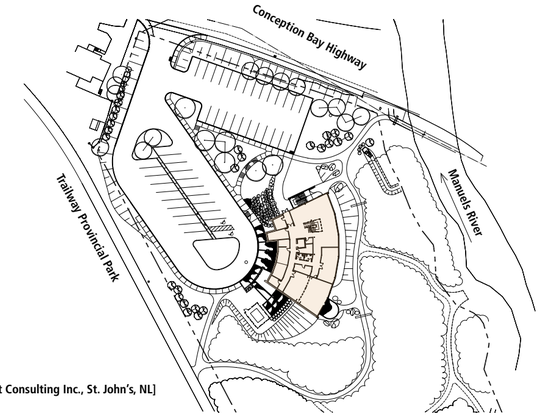
MANUELS RIVER HIBERNIA
Interpretation Centre

Background

The Manuels River Hibernia Interpretation Centre is the public educational centre of the not-for-profit Manuels River Natural Heritage Society Inc. located on the banks of the Manuels River, Conception Bay South, Newfoundland and Labrador. The 13,000 sq. ft. [1,196 m^2] state-of-the-art interpretation centre showcases internationally-recognized fossils and serves as a tourist attraction and economic driver within the community and neighbouring areas. The main goal of the Manuels River Natural Heritage Society is to 'preserve and interpret the natural, cultural, and geological history of the river.' Completed in 2013, the new Manuels River Hibernia Interpretation Centre forms the epicenter of the Manuels River Experience.

It is an icon in the developing Conception Bay South area, acting as a first-class tourism destination for the study of paleontology resources. The centre will be a destination for those seeking a unique experience, and will educate students and visitors about the geology of the area and the significance of trilobite fossils that date back more than 500 million years.

Looking east to the rear of the building past the central stair and a portion of the exhibit area. [Photo: Crockwell Photography, courtesy of Stantec].



Site plan [courtesy Tract Consulting Inc., St. John's, NL]

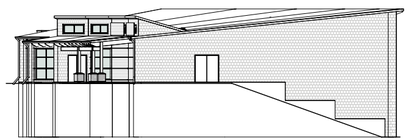
The Project

As a key attraction for visitors to the community and the province, the Centre blends with the natural surroundings as an excellent example of how to fit a building into a sensitive environment. The project was designed with progressive environmental standards in mind, it encompasses a variety of wood products and other structural elements to form a hybrid structural system, and utilizes a geothermal heat pump system to minimize energy loads and operational costs.

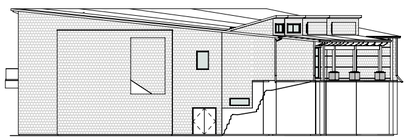
The architects, Stantec Architecture completed a building program with the client to determine needs analysis, and then prepared a conceptual master plan for the client to establish a budget and to do fundraising. Based on the success of fundraising the client settled on a total area of 13,000 sq. ft. [1,196 m^2] on two storeys to maximize the use of the site.

Creating a full experience for the visitor is crucial to the success of the interpretation centre. Amenities that are bright, inviting and functionally efficient bring pleasure to the visitor, and enhance their experience. The architects acknowledged this dynamic and adopted this approach in its design philosophy. The Centre includes classroom space that can accommodate up to 60 people, a floor of interactive exhibits by Lord Cultural Resources and Mystus Exhibits, a cafe, a 52 seat theatre, a gift shop, office, kitchen and a separate event space for concerts, business meetings, cultural events and other private events.

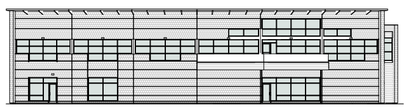
The front [south] elevation. The Manuels River Interpretation Centre building connects with an extensive trail system, and is located in a section of Manuels River having some of the oldest fossils in the world - 500 million years old! The Centre tells the story of this geological wonder. [Photo: Crockwell Photography, courtesy of Stantec].



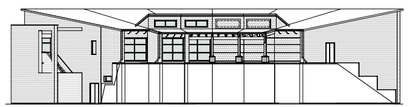
East elevation



West elevation



North elevation



South elevation

Architecture

The Society, as a not-for-profit organization, wanted an efficient low-labour model design with an operation and maintenance regime which would minimize future expenditures. The retail potential of the facility was to be maximized through the strategic location of the gift shop and cafe near the top of the stairs at the second floor and close to the balcony and large windows.

The client also wanted the Centre to be a favourite destination and the 'go-to' rental facility in the area for weddings and other events. Therefore, its location has high visibility at the intersection of Topsail Road and Conception Bay Highway which is the main point of access to the town. Lighting and large glazed areas give the building a dramatic lantern effect at night, and is situated to blend neatly with the surrounding forest and contours of the site.

The staircase on the north side has a large opening in the wall where a trilobite art piece is planned for display and illumination at night.

Materials were chosen to match the natural character of the site, while also offering structural efficiency, construction economy and low maintenance. The hybrid steel and glue-laminated [glulam] truss system was chosen for its long clear span capability while also making an interesting visual element in its own right. The use of tongue and groove heavy timber roof decking, wood columns, and simple stick-built construction optimize cost and maintain the natural aesthetic.

