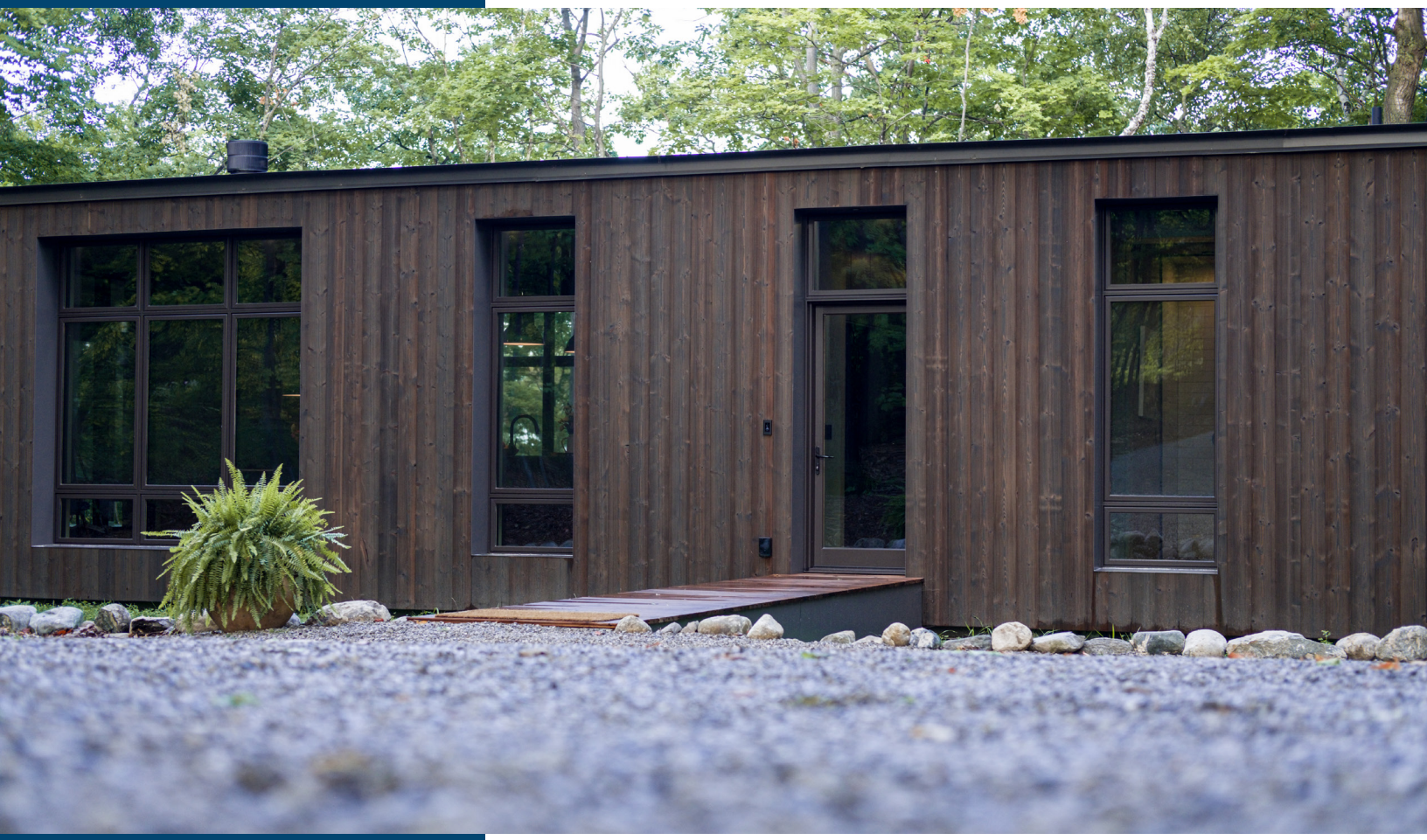
CASE STUDY

KIT HOUSE

GREENE HOME
TRAVERSE CITY, MICHIGAN



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Cozy, Minimalist Home Features Cold-Formed Steel Prefabricated Panels

OVERVIEW

PROJECT

Use
Scandinavian-designed kit home

Size
3BR, 2BA, 1,400 sq. ft. living space

Completion Date
July 2020

PEOPLE

Owner
Private Client

Designer
Hygge Supply, Traverse City, MI

Cold-Formed Steel Panelizer
Wall-panel Prefab, Madison, WI

General Contractor
G. Mott Builders, Traverse City, MI

STEEL

30 - 68 mil cold-formed steel framing

Cover: The Birch Le Collaboration house from Hygge Supply is representative of the Greene Home, a photo of which was not available at the time of publication.

The Greene House in Traverse City, Michigan, is a Danish-inspired, minimalist home built from a kit of building products and components.

The home is part of a new trend in home design and delivery that gives the homebuyer the choice in connecting units, or pods, in different configurations. Streamlining the erection and delivery of these homes are cold-formed steel (CFS) framing and roofing systems.

