

STEEL DESIGN

A SENSE OF PLACE

ISSUE ONE, VOLUME 54
SPRING 2022

THE THINGS THAT SHAPE US: CULTURE, SPIRIT, COMMUNITY, STEEL



A spectrum of possibility with steel in education

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COLOURED CLADDING

PRE-FAB POTENTIAL

BREWING A NEW BUILDING

LUXURY LIVING



ArcelorMittal
DOFASCO | HAMILTON

STEEL DESIGN

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Fall 2021 Correction: The contractor for Parkview House was Interactive Construction. The general contractor for the Charter Telecom Headquarters was Road's End.

About ArcelorMittal

ArcelorMittal is the world's leading steel and mining company. Guided by a philosophy to produce safe, sustainable steel, it is the leading supplier of quality steel products in all major markets including automotive, construction, energy, household appliances and packaging. ArcelorMittal is present in more than 60 countries and has an industrial footprint in more than 20 countries.

With a strong presence in North America, Europe, South America and South Africa, and an emerging presence in China, ArcelorMittal delivers a large scale of products, solutions and services to customers with the same quality focus in all regions. ArcelorMittal is the leader in steel technology, both in the breadth and depth of our product portfolio, and in our ability to supply a range of grades throughout the world. ArcelorMittal is a supplier of choice for all markets, a testament of our commitment to working collaboratively with our customers to engineer advanced steel grades to meet their needs.

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PHOTOGRAPHY: Chief Aranazhi High School
by Eymeric Widling Photography Ltd.

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From the outside, there are no hints of the advanced technology that forms the underlying structure of Coventry. In fact, the building looks historic.

See full article on page 16.

In the city of Hamilton, ArcelorMittal Dofasco lands are situated upon the traditional territories of the Erie, Neutral, Huron-Wendat, Haudenosaunee and Mississaugas. This land is covered by the Dish With One Spoon Wampum Belt Covenant, which was an agreement between the Haudenosaunee and Anishinaabek to share and care for the resources around the Great Lakes. We further acknowledge that this land is covered by the Between the Lakes Purchase, 1792, between the Crown and the Mississaugas of the Credit First Nation. Today, this area is still the home to many Indigenous people and we are grateful to work and live on this land.



CELEBRATING CULTURE, SPIRIT AND COMMUNITY WITH STEEL

A spectrum of possibility with steel in education

Story: Julia Preston

Photography: Eymeric Widling Photography Ltd.
and Stationpoint Photographic

For people of the Alexis Nakota Sioux Nation, a new junior-senior high school is about more than education. It is also a centre for the community, which is approximately 90km northwest of Edmonton. Chief Aranazhi High School, which opened in fall 2021, is a place to celebrate and preserve the nation's culture.

"When education was introduced to our people through residential schools – it was done terribly," said Chief Tony Alexis in a press release. "Today, we recognize the importance of education and we will continue to achieve more academically. The new school will facilitate learning, space for ceremony and room to expand our programming."

The focus on culture and ceremony is evident throughout the building, including outside. The exterior of Chief Aranazhi High School is clad in six vibrant colours: deep grey, heron blue, dark red, stone grey, gold and charcoal. Steel was a natural choice because of its ease of installation, minimal maintenance costs and the colour fastness of the panel system.

Project architects, BR2 Architecture, worked with the design committee including members of the Alexis people to select colours that were significant for the Alexis Nakota Sioux Nation's culture and heritage.

The focus on culture and ceremony is evident throughout the building.

A portion of the design incorporated steel elements in the façade. The cladding, manufactured by Agway Metals, combines the company's HF-12 profile with 7/8" corrugated panels. HF-12 is Agway's most popular hidden fastener profile. The 12-inch wide panels install easily and deliver clean, sleek, contemporary lines, while the 7/8" corrugated panels have exposed fasteners and no hard lines, resulting in a highly consistent appearance and more organic overall look.

"We also tried to... adjust the depth to give a little bit of texture and definition to the face of the building," explains architect Shaun Visser. "We have some sloped elements of cladding and then underneath it we have some LED lights that shine down the face of the building, so it kind of splits up the face and gives us some depth and some lighting in the evening."

The school sits on a sloped site that has views out to Lake Wakamne (Lac Ste Anne). The lake is an important spiritual centre, and the school is oriented to reflect the sacred connection to the land. It is also designed to allow students inside to connect with nature outside as much as possible.

