SABMag

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WINNING PROJECTS

CANADIAN GREEN BUILDING

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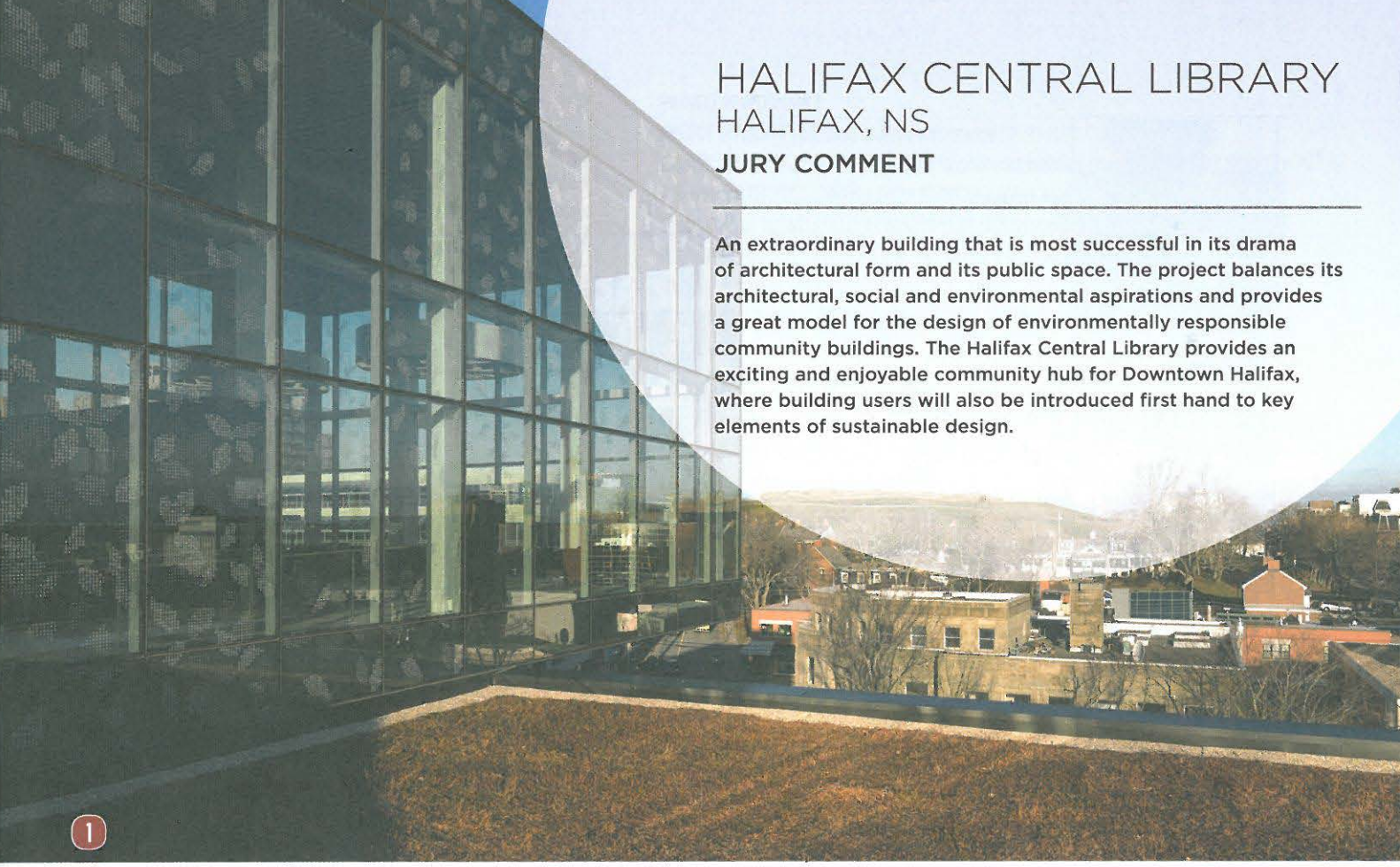
HALIFAX CENTRAL LIBRARY
HALIFAX, NS

JURY COMMENT

An extraordinary building that is most successful in its drama of architectural form and its public space. The project balances its architectural, social and environmental aspirations and provides a great model for the design of environmentally responsible community buildings. The Halifax Central Library provides an exciting and enjoyable community hub for Downtown Halifax, where building users will also be introduced first hand to key elements of sustainable design.