"Our customers feel that [cold-formed] steel is strong and has longevity," says Kelly Sean Karcher, founder of Hygge Supply, Traverse City, and the firm's lead designer. "When the customer finds out that our homes are high design, durable and green, they're in."

STRENGTH AND LONGEVITY

Hygge (pronounced "high guh") is Danish for clean, warm, cozy and minimal, Karcher says. The company's home kits offer a variety of designs.

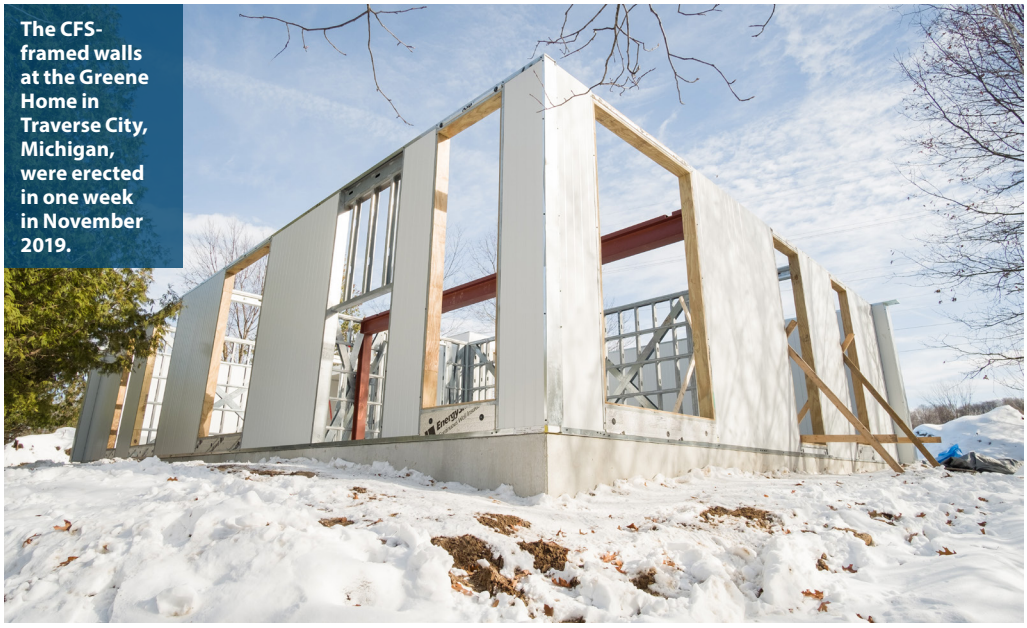
For example, the 353 sq. ft. Studio, a basic pod, serves as a Hygge home's mechanical hub. Studio includes a high-efficiency boiler for hot water and radiant floor heating. Customers can add bedrooms, bathrooms, covered porches and enclosed glass breezeways to it.

Hygge home kits start at $30,300 (2020) for a cottage unit. Two-bedroom, two-bath kit houses begin at $240,000 (2020). Hygge Supply arranges for the passage of materials to the job site, where they are erected by a contractor with commercial construction experience.

Most Hygge homes are built slab on grade, but some sit on helical piers ideal for wet, marshy areas. All kit house designs feature structural columns and I-beams and CFS-framed wall, roof and flooring systems. CFS provides stability and a sustainability benefit, since CFS is 100 percent recyclable at the end of its useful life.

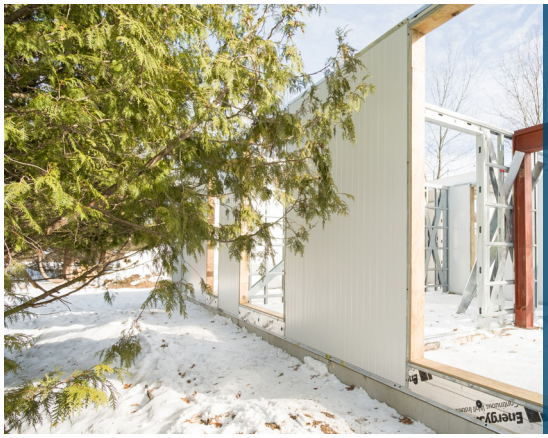
The marvel of the Hygge home is its open floor plan. CFS framing allows for this design flexibility.

"This type of residential construction showcases cold-formed steel's versatility. The CFS is integrating with other construction materials in these designs," says Pete Braun, president of Wall-tech Companies, Madison, Wisconsin. Wall-tech's panel division, Wall-panel Prefab, provides Hygge homes with prefabricated CFS wall and roof systems. He adds: "Hygge's approach to residential construction is new and brilliant."



