

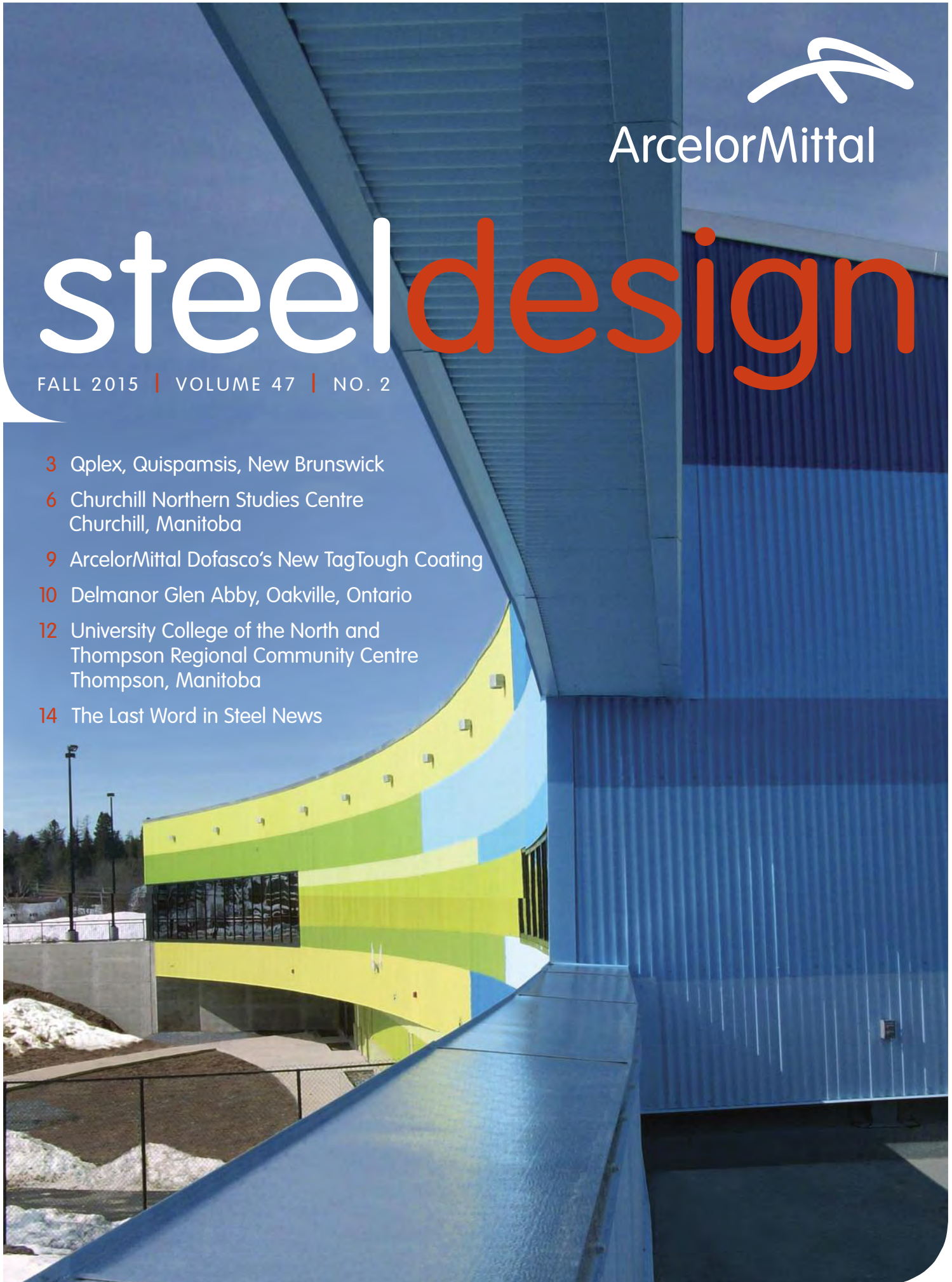


ArcelorMittal

steel design

FALL 2015 | VOLUME 47 | NO. 2

- 3 Qplex, Quispamsis, New Brunswick
- 6 Churchill Northern Studies Centre
Churchill, Manitoba
- 9 ArcelorMittal Dofasco's New TagTough Coating
- 10 Delmanor Glen Abby, Oakville, Ontario
- 12 University College of the North and
Thompson Regional Community Centre
Thompson, Manitoba
- 14 The Last Word in Steel News