Chief Aranazhi High School serves as a community centre as well, with an oversized gym, fitness room, large commercial kitchen, and ceremonial space.

"We meet a lot of different clients with different views on how education should be offered to the students. With that we... talk to clients about different ways of incorporating those teaching methods into the built design," explains Visser. "The band had input at every phase so that they could get what they wanted and make sure that what we did reinforced all of their goals and visions for the school."

Chief Aranazhi High School



BUILDING OWNER/PROJECT COMMISSIONER

Alexis Nakota Sioux Nation

ARCHITECTS

BR2 Architecture // br2architecture.com

ENGINEERS

Protostatix Engineering Consultants Inc. // protostatix.com (structural)

Associated Engineering (mechanical & electrical) // ae.ca

Arrow Engineering (civil) // arrowonline.ca

CONSTRUCTION PROJECT MANAGER

Bosgoed Project Consultants // bosgoedprojects.com

GENERAL CONTRACTOR

Marshall-Lee Construction // marshall-lee.ca

STEEL

Product Suppliers: Flynn, Agway Metals

Product Specs: HF-12 (Deep Grey: QC28314, Charcoal: QC28306,

Stone Grey: QC28305), 7/8" Corrugated (Heron Blue: QC28330,

Dark Red: QC28250, Gold: QC28276)

Chief Aranazhi High School



Bernie Wolfe School



In 2021, Bernie Wolfe School in Transcona, Manitoba, received new exterior cladding as part of the province's ongoing maintenance and infrastructure renewal program for educational facilities. This included a comprehensive update of the wall and roof envelope.

As at Chief Aranazhi, the exterior cladding is HF-12 panelling from Agway Metals. Here too, metal paneling was an obvious choice for ease of maintenance and durability. As well, aesthetically, as the large coloured panels reflect the school colours. LM Architectural Group oversaw the technical assessment, demolition and envelope replacement on a two storey wing at the school. On the lower half of the building, split-faced tyndall stone grounds the school to its surroundings. The stone defines and frames each student entrance.

On the upper floor, the architects selected a monochromatic range of prefinished metal panels—charcoal, bone white, white white, and regent grey—accented with blocks of sunny yellow—the school's official colour.

BUILDING OWNER/PROJECT COMMISSIONER

River East Transcona School Division

ARCHITECTS

LM Architectural Group // lm-architects.com

INSTALLERS

Arrow Exteriors // arrowexteriorsinc.com

STEEL

Product Suppliers: Agway Metals // agwaymetals.com

Product Specs: HF-12 (Charcoal: QC28306, Bone White: QC28273, White White: QC28317, Gold: QC28276, Regent Grey: QC28730)

The panelling shows the clean lines and versatility of Agway's HF-12 profile in conjunction with the large colour selection available.

Bernie Wolfe School



Rather than using steel panels to draw attention to a structure, at the other end of the spectrum—literally—is the Bill and Helen Norrie Library in Winnipeg, where steel helps the structure blend into the landscape.

The library uses a single profile in a single colour for both walls and roof. Wood, concrete and weathered steel are employed selectively as accents.

In designing the building, LM Architectural Group was influenced by the local residential neighbourhood, which has mainly monoslope or gable roofs. The LM team designed the library as a “big house:” one storey with a gable roof that is similar to what is seen in the surrounding community.

For the exterior cladding, LM selected Agway’s AR-38 profile in graphite grey from the ArcelorMittal Granite Deep Mat line in the Nature Collection. The dark colour helps the long low structure blend into its environment.

The graphite coloured panels clad the walls and then wrap up and over the roof. The architects collaborated with installers from Claude Simard Metal Systems Ltd. to achieve a clean-lined look.

“On the gables they wanted shorter sheets with intermediate laps,” explains Simard. “The architect wanted to really see a nice pattern.”

A key challenge in achieving clean lines was the eavestrough. Simard designed a two layer system. The inner liner is formed from 18 gauge which is then hidden with a cover fabricated from AR-38.

The challenge was both aesthetic and practical. “Making sure it drains properly... was quite a challenge,” says Simard.



Bill and Helen Norrie Library

“Often it’s job site details that need a lot of attention. Some require mock-ups to see how things will look. Some require a lot of last minute refinement. We always work with our customers and try to achieve the look and the finish that they want.”

The Bill and Helen Norrie Library is constructed in a section of Winnipeg formerly known as Rooster Town, home to a vibrant Métis community. The families who lived there faced years of harassment and were ultimately evicted by the City of Winnipeg in 1959 to make way for urban expansion.

