



ArcelorMittal

# steel design

FALL 2017 | VOLUME 49 | NO. 2

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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. Please send a description of the project, including photographs, to:

The Editor, *Steel Design*  
1039 South Bay Road  
Kilworthy, Ontario P0E 1G0  
E-mail: davidfolis@vianet.ca

## CHANGE OF ADDRESS, NEW SUBSCRIPTIONS

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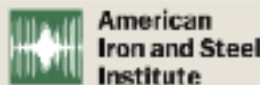
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COVER PHOTO: Assiniboine Community College, Brandon, Manitoba.

PHOTOGRAPHERS:  
Mike Karakus and Jerry Kopelow



transforming  
tomorrow

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### 10 Spokane International Airport, Spokane, Washington Snow Removal Equipment Building

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### 13 Village Hotel on Biltmore Estates Asheville, North Carolina

The project demonstrates the strength and versatility of cold formed steel. The 4-storey, 11,520m<sup>2</sup> (124,000 sq. ft.) structure involved 3,490m (11,450 feet) of cold formed steel sections for the wall panels and floor systems.

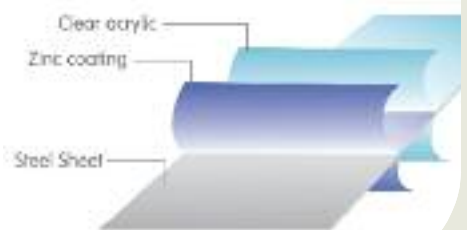
### 16 Edmonton Waste Management Integrated Process and Transfer Facility

Facing reduced landfill and already diverting 60% of its waste, the city wanted to process the remaining 75,000 tonnes per year of composting residuals and the 5,000 tonnes of materials recovery residuals. Their ultimate goal? Divert 90% from landfill and do it without employing a conventional combustion system.



### 18 LustreLok™ – New Acrylic Coating for Galvanized Steel

LustreLok™ is a thin, clear organic coating applied to both sides of the galvanized steel as a final protective layer over the zinc coating. LustreLok™ provides an attractive appearance and enhances the traditional look of galvanized steel. Because the resin coating is transparent, the standard surface appearance of the zinc-coated substrate is unchanged.



# Len Evans Centre for Trades and Technology and an education on how to use Steel

When it came time to build the Len Evans Centre at Assiniboine College, architects chose to use an extensive steel building system. Cibinel Architects Ltd. designed the buildings and spokesperson Jenna Goodfellow said that the company's main objective for any creation is to always "convey material honesty and maintain sensitivity to the existing environment."

To that end, the Len Evans Centre embraced the original structure of the Pine Ridge Heritage Building to maintain its authentic details. The project was the second phase of a venture which relocated the entire college of the Brandon Campus. Construction of the Centre began in May 2008 and the project was completed in August 2010.

The Pine Ridge Heritage Building was intended for housing classrooms and offices and two new wings were added for the trades shops. The three buildings are linked by bridges which create a "large central courtyard," said Goodfellow. She added



The exterior of the new wings are detailed in a completely modern way – with pre-painted AZM150 Galvalume steel cladding on the exterior, as well as, high performance windows making an energy efficient envelope. These features, along with many more, contribute to the project's LEED Silver Certification.





"the design encourages awareness and celebration of ACC's programs for all those visiting the campus."

In regards to the pre-painted steel cladding on the exterior of the buildings, Goodfellow said they are detailed in a completely modern way, with the high performance windows a part of an energy-efficient envelope. There are many extras that make this build very modern.

"The project features water efficient land-scaping, materials with high recycled content, certified wood plywood throughout the shops, as well as low-emitting materials throughout both the new construction and the renovation," said Goodfellow.

"Energy conservation was achieved with a high-efficiency chiller, 90% efficiency on ventilation heat recovery, variable-speed pumps and fans, fan coils on occupancy sensors, and automatic building controls. These features along with many more contribute to the project's LEED Silver Certification."

For the trades shops, which were the two new structures created, steel structures were used in different ways. "One building uses a standard steel frame structure, while the other building uses a steel building system supplied by Behlen

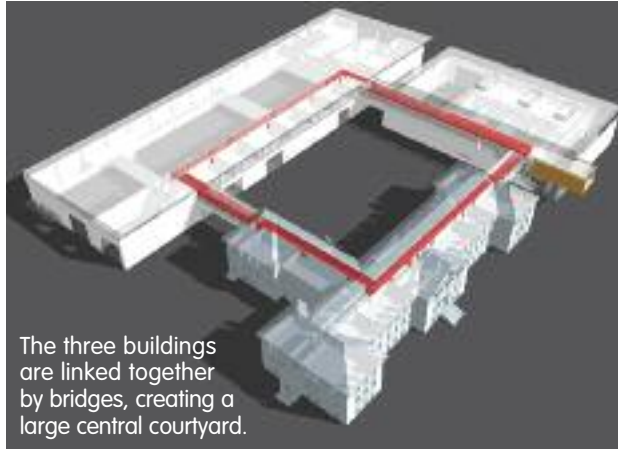
Industries," said Goodfellow. "The pre-engineered steel building was specified to carry internal imposed loads for equipment that was suspended from the roof. The membrane air/vapour barrier and insulation characteristics of the walls and roof of both buildings were determined by the designers and the whole project was designed to meet LEED Silver."

The usefulness and the adaptability of steel make it a clear choice for a large and unique project such as the Len Evans Centre and this fact was not lost on Cibinel and the construction team.

"Steel offers a way of creating large, column-free interiors, thereby giving the building a sense of openness. As well, the exterior applications of steel afforded this project a modern and elegant way to visually connect a material commonly reflective of the trades to the

teachings within the Centre."


Goodfellow went on to add that steel can be adjusted or changed according to the owner's requirements. Wall frames made from light steel framing, for example, can be repositioned or altered easily in order to widen spaces and create new interior layouts. Steel also characteristically helps to extend the lifespan of the building.



The three buildings are linked together by bridges, creating a large central courtyard.