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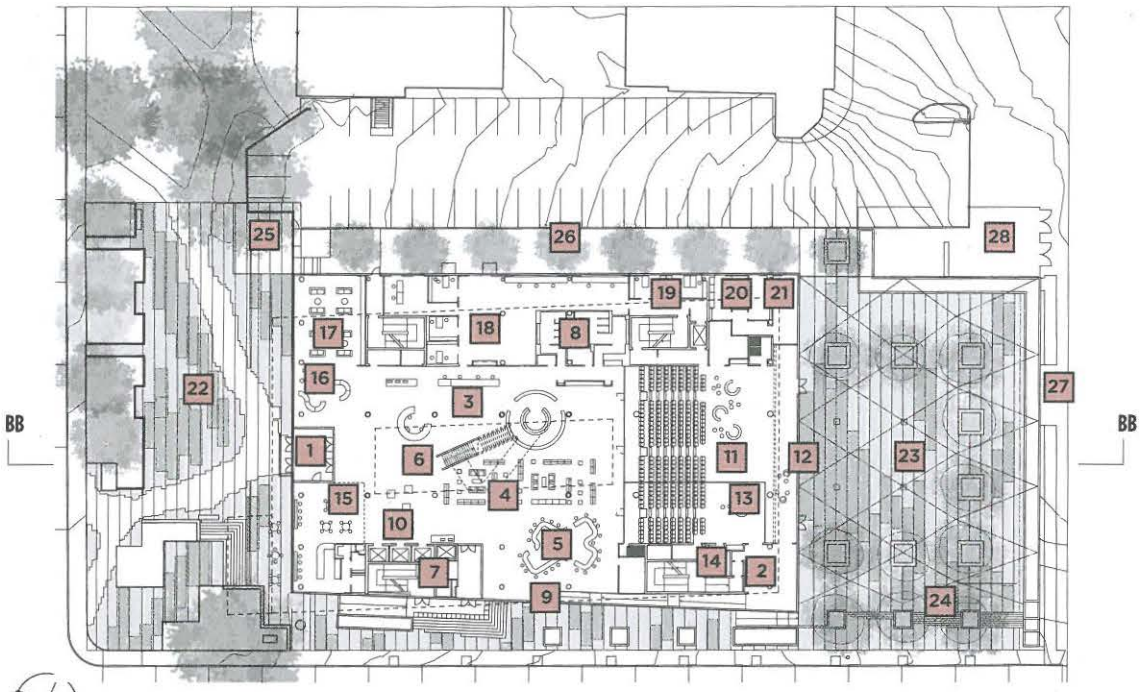


Site Plan & Main Floor Plan: Public plazas & spaces surround the primarily public space of Level 1 making the ground plane continuous from outside to inside.

1 Vestibule
2 Lobby
3 Welcome/Customer Service desk
4 Best Sellers
5 Electronical browsing
6 Atrium staircase
7 Staircase
8 W.C.
9 Ramp
10 Elevators
11 Paul O´Regan Hall
12 Wintergarden
13 Program space
14 Storage
15 Café
16 Meeting area
17 Reading Lounge
18 Sorting area
19 Office/staff area
20 Performance change rooms
21 Green room
22 Plaza
23 Exterior podium
24 Exterior staircase
25 Bicycle parking
26 Planting
27 Entrance parking area
28 Transformer service area

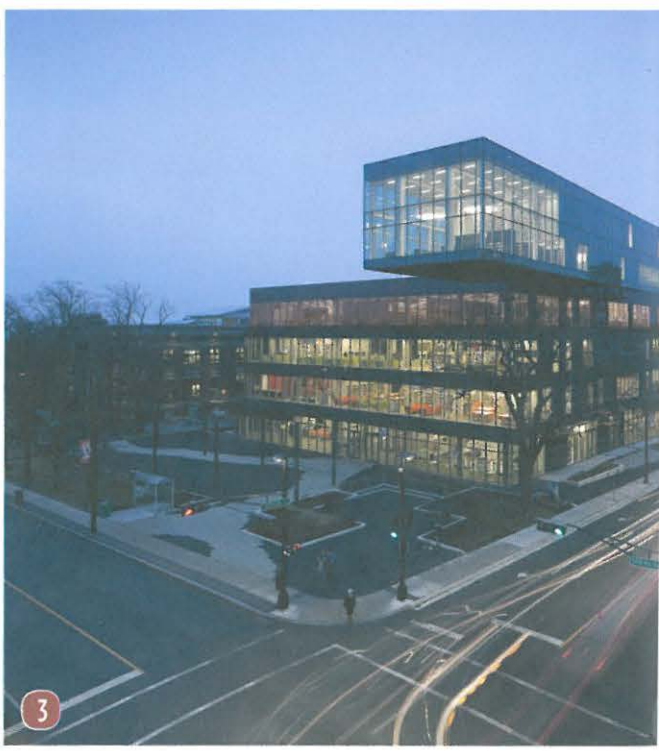
GREEN ROOF LOOKING TOWARD CITADEL HILL [1]. VIEW FROM CORNER OF SPRING GARDEN ROAD & QUEEN STREET [2]. NORTH PLAZA, SPRING GARDEN ROAD ENTRY [3]. LEVEL 1 ENTRANCE LOBBY [4]. HALIFAX LIVING ROOM WITH VIEW TO CITADEL HILL [5].