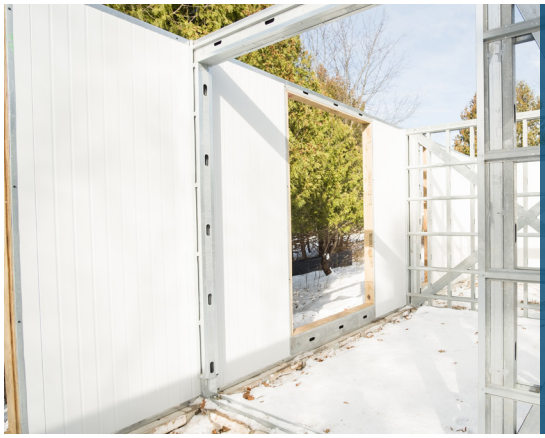
The CFS-framed walls at the Greene Home in Traverse City, Michigan, were erected in one week in November 2019.

The home features hot-rolled steel and 68 mil load-bearing CFS-framed panels.



The Greene home has a slab-on-grade foundation.

All CFS was cut to length. "There's zero percent waste," the panel fabricator says.



The interior CFS framing was set by hand.

THE GREENE HOME

The Greene Home combines a modified Hygge Studio (one bedroom, one bath) with a two-bedroom, one-bath unit for a total of 1,400 sq. ft. of living space.

Construction began in October 2019. The steel columns and beams and the CFS sheer walls arrived first on site. The installer used special equipment to erect this structural framing.

In November, the panelized walls and roof panels arrived and were erected by hand in one week. All CFS components were labeled and stacked onto a truck trailer in their erection order. The shipment included the set plans. The installer was able to fully enclose the Greene Home in a month.

The exterior wall systems at the Greene home used both 6-inch and 12-inch CFS track. A series of heavy gauge, 68 mil sheer walls and structural I-beams support the roof. The interior walls generally featured 30 mil CFS.

As it fabricated the CFS panels, Wall-panel Prefab added roughed-in electrical boxes, bracing and bracketing.

"The walls were ready to connect to the electrical and plumbing," says Nick Edwards, Wall-panel, general manager. "This minimized the rough-in work on site."

PANELS SHIPPED QUICKLY

Edwards says Wall-panel's production takes three to 10 working days to produce an entire Hygge home once it receives the panel drawings.

"There's zero percent waste," he says. "The cold-formed steel is cut to length, and it's galvanized. No rust, twisting or warping."

The Greene Home features 10.5 ft. by 28 ft. CFS-framed panels. The steel-framed panels have polystyrene cores and powder coated finishes. The panels have the highest rated R-value rating on the market, according to Hygge Supply.

All 50 CFS-framed panels and the structural steel fit on one semi-truck trailer.

"We diagramed the trailer as we built the panels," Edwards says, "and we kept the panels under a certain footage to get the most out of the shipment."

Edwards says the speed of Wall-panel's production is getting better all the time.

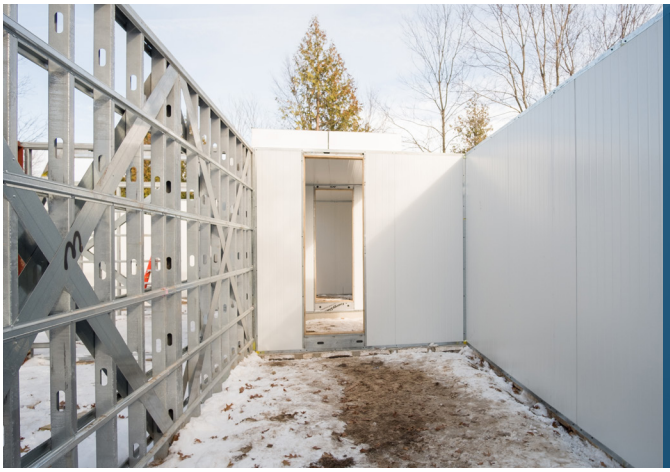
"These houses involve repetitive cold-formed steel panels," he says. "We want to build up our stock of panels so we can pick and ship in one day."

After a slowdown in construction over the Michigan winter, the Greene Home was move-in ready in July 2020.

> "CFS framing allows for flexibility and safety in design.

"Steel … has longevity," says Hygge Supply founder Kelly Sean Karcher, here with Christen Landry and their dog, Lucy.

All 50 of the Greene Home's CFS-framed panels fit on one semi truck trailer.



Panel dimensions of 10.5 ft. by 28 ft. allowed for optimal shipment.

GREENE HOME • TRAVERSE CITY, MICHIGAN

DESIGN

- 1,400 sq. ft. private residence
- Slab-on-grade foundation
- Hot-rolled column and I-beam structural system
- 68 mil load-bearing cold-formed steel framed panels
- 30 mil non-load-bearing cold-formed steel framed interior panels
- The steel-framed panels have polystyrene cores and powder coated finishes
- The panels have the highest rated R-value rating on the market, according to Hygge Supply
- Pod construction joined with special connectors

CONSTRUCTION SPEED

- Load-bearing and non-load-bearing CFS-framed panels shipped within 3-10 days

CFS-FRAMED WALL DETAILS

- 50 CFS-framed wall panels
- Panel dimensions: 10.5 ft. by 28 ft.
- CFS track: 6 in. and 12 in.
- CFS-framed panels include roughed in electrical boxes and plumbing mounts

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