In its design, the library references both the homes constructed after the eviction and the few original Rooster Town houses that still stand today. Inside the building, the Winnipeg Public Library provides a range of resources for people to learn more about Rooster Town and the Métis.

From echoing a community’s vibrant culture with coloured cladding on Chief Aranazhi High School, to celebrating school spirit with yellow feature walls at Bernie Wolfe School, these three projects show the spectrum of what is possible with steel. ■



Bill and Helen Norrie Library

BUILDING OWNER/PROJECT COMMISSIONER

City of Winnipeg

ARCHITECTS

LM Architectural Group // lm-architects.com

ENGINEERS

Tower Engineering // towereng.ca, Sison Blackburn // sbcinc.ca

CONSTRUCTION PROJECT MANAGER

Taylor Wiebe

GENERAL CONTRACTOR

Gateway Construction and Engineering Ltd.

INSTALLERS

Claude Simard Metal Systems Ltd.

STEEL

Product Suppliers: Agway Metals

Product Specs: AR-38 (Graphite Grey: QC60035)

STEELING AWAY TO THE LAKE

Pre-fabricated steel building in
harmony with its lakeside setting

Story: Julia Preston
Photography: Sandra Mulder

The shore of a quiet lake in Northern Ontario is a spot to commune with nature. It's also a place to see how steel structures can intersect and complement the natural surroundings.

The new head office for Prestige Steel showcases the potential of pre-fabricated steel buildings. Located on Kahshe Lake, the building uses steel, wood, rock and concrete to create a functional and beautiful space that is in harmony with its lakeside setting.

Prestige president, Jason Gullett, grew up in the Kahshe Lake area. When a lot came up for sale, he bought it and planned to construct a shop and office for his company alongside his own home.



"I just took the excavator through the woods... and tried to find a spot to build a house and shop," he says, recalling the raw state of the land. "I found some rocks and a couple of level areas where I could build and then just started designing the building to fit on the land."

The resulting plan has a 3,500 square foot house set onto a large rock outcropping. An elevated glass breezeway connects the house to the shop, a 3,600 square foot, two storey building that incorporates workspace, lounge and office areas.

Exterior finishes unite the two structures. Black corrugated steel cladding covers most of the walls, with stone and woodgrain steel as accents. The woodgrain panels are Silver Birch, part of a new line of printed series prefinished products from Agway Metals Inc. The printed series is Agway's response to demand for cladding with a natural and authentic look that provides the aesthetics of wood with the strength of metal.

“Steel is very industrial usually, and Jason’s brought a way to bring nature and steel together using wood, steel, concrete and rock.”

ALYSSA GELINEAU, OPERATIONS MANAGER, PRESTIGE STEEL



Exterior finishes unite the two structures. Black corrugated steel cladding covers most of the walls, with stone and woodgrain steel as accents.

Alyssa Gelineau, Prestige’s operations manager, says of the new office, “Steel is very industrial usually, and Jason’s brought a way to bring nature and steel together using wood, steel, concrete and rock.”

The blend of materials continues inside. The main floor, which Gullett describes as “a man cave,” has concrete floors, galvanized steel ceilings and shou sugi ban (charred pine) walls. Upstairs, which houses administrative and office spaces, the ceilings are painted steel.