PROJECT CREDITS

OWNER/DEVELOPER Halifax Regional Municipality
ARCHITECT Fowler Bauld & Mitchell Ltd. with Schmidt Hammer Lassen Architects
CONSTRUCTION MANAGER Ellis Don
LANDSCAPE ARCHITECT Gordon Ratcliffe
CIVIL/STRUCTURAL ENGINEER SNC Lavalin
MECHANICAL/ELECTRICAL ENGINEER CBCL Limited
COMMISSIONING AGENT F.C O'Neill Scriven & Associates Ltd.
PHOTOS Adam Mork

Located on Spring Garden Road in the heart of Halifax, the city's new central library has already begun to stimulate rehabilitation and redevelopment in the surrounding area. While the library is an environmentally conscious building, targeting LEED Gold certification, its most important attribute is its contribution to social sustainability, providing multiple types of community space and facilitating community interaction. This has been achieved using a design process focused on community engagement.

The program includes a 300-seat performance space, two cafes, gaming stations, music studios, space for adult literacy programs, a First Nations Circle, boardrooms for public and business use and an entire floor dedicated to youth ranging from toddlers to teens. Roof top patios offer multiple views to the surroundings, including the harbour, historic Citadel Hill, the adjacent downtown and residential areas, and the forested landscape beyond.



The building is expressed as a series of cantilevered glass boxes, suggesting a stack of books. The interior of the library reflects the diversity of the exterior with stairs and bridges in the atrium connecting the five storeys, each storey offering unique program areas for different sectors of the community.

The plan reflects the principles of passive design. Floor-to-ceiling vision glazing on the north and south facades promote glare-free daylight and passive solar heating; while elevators, emergency exits and mechanical shafts are located to the east and west, their solid walls minimizing glare and unwanted summer solar heat gain.

PROJECT PERFORMANCE

ENERGY INTENSITY [building and process energy] = 701 MJ/m²/year
ENERGY INTENSITY REDUCTION [relative to reference building under ASHRAE 90.1 [1999]] = 39.3 %
POTABLE WATER CONSUMPTION FROM MUNICIPAL SOURCES = 3437 L/occupant/year
REDUCTION IN POTABLE WATER CONSUMPTION [relative to reference building] = 64 %
RECLAIMED AND RECYCLED MATERIALS BY VALUE = 18% [Does not include recycled content in aluminum curtain wall]
REGIONAL MATERIALS [800km radius] BY VALUE = 21% [To Date. Awaiting material certification.]
CONSTRUCTION WASTE DIVERTED FROM LANDFILL = 76%

MATERIALS

Unitized curtain wall system with with sealed glazing units and applied frit by **Prelco,** T5 and LED fixtures for artificial lighting; vegetated roofs incorporating hot rubber coating by **Carlisle Construction Materials** and podium membrane roof by **Hydrotech.** The **REHAU** radiant in-floor heating and cooling system reduces noise and maximizes space efficiency while providing significant energy savings. Carpet tile by **Interface**, sheet flooring by **Forbo.**

The double-glazed windows have a thermal resistance of R3.6, including frame effects, and visible light transmission of over 63%. Frit patterns composed of random letters create interest for library visitors and also minimize bird impacts. Artificial lighting is high efficiency T5 and LED fixtures integrated into the metal linear baffle ceilings and controlled by daylight and occupancy sensors. This results in an energy reduction for lighting of more than 60% relative to the reference building.