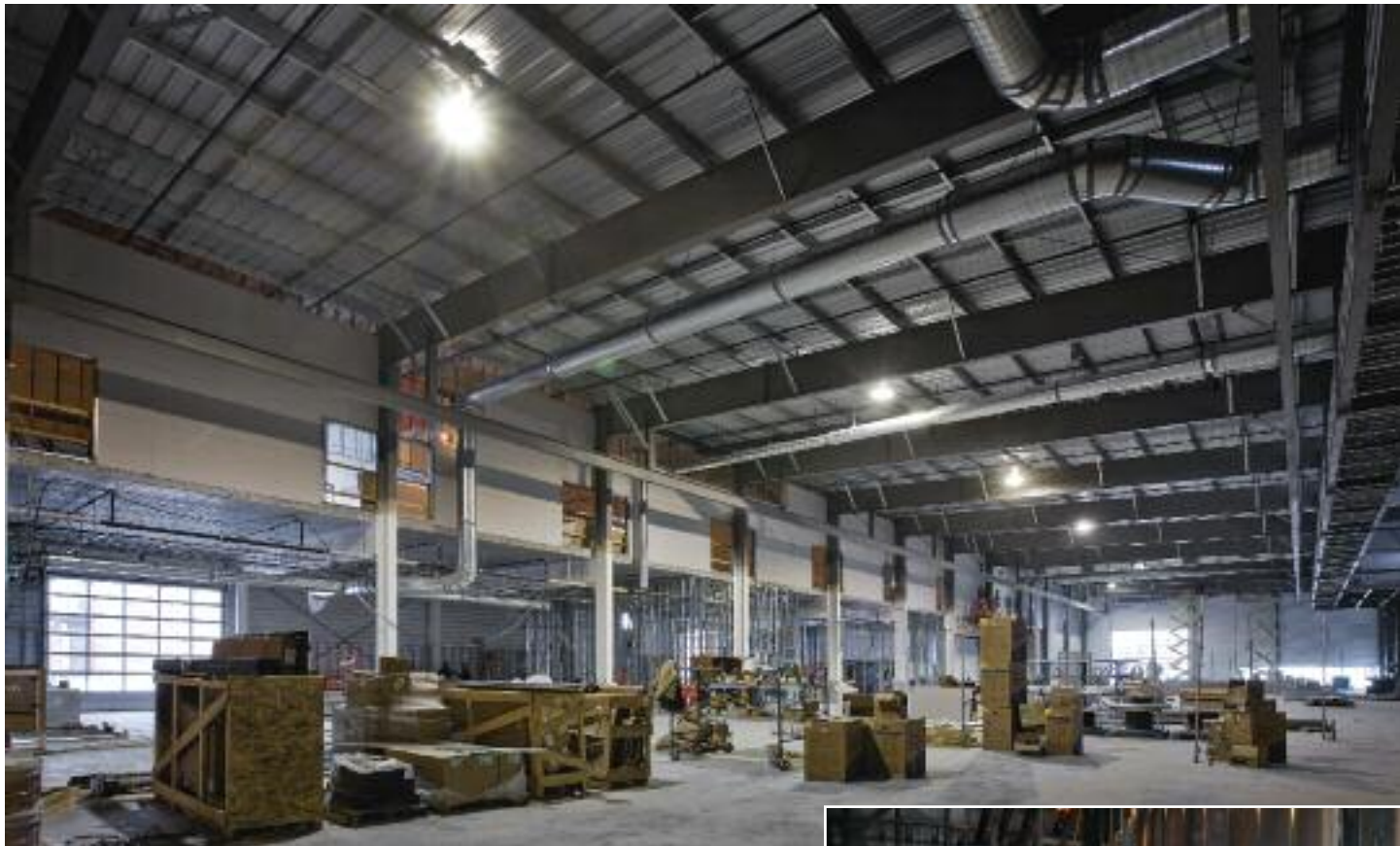
AZM150 Galvalume Ultraspan cladding coloured QC8262 Black being installed on the Trades Centre.



Bridge connecting Trade shops to the original Pine Ridge building, showing the unpainted AZM150 Galvalume 22mm (7/8") corrugated wall cladding.



ROOF:	.61mm (.0239") AZM150 Galvalume Standing Seam Roof.
WALL CLADDING:	AZM150 Galvalume .61mm (.0239") Ultra Span cladding coloured QC 8262 Black and unpainted .61mm (.0239"), 22.2mm (7/8") corrugated AZM150 Galvalume Plus
SOFFIT:	AZM150 Galvalume, coloured QC8317 White/White, with the 936 profile.
STEEL FLOOR DECK:	76mm (.0299") Galvaneal with Vicwest 38mm (1.5") HB938 profile.
STEEL BUILDING SYSTEM:	Rigid Frame



The second phase rehabilitates a 1933 heritage building to house classrooms and offices – with two new wings added to house the trade shops, forming a large central courtyard. (see illustration on P4).



DESIGN AND CONSTRUCTION TEAM
MAIN SCHOOL ARCHITECT: Cibinel Architecture Ltd 204-989-8910
GENERAL CONTRACTOR: Akman Construction Ltd. 204-944-9721
PRE-ENGINEERED BUILDING SUPPLIER: Behlen Industries LP 204-728-1188
PRE-ENGINEERED BUILDING INSTALLER: Crane Steel Structures 204-725-3588
STEEL DECK & CLADDING INSTALLER: Tri Clad Designs 204-878-3480
LIGHT STEEL FRAMING: K. Sleva Contracting 204-897-0442
STRUCTURAL STEEL FRAMING: Abesco Ltd. 204-667-3981
PHOTOGRAPHERS: Mike Karakus and Jerry Kopelow

# Steel Building System brings quality and speed to new heights

In order to address a chronic shortage of indoor recreational space, the University of Winnipeg created the Axworthy Health and RecPlex. The building houses a 50.5 x 90m soccer field, a 4-lane, 60m rubberized sprint track, a gymnasium and many other bells and whistles for the sport-loving citizens of Manitoba.

When it came time to build the 15,607m<sup>2</sup> (168,000 sq. ft.) RecPlex in January of 2013, a steel building system was chosen and by July of 2014, the RecPlex was completed.