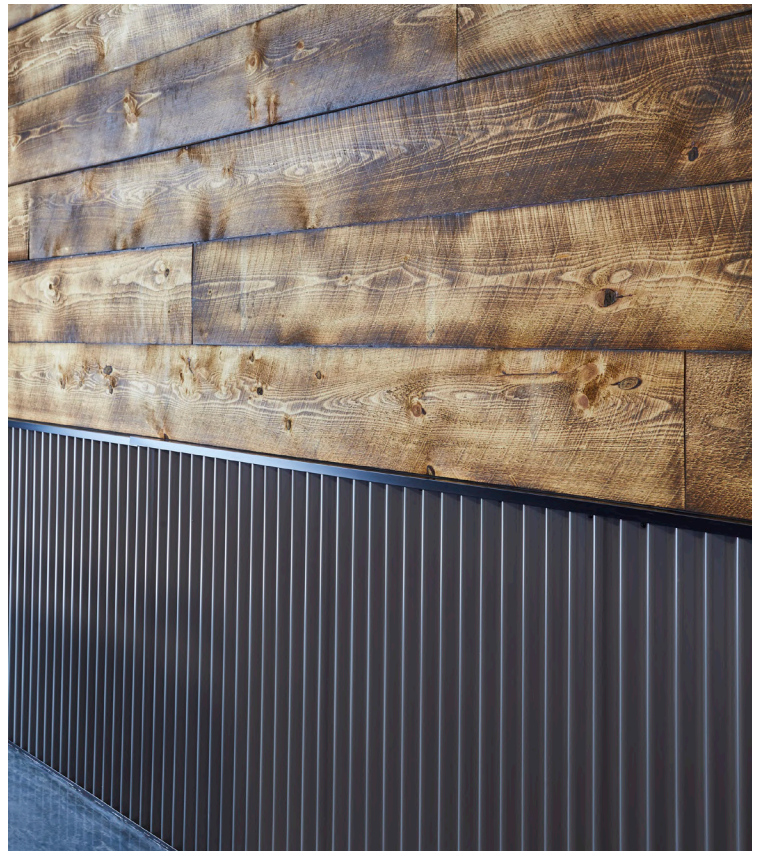
Gullett also likes to blend wood and steel for the structure of his buildings. He starts with a prefab building package, and then customizes it to have wood walls. “It gives a little bit warmer interior which is easier to finish with drywall,” he explains.

However, with the rest of the structure being steel, the interior is a clear span that gives clients a lot of flexibility.

“A lot of our clients are very excited because they’re not limited when buying a steel home in what they can do designwise,” says Gelineau. “We’re willing to push the bounds of steel. If a client comes to us with a really unique idea... we’ll come together, think about it and definitely create a plan that would put the project into action.”

“We’re all problem solvers,” adds Gullett. “We’re very creative at what we do. We usually come up with a solution for most properties or projects.”

For Gullett at his own build, that clear span translated into larger windows (including one that is 10 feet by 16 feet), wide open floors



unobstructed by posts or beams, and maximizing space to incorporate a loft, mezzanine, storage, and cathedral ceilings.

In addition to the design, steel provides numerous functional benefits as well.

Gullet used a standing seam steel roof for the house and office.

Panels are fire resistant – Class A, which translates to less expensive insurance costs.

Gullet also notes that with standing seam roofs, solar panels can be attached without penetrating the roof.

Seeing the potential of steel and being on the forefront of this material's evolution has been a lifelong passion for Gullet. Growing up, Gullet's father built arenas, warehouses and more out of steel. When Gullet founded Prestige in 2011, he first focused mainly on residential garages and commercial spaces.

That all changed when Gullet built a house and attached a steel building to it. "The township made me make it [the steel section] into a living area. It was the only way I could get it [approved]. I liked the steel building more than my house, so I started planning to do houses with it," he says.

Building houses out of steel has meant adapting to some of the local building rules.

The steel roof panels are more weather-tight and require less maintenance than traditional shingles. Concealed fasteners mean there are no screw or bolt patterns on the cladding, resulting in a clean finish that enhances curb appeal.

"No one had really tried it, so there wasn't a process to do it and meet code," explains Gullet. "It was non-conforming. We've now made it conforming, but it was something no one understood."

The Prestige team worked closely with municipal building departments and supplied energy reports and other information to demonstrate how steel buildings surpass code requirements and how they can be residential.

"It was a very new process and we just figured it out," says Gullet. "We're pushing the envelope a bit that way." ■

