premier ski resorts and happens to be New Zealand's largest active volcano. The café replaces the original Knoll Ridge Chalet which was destroyed by a fire in February 2009.

The new two story building accommodates cafeteria seating for 400 people, with a food counter, kitchen, support facilities and extensive exterior decks on the upper level, and washrooms, staff and storage facilities below.

The major design challenges for this project were the remote location, the harsh environment and the potential for rapidly changing weather conditions during construction. The solution was to design the entire building from foundations and floor panels, to walls, windows and roof - as a system of prefabricated modular units that could be delivered to site by helicopter. The payload limit for the helicopter meant that each component - including those for the 415 square meter glass curtain wall - had to be carefully designed to weigh less than 800 kilograms.

The form of the building is designed to reflect the strong geological features of the mountain. The gullwing profile of the roof appears to cradle the peak, but also serves to prevent the shedding of snow, which at times can accumulate to a depth of 3 meters.

PROJECT CREDITS**Client:**

Ruapehu Alpine Lifts Ltd.

Architect:

Harris Butt Architecture Ltd.

Structural Engineer:

Dunning Thornton Consultants Ltd.

General Contractor:

Stanley Construction Ltd.

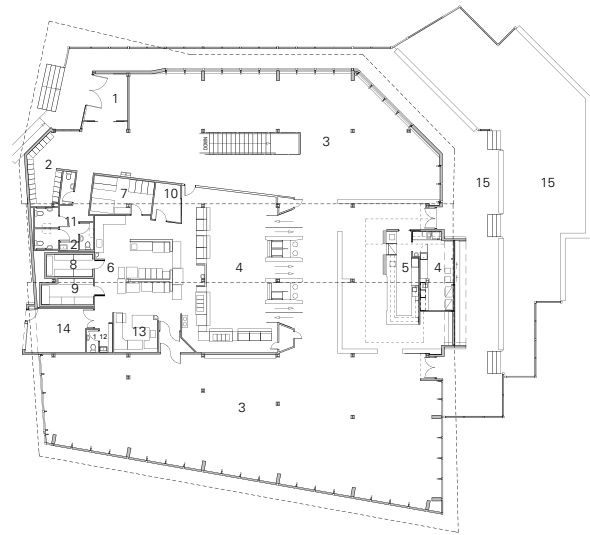
Photography:

Simon Devitt



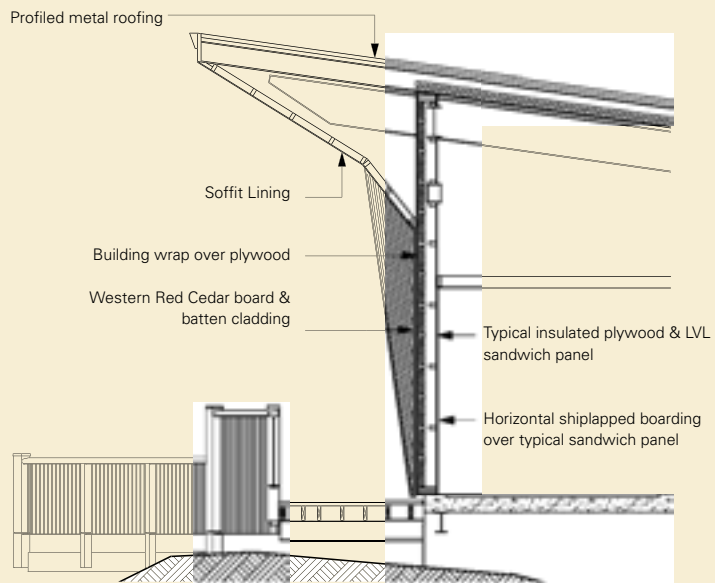
Wood has been used extensively inside and out to capture the warm feeling of a traditional chalet - but in a contemporary idiom. Western Red Cedar was chosen for its durability, dimensional stability and weather-resistant characteristics. Externally and internally it is complemented by large expanses of glass. These are strategically positioned to capture panoramic views - particularly on the east façade that looks out to the magnificent Pinnacle Ridge.

1. ENTRY LOBBY
2. LOCKER / LOBBY
3. CAFE
4. SERVERY
5. CAFE / BAR
6. KITCHEN
7. DRY STORE
8. FREEZER
9. CHILLER
10. OFFICE
11. WC
12. CLEANER
13. DISHWASHER
14. TRANSFER ROOM
15. DECK



Upper Floor





Wall Section & Partial Elevation

WRC SPECIFICATIONS

- Grade: A and Better Clear
- Profile: Rectangular board and batten
- Size: Boards milled from 25 x 305mm (1 x 12in);
Battens milled from 25 x 75mm (1 x 3in)
- Fastening: Stainless steel countersunk screws
- Applied Finish: Band sawn with 2 coats Drydens clear wood oil



LOCATION:
Hakuba, Japan

PROJECT TYPE:
COMMERCIAL

One Wadano Ski Chalet

The village of Hakuba sits in a wooded valley in the Northern Alps region of Japan. It is the central hub for the area's 10 ski resorts and served as the main venue for the alpine, cross country and ski jumping events for the 1998 Winter Olympic Games.

Situated in the Wadano Forest area of the Hakuba Olympic Valley and completed in 2012, the One Wadano chalet brings a new level of luxury to rental property in Japanese ski resorts. Arranged on three levels, the accommodation includes living, dining and kitchen areas, four bedrooms each with an ensuite bathroom, a gym, a spa area with an infrared sauna and a bike storage area - as well as patios, decks and an outdoor fireplace.

PROJECT CREDITS

Client:

Bernie Schiemer

Designer/Builder:

Fusion Homes

Photography:

Richard Grehan

The architectural concept is modern, with open plan spaces offering views to the surrounding forest, and a contemporary palette of materials including exposed concrete, stainless steel and glass. These materials are complemented by the extensive use of Western Red Cedar both inside and outside. Cedar was deliberately chosen as a key building material to infuse the minimal style of the lodge with a natural and organic warmth.