Greg Hasiuk, a Partner at Number Ten Architectural Group, spoke with Steel Design and said that steel was chosen because of its "large span and lower cost." Hasiuk went on to discuss the specific requirements of the impressive location. "The stakeholder groups identified a number of project goals to direct and guide the design team's work," he said. "At various milestones of the process, these goals have served as a benchmark to inform decisions at all levels of the design. The facility was designed to welcome and fill the needs of

multiple user groups, both those from within the University as well as those beyond."

In addition to the AZM150 Galvalume steel standing seam roof of the steel building system (SBS) the RecPlex boasts conventionally framed steel areas, it has conventional EPDM roofs and exterior steel stud wall assemblies. "In essence, the sloped roof of the pre-engineered building is hidden from general view," said Hasiuk.

This impressive \$30 million facility is certified LEED Gold and was designed to offer maximum energy efficiency. This includes design features such as energy efficient lighting control systems, high-efficiency condensing boilers, the use



This 15,607m<sup>2</sup> (168,000 sq. ft.) sports and recreation facility, opened in the summer of 2014, offers an abundance of new indoor sporting, health and wellness opportunities for inner city community groups, sports clubs and university students in Winnipeg. The multi-functional facility is designed for maximum flexibility, perfect for a range of community and sporting events including indoor soccer, baseball, track and field, wrestling, basketball and flag football. This impressive \$30 million facility is certified LEED Gold and was designed to offer maximum energy efficiency.



of reclaimed wood directly from the site, a heat recovery ventilator and ample glazing to allow natural light to fill the building. As well, the steel roof is a “bright white” finish selected to achieve LEED heat island effect credit. The building utilizes Behlen’s ‘Thermalguard® Insulation’ and ‘Vapourguard 32® notched Zee Bar’ systems.

Other features include reused historic Tyndall stone foundations from the earliest U of W college which are being used in the building, the cladding and the landscape. As well, the plan identified existing site trees for protection and the

remaining trees were recycled back onto the campus as finished projects, lumber, furniture, art pieces or mulch.

The building continues its environmentally friendly status by using low flow showers, faucets, toilets and waterless urinals. Finally, there is a 189 stall underground parkade, complete with storage for 56 bicycles, which takes congestion off the streets

The result is a fantastic structure with a FIFA certified indoor soccer field, and facilities for baseball, track and field, wrestling, basketball and many other sports.

DESIGN AND CONSTRUCTION TEAM

OWNER:	University of Winnipeg
ARCHITECT:	Number Ten Architectural Group 204-942-0981
STRUCTURAL CONSULTANT:	Crosier Kilgour Partners 204-946- 7501
CIVIL ENGINEER:	MMM Group Limited 204-272-2028
MECHANICAL CONSULTANT:	SMS Engineering 204-775-0291
ELECTRICAL CONSULTANT:	SMS Engineering 204-789-2342
SUSTAINABILITY LEED:	Integrated Designs Inc 204-669-6818
GENERAL CONTRACTOR:	PCL Constructors Canada Ltd. 204-949-8914

STEEL BUILDING SYSTEM SUPPLIER:	Behlen Industries LP 1-888-315-1035
STEEL BUILDING SYSTEM ERECTOR:	Contempora Steel Builders 204-631-3081
INSULATED STEEL WALL PANEL SUPPLIER:	Kingspan Insulated Metal Panels, Canada 1-866-442-3594
INSULATED WALL PANEL INSTALLER:	Thermo Design Insulation Ltd. 204-953-1633
STEEL DECK SUPPLIER & INSTALLER:	Tri Clad Designs Inc. 204-878-3480
COLD FORMED STEEL SUPPLIER:	Abesco Ltd. 204-667-3981
PHOTOGRAPHY:	Number Ten Architectural Group / Mike Pratt

The RecPlex boasts conventionally framed steel areas, added to either gable end of the pre-engineered Behlen (SBS) building. Tightly sealed insulated metal exterior wall panels with an R-value of R28 combined with an R38 roof assembly reduces heat loss, energy use and greenhouse gas emissions. Also, the ‘bright white’ coloured roof reflects solar radiation to reduce the “heat island effect” which threatens urban areas with above average temperatures in the summer.

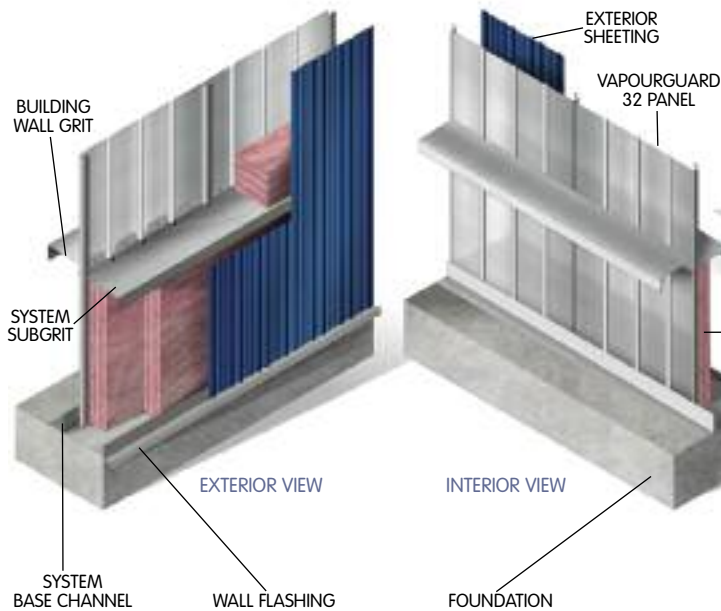


The Field House is a wide span rigid frame pre-engineered steel building. The roof of the steel building system (SBS) housing the soccer field is a “bright white” finish selected to achieve LEED heat island effect credit. The roof also utilizes Behlen’s ‘Thermalguard’ and ‘Vapourguard 32’ systems.