BUILDING OWNER/PROJECT COMMISSIONER/GENERAL CONTRACTOR

Jason Gullett

DEVELOPER

American Buildings // americanbuildings.com

ARCHITECTS

Granite Engineering Services // graniteengineeringservices.ca

ENGINEERS

Granite Engineering Services // graniteengineeringservices.ca

Dahl Group Engineering // dahlgroupp.ca

CONSTRUCTION PROJECT MANAGER

Dave Simmons (Simmons Custom Designs Ltd.) // 705-323-5527

PRODUCT SUPPLIERS

American Buildings // americanbuildings.com

Agway Metals Inc // agwaymetals.com

Sarjeants Co. // sarjeants.com

Silvercote // silvercote.com

Lafarge // lafarge.ca

STEEL

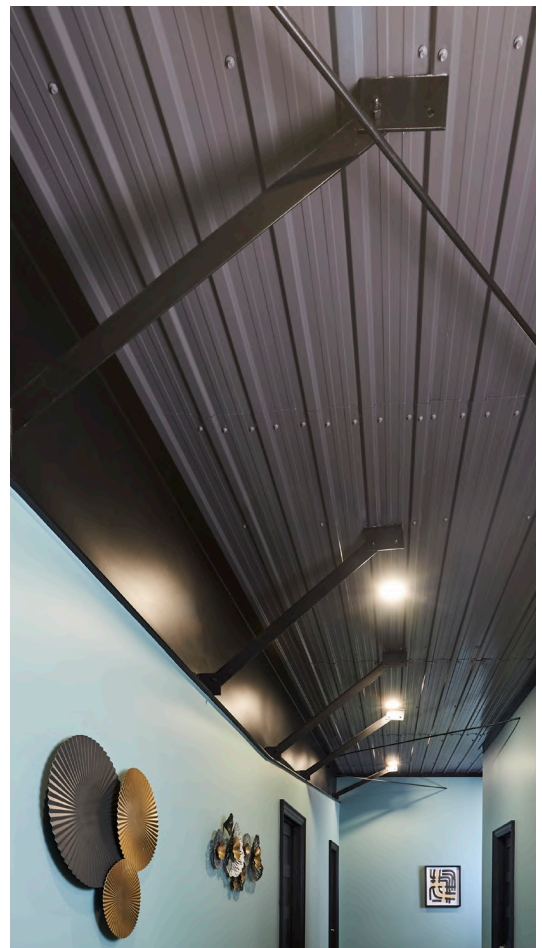
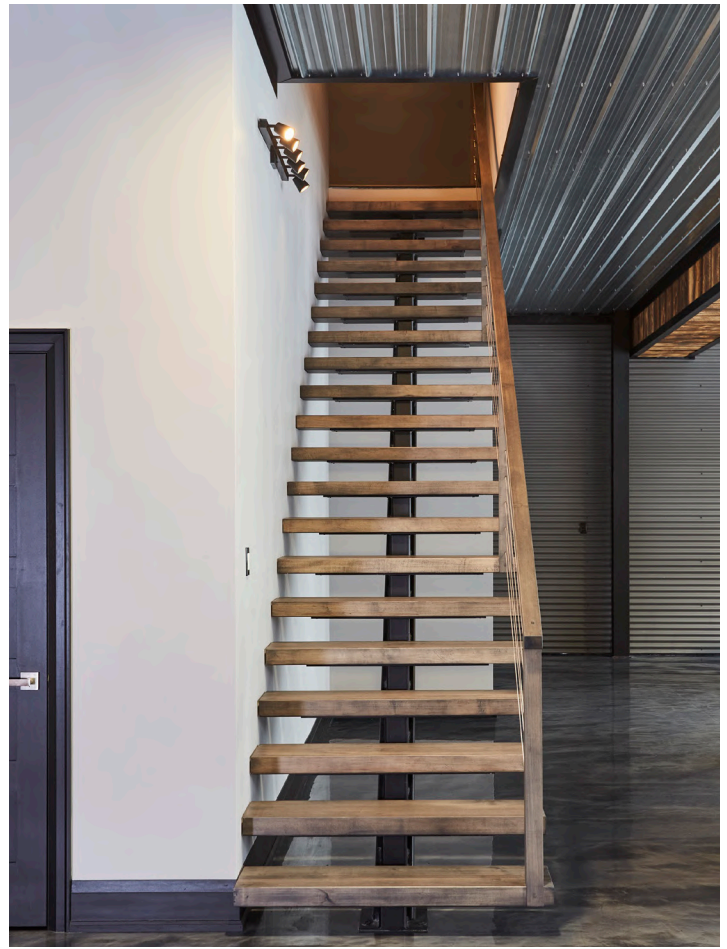
Primer Colours: Red (IR .38 SRI 40)

Roof Panel: Charcoal (PVDF) (IR. 32 SRI 34)

Roof Line Trim: Charcoal (PVDF) (IR. 32 SRI 34)

Wall Panel: Midnight Black (PVDF) (IR .27 SRI 26)

Woodgrain Panels: Silver Birch (QC 18-2964)



FRESH OUT OF THE KEG

Molson Coors builds on two centuries of history in Canada

Story: Julia Preston Photography: Damien Ligiardi

In 2021, the Molson Coors Beverage Company completed construction on an integrated brewing and distribution centre in Longueuil, Quebec. The ultramodern production and distribution complex is one of the most significant investments in the company's 235-year history, with a budget of \$600 million.