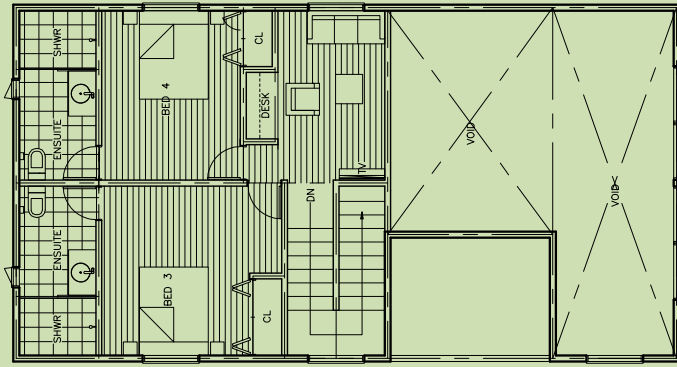




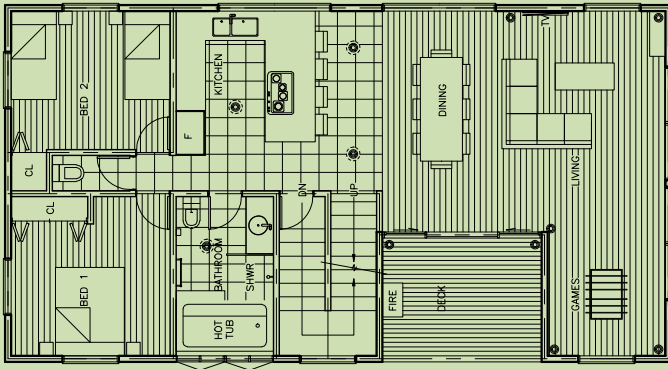
The use of cedar cladding on the exterior of the chalet ties the building to its forested surroundings. The horizontal boards have been laser cut to eliminate all shadow lines and focus attention on the natural beauty of the material.

For most people, the appeal of a vacation property can be measured in three ways: by location, by the amenities it offers, and by its design. Most would agree that One Wadano scores highly in all three categories. With its high vaulted ceilings, abundant daylight and the natural warmth of Western Red Cedar, this chalet is a true Alpine retreat where visitors can relax and refresh the senses.

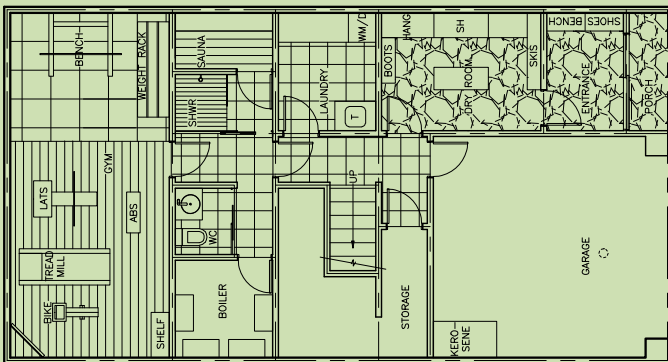




Upper Level



Main Level



Basement



WRC SPECIFICATIONS

- Grade: A & Better Clear
- Profile: Tongue & groove
- Size: 11 x 89mm (7/16 x 3 1/2in)
- Fastening: Blind nailed and glued
- Applied Finish: Clear OSMOS oil

**LOCATION:**

RMIT University,
Melbourne, Australia

PROJECT TYPE:

INSTITUTIONAL

Textile Clothing Footwear and Leather Building

When completed in 2000, the School of Textiles, was the largest contemporary timber clad building in Australia. The architects devised an innovative panelized Western Red Cedar system to cover what might otherwise have been no more than an orthodox institutional building.

The school is divided into two distinct halves, with one side containing large floor spaces for textile weaving machinery and the other containing smaller teaching studio spaces, administration and other services. The impressive central corridor acts as the school's main circulation space, with bridges on each level connecting the two halves of the building.

Except for the ground floor, which has been left as raw precast concrete, the entire façade of the 5200 square meter (55,000 square foot) facility has been clad with Western Red Cedar panels, applied as a pattern not unlike that of woven fabrics. The effect is visually dynamic, with the building changing color with the varying light conditions of the day. To enhance this effect, the cedar was left untreated and allowed to weather over time to a silky grey.

Designed to achieve passive solar temperature control, the building is only partially air conditioned. The architects worked closely with the builder, engineers, Australia's Timber Promotion council and leading European researchers in timber façade systems to develop an environmentally responsive method of construction for the building.

PROJECT CREDITS**Owner:**

RMIT University

Architect:

H2o Architects

Structural Engineer:

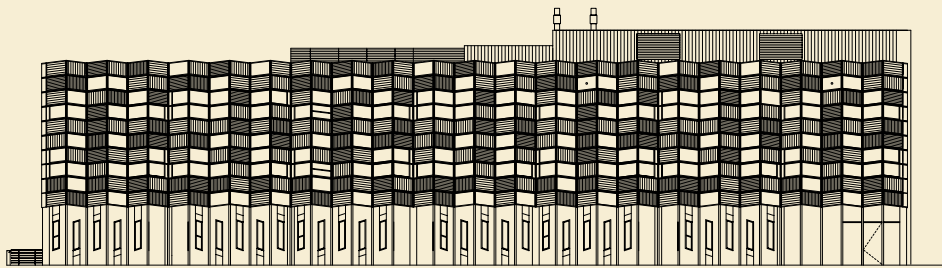
Ove Arup & Partners

General Contractor:

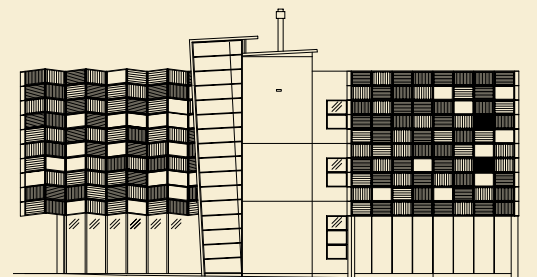
Kane Constructions Pty Ltd.