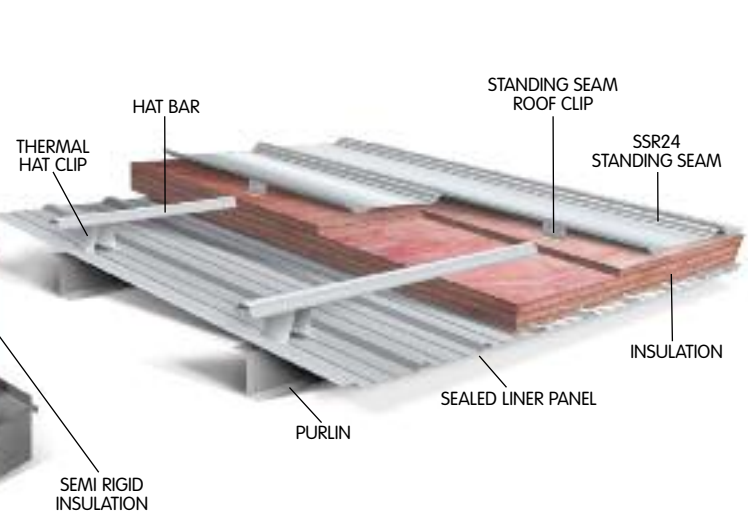




## Thermalguard® Insulation System:



## Vapourguard 32® Notched Zee Bar:



Thermalguard® Insulation System: Incorporates all the benefits of a liner panel while providing the advantages of superior thermal efficiency, condensation control and noise reduction. The system comprises a steel liner complete with sealant at all joints and laps to act as a vapour retarder. This liner gives the interior an attractive finish and is insulated from the exterior. The insulation cavity can be supplied to accommodate up to 300mm (12") of insulation.

Vapourguard 32® Notched Zee Bar: Is an insulation system which incorporates all the benefits of a smooth liner panel while providing the advantages of superior thermal efficiency, condensation control and noise reduction. The system comprises the Vapourguard 32 (applied on the ends) to act as a vapour retarder. This liner gives the interior an attractive finish and is insulated from the exterior. The insulation cavity can be supplied to accommodate up to 200mm (8") of insulation.

### SPECIFICATIONS:

**OVERALL HEALTH & RECPLEX:** 15,607m<sup>2</sup> (168,000 sq. ft.).

**ROOF:** .61mm (.0239") AZM150 Galvalume – 20" wide steel standing seam coloured Bright White QC8317.

**BUILDING:** Supplied with a thermal roof cavity on top of purlin liner installed, then the thermal clip and hat bar followed by roof panel.

**LINER:** Behlen AR profile, .48mm (.0179") coloured Bright White QC 8317.

**ROOF DECK:** Galvalume AZ150 substrate .48mm (0.018").

### ACTUAL SBS BUILDING:

60.425m wide, 101.158m long, 13.200m high, 2:12 roof slope.

### INSULATED WALL PANELS:

Mini-Micro-Rib (KS42MMR) Wall Panel – Insulated-core with steel wall panels Z275 (G90) galvanized steel sheet to ASTM A653 / A653M coating.

**EXTERIOR FINISH:** .61mm (.0239") SE Ascot White, Kynar.

**INTERIOR FINISH:** .45mm (.0179") SE SMP Imperial White White.



# Airport's Snow Removal Equipment Building Pre-painted Galvalume Cladding helps achieve LEED Certification

The Cortner Architectural Company faced an unusual challenge in 2013. They set out to design a storage building that would defy the norm of how such industrial structures ordinarily appear, while still meeting the needs of the client. The client, Spokane International Airport in Spokane, Washington, required more storage space than most.

"The project goal was to have a building for the snow-removal equipment. As you can imagine, the equipment used to clear runways is pretty large," says the project's principal architect Jim Cortner. "It was a very large building with a significant footprint. The challenge for us was providing some variety without it looking like a rectangular block."

With the dimensions of 182.9m x 30.48m (600 ft. x 100 ft.), this wasn't easy and Cortner admits the first design was too industrial looking.

To arrive at a design that satisfied architect and client, Cortner's team created an unusual steel "rolling roof." "The rolling rooftop is a reminder of the topography of this area. To get the roof we needed, steel was the only method we saw," Cortner says. "The client was happy with how it looked. It fit with their new vision for the airport."

The roof system consists of pre-finished standing seam steel panels over 152mm (6") of rigid insulation and vapour retarder. The exterior walls feature 152.4mm (6") steel studs with exterior sheathing, a moisture barrier, 38mm (1.5") of rigid insulation and pre-finished steel wall panels.

Over 373 tons of steel was used in the construction of the steel frame and building envelope and all steel panels, including those used for the roof, walls and soffits are 100 per cent recyclable.

"We reused and recycled as much as we could," says Cortner, adding that the building achieved LEED Gold certification. "More than 45 per cent of the building materials used on this project contained recycled materials."

While two-thirds of the \$7.8m building is used for storage, the remaining third is a mechanic's bay, complete with a five



Over 5,205m<sup>2</sup> (56,000 sq. ft.) of .61mm (.0239"), 404mm (16") Magna-Loc standing seam roof panels with striations in a Dark Bronze finish are used for the roof. The walls are clad with .61mm (.0239") thick Galvalume AZ50 (AZM150 in Canada) IC72 wall panel in Slate Grey and Khaki, both with a PVDF finish.



Steel roof and wall panels were the preferred material for this project because of their durability, maintenance and weather tightness. Steel made the installation easier, according to Cortner. This was a publically bid project and the products needed to be competitively bid.

To arrive at a design that satisfied architect and client, Cortner's team created an unusual steel "rolling roof." The roof features a crimped steel deck over 660mm (26") deep open-web steel joists supported by a rigid steel frame.

ton bridge crane for pulling engines and removing plows. Construction took about a year from start to finish. Steel made the installation easier, according to Cortner. "The shell was built over the winter months. Steel roof panels were the preferred roofing material for this project because of durability, maintenance and weather tightness. Steel made the installation easier," Cortner says. "We used as much of the conventional frame as we could to keep costs down."