At the centre of the new facility is a commitment to sustainability and respect for the environment. Molson Coors is aiming to have the plant LEED certified, one of the few industrial sites in Canada to earn the certification.

Insulated Metal Panels (IMPs) from Norbec are a key component of achieving Molson Coors' sustainability targets. IMPs offer superior insulating properties, along with multiple profile and colour options.

The Molson Coors facility uses charcoal, white and red panels to delineate different sections of the massive building. The white tower faces the highway. Architects GKC designed a vertical charcoal "fin" to add visual interest to one side of the façade. Every six panels, a dark wedge, or flashing, was inserted into the panel joints, adding definition to the surface. On an adjacent wall, the fins shift to horizontal.

Norex is Norbec's line of conventional insulated panels, which consist of two steel sheets cast with a liquid polyisocyanurate foam which forms the insulating core. For fire protection, Norbec offers its non-combustible Noroc panels, which have a rock fibre core.

For the Molson Coors project, Norbec developed a new eight-inch deep Noroc panel. The panels were installed between the packaging and brewing sections and meet three-hour fire resistance requirements.

"Developing such a panel required the adaptation of our assembly line in order to increase the line's ability to handle very heavy panels," says Manon Barbette, marketing project manager with Norbec. Panels weigh between 34–39 kilograms per square metre (seven and eight pounds per square foot).

The panels had to be tested and certified in a short amount of time. In fact, certifications were obtained just in time for installation.

Installation of the panels was complicated by both their weight and the physical space they were located in.



The facility is part of Molson Coors' transformation from one of the oldest brewers in Canada to a modern, progressive brewer.

"We needed to install two walls facing each other," explains Johan Dubois, with panel installer Frimasco. "In the end we had less than 20 inches between the two walls... We had to fix the panels from inside the building because once we put one wall we were not able to put the other one and anchor it normally."

Installation of the firewall also required a heavy crane with a long reach.

However, once the panels were in place, Frimasco's work was not complete. Nearly 20 wall sections throughout the building had to be reopened to install the giant brewing silos and other equipment.

Openings were carefully planned from the construction outset with contractors Pomerleau and Alberici Constructors.

"That was hard to do because when we install we install it permanently," explains Dubois. "We anchored the panels in a way that we would be able to open the wall later on and put it back without seeing any opening inside."

An additional innovation developed specifically for this project was a new clamping system which increased anchoring capacities by nearly 30 per cent. The IMPs required the unique clamp due to the height of the building and spacing of the structural elements.

By building this clamp, Norbec is now able to address specific structural constraints that previously would have required modifications to the building structure. The installation process for the clamp is longer, due to its larger size. However, the additional cost for the clamp is minimal compared to the cost of modifying a steel structure.

"Participating in this type of major project is always stimulating," says Barbette. "A building of a major Canadian company, made with products from home, we have something to be proud of."

The facility is part of Molson Coors' transformation from one of the oldest brewers in Canada to a modern, progressive brewer. The new plant is the most integrated and agile operation within the company. It services the local domestic market and is capable of producing beer and non-beer brands.

The state-of-the-art centre includes three high-production rate lines divided between bottles, cans and kegs. The can line has a maximum capacity of 2,100 cans per minute, while the bottle line is 1,000 units per minute. Annually the facility will produce approximately 2.5 million hectolitres.



The new facility
is committed to
sustainability
and respect for
the environment.

For Frederic Landtmeters, president and CEO, Molson Coors Canada, this new development connects the company's past to its future.

"We are proud of our heritage and of the fact that the memory of John Molson, the founder, will be preserved. John Molson demonstrated a remarkable blend of entrepreneurship and community spirit and it's a great honour for our company to continue the work he initiated in 1786," he said in a statement.

In an interview with CTV, Landtmeters said the new facility will allow the brewer to be more agile when it comes to beverage trends.

"There's probably a component of changes that we're not yet aware of today that are going to appear tomorrow, so from all perspectives, we want to be able to respond to those changes in trends if and when they happen... That's one thing that is... at the heart of the design of this site." ■

BUILDING OWNER/PROJECT COMMISSIONER

Molson Coors Canada

ARCHITECTS

GKC // gkc.ca

GENERAL CONTRACTOR

Pomerleau and Alberici Constructors // alberici.com

INSTALLER

Frimasco // 450-589-9090

PRODUCT SUPPLIERS

Norbec // norbec.com

PRODUCT SPECS

C-10964 Prowess panels Noroc-L 8" / Aillerons



LIVING LUX WITH STEEL

Lightweight steel framing provides elegance in Oakville condo

Story: Julia Preston Photography: Dan Banko

Oakville, Ontario is known for its high-end real estate. Close to Toronto, but removed from the bustle of the city, Oakville is a desirable community with established neighbourhoods and well-appointed homes. The Coventry, a condominium in downtown Oakville, caters to those looking for luxury.