Photography:

Trevor Mein



North Elevation



West Elevation

Passive solar temperature control is achieved through the use of a double skin either side of a thermal chimney that limits the transfer of heat to the internal fabric of the building.

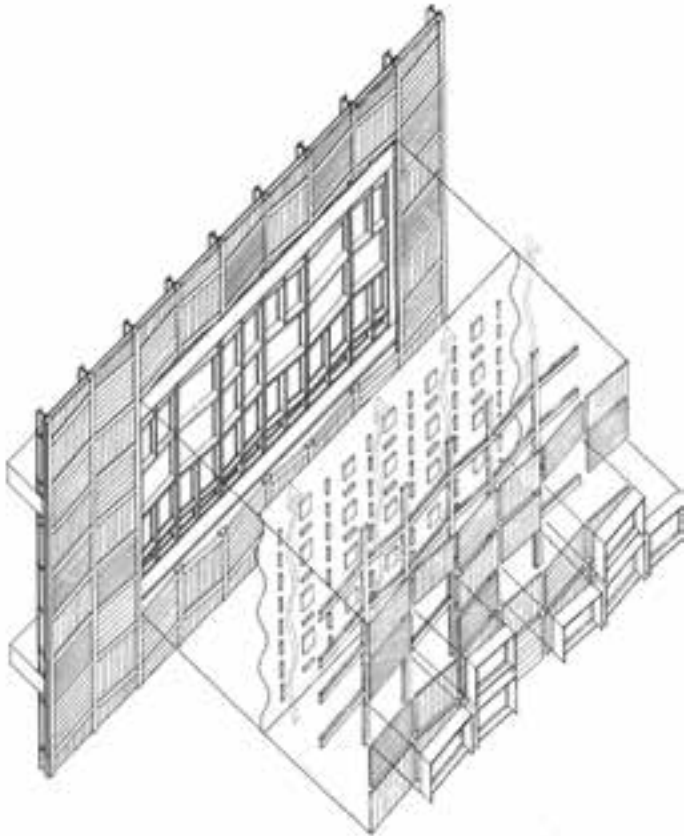
Apart from their obvious decorative function, the cedar panels act as a rain screen protecting an underlying moisture membrane. A gap between them allows circulation of air that not only helps to dry the wood, but aids with the cooling of the façade. The double skin also allows for the draining of any excess moisture that may penetrate the outer cladding layer.

With the completion of this project the campus, located in a formerly neglected industrial area, has been transformed into an engaging place of learning.

Ground Floor

- | | |
|------------------|-------------------------|
| 1. Undercroft | 10. Mixing |
| 2. Wind Lock | 11. Exposure |
| 3. Foyer | 12. Drying Racks |
| 4. Classroom | 13. Reclaim |
| 5. Setup | 14. Textile Print Area |
| 6. Technician | 15. Support Area |
| 7. Loading Store | 16. Paper Print Area |
| 8. Lobby | 17. Screen Racking Area |
| 9. Loading Dock | 18. Store |





Exploded Façade



WRC SPECIFICATIONS

- Profile: Rectangular, custom rabbeted
- Size: Thickness 17 and 22mm (5/8 and 7/8in)
- Width: Varies
- Fastening: Countersunk stainless steel screws
- Applied Finish: Planed smooth, factory applied clear preservative oil with fungicide



LOCATION:
Cardiff, Wales, UK

PROJECT TYPE:
INSTITUTIONAL

Royal Welsh College of Music and Drama

This competition-winning scheme for the Royal Welsh College of Music & Drama consists of three separate new buildings and a renovated existing structure, all united under a single floating roof. The program includes a 450-seat chamber concert hall, a 160-seat theatre and four rehearsal studios, as well as a dramatic glazed foyer, a terrace overlooking the heritage landscape of Bute Park and a restaurant.

Wood was chosen as the primary material for the Dora Stoutzker Concert Hall both internally and externally. The Western Red Cedar cladding used on the building enables it to fit comfortably into its woodland setting, and to age gracefully in a manner not possible had synthetic materials been used.

The cladding design was developed to cover the complex geometry of the concert hall in a series of vertical strips, set in bands across the drum. The strips at the base of the building were vertically aligned so as to deter climbing.

In order to prevent unsightly weathering patterns in the timber, adjacent bands of cedar fins have been oriented at 45 degrees to one another. This allows the structure to be viewed not as an opaque planar screen, but a semi-transparent screen, with a greater degree of colour balance maintained over time. The cladding system was prefabricated off site and delivered in a single shipping container.

PROJECT CREDITS

Client:

Royal Welsh College of Music and Drama

Architect:

BFLS

Structural Engineer:

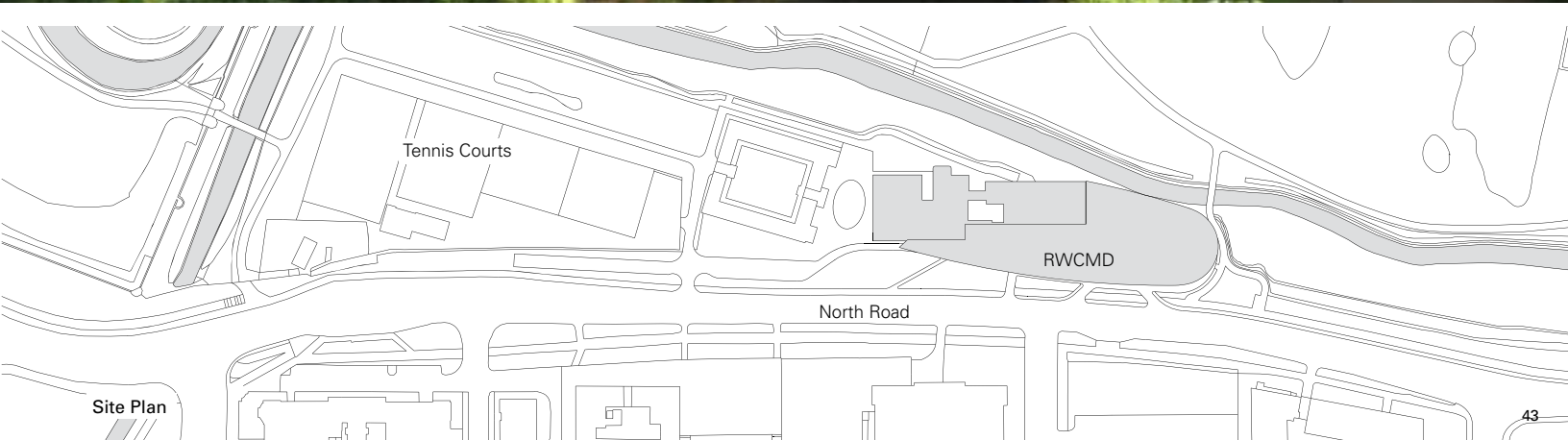
Mott Macdonald

General Contractor:

Willmott Dixon Construction Ltd.