Potable water requirements are reduced through a combination of low-flow plumbing fixtures and a rainwater collection and distribution system.

Most of the roof surfaces are vegetated, reducing storm water runoff substantially compared to hard surfaces. Level 5, the highest level of the building, has hard roofing materials so that rainwater can be collected without the staining that results from transport through vegetation. The rainwater collection system consists of roof drains, piping, pre-filtration prior to entering an underground rainwater cistern and post-filtration/UV disinfection prior to being used for flushing toilets and urinals.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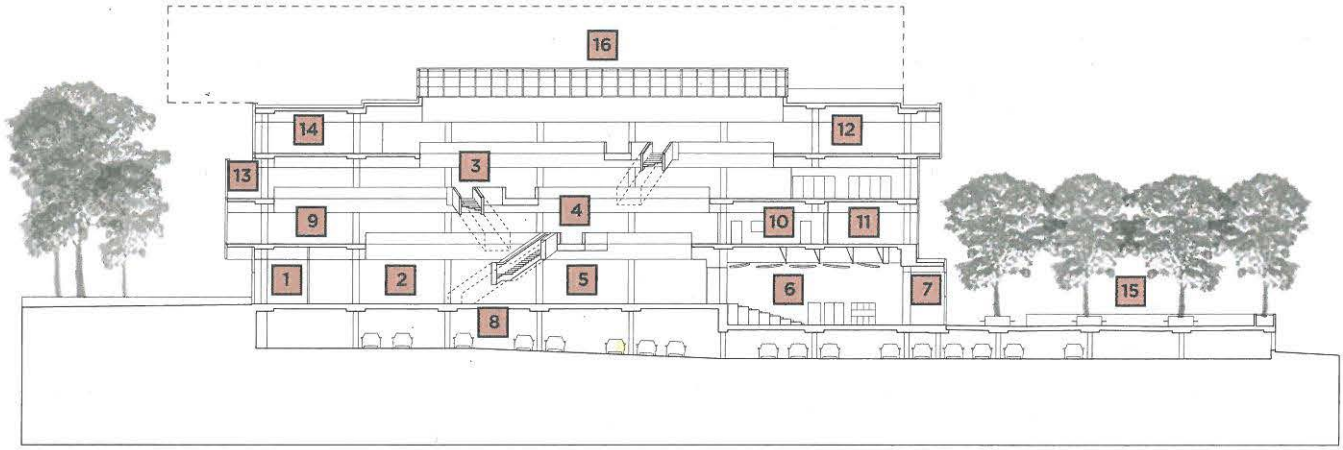

Building section B-B

1 Vestibule
2 Lobby
3 Atrium staircase
4 Atrium bridge
5 Book pick-up
6 Paul O'Regan Hall
7 Wintergarden
8 Parking garage
9 Teen study/reading
10 Large program room
11 Family reading
12 Collection
13 Open study
14 Local history
15 Exterior podium
16 Skylight

The heating and cooling system includes an active four-pipe chilled beam system, and high-efficiency heat recovery. Two high-efficiency natural gas boilers provide all the necessary heating for the building.

The dedicated outside air [DOSA] main air handling systems use a Scandinavian technology, Canadian manufactured, regenerative "push-pull" heat recovery systems with heat recovery efficiency of 90%, even at very cold ambient temperatures. Only 10% of the building's ventilation heating needs are required to be provided by the fossil fuel ventilation heating system.

The cooling systems include electric water chillers but these air-cooled machines are fitted with state-of- the-art water side economizers so that when ambient conditions allow, all the cooling needs of the building can be delivered without any need for mechanical refrigeration.

Life cycle considerations included the ability to adapt to change, as the community's needs change over time. The library was designed to accommodate this. The floors were structurally designed for a library load throughout, allowing the collection to be moved anywhere. Partitions are easily moved and the mechanical and electrical systems can be adapted to virtually any new layout.

Areas in the building with higher glazing systems, specifically the first and fifth floors, also utilize radiant heating and cooling through the floor. Water is circulated through in-floor piping allowing these large surfaces to be warmed in the winter, or cooled in the summer, efficiently conditioning the space.

Since opening its doors in December 2014, the Halifax Central Library has become a city landmark, embodying Halifax's civic values but also conveying a sense of wonder, expectation, and discovery.

PAUL O'REGAN HALL: COMMON DAY-TO-DAY CONFIGURATION [6].
LEVEL 2, CHILDREN'S ZONE [7].