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PROJECT SUBMISSIONS

Do you have a project using sheet steel that you would like to see in *Steel Design*? The editor welcomes submissions of completed buildings—commercial, institutional, industrial, recreational and residential—using components made from steel, including cladding, steel decking, light steel framing, steel roofing, steel doors, steel ceiling systems and steel building systems.

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COVER PHOTO:
EV3 BUILDING – UNIVERSITY OF WATERLOO
AFrame 416-465-24761



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transforming
tomorrow



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3 EV3 Building
University of Waterloo

The extensive use of steel in the construction of the Environment 3 Building at the University of Waterloo helped satisfy several design objectives.

6 Nunavut Trades Training Centre

With a short construction season and daylight hours at a premium in Nunavut, choosing steel building materials that would enable rapid construction of the 1,900m² (20,300 sq. ft.) Nunavut Trades Training Centre in Rankin Inlet was critical.



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8 Canadian Aviation Museum
Expansion, Ottawa

The facility provides a highly visible addition to the existing museum complex with the clear, bold building form and reflective Galvalume steel shell.



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10 Highland Valley Copper Mine, BC

The company was faced with a formidable challenge last year – to beautify the stockpiles of Canada's largest open-pit copper mine. The Highland Valley Copper Mine, located in the southern interior of British Columbia, produces large stockpiles of crushed rock during its operation, and the blowing dust from these piles was a growing concern.

12 101b Third Avenue, Ottawa
Earthquake House

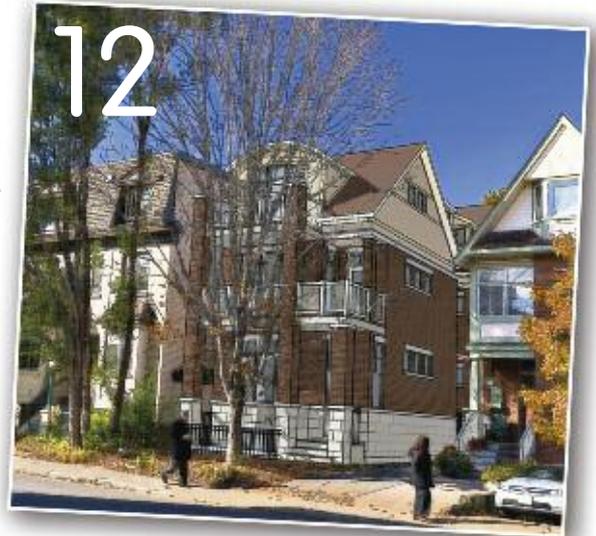
Non-combustible light steel framing contributes significantly to the overall design of 101b Third Avenue in Ottawa's Glebe neighbourhood. Built to meet the stringent LEED Platinum green building standard, the steel-framed, four-level duplex is one of only two houses in the city to hold an earthquake rating.



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15 The Last Word in Steel News

- Porsche Centrum, Groningen, The Netherlands
- Sun Slice House, Lake Garda, Italy
- Living Steel showcases next-generation architecture in "Houses of Steel"
- Bubblecture H environmental education centre in Sayo-cho, Hyogo, Japan.



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The extensive use of steel in the construction of the Environment 3 Building at the University of Waterloo helped satisfy several design objectives. To expand and transform aging facilities to address the University's demand for new programs and a growing student population, as well as to create a distinct new image for the faculty. Steel inside and out helped satisfy these design objectives.



EV3 Building University of Waterloo

Construction of the project, completed at the end of August 2011, included a 5,295m² (57,000 sq. ft.) addition and a 465m² (5,000 sq. ft.) renovation to the University's two-storey EV2 building. Previously housed within two adjacent, connected and dated buildings – EV1 and EV2 – that were constrained on a limited site located within the campus ring road, EV3 was built over a large part of the existing building, minimizing its footprint on the campus plan while taking advantage of the ample available vertical space.

