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Bergeron Centre for Engineering Excellence

Creative facade wraps high-performance envelope

Mainstreaming Mass Wood Construction

Lessons from Brock Commons

Our annual Canadian Directory

of Products and Services for Sustainable High-Performance Building

Digging Deep

Unearthing the truth about green roof growing media

Canada ecohouse

First Net Zero Certified Home in Canada

Saanich house meets Net Zero Home Labelling Program

FIRST NET-ZERO LABELLED HOME IN CANADA

Saanich house meets Net Zero Home Labelling Program

1 - Ocean front East-facing elevation.

In May of 2017, the Canadian Home Builders Association [CHBA] officially launched its Net Zero Home Labelling Program, following the successful completion of a 15-month pilot to validate technical and administrative procedures. The Program provides the industry and consumers with a clearly defined and rigorous two-tiered technical requirement that recognizes Net Zero and Net Zero Ready Homes, and identifies the builders and renovators who can provide them.

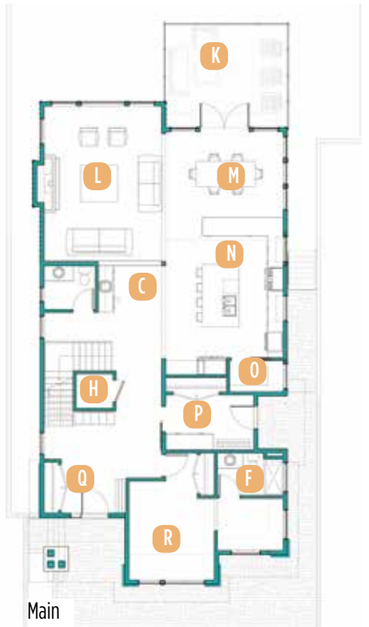
The Net Zero and Net Zero ready certification provides homeowners with a voluntary and affordable option to invest in energy conservation measures that go beyond those mandated by building codes.

In this way, the program supplements the existing Energy Star and R-2000 certifications, encouraging developers and builders of single-family houses and small multi-unit residential buildings [MURBs] to raise their own standards, and those of the industry as a whole.

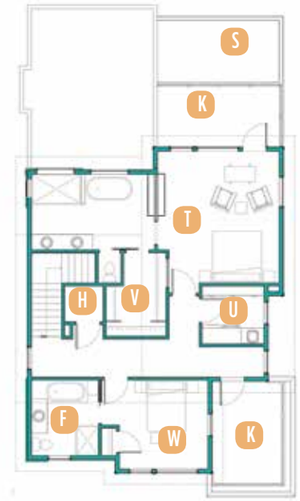
A network of CHBA NZE Qualified Service Organizations, Energy Advisors and Trainers is being established to work directly with the builders and renovators to design, model, test and inspect the homes, as well as to deliver the required training.

The CHBA NZE Building Science Training is mandatory for participation in the CHBA NZE Labelling Program. The training introduces the concept of the building as an integrated system; the basic principles of building science, and how these can be used to design reliable, high performance building assemblies.

Basement



Main



Upper

FIRST NET-ZERO LABELLED HOME

The first home in Canada to receive the CHBA's NZE label is located in Saanich, BC. Designed by Ryan Hoyt and built by Falcon Heights Contracting, the three-storey, 4,500 square foot house steps down its sloping oceanfront lot, maximizing views from each level. The main floor has grade access from the road, and includes the living room, kitchen and home office. Family and guest bedrooms are located on the upper floor, while the full-height basement contains leisure and social space that leads out to a barbecue terrace.

The main floor living space is open plan to maximize daylight and views to the ocean, while patios and decks are strategically placed to optimize views, provide shelter and maximize privacy.

The house is rectangular in plan, with the longer north and south elevations facing the property lines, the east elevation facing the ocean, and the west elevation screened from the road by a detached garage.

The net zero energy strategy began with the compact plan and a high-performance, airtight building envelope, including triple-pane windows and doors, with a solar heat gain coefficient of 0.18 and a North American Fenestration Standards [NAFS] performance grade rating of PG50 Plus.