All panels have a long life span are 100% recyclable and contain a high percentage of recycled material, contributing to sustainable building goals, such as, LEED. All panel colours are ENERGY STARR listed and can improve the energy efficiency of a building. The building has been awarded LEED Gold certification.



**DESIGN AND CONSTRUCTION TEAM**

OWNER: Spokane International Airport 509-455-6455

ARCHITECT: Cortner Architectural Company 509-363-1039

GENERAL CONTRACTOR: Lydig Construction, Inc. 509-534-0451

STRUCTURAL ENGINEER: Structural Forte, Inc. 509-624-3224

CLADDING MANUFACTURER & SUPPLIER:

Metal Sales Manufacturing Corporation 509-536-6000

ROOF & WALL CLADDING INSTALLER:

Krueger Sheet Metal 509-489-0221

PHOTOGRAPHY: Metal Sales and Cortner Architectural Co.

**ALL METALLIC-COATED STEEL SHEET PANELS:**

are aluminum-zinc alloy-coated Galvalume AZ50 coating (AZM150 Galvalume in Canada)

**EXPOSED COIL-COATED FINISH:**

2-coat flouropolymer (PVDF Kynar 500)

**ROOF PANELS:**

**Steel Standing Seam Roof Panel:**

Colour: Dark Bronze

Profile: Magna-Loc

Panel Thickness: .61mm (.0239")

Panel Coverage: 406.4mm (16") striated

Panel Height: 50.8mm (2")

Roof Slope: 1:12

Roof Area: 4,738m<sup>2</sup> (51,000 sq. ft.)

**WALL PANELS:**

**Vee-Rib Profile, Exposed-Fastener Steel Wall Panels:**

Colour #1: Khaki

Colour #2: Slate Grey

Profile: IC72 corrugated panel

Panel Thickness: .61mm (.0239")

Panel Coverage: 914mm (36")

Rib Spacing: 183mm (7.2" o.c.)

Panel Height: 38.1mm (1.5")

Coverage Area: 1,709.8m<sup>2</sup> (18,400 sq. ft.)

**FLUSH-PROFILE METAL SOFFIT PANELS:**

**Exposed Coil-Coated Finish:**

2-coat flouropolymer (PVDF Kynar 500)

Colour: Dark Bronze

Profile: Soffit Panel (Flat Pan)

Panel Thickness: .61mm (.0239")

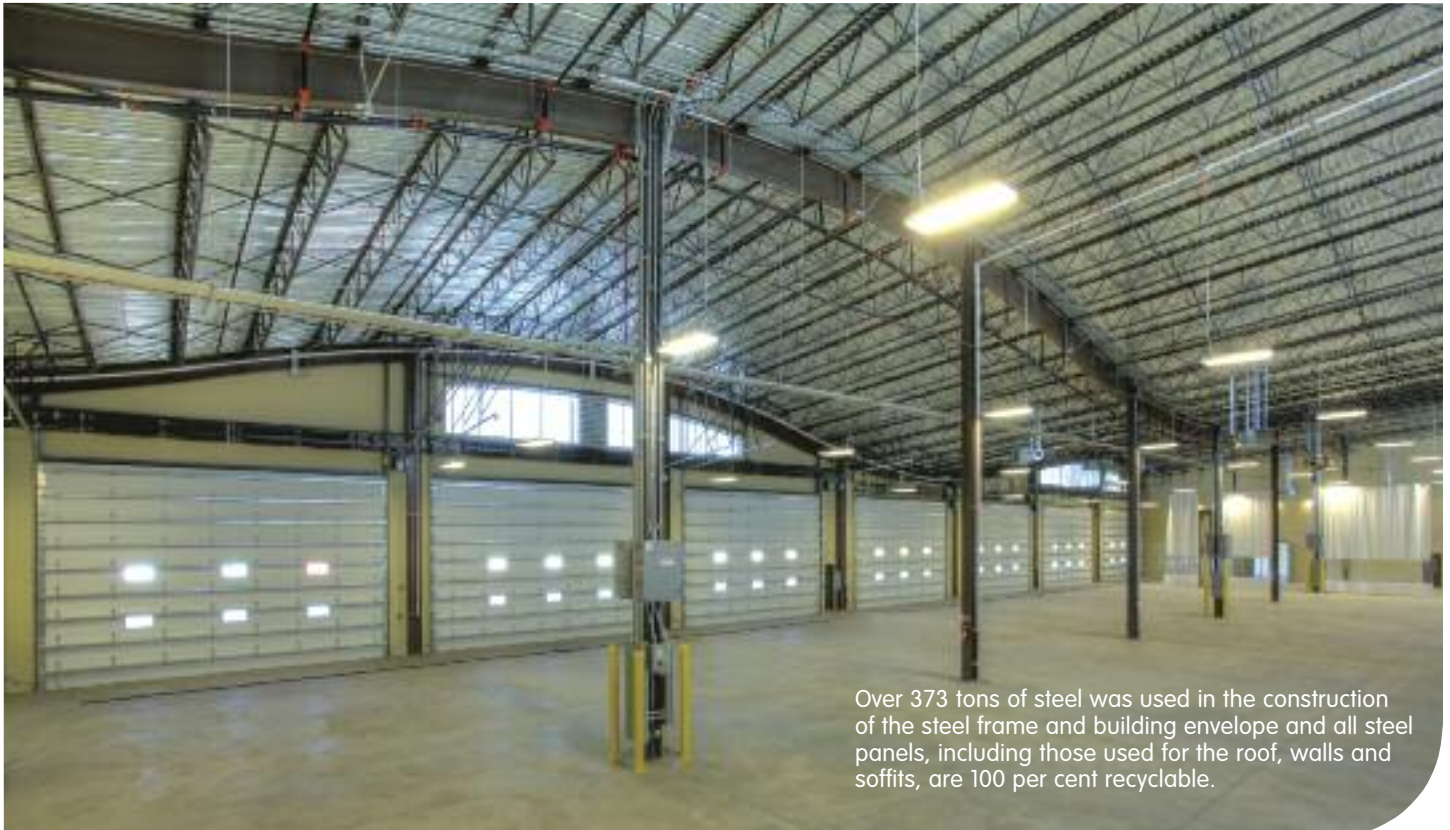
Panel Coverage: 304.8mm (12")

Panel Height: 25.4mm (1.0")

Coverage Area: 585.3 m<sup>2</sup> (6,300 sq. ft.)



