

BONE Structure's homes are literally snapped together. This framework isn't limiting, though; instead, it allows an unprecedented efficiency and a fully custom design-build experience. Photo: Frank Desgagnés.



RESHAPING RECONSTRUCTING AN INDUSTRY INDUSTRY

BONE Structure's steel-home-construction system does more than speed up the home-building process; it provides the building industry with an entirely new foundation **BY DAVID HUDNALL**

Working in the late 1990s as a consultant to transportation conglomerate Bombardier, Marc Bovey was assigned the task of promoting the company's electric car. The vehicle was small and marketed to residents of gated communities, and Bovey traveled the world pitching it to homeowners. The job required him to see homes in all phases of construction, and behind the luxurious façades Bovey noticed a gaping dilemma. "I was meeting developers and observing job-

sites, and I was struck by the wastefulness and inefficiencies of the building industry," he says.

Bombardier ended up pulling the plug on its electric car, and Bovey would eventually move on from the company. The observations he acquired working around the world, however, stuck with him. Confident that he could hit upon a better way of building homes, Bovey assembled a team of MBAs, engineers, and architects, and funded



Photo: Frank Desgagnés.

THE BUSINESS MODEL

"We plan to become the McDonald's of the construction industry," says Marc Bovet, president of BONE Structure. "We're looking to grow a dealer network of builders, contractors, and project managers that want to differentiate themselves and share our philosophy."

BONE Structure has three plants under license that handle manufacturing, and it trains contractors in its system before granting franchises. Applications are flooding in, but the company has been especially thorough in granting dealerships. "We want our process to be followed accurately, so we don't want to just hand out dealerships to anybody," Bovet says. After the structure is assembled, BONE Structure offers turnkey capabilities; it will handle architecture, or work with outside firms, or "you can have your brother-in-law finish it for you," Bovet says.

The intention from the beginning has been to serve an international market that includes single-family dwellings, multiplexes, and light commercial jobs. "It's turning into something bigger," Bovet reflects. "We can enable upcoming cultures to erect houses for themselves. Our reach is becoming much wider."

SEVEN STAGES

A step-by-step look at BONE Structure's building process.

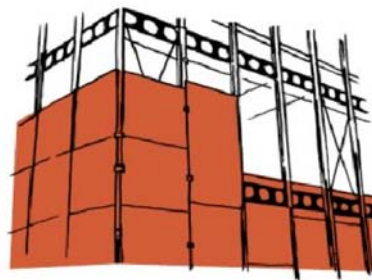
1

The foundation uses 8-inch foundation forms, and 25-MPa concrete is sealed with hot tar in the interest of maximum permeability.



2

Walls, floors, and roof are installed, usually in a week.



3

An integrated measuring system allows for windows and doors to be installed using anchoring bolts.

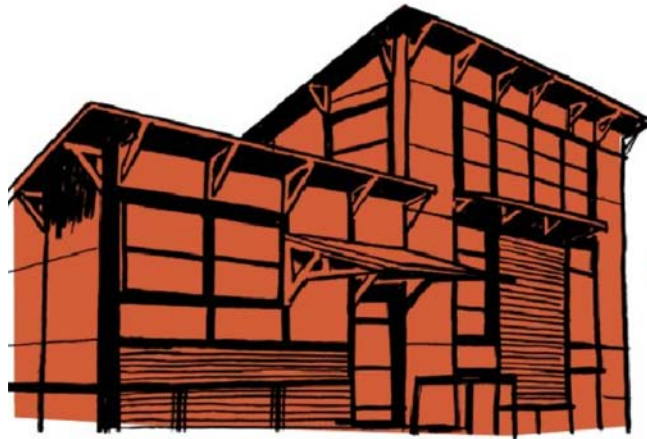
a search for a solution. Once again, he traveled the world, attending trade shows and seeking out ideas he could bring back to Canada. His research uncovered some striking facts and figures.

"There are too many variables in the traditional building process," Bovet says. "Eighty percent of workers on jobsites don't know how to read design plans, which opens up a job to too much interpretation and waste. Each new house being built fills up three 40-cubic-yard containers of brand-new construction materials. A bundle of two-by-fours is half-rotten, so it goes in the trash. Things like that happen far too often. Sixty percent of the content of landfills is brand-new construction materials. That's a scary thought."