Photography:

Jo Clark; Nick Guttridge; BFLS Architects



Site Plan

Tennis Courts

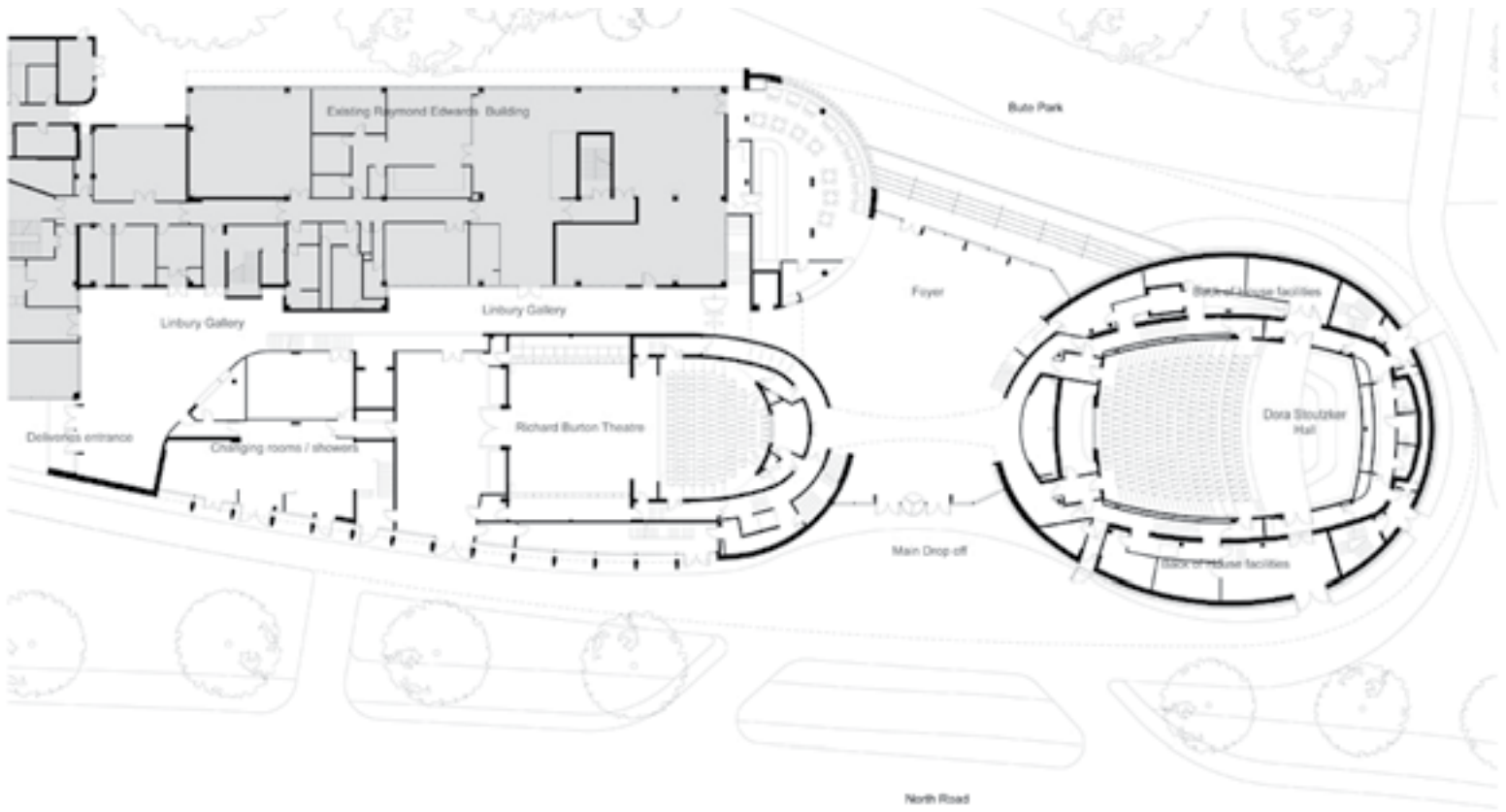
RWCMD

North Road

The visual warmth of the wood which has been used both externally as cladding and internally as a lining for the concert hall has met with the approval of visitors and performers alike. Its natural beauty anchors the building seamlessly to its surroundings.