The roof features a crimped steel deck over 660mm (26") deep open-web steel joists supported by a rigid steel frame.



Over 373 tons of steel was used in the construction of the steel frame and building envelope and all steel panels, including those used for the roof, walls and soffits, are 100 per cent recyclable.



# Cost effective hotel construction using Cold Formed Steel Sections

In the late 19th century George Vanderbilt II had a 250-room mansion constructed on an estate he created near Asheville, North Carolina, which he called Biltmore Estate. Today the location is a major tourist attraction. In October 2014 Magest Building Systems Limited (MBSL) of Stratford, Ontario, began design work for the light steel framing of a 190-room 'Village Hotel' for the project owner Biltmore Company to be located on the estate a few kilometres away from the mansion. They completed construction in May 2015 and the hotel opened in November, the same year.

The project demonstrates the strength and versatility of cold formed steel. The 4-storey, 11,520m<sup>2</sup> (124,000 sq. ft.) structure involved – 3,490m (11,450 feet) of cold formed steel sections for the wall panels and floor systems. MBSL provided the

panelized wall system for exterior and interior load-bearing and non-load-bearing walls, as well as, X-braced shear walls, headers and jamb posts. Insulation was factory installed, as was the 38.1mm (1.5-inch) Dow Thermax Foil Faced sheathing for exterior walls. MBSL did not supply any of the masonry or other exterior finishes.

All light steel framing for wall studs and roof framing were rolled in-house by MBSL's sister company Magest Metal Products Limited. Sizes used included 600S300-97, 600S162-33, 800S300-97 and 800S162-33. All 55ksi coated to ASTM G60, as were the floor trusses. MBSL used Alpine's TrusSteel cold formed steel roof truss system with its Double Shear™ fastening and symmetrical profile for efficient structural load transfer.

President of Magest, Brock Martin, points out some of the numerous advantages of panelized steel construction: "Whether you're looking for new construction, renovation or expansion, all can be cost-effectively achieved with a cold formed steel panelized system. Efficiencies and thus savings, accrue in all phases – from reducing builder's risk insurance



Panelized cold formed steel construction for mid-rise buildings in the four to nine storey range, is much more cost effective than heavier construction. It also has a more predictable schedule which can shave months off the total project cycle time.



to fire insurance premiums; being precisely pre-engineered to reduce garbage disposal costs through onsite waste, for example – 2% steel vs 20% lumber; simplified assembly requires only semi-skilled labour onsite; steel has the highest strength-to-weight ratio of any construction material; and our panelized systems are compatible with a wide variety of building materials as well as flooring and roofing systems. There are many more features and they all add up to superior building performance, reduced costs across many areas and fast, all-weather construction.”

As well, recyclability and other factors make steel a ‘Green’ product ideal for LEED projects.

GENERAL BENEFITS:

- Most cost-effective mid-rise structural material.
- Shorter and predictable construction schedule.
- Highest strength-to-weight ratio of any building material.
- 100% recyclable.
- Non-combustible – does not burn nor contribute fuel to the spread of a fire.
- Inorganic – will not rot, warp, split, crack or creep, no mold
- Dimensionally stable – does not expand or contract with moisture content.
- Consistent material quality.
- Substantial discounts on builders risk insurance.
- Lighter than other framing materials.
- Lighter structure with stronger connections results in less seismic force.
- Less probability of damage in high winds.
- Stronger connections, screwed versus nailed.

Buildings framed with cold-formed steel (CFS) can go up much faster than traditional heavy materials like concrete and masonry. Up to 3 months or more can be shaved off the schedule of a mid-rise project. CFS allows you to move paying customers in the door faster which can significantly reduce your costs.



As was found with the Village Hotel, whether you’re looking for new construction, renovation or expansion, all can be cost-effectively achieved with a cold-formed steel panelized system. Efficiencies, and thus savings, accrue in all phases.

COLD FORMED STEEL SECTIONS:

600S300-97	152.4mm (6") web	76.12mm (3") flange	97m thickness (.018")
600S162-33	152.4mm (6") web	41.275mm (1 5/8") flange	33m thickness (.036")
800S300-97	376.2mm (8") web	76.2mm (3") flange	97m thickness (.018")
800S162-33	376.2mm (8") web	41.275mm (1 5/8") flange	33m thickness (.036")





#### DESIGN AND CONSTRUCTION TEAM

ARCHITECTS: PGAV Architects 314-231-7318

#### GENERAL CONTRACTOR:

The Whiting-Turner Contracting Company 410-821-1100

#### STRUCTURAL STEEL SUPPLIER & INSTALLER:

Universal Steel Inc. 336-476-3105

#### LSF SUPPLIER:

Magest Building Systems Limited 519-272-1001

LSF INSTALLER (subcontracted by MBSL):

SK Contractors Inc. 757-481-0111

#### ROOF TRUSS SYSTEM SUPPLIER:

Alpine TrusSteel™ 888-565-9181

#### CONSTRUCTION PHOTOGRAPHER:

Magest Building Systems Limited 519-272-1001

PHOTOGRAPHY: FINISHED – The Biltmore Company



# Steel can improve your Waste Line

A population on its way to 1-million makes Edmonton, Alberta, Canada's 5th largest municipality. It also makes for a lot of waste. Facing reduced landfill and already diverting 60% of its waste, the city wanted to process the remaining 75,000 tonnes per year of composting residuals and 5,000 tonnes of materials recovery residuals. Their ultimate goal? Divert 90% from landfill and do it without employing a conventional combustion system.

The answer – an Integrated Processing & Transfer Facility (IPTF) that would separate waste into composting, landfill and biofuels production streams. The IPTF would provide the feedstock for biofuels in a partnership with Enerkem Alberta Biofuels, a subsidiary of Enerkem Inc. of Montreal.