The architects also sought higher building performance through increased insulation, a high-performance glazing system which was used to maximize natural daylighting in public areas and reduce dependency on artificial light, a mechanical system designed to work based on occupancy of the building [ie heat sensors and pollution sensors], and lighting activated by motion detectors.

Eave detail [top left]. The balcony at the north elevation [top right], and a view of the full north elevation [bottom left]. The approach from the south end of the parking lot [bottom right]. The floor plan is based on a radial design intended to take advantage of the view of the Manuels River, to focus attention on the main entrance adjacent to parking lots, and to lend itself to future expansion to one side. [Photos: Crockwell Photography, courtesy of Stantec].

First floor

Second floor

Floor plans

A	Permanent exhibition	**G**	Washroom	**M**	Vestibule	**S**	Multipurpose room
B	Fossil storage	**H**	Loading	**N**	Cafe	**T**	Canteen
C	Classroom/theatre	**I**	Staff room	**O**	Gift shop	**U**	Kitchen
D	Stair	**J**	Storage	**P**	Reception		
E	Elevator	**K**	Office	**Q**	Coat room		
F	Elevator room	**L**	Mechanical room	**R**	Visitor centre		

Structure

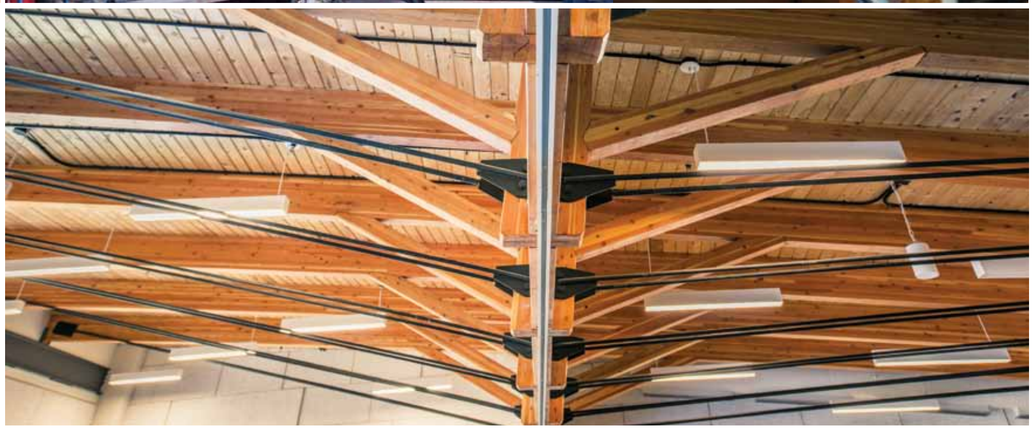
The glulam and steel work to their strengths by taking advantage of the high compressive strength of glulam with the high tensile strength of the steel rods to create the hybrid king post roof truss system. The connections are simple seated steel-to-wood connections with timber rivets.

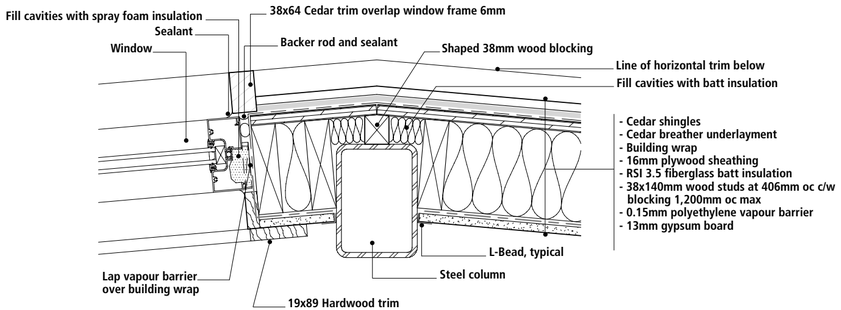
Other parts of the hybrid structural system consists of glulam beams supporting spruce roof decking. Even though the plan geometry of the building is complex, the implementation of random pattern spruce roof decking reduced the amount of waste during the construction phase.

Exterior walls use typical rainscreen construction consisting of 38x140mm wood studs, insulated with RSI 3.5 fiberglass batt insulation, 0.15mm polyethylene vapor barrier on the inside of the wall sheathed with 13mm gypsum board. The exterior is sheathed with 16mm plywood, building wrap as an air barrier, 'cedar breather' underlayment, and cedar shingles.