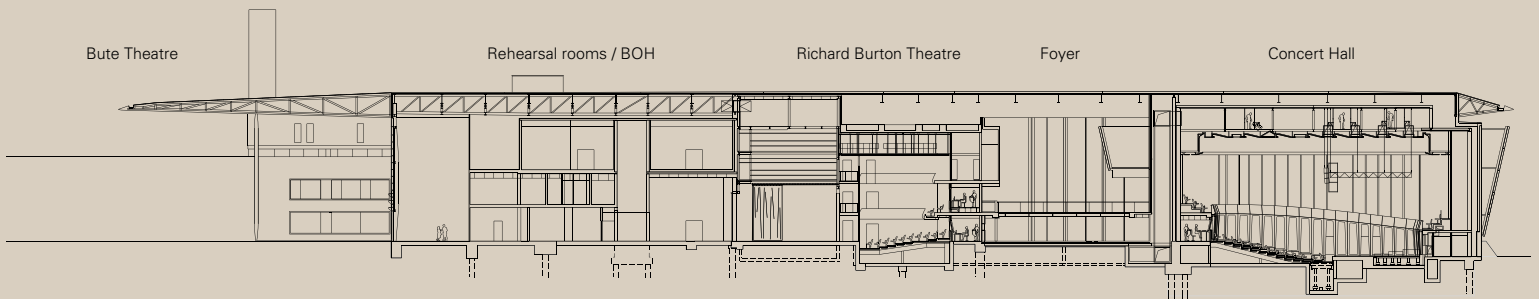






Ground Floor Plan

Long Section



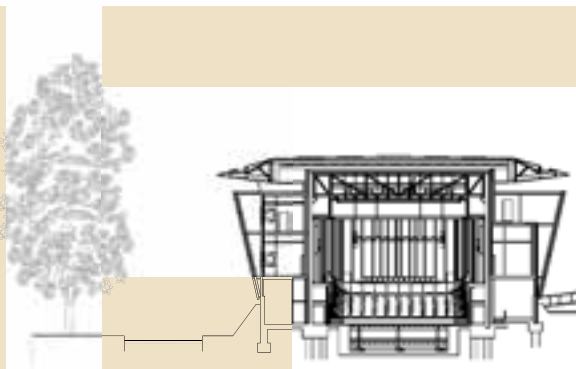


Primary steelwork:
galvanised and
lacquered vertical
steel box section
as a titled column,
connected to concert
hall exterior wall

Secondary steelwork:
galvanised and
lacquered T-profile,
faceted profile with
curved rows of pins
to support timber fins



Timber Façade Perspective Diagram



Section through concert hall

WRC SPECIFICATIONS

Grade: A & Better Clear
 Profile: Custom
 Size: 185mm x 44mm (7.5in x 1.75in)
 Fastening: Custom stainless steel cleats
 Applied Finish: Natural, no coatings or sealants



LOCATION:

Washington, DC, USA

PROJECT TYPE:

INSTITUTIONAL

Sidwell Friends Middle School

The addition and renovation of the Sidwell Friends Middle School, completed in 2006, transformed an awkwardly sited, undersized 1950s building into an exterior and interior teaching landscape. The first K-12 school to achieve a LEED Platinum rating, the building is designed to demonstrate how natural and mechanical systems work in unison with each other to promote resource conservation. Examples include solar chimneys for passive ventilation, a vegetated roof developed as an outdoor classroom, photovoltaic roof panels, and a constructed wetland in the courtyard that recycles water for grey water use in the building, and a biology pond that is part of the school's science curriculum.

PROJECT CREDITS

Owner:

Sidwell Friends School

Architect:

KieranTimberlake

Structural Engineer:

CVM Engineers

Owner's Representative:

JFW Project Management

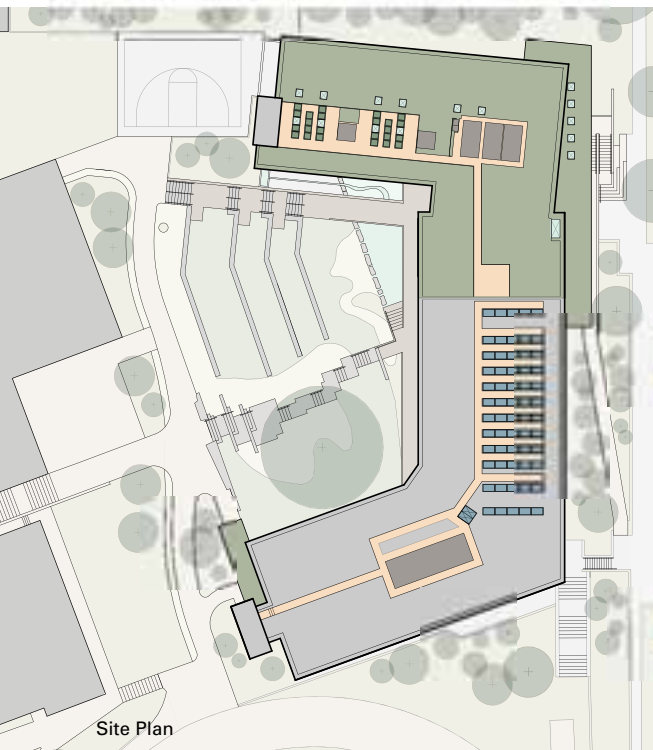
General Contractor:

Hitt Contracting Inc.

Photography:

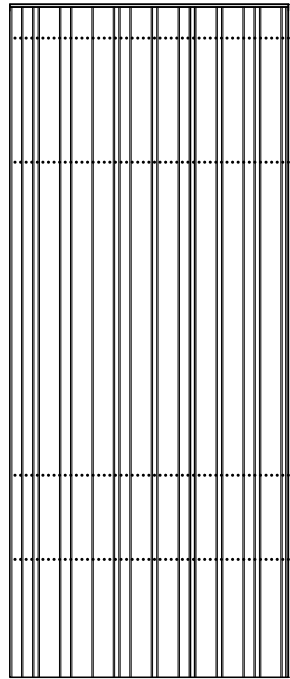
Peter Aaron/OTTO, Barry Halkin, Albert Vecerka/Esto

The wood that wraps the Middle School plays an important part in resource conservation measures for this project. Made with reclaimed Western Red Cedar, the cladding and shading fins are designed to balance thermal performance with optimum day lighting, and to unify the new and existing structures. They are configured differently on each façade to respond to unique solar conditions. On the east and west façades, the fins are arrayed vertically and angled to permit daylight deep into the building while protecting against solar gain. The multilayer building envelope, consisting of outer cladding, windows, and inner rain screen, was fabricated offsite in large assemblies, greatly reducing the amount of onsite labor required to enclose the building.