2 - Steel, timber, and glass breezeway connects garage to house.
3 - West-facing private garden.
4 - Curved lines, timber accents and custom millwork are harmonized throughout.

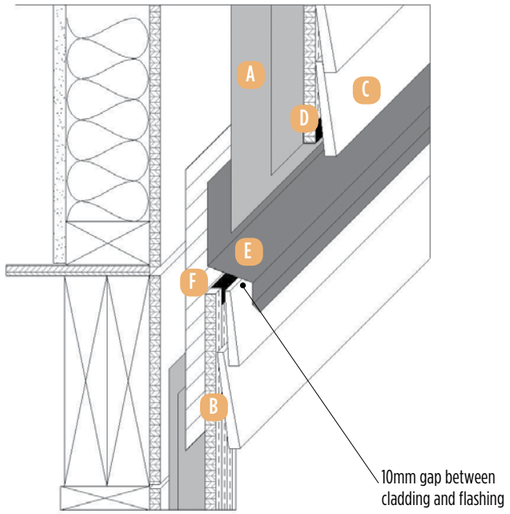
Floor plans

- **A** Gas heater on deck posts
- **B** BBQ
- **C** Bar
- **D** Media room
- **E** Game room
- **F** Bathroom
- **G** Exercise room
- **H** Elevator
- **I** Crawlspace storage
- **J** Mechanical room
- **K** Deck
- **L** Living room
- **M** Dining room
- **N** Kitchen
- **O** Pantry
- **P** Mud room
- **Q** Entry/foyer
- **R** Office
- **S** Flat roof
- **T** Master bedroom
- **U** Laundry room
- **V** Walk-in
- **M** Bedroom 2

PROJECT CREDITS

DESIGNER Ryan Hoyt Designs
INTERIOR DESIGNER Mari Kushino Design
MILLWORK Thetis Cove joinery
CONTRACTOR Falcon Heights Contracting
PHOTOS Leanna Rathkelly

5 - Stone fireplace and live-edge dining room table.



Thru cavity flashing detail

A Building paper, two layers
B P.T. plywood strapping
C Cladding
D Bug screen
E Pre-finished flashing
F 300mm starter paper

The roof is insulated to R-65 insulation, and the walls to R-40 insulation, including two inches of continuous mineral exterior insulation. Careful attention to the continuity of the air barrier has resulted in an air change rate less than 0.7 A.C.P.H. The high levels of insulation, together with the optimization of windows elsewhere, enabled the design team to glaze the east elevation completely, while still achieving net-zero performance overall.

Energy efficient mechanical and electrical systems include: a GREE air to water heat exchange unit, [equipped with Tekmor controls] that supplies radiant heating and cooling through an in-floor hydronic system; drain heat recovery; a ductless condensing clothes dryer; and a combination of LED and low voltage lighting systems, controlled by daylight and motion sensors.

Having reduced overall energy demand using the above measures, the remaining energy requirements are met using a solar thermal installation for domestic hot water, and an 11KW roof-mounted photo-voltaic array. The garage also has an electric car charging station. The house takes advantage of BC Hydro's Net Metering program, enabling surplus electricity generated during the summer months to be sold to the utility, then bought back should there be any shortfall in the winter. After one year of operation, the house has a net energy consumption of 0-gigajouels.

COMPILED BY SABMAG FROM MATERIAL SUPPLIED BY FALCON HEIGHTS CONTRACTING OR PUBLISHED BY THE CANADIAN HOME BUILDERS ASSOCIATION. INFORMATION ON THE NET ZERO PROGRAM CAN BE FOUND AT WWW.NETZEROHOME.COM. INFORMATION ON THE NET ZERO COUNCIL CAN BE FOUND AT WWW.CHBA.CA/NZC.

6 - Photovoltaic Panels.
7 - Easy access to roof for maintenance of PV array.
8 - Solar thermal domestic hot water system supplied by **Viessmann.**