Architect Kevin McCluskey, Principal, Akitt, Swanson and Pearce Architects Inc. says, "The project needed to be designed and constructed within limited budget and schedule constraints and the initial LEED silver target was upgraded to LEED platinum – one of only a few buildings in Canada to hold that distinction."

The new four-storey building features structural steel supplied and installed by Telco Steel Works, light steel stud framing for all partitions supplied by Bailey Metal and installed by Dixon Drywall, and colourful steel cladding supplied by Vicwest and installed by Commercial Sheet Metal.

The steel structure features two parallel two-storey, 45.72m (150') long steel trusses that span over the existing two storey EV2 building while remaining structurally independent. Two large two-storey 10m high x 47m long

The extensive use of steel in the construction of the EV3 Building at the University of Waterloo features structural steel; interior light steel stud framing for all partitions; light steel wind bearing studs on exterior walls; light coated steel liner panels and colourful pre-painted steel wall cladding.



PHOTO: AFrame 416-465-24761



Two large 2-storey 10m high x 47m long (32.8 ft. high x 154 ft. long) steel trusses form the sides of the 3rd and 4th floor addition and are supported on columns located clear of each end of the EV2.

PRIMARY TRUSS:

Supporting columns at ends:

WWF500x254,
18.8m high (spliced)

Vertical truss members:
W310x283, W310x158,
W310x107, 10.1m high

Horizontal members at 3rd floor:

W310x226 (ends)
W310x342 (center)
47m long

Horizontal members at 4th floor:

W410x39,
W 410x46 (center),
47m long

Horizontal members at roof:

W310x375 (ends),
W310x454 (center),
47m long

Diagonals:

W310x313, W310x202,
W310x97, (in order
outside to center)

(32.8 ft. high x 154 ft. long) steel trusses form the sides of the third and fourth floor additions and are supported on columns located clear of each end of the EV2. These trusses support five other 5m high x 30m long (16.4 ft. x 98.4 ft.) members that span perpendicular and support the fourth floor. The third floor is hung from these trusses. "The truss members and supporting columns are visible through the exterior curtain wall glazing and exposed or expressed throughout the interior at specific locations," says McCluskey.

The building's rectangular massing, comprised of structural metal studs with galvanized panel air/vapour barrier, was chosen for its cost and construction efficiency. It is offset by the playful use of a variety of exterior cladding materials including four-sided SSG curtain wall, multi-coloured corrugated steel siding panels, and aluminum composite panels and architectural masonry. "Steel siding was a cost-effective solution that is fast and easy to install and durable. We chose to use the corrugated profile in a contemporary look which brings an appropriate scale and level of texture to the skin of the facade," says McCluskey. "Most striking is the introduction of vibrant green coloured aluminum and glass panels which clearly identify this as the environment building and project a strong sense of identity and confidence as the new home for the faculty. Siding and masonry colours are kept neutral to allow the green to really 'pop'."

The .46mm (.0179") corrugated prepainted steel siding panels are in two colours: 10,000 Series Charcoal QC690 and Stone Grey QC998, with a detailed vertical and hori-



zontal reveal system between the panel colours. The flat panel is AD-300R, .76mm (.0299") thick Bone White used at the back of parapets and the aluminum composite panels are Vicwest 4mm (.157") thick, Duranar finish custom colour Lime Green BK60603 with the liner panel Vicwest L-800, .46mm (.0179") thick, light coated galvanized steel.

At the heart of the building is a new four-storey sky-lit atrium, which cuts east/west through the addition separating the four-storey student spaces to the north from the two-storey faculty offices and EV2 to the south. The atrium features a two-storey living wall, the exposed red brick wall of EV2 and a glass and steel feature stair with