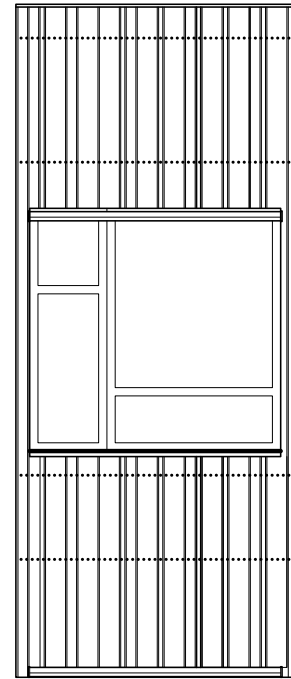


Cedar was chosen for the exterior cladding because it was the most sustainable choice. Reclaimed lumber required fewer resources to re-mill and deliver than newly milled wood. The wood supplier, had a ready supply of cedar, which was the ideal species because it is decay-resistant, and can be used untreated and unfinished. In this case, the reclaimed cedar was believed to have come from very large, old trees, making it especially resistant to rot and decay. The cedar cladding at Sidwell Friends was left untreated and has begun to weather to a silvery grey. It is expected to last 50 to 75 years, with little need for maintenance and refinishing.

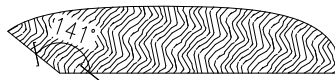
Standard Configuration



At Window Opening



Exterior WRC Screen



Typical Cedar Sections



WRC SPECIFICATIONS

Vertical Fins

- Grade: Select appearance
- Profile: Rectangular
- Size: Thickness 21mm (7/8in) Width: varies
- Fastening: Face fastened with stainless steel screws
- Applied Finish: None, except for 2-part epoxy paint on upward facing ends of boards

Sun Shades

- Grade: Select appearance
- Profile: Custom curved
- Size: Thickness: ex 38mm Width: varies
- Fastening: Vertical sun shades blind fastened with stainless steel screws
- Applied Finish: None, except for 2-part epoxy paint on upward facing ends of boards

Note:

The reclaimed cedar was approved by sample prior to contracting, so was not specified in the traditional sense. Specifications listed here are therefore based on visual comparison with new material.



LOCATION:

Tofino, BC, Canada

PROJECT TYPE:

INFRASTRUCTURE

Ty-Histanis Community Infrastructure

Ty-Histanis is a new sustainable community development located on the ecologically unique Tofino Peninsula on the west coast of Vancouver Island. The new community will relieve severe overcrowding in the neighboring Tla-o-qui-aht First Nations village of Esowista. Ty-Histanis will eventually include a total of 220 new single family and multifamily homes, a health center, community and governance buildings, a K-12 school, public works yard, cemetery and fire hall.

PROJECT CREDITS

Client:

Tla-o-qui-aht First Nations

Architect:

David Nairne + Associates Ltd.

Structural Engineer:

David Nairne + Associates Ltd.

General Contractor:

Windley Contracting Ltd.

Photography:

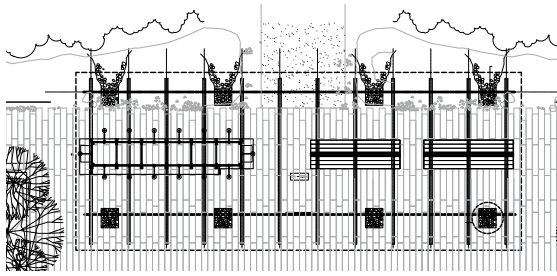
Jeff Gravistin

The design approach to the development is a direct reflection of the commitment by TFN to build a model sustainable community respectful of the surrounding Pacific Rim National Park and UNESCO Clayoquot Sound Biosphere Reserves within which the project is situated, while at the same time promoting and celebrating the spirit, language and form of their traditional culture.

The Postal Kiosk/Bus Stop Shelter and The Pump House/District Energy Plant are the first two structures built in the heart of the community and take their formal inspiration from traditional Coast Salish plank houses.



Site Plan



Plan

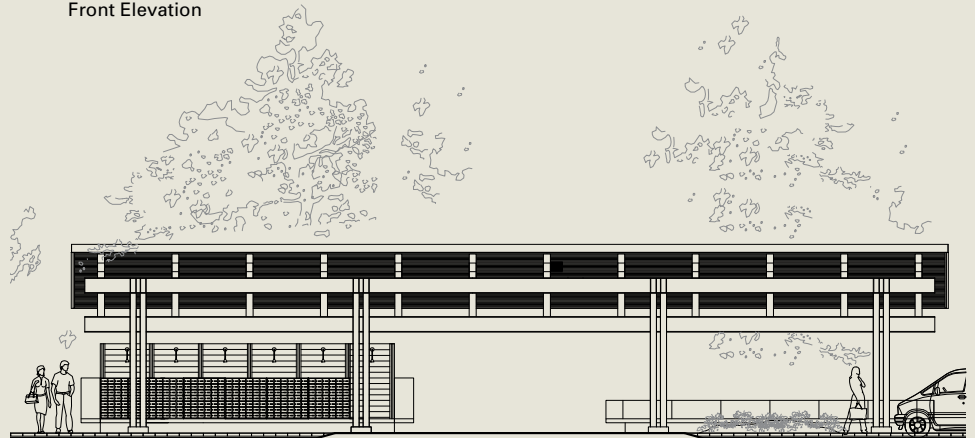
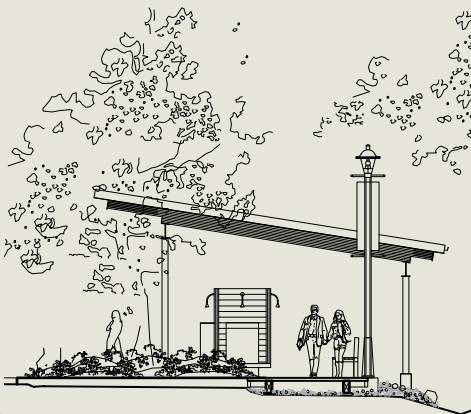
The Pumphouse District Energy Plant provides domestic water, fire protection and geothermal energy to the community, its structural language being an extension of that developed for the kiosk, with the various program elements organized under a single shed roof. A series of breezeways gives rhythm to the long street façade. Emergency power equipment is concealed within a cedar clad enclosure whose boards recall traditional bent wood box construction.

The use of sustainably harvested cedar fits within the highest environmental design standards required by Parks Canada, and the Department of Fisheries and Oceans.