Suites are spacious—the four storey building houses just 12 units. Inside, the units feature high-end finishes like radiant floor heat, premium appliances, walk-in wine cellars and custom cabinetry. Other amenities include semi-private elevator access and a rooftop garden with putting green. The building's location within walking distance of Lake Ontario solidifies its tony address.

The commitment to luxury at Coventry started early in the design phase. Developer, Legend Homes, elected to use lightweight steel framing (LSF) with a composite slab floor.

"You could have built that building out of wood, but they really didn't want to do that," says Raymond Van Groll, managing partner at Atkins + Van Groll Consulting Engineers. "They really wanted to have a much more robust floor system. [ComSlab] doesn't have any bounce like a wood floor would."

LSF also increases stability, which eliminates cosmetic issues like nail pops or plaster cracks—critically important for the high-end custom plasterwork used in some units. "When you have beautiful plaster... you want to use light gauge steel framing," says Van Groll.

Lightweight steel framing refers to steel studs, joists, beams, trusses, and other members made from cold-formed sheet steel (CFS). Walls, floors and roofs are made from prefabricated panels. The components can be manufactured to a very high level of precision and assembled quickly onsite.

In an LSF building, the steel deck serves as formwork for the concrete floor. The concrete bonds with the metal deck structurally, making a composite slab.

Lightweight steel framing increases stability, which eliminates cosmetic issues like nail pops or plaster cracks.





The ComSlab system from Bailey Metal Products Ltd. was used for Coventry. The form of the deck creates beams on top of the load bearing wall. These beams support the weight of the slab. Unlike in conventional construction where the beams are installed first and then the floor is done separately after, in ComSlab the slab and beams are completed in a single concrete pour.

LSF's efficiency was an asset given Coventry's downtown location. The condo is located on Trafalgar Road just one block from Lakeshore Road, both main arteries which could not be blocked. Panels were delivered early in the morning to minimize disruptions to the surrounding community. "The logistics of the site lends itself to doing a panelled system," says Van Groll.

The LSF and ComSlab systems also offer high fire and sound transmission ratings, adding a layer of safety, comfort and privacy to Coventry.

Van Groll used concrete cores for lateral stability. Stairwells carry most of the load, allowing for long clear spans and open concept designs within the suites.

BUILDING OWNER/PROJECT COMMISSIONER/DEVELOPER

Legend Homes

ARCHITECTS

Hicks Design Studio // hicksdesignstudio.ca

ENGINEERS

Atkins + Van Groll Inc. // atkinsvangroll.com
(joined MTE Consultants)

CONSTRUCTION PROJECT MANAGER/GENERAL CONTRACTOR

Legend Homes // 905-849-1234

PRODUCT SUPPLIERS

Bailey Metal Products Ltd. // bmp-group.com

PRODUCT SPECS

ComSlab floors from Bailey Metal Products,
Bailey CFS framing for load bearing walls

"It's a beautiful building structurally because it's simple doing cores," says Van Groll.

From the outside, there are no hints of the advanced technology that forms the underlying structure of Coventry. In fact, the building looks historic.

Wrought iron balconies, intricate trim around the windows and a decorative cornice all give the building a luxurious European aesthetic.

But what appears to be cut stone on the façade is actually pre-cast concrete panels.

LSF integrates well with other systems—like pre-cast—to achieve the desired architecture.

Van Groll recounts that the pre-cast contractor had never worked with LSF before and had some hesitations. The precast panels had to be bolted to the steel studs. The LSF wall assemblies needed to be engineered with a space wherever a fastener was required.

"The guy was a little leery that we'd ever be able to do it," says Van Groll. "I said, 'You tell us where you want to put your anchors and we'll look after that.' After the building was finished he actually came back to my office and he said, 'That went so well! Everywhere I wanted that space you left me a space. It was great!'"

