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CERTAINLY NOT WITH MAGIC BULLETS.
IT REQUIRES A SUSTAINED EFFORT ON
SEVERAL FRONTS. AND SOME NORTHERN
ENTREPRENEURS ARE SEEING POTENTIAL
FROM MODULAR HOUSING TO MAKE
PART OF THE DIFFERENCE.

BY KERRY BANKS

GIVE 'EM SHELTER

WHEN STUART ROSTANT and his wife Amanda Doiron moved from Trinidad to Cambridge Bay in 2010 to work for the Government of Nunavut they experienced a heady dose of culture shock— an Arctic night that runs from early December to mid-January, extreme cold, country food, and the rippling dance of the Northern Lights. But Rostant also recalls their amazement at the sight of workers trying to attach siding to buildings in the midst of a raging blizzard. "We thought it was sheer madness," he says. The pair, who both hold master's degrees in architecture, also thought there must be a better way.

Ten years after launching their own consulting and development company, and after several years of hit and miss building efforts in the area, including construction of their own home, they believe they have found an answer: prefabricated, modular homes that are manufactured in the south using a unique panel system and shipped north for installation on a pile foundation.

The couple will soon know if they are on the right track. They were recently notified that their company, Arctic Modular Housing, has made the short list in a CHMC competition that asked applicants to propose methods of overcoming the barriers to northern housing supply. If successful, they'll qualify for grant money that will enable them to begin construction of a 16,000-square-foot modular facility in Winkler, Man., to manufacture modular homes to be constructed in northern Canada.

The concept of modular homes is not new in the North, but it has recently gathered some momentum as a technology with the potential to help address a housing crisis across the territories—from extreme shortages in small communities to low inventories and soaring prices in larger centres.

Obviously, modular housing won't be the sole answer to such a complex issue, but it could be another approach to building solutions. And the potential has led to flutter of entrepreneurial investment in the idea, including construction of a modular factory in the Nunavut community of Arviat on the west coast of Hudson's Bay. The concept comes with substantial challenges, including logistics, time constraints due to climate, and transportation corridors that are vulnerable to the impacts of a changing climate. But if the companies, both new and established, are successful, modular housing could become another tool in battling an entrenched problem—and one

PHOTO: COURTESY ARCTIC MODULAR HOUSIN 40-45
h
Number of

Number of full-time employees estimated for Arviat's new facility.

50%

Percentage of dwellings in Nunavut that are overcrowded or in need of repair. with a greater economic involvement from Northerners.

Architect Wayne Guy believes the model of using southern labour to build the modular pieces and Northerners to do the installation is "a good fit" for the territories. The founder and principal of Guy Architects and first president of the NWT Association of Architects, Guy has over 35 years of experience operating out of offices in Iqaluit and Yellowknife. His company has worked on more than 500 building projects, including prefab modular constructions in the North.

According to Guy, the northern construction sector is challenged by high costs, a lack of trained manpower and contractors, and a short building season. Getting building materials to a site by barge is often a headache. "Sea lifts must be booked six to eight months ahead. Typically, you are unable to construct the build in the year you would like," he says. In such a situation, Guy contends that modular housing offers several advantages to traditional building methods. "For one thing, you are building within a temperature-controlled environment. You don't have the risks of delays due to inclement weather."

The cost of installation and labour is also a lot less, and because modular manufacturers usually deal in higher volume, they can often get better prices on materials. Guy notes that another advantage is that when building on site in the North it is necessary to freeze the foundation into the ground before any construction can take place, a procedure that takes place over winter. With the modular approach one can have units being manufactured in the south at the same time as the freezing is taking place. Modular also allows for more precise costing.

Even so, shipping modular pods is expensive. It can account for 25 per cent of a project's total cost. And while quality control over design and construction may be better offsite, there is still a need to ensure the on-site assembly is done with precision. "You must be sure that when you put the modular components together that they are airtight and





MATES FOR CATS CAN BE ARCHITECT E GUY SAYS.

of housing in the North involves modular housing and programs to work with Inuit and First Nations to develop that. Right now, the lack of a skilled workforce is holding us back."

Jorge feels that the modular approach has considerable potential, he insists "it is not an affordable option for the North because we don't have roads."

While that observation may not be completely true for the Yukon and parts of the NWT, the roads into smaller communities are often narrow, hilly, and unpaved. Even if you can get modular units into a smaller community, Jorge says, "they don't have the infrastructure to deal with it."

Even so, he notes, "I believe that the future

NOT LONG AFTER arriving in Cambridge Bay, Rostant and Doiron decided to build their own home. The project was a traditional stick-build house that came in pre-built pieces. They soon discovered, however, that building with lumber in the Arctic posed unexpected time delays and equipment issues. Since that initial experience—and after several years of designing and constructing both one-bedroom modular homes and multiplexes—they have a more complete understanding of the challenges of building in the North.

As a result of their experimentation, Rostant and Doiron decided to forge a business arrangement with Brandon, Man.-based Greenstone Building Products to build their modular envelopes, leading

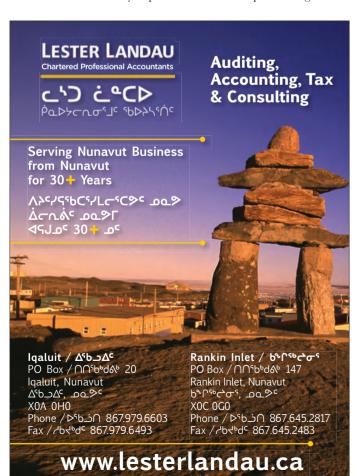
envelope are all in order," Guy notes. "Quality control over the stitching is exceptionally important. You can't have any air gaps or rain or snow coming into the building."