The contract for IPTF construction was awarded on a design-build basis to Clark Builders of Edmonton who joint ventured with HIP Architects (now Kasian) of Edmonton, who in-turn joint ventured with Stantec Inc. of Edmonton as architectural sub-consultant. Construction began in January 2008 with substantial completion March 2010 and facility operations beginning a few months later.

The IPTF is located on the city's 550-acre (223 hectares)

Waste Management Centre site that contains numerous facilities, including 12 waste processing, two major research, and sewage biosolids storage/recycling lagoons.

In initiating the project Edmonton issued an RFP establishing the parameters the successful bidders would work to. They included a tipping floor to determine waste streams, a sorting facility to separate materials and send to receiving areas, and a preparation area to shred and dry plastics and styrofoams before being transported to Enerkem's adjacent gasification plant to produce ethanol.

Accommodating these activities would require a very large building in terms of overall area, height and clear spans. Behlen Industries LP provided a clear-span rigid frame building with multiple-span lean-tos. The facility's footprint is 18,116m<sup>2</sup> (195,000 sq. ft.), with eave heights of 12m+ (40'+) over differing floor elevations.

Clark's Pete Simpson, Sr. Project Manager at the time, tells us, "One of the many awards we've won was Behlen President's Award for 'Overall Most Successful Dealer/ Installer.' Our steel building packages offer the combined logistical advantages of single sourcing, precisely engineered components, plus steel's inherent advantages of strength: weight and life expectancy – especially roofing – with low maintenance compared to

The large recycling facility for the City of Edmonton is a key part in their overall master plan to reduce waste. The project was delivered by the design build approach. The ultimate goal? Divert 90% from landfill and do it without employing a conventional combustion system.







The building's steel standing seam roof is clad with 19,417m<sup>2</sup> (209,000 sq. ft.) of unpainted 61mm (.0239") AZM165 Galvalume Plus, with an acrylic coating.



competing materials. This project is a perfect example of a steel building fitting the bill.

In this case the building's standing seam roof was clad with 19,417m<sup>2</sup> (209,000 sq. ft.) unpainted 61mm (.0239") AZM165 Galvalume™ Plus, with an acrylic coating and exterior walls clad with 4738m<sup>2</sup> (51,000 sq. ft.) of 45mm (.0179") Galvalume AZM150 coloured White/White QC18317 and 1,672m<sup>2</sup> (18,000 sq. ft.) of 45mm (.0179") coloured Slate Blue

QC18260, in the Widespan profile and 3,902m<sup>2</sup> (42,000 sq. ft.) interior liner panels. Light steel framing (LSF) such as purlins and wall girts totaled 26,091m (85,600 ft.).

Edmonton is generally recognized as one of the world's most sustainable cities. Not surprisingly its Waste Management Centre comprises North America's largest collection of modern, sustainable waste processing and research facilities. A pre-engineered steel building is making a significant contribution.



Waste Management facility under construction with a total square footage of 18,116 m<sup>2</sup> (195,000 sq. ft.)



Prepainted AZM150 Galvalume coloured White White QC18317 and Slate Blue QC18260.



#### DESIGN AND CONSTRUCTION TEAM

OWNER: City of Edmonton

ARCHITECT: HIP Architects (now Kasian) 780-424-9010

STRUCTURAL: Stantec 780-919-7000

GENERAL CONTRACTOR: Clark Builders 780-395-3300

STEEL BUILDING SYSTEM SUPPLIER:  
Behlen Industries LP 888-315-1035

PROJECT MANAGER – STEEL BUILDING AND INSTALL:  
Clark Builders Metal Building Services 780-395-3300

STEEL WALL & ROOF CLADDING SUPPLIER:  
Behlen Industries LP 888-315-1035

STRUCTURAL STEEL & STEEL DECK SUPPLIER:  
Behlen Industries LP 888-315-1035

- BUILDING: Rigid Frame: 3-plate built-up – multiple size webs and flanges
- BUILDING ROOF: Steel Standing Seam  
61mm (.0239") unpainted Galvalume AZM165 Plus c/w acrylic coating
- WALL CLADDING: 45mm (.0179") Galvalume AZM150 coloured White White QC18317 and Slate Blue QC18260 in the Widespan profile.
- LIGHT STEEL FRAMING (LSF): Galvalume AZM150 in varying thicknesses from 1.52mm (.060") up to 3.68mm (.1345")

# LustreLok™ – New Acrylic Coating for Galvanized Steel

LustreLok™ is a thin, clear organic coating applied to both sides of the galvanized steel as a final protective layer over the zinc coating. LustreLok™ provides an attractive appearance and enhances the traditional look of galvanized steel. Because the resin coating is transparent, the standard surface appearance of the zinc-coated substrate is unchanged.

During our continuous hot-dip galvanizing coating process, the clear, water-based organic coating is applied to both sides of the sheet using state-of-the-art in-line reverse roll



The application of the organic coating – LustreLok™ – eliminates the need for ArcelorMittal to apply conventional chemical treatment and vanishing oil. Shown in this photograph is a steel floor deck.

coaters. The use of reverse roll coaters provides precise application of the organic film, assuring a uniform film thickness of approximately 0.04 mils (1 micron). The coated sheet then passes through an in-line drying oven where it is thermally cured. The transparent coating is flexible, provides excellent resistance to storage stain and has lubricating properties that provide superior roll forming characteristics. It is designed to run through roll forming operations without further lubrication and replaces the need for conventional passivation treatment and vanishing oil.

## Applications

LustreLok™ acrylic coated galvanized steel is available for a wide range of applications in construction, transportation, HVAC, appliance, metal furniture and other manufactured products. If, however, colour is specified, or if a silvery metallic appearance is desired over the long term, ArcelorMittal Dofasco prepainted galvanized steel should be used, since LustreLok™ was developed for unpainted applications.