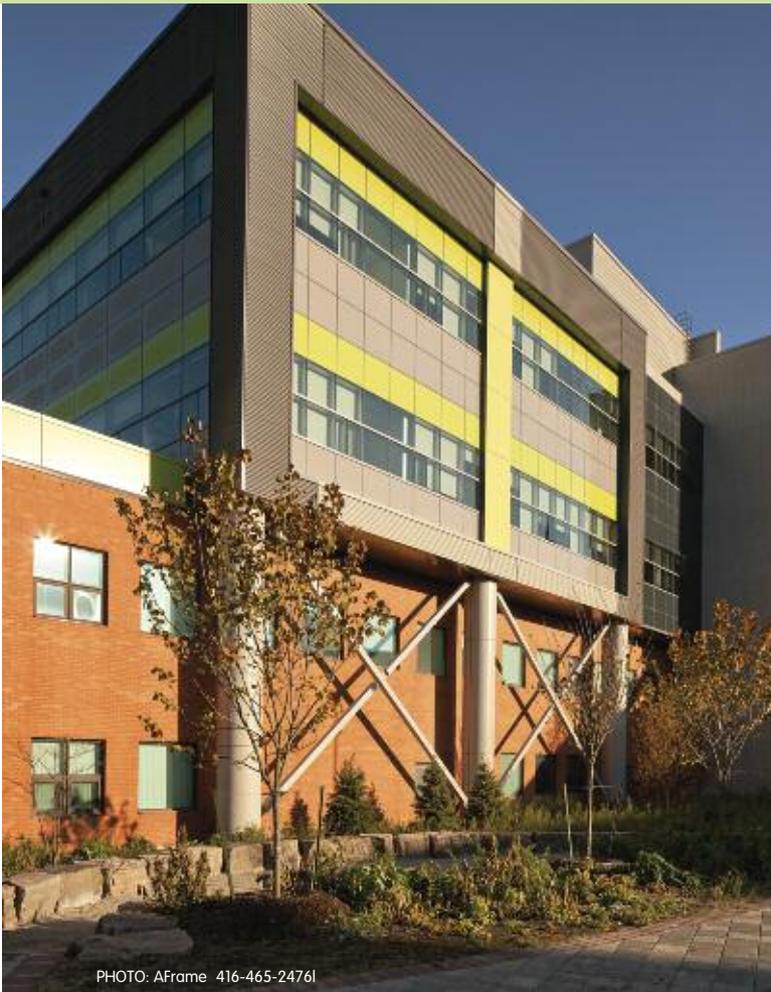


PHOTO: AFrame 416-465-24761



PHOTO: Harold Clark Photography 416-499-8821

The corrugated prepainted steel cladding and masonry colours are kept neutral to allow the vibrant green and glass panels, which clearly identify this as the Environment Building and project a strong sense of identity and confidence as the new home for the faculty.

The atrium (below) features a two-storey living wall, the exposed red brick wall of EV2 and a glass and steel feature stair with a bold cantilever out into the atrium between the third and fourth floors.

PROJECT TEAM

DESIGN AND CONSTRUCTION TEAM:

Akitt, Swanson & Pearce Architects 905-607-2444

STRUCTURAL/ELECTRICAL ENGINEERS:

Walter Fedy 519-576-2150

DESIGN BUILD CONTRACTOR:

Cooper Construction Ltd. 905-829-0444

STEEL CLADDING SUPPLIER: Vicwest

STEEL CLADDING INSTALLER:

Commercial Sheet Metal 905-206-1688

STEEL STUD SUPPLIER: Bailey Metal

STEEL STUD INSTALLER: Dixon Drywall 905-761-0378

LINER PANELS INSTALLER:

Commercial Sheet Metal 905-206-1688

STRUCTURAL STEEL SUPPLIER/INSTALLER:

Telco Steel Works 519-837-1973

a bold cantilever out into the atrium between the third and fourth floors.

Upper levels of faculty spaces offer exceptional working environments. The majority of offices are located along the perimeter, or adjacent to the atrium, and there are two fourth floor sky lit courtyards. "All of this brings a lot of natural light to the interior and the offices are fitted with operable windows and large expanses of glazing at corridor walls," says McCluskey.

The existing EV2 roof has been transformed into a green roof that can be accessed from the third floor and is overlooked by third and fourth floor faculty offices.



PHOTO: Joe Bevan 519-888-4567