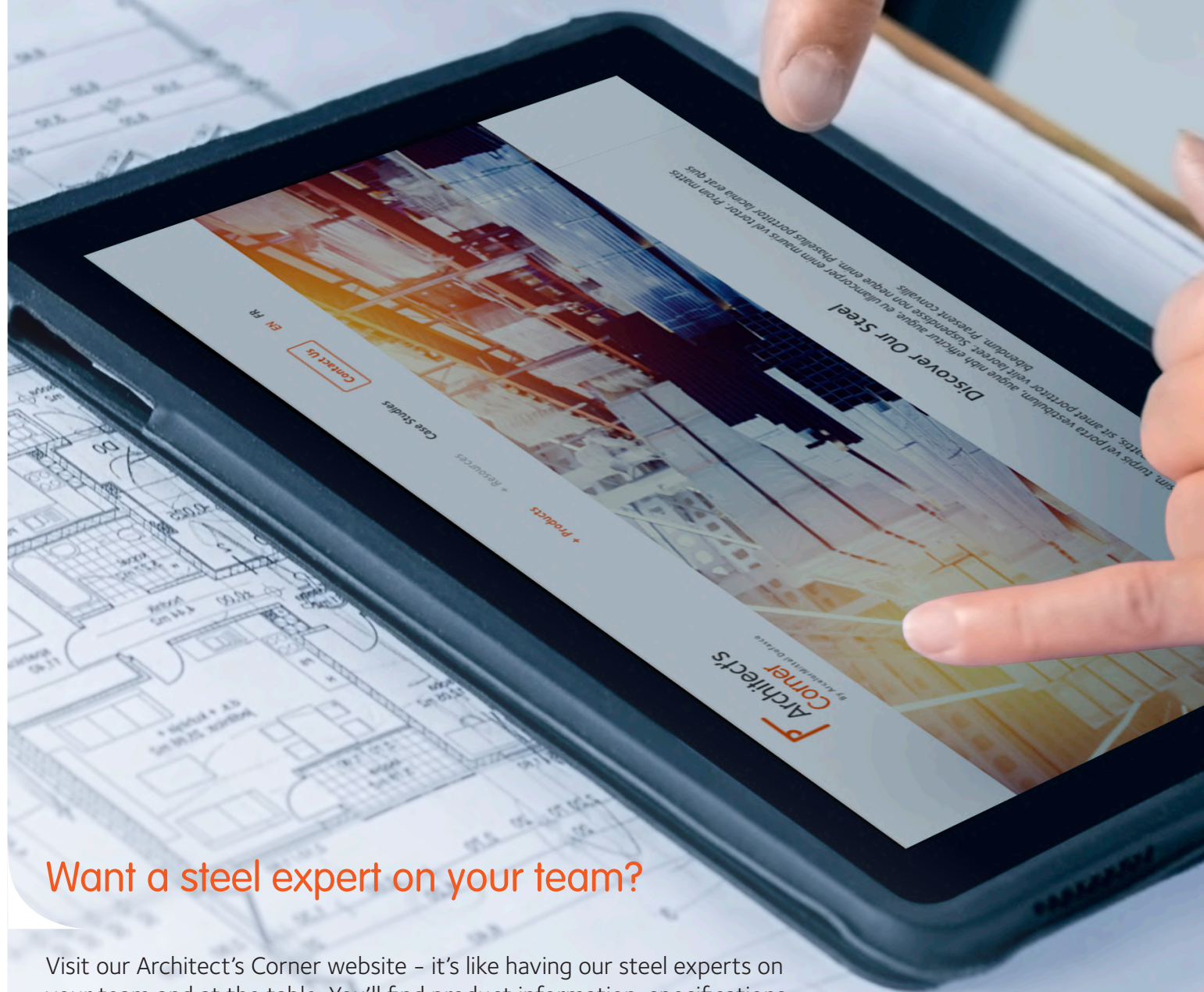
Van Groll jokes, "I have to get the windows in the right spot. Leaving him a space was easy."

From its historic exterior to its luxurious interior, Coventry epitomizes elegant living. Achieving that elegance started with the lightweight steel frame structure. The high level of precision, flexibility and reliability provided by LSF make it an ideal choice for a wide variety of construction projects, including luxury residential units like Coventry. ■





ArcelorMittal



Want a steel expert on your team?

Visit our Architect's Corner website - it's like having our steel experts on your team and at the table. You'll find product information, specifications, building information modelling and all the steel resources you need to help bring your building design to life. Plus, we are just a phone call away to talk through your need!

Visit and bookmark:
architectscorner.ca

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 @arcelormittal_dofasco  [facebook.com/arcelormittaldofasco](https://www.facebook.com/arcelormittaldofasco)