Bovet couldn't find an answer to the problem within the construction business, so he turned his search outward for inspiration. He landed upon a solution in the automated approach of the automobile and aerospace industries, where standards of precision are naturally embedded in the process. Through research and development, Bovet was able to craft a similar model for the building industry, and in 2005 he founded BONE Structure to implement it.

4

Polystyrene panels are coated with a soya-based polyurethane to seal the building's envelope.



5

The exterior is clad with the client's choice of a variety of sidings—wood, stone, metal, and brick.

6

Plumbers, electricians, and HVAC specialists work without cutting or drilling, thanks to pre-existing cavities built into the design.

7

Interior fixtures and finishes are designed and arranged according to the wishes of the client.

Rather than hinge on the logistical complexities of typical construction projects, BONE Structure offers a specialized steel-home-construction system that can be assembled using only a drill.

"Every piece of the home is clipped together," Bovet says. "It's like Legos. It's not constructing; it's assembling. We can erect a 3,000-square-foot steel home in three days. We can attach 100 windows to the structure in one day."

It's a process more akin to what takes place at a car-manufacturing plant, and it slashes labour costs. "A contractor for one of our homes is much less at the mercy of his subcontractors," Bovet adds. "Wiring is performed as quickly as the wiring can be unrolled."

This efficiency is evident during the installation of insulation as well. "The vapour barriers typically installed in houses before the walls are closed are installed with staplers, which is totally absurd," Bovet says. "Anybody can understand that stapling a plastic bag is not an efficient form of insulation. But that's the way people have been building for the past 400 years, and there's a gap between engineers and architects and

construction jobsites." With the company's steel-home-construction system, the thermal envelope never has to be breached by an electrician or other specialist, as the entire structure is designed with these needs in mind.

BONE Structure's homes also make for more exact budgeting. "We can tell you exactly how many parts and screws you'll need before we even start," Bovet says. "We don't allow for judgment on our jobsites. This is a product where you know exactly what you'll get."

Some may feel that such a rigid process takes some originality out of the design. Bovet, however, disagrees. "This is mass customization," he says. "A Volkswagen Passat and an Audi A4 are built with the same car frame. It's the same thing with us. You can put windows and doors anywhere you want. It can be contemporary or traditional. And inside, there are no load-bearing walls, which allows for open spaces. You can remove or add walls as you please."

Bovet's faith in this structural core is indicative in the company's moniker. Bovet named the company BONE Structure because he liked the

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BONE Structure's unique steel-home-construction system allows for a much more efficient design-build experience.



comparison to the human skeleton. “We all have 206 bones, 10 toes, 10 fingers, etc.—there must be something special about that equation,” he says. “So we baptized our brand to that analogy, the underlying idea being that we can enter any culture—Nordic, Dubai, whatever—and construct a structure that respects local architecture and allows for the complementing of interior and exterior aesthetics.”

Currently, the company is doing just that. With a staff of 25—architects, engineers, and accountants among them—the company has 18 BONE Structure dealerships in Québec, with plans in the works for dealerships in British Columbia and Alberta. Additionally, franchising deals are also on the table in France and Panama. “It’s a very appealing idea for general contractors,” Bovet says by way of explaining the company’s rapid growth. “A general contractor that can do 20 houses a year could do 30 a year with our system. Plus it cuts down on after-sales service—you don’t have to go back in a year and fix the sheet rock that’s cracking on the kitchen ceiling.”

Not so surprising, given his background, Bovet draws an automobile-inspired analogy to explain the social implications of what he’s trying to accomplish with BONE Structure. “In the 1970s, you’d buy a brand-new car and the bottom of your doors would rust within three years, and after five years of driving it it’d be junk—that was standard, a normality,” he says. “Then the Japanese came around and initiated a better process that resulted in better quality. I see what we’re doing as similar in nature.”

This vision is shaping up nicely for BONE Structure. The company works with three plants to manufacture parts, and is on the lookout

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for interested contractors. With any luck, Bovet will be able to reach a broader base of clients and provide BONE Structure’s revolutionary building concept to the world.

“What I feel we need in our society are houses that can evolve and that are more lasting,” Bovet says. “And I think we’ve identified a way to make that happen.” CBQ

The flexibility of BONE Structure’s grid construction allows interiors to be configured in any way, with both modern and traditional layouts equally feasible. Photo: Frank Desgagnés.