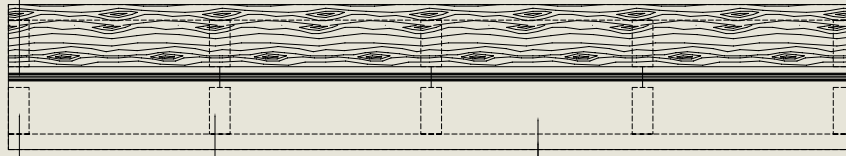
Side Elevation

Front Elevation





Min 12 gauge pre-finished metal cap to match color of painted structure

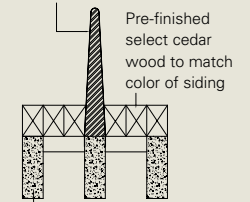


C.I.P. Concrete

Pre-finished select cedar wood to match color of siding

Elevation of WRC Bench

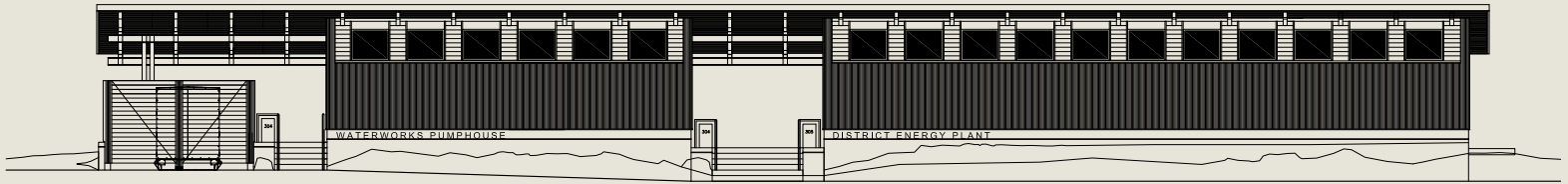
Min 12 gauge pre-finished metal cap to match color of painted structure



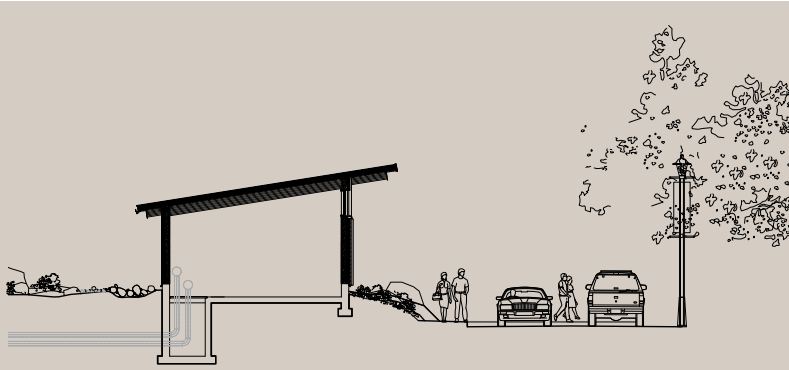
C.I.P. Concrete

Section through WRC Bench

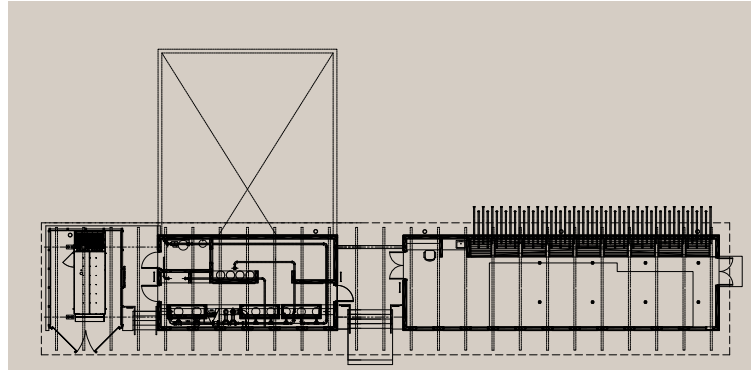




Elevation



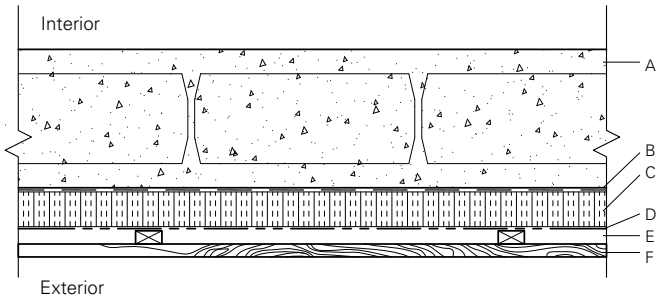
Cross Section



Plan



- A: 200mm concrete masonry wall with interior clear sealer finish
- B: 1 layer self adhesive vapour barrier
- C: 50mm rigid insulation supported on galvanized Z bars
- D: 2 layers building paper
- E: 319mm T&G select cedar siding
- F: 19 x 38mm wood strapping



Typical Exterior Wood Cladding Wall Assembly



WRC SPECIFICATIONS

Siding - Throughout Project

- Grade: Mixed Grain, Mixed Grade A/B Clear with percentage of Select Tight Knotty, smooth face, color sorted with yellow/golden bias
- Profile: Tongue & groove, square shoulder, 3mm (1/8in) gap, 6 degree bevel
- Size: From 25 x 152mm (1x6in)
- Fastening: Blind fastened, double HD galvanized screws
- Applied Finish: 2 coats CBR Products, BRODA Wood Stone Clarity 112 Woodlands

Swing Gates on Pumphouse

- Grade: Mixed Grain, Mixed Grade A/B Clear with percentage of Select Tight Knotty, smooth face, color sorted with yellow/golden bias
- Profile: Tongue & groove, square shoulder, 3mm (1/8in) gap KD, 6 degree bevel
- Size: From 51 x 152mm (2 x 6in)
- Fastening: Blind fastened, double HD galvanized screws
- Applied Finish: 2 coats CBR Products, BRODA Wood Stone Clarity 112 Woodlands