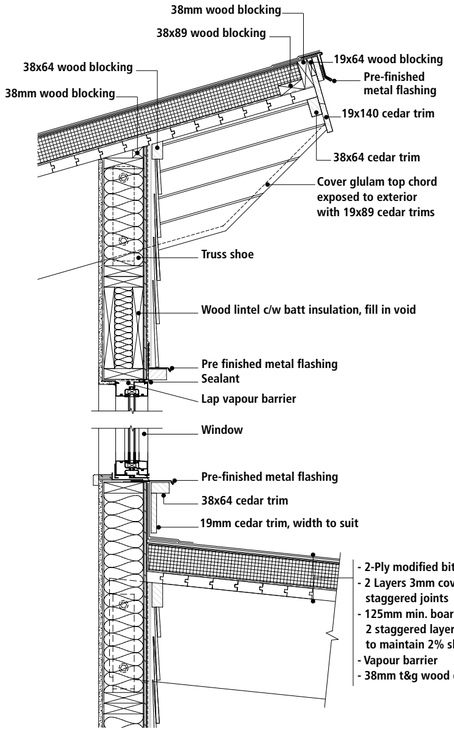
A cost comparison analysis examined various construction systems and material combinations. The findings revealed a wood/hybrid material combination to be the most economical for this project.

The structural system is a mix of glulam and wood and steel framing which was found to be the most economical in comparison to other systems [right, photo: DBA Consulting Engineers Ltd.]. The multi-purpose room is comprised of long-span hybrid king post roof trusses constructed from glulam and steel rods. The resulting structure is stylish and chic [far right and bottom].





Plan detail - Window at level 1 columns



Section - Shed roof eave/wall interface

Use of Wood/ Millwork Finishes

Wood is used throughout the exterior of the building. The exterior walls are comprised of light wood framing, with plywood sheathing, which act as shear walls to provide structural lateral resistance. The exterior facade includes sawn eastern white cedar shingles which blend well with the exposed glulam fascia and timber soffits, as well as with the natural surroundings while minimizing maintenance and repair.

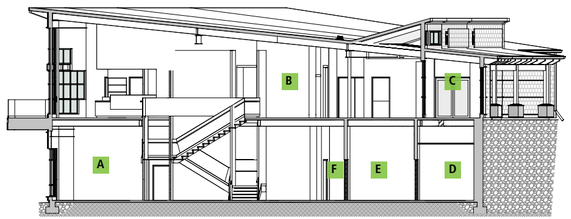
Inside, wood is evident in the exposed tongue and groove decking on the roof, in the natural pine wood window sills, in the wood fibre-based Tectum acoustic absorption panels, and in the exposed heavy timber columns and hybrid steel and glulam trusses in the multipurpose room.

The approach from the north end of the parking lot [right]. The stairwell on the north side of the Centre [centre, photo: DBA Consulting Engineers Ltd.]. The vestibule at the top of the exterior stairwell. The exterior wall is built as a rainscreen and the cedar shingles will weather naturally for low maintenance [far right]. The multipurpose room [bottom].

Building Code Analysis

The Occupancy type is a Group A, Division 2. The building is two storey sprinklered and permitted to have both combustible and non-combustible construction to a maximum building footprint area of 2,400 m^2. All occupant loading and exiting requirements are according to the National Buildiing Code of Canada [NBCC].

The floor-ceiling assembly at the second level is a non-rated fire separation [0 minutes] consisting of a concrete slab on metal deck. The main assembly hall uses Tectum acoustic insulation panels made of fibre from sustainably-managed forests and containing high recycled content. Sound-rated walls of STC 57 are used around the theatre, and sound isolation gasketing was installed in areas requiring high STC ratings. The roof is a non fire-rated assembly so wood/combustible construction was permitted.



Building section - Stairs and balcony

Building section - Vestibule and balcony

A	Permanent exhibition	E	Storage	I	Elevator
B	Visitor centre	F	Corridor	J	Mechanic/electrical room
C	Vestibule	G	Canteen	K	Elevator room
D	Office	H	Washroom		

PROJECT CREDITS

CLIENT Manuels River Natural Heritage Society Inc.
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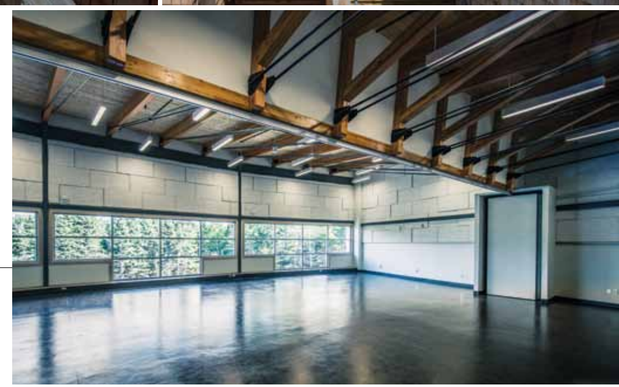
STRUCTURAL CONSULTANT DBA Consulting Engineers Ltd., St. John's, NL
M&E CONSULTANT Stantec, St. John's, NL
CONTRACTOR Redwood Construction, St. John's, NL
LANDSCAPE ARCHITECT Tract Consulting Inc., St. John's, NL
WOOD FABRICATOR Redwood Construction, St. John's, NL
PHOTOS Crockwell Photography, Stantec and DBA Consulting Engineers Ltd. as indicated
DRAWINGS Stantec, and Tract Consulting Inc. as indicated

COMPLETED 2013
COST $5,000,000
SIZE 13,132 sq. ft. [1,196 m^2]



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