## Advantages

The application of an organic coating eliminates the need for ArcelorMittal to apply conventional chemical treatment and vanishing oil. This enhancement offers our customers and users the following benefits:

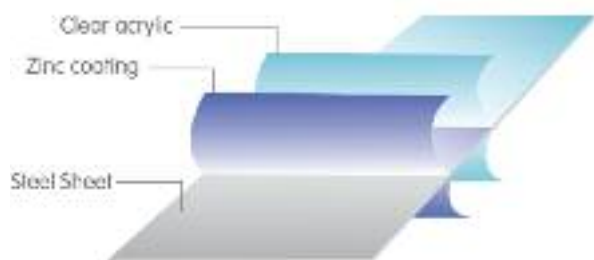
### Reduced Costs

- The product is designed to be roll-formed dry, which eliminates the need for lubricants.
- Lower maintenance costs – reduced coating build-up and reduced tool wear will extend die life.
- Improved productivity – extended die life results in longer production runs.
- Enhanced scheduling flexibility – eliminates the need for die clean-up prior to roll forming pre-painted metals or other uncoiled products.
- Storage, handling and installation benefits
- Excellent resistance to staining during transit and field storage.
- Reduces smudging and streaks associated with rolling oils.
- Effectively resists figure printing and foot printing during installation.

### Improved Safety

- Finished product is delivered to the job site dry providing a safer, oil free surface for workers.

## Sheet LustreLok™ Acrylic Coated Galvanized Steel System



ASTM Steel Grades	Thickness	Width	Zinc Coating Weights
Commercial, Forming Structural & HSLA	0.25mm – 2.31mm 0.001" – 0.091"	610mm – 1,537mm 24" – 60.5"	Z001 Z600 G01 G210

## Product Availability

ArcelorMittal offers a full range of widths, thicknesses, coating weights, and steel grades.

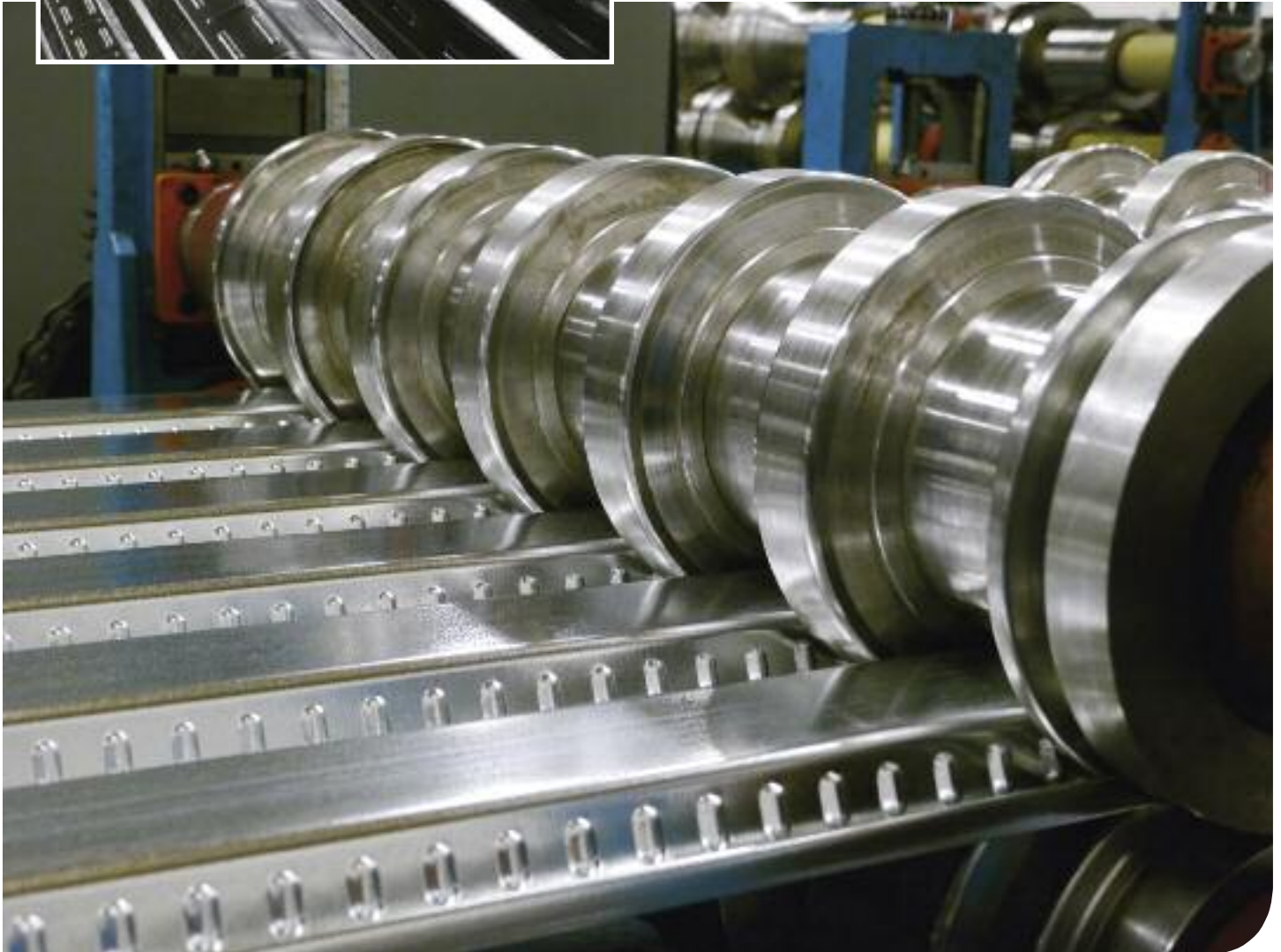




Stacked Track



Ribbed Profile



Deck Line Roll Tooling



Steel-intensive home by BONE Structure™

## The world is what you make it

Stronger, safer and more sustainable buildings. That's where innovations in steel are taking us. We continue to formulate steel that is lighter, improving an already superior strength-to-weight ratio for more efficient and effective structures. Lighter and stronger steel is also making construction easier – requiring less energy to move and assemble, and needing less extensive foundations. The result is stunning design, performance and sustainability.

**See how we're transforming the construction sites of tomorrow at [dofasco.arcelormittal.com](https://dofasco.arcelormittal.com)**

transforming **tomorrow**

  
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