Benches Outside Postal Kiosk

- Grade: A Clear full sawn, re-planed, from onsite harvesting
- Profile: Square edge
- Size: From 203 x 305mm (8 x 12in)
- Fastening: Threaded rod, double HD galvanized, countersunk with grain matched wood plugs
- Applied Finish: 2 coats CBR Products, BRODA Pro-Tec-Tor SDR 112 Woodlands

Cedar Street Light Structures

- Grade: B full sawn, re-planed from onsite harvesting
- Profile: Square edge
- Size: Twinned 76 x 203mm (3x8in) horizontals on twinned 102 x 203mm (4 x 8in) posts
- Fastening: Lag bolts and threaded rod, double HD galvanized, countersunk with grain matched plugs
- Applied Finish: 2 coats CBR Products, BRODA Pro-Tec-Tor SDR 112 Woodlands



LOCATION:

Tasman, New Zealand

PROJECT TYPE:

RESIDENTIAL

Waiwhero Farm House

This home is set within a large rural property in the Moutere Hills, on the northwest coast of the South Island, with views of Mount Hector and Tasman Bay. It was designed as a summer retreat for a New York family and their many guests. The farmland has been extensively restored and planted with native trees, Radiata pine and olives for future production. The owners wanted a house which had a sense of containment, quietude and one which would fit comfortably into its rural environment.

The design of the house evolved as two distinct buildings fanning out and around two established kanuka trees, the plan reflecting the underlying geological formation of the Moutere Hills. The separate buildings reduce the bulk of the house as well as form a protected sunny courtyard to escape the strong north eastern breezes from Tasman Bay. The eccentric angles of the house are intended to reflect the forms of hop drying houses found throughout the area.

Western Red Cedar was chosen as an external wall cladding for its ability to weather naturally and blend in with the surrounding hills and trees. These properties also helped to meet the client's requirement for an elegant farmhouse that would complement its rural setting.

PROJECT CREDITS

Architect:

Tennent + Brown Architects

Structural Engineer:

Romulus

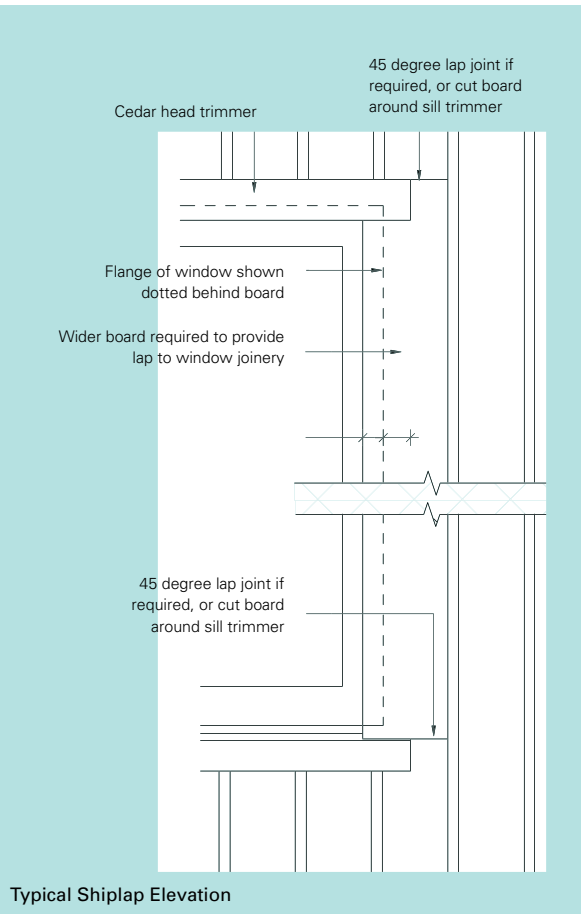
General Contractor:

Lovell Inch Builders

Photography:

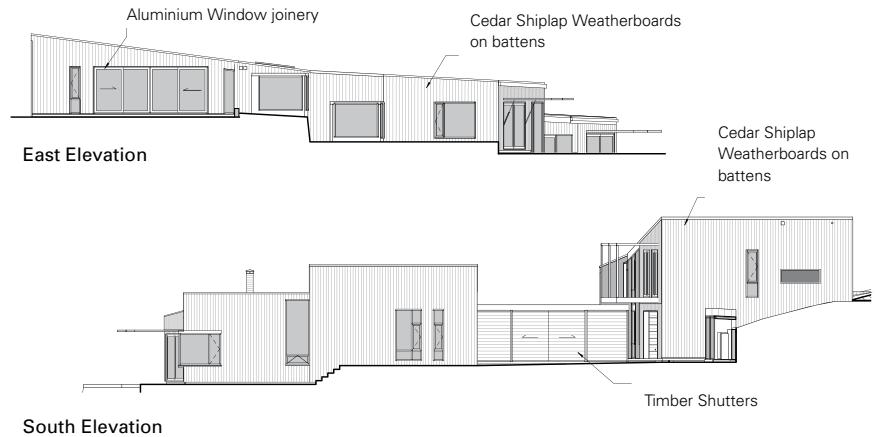
Jason Frank Rothenberg





Cedar was also used for the slatted screens that shade the house from the northern and western sun. The main entrance door is solid laminated cedar with an inset pattern unique to this home. The house sits off a narrow ridge and is set into the landscape in a series of long terraces that merge the house and immediate gardens with the wider farm landscape. Glue laminated Lawson cypress columns and beams define the main living spaces, with a hoop pine plywood ceiling lining and matai flooring selected to evoke a traditional farmhouse interior.

The house is self sufficient except for electricity, incorporating a Biolytix wastewater treatment system, solar hot water heating and storm water collection.





Ground Floor



Upper floor



WRC SPECIFICATIONS

- Grade: Custom
- Profile: Vertical shiplap with bandsawn face
- Size: 19 x 110mm (4 1/4 x 3/4in)
- Fastening: 75 x 3.2mm (3 x 1/8in) stainless steel annular groove rose head nails with clinch nail
- Applied Finish: Two coats Drydens Wood Oil (1 in factory, one on site)