Moreover, logistics will always be a chal-

that insulation components of the building

Moreover, logistics will always be a challenge. Miguel Jorge, the founder and owner of Energy WallTM, a Yellowknife company focused on affordable northern housing technology and energy efficient buildings, sells prefabricated building packages that can withstand harsh northern climates. Although

PHOTOS COURTESY: NUNAVUT TOURISM, GUY ARCHITECTS, ARCTIC MODULAR.







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to the founding of Arctic Modular in 2023. Greenstone's panels, which are composed of a combination of a rigid cellular plastic and galvanized steel are environmentally stable and completely recyclable with a 200-plus year life expectancy.

If all goes according to plan, Rostant says they will be able to start producing homes out of the Winkler facility by October 2024. "CMHC will assist with the construction. This way we will be reducing all the risks. We will be able to streamline production and deliver a home to anyone in the Arctic at a known cost. We want to go after home ownership. We want people to be able to go on our website and look at floor plans. We want to tap into that market."

Still, Rostant says that even though they've been able to produce housing at a rate at \$615 per square foot—a figure that is almost half as much as the price of \$1,000 to \$1,200 per square foot for tenders from the Nunavut Housing Corporation—it's still hard to find buyers.

"In 2002, we built a two-bedroom, two-bathroom, 1,000-square-foot home. It came with land, on a pile foundation, fully furnished, move-in ready and we put it on the market for \$460,000, which is pretty much close to cost. Out of everybody who came to look at that unit and went to the bank to try and get financed, zero people qualified." In the end the non-profit Kitikmeot Friendship Society acquired the building to use as a transition home for women in need.

Meanwhile, across the territory, a factory and training centre to build modular housing is under construction in Arviat. Slated to open in 2025, the \$50-million, 64,000-square-foot facility is the product of a partnership between RG Solution, a Quebec-based manufacturer of construction trailers and prefabricated buildings, and Sakku Investments Corp., the business arm of the Kivalliq Inuit Association. "The factory will produce housing units, but it can also do any type of unit," says Guillaume Guida, vice-president of business development for Sakku. Once operational, it is estimated that the factory will produce 35 modular homes per year that will be shipped to various Nunavut communities for assembly.

That number may not sound like a large contribution to solving Nunavut's extreme housing issues. (Recent studies have found that roughly 50 per cent of occupied dwellings are overcrowded or in need of major repair.) But Guida stresses that the main goal isn't strictly construction. It is also viewed as a vehicle to employ Inuit and develop workforce capacity in the region. "We plan to have 40 to 45 full-time positions to produce the modules and 15 apprentices. Every three to four years, these apprentices will graduate and go to work elsewhere in the region. Then



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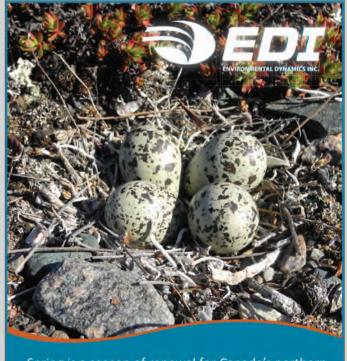
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we'll bring new people in."

The factory will manufacture commercial, residential, and multiplex buildings. To get an accurate estimate of costs, two five-plex structures were built in RG Solution's Quebec plant and shipped to Arviat in 2022 for installation. The pilot project took 10 months to complete. "We were mandated to look into this in 2015 by the directors of the Kivalliq Inuit Association," Guida notes. "They wanted to know why there were so many fly-ins and fly-outs of southern workers, and why was there so little training to ensure that there were local people engaging in the construction field."

As it stands, the constraints of time and weather simply don't allow for training on conventional building sites. "You have an apprentice, and he only works three months of the year. If you only have two weeks of good weather and you want to put a roof on a building you don't have time to train a youngster to do the same job when you are gone," Guida says. "It's a model that is scalable. It could be copied in other communities," he continues. "This factory will change how construction and training is done and it will have tremendous impact on how business is done in the territory."

Sakku Investments also hopes to work closely with Nunavut 3000, a \$2.6-billion initiative launched by the Government of Nunavut and the Nunavut Housing Corporation. They have teamed up with Inuit-owned NCC Development Ltd. to build 3,000 new housing units by 2030, covering transitional, temporary, affordable, and market-value housing.

Sakku Investments regards Nunavut 3000 as a welcome strategy and is collaborating with Nunavut Arctic College and the Nunavut government to develop training programs that align with the region's apprenticeship program, and which will reduce the need for imported labour from other provinces.

Stuart Rostant senses that even if Nunavut 3000's stated goal of erecting 3,000 new units by 2030 proves overly ambitious, the concept will pay dividends down the road. "It has put a huge spotlight on the housing situation in Nunavut. I feel like it's moving the conversation forward. I think it's a step in the right direction."

One could also suggest that entrepreneurial efforts like those advanced by Arctic Modular Housing and Sakku Investments Corp. have begun to open people's eyes to the potential role of modular housing in addressing the housing crisis in Canada's northern communities. The success of these projects and others that may follow in their tracks, however, ultimately hinges on meaningful community engagement, careful planning and effective responses to logistical challenges, all of which must be directed from the governmental realm.