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:
Qplex, Quispamsis, New Brunswick
PHOTOGRAPHER:
Murdock and Boyd Architects



transforming
tomorrow



3 Qplex, Quispamsis, New Brunswick

The exterior walls are framed with 200mm (8") wind bearing steel studs and clad with a total of 2,044m² (22,000 sq. ft.) prepainted 45mm (.0179") galvanized steel in a variety of durable colours. Light steel framing was specified for the interior partitions.

6 Churchill Northern Studies Centre, Churchill, Manitoba

Light Steel Framing was used in the exterior wall assemblies and the interior partition walls, except for the shear walls. Wind bearing steel studs were used as infill between glulam columns in the construction of the exterior walls and light steel studs were used on the interior walls.

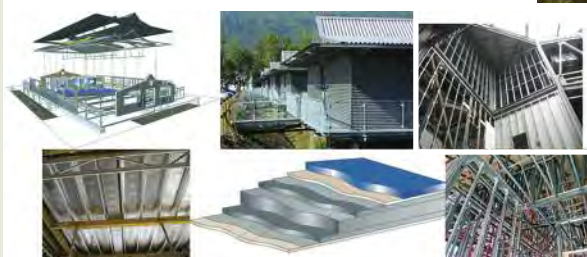


9 ArcelorMittal Dofasco's New TagTough™ coating causes paint to bead on the surface

TagTough steel features a 3-coat factory-applied coating that is difficult to tag and washes easily. The paint system eliminates the need for graffiti removal products applied in the field. In addition, taggers find it very difficult to apply their paints to the surface. Tagging requires more time and more paint product, which often causes the paint to sag. Even if taggers are persistent, in most cases TagTough steel is easily washed using only water and a pressure washer.



"We left a lot of the materials exposed. Steel was the main part of our design process. We wanted a natural galvanized look. The design concept was raw," Corbett says. "One of the main advantages of using steel in a Northern climate is that you can erect it at any time of year. Steel is durable for the buildings' purpose and climate. If a panel gets damaged, you can take it off and replace it pretty easily."



14 The Last Word in Steel News

• Design in Cold Formed Steel Seminar
For locations and dates, visit the CFSEI Canada website at www.cfsei.ca

- Le Bourget du Lac Complex, France
- Basic Characteristics of Organic Coated Steel
- Lightweight Steel Framing

Qplex, Quispamsis New Brunswick

A dozen different colours of .46mm (.0180") corrugated pre-painted galvanized steel cladding add cheer to this signature multi-purpose community building in the New Brunswick town of Quispamsis, located just northeast of Saint John. The design respects the idea of sustainable development and the ecological integrity of the natural environment, while complementing the natural beauty of the Kennebecasis Valley.



Multi-coloured cladding adds cheer to this community building

Called the Qplex, this 6,503m² (70,000 sq. ft.), \$24 million, structure features a year-round National Hockey League-size ice rink with seating for 1,124 fans. The upper level includes a 446m² (4,800 sq. ft.) conference room as well as a three-lane walking track.

Huge, exposed wood composite roof trusses hold up a roof substrate made of 38mm (1.5"), galvanized acoustic steel deck exposed from below. The exterior walls are framed with 200mm (8") wind bearing steel studs and clad with prepainted 46mm (.0180") galvanized steel. Light steel framing, ASTM C645, was specified for the interior partitions.

The exterior walls are framed with 200mm (8") wind bearing steel studs and clad with prepainted 46mm (.0180") galvanized steel in a variety of colours. Light steel framing was specified for the interior partitions. A total of 2,044 m² (22,000 ft.²) of 46mm (.0180") cladding was used on the building. "The corrugated steel cladding easily curved with our walls, the colour availability is endless and it is durable," Malcom Boyd says.



The Saint John-based architectural firm, Murdock & Boyd Architects, specified insulated panels in the area of the arena. "Adjacent to the cold arena the insulated panels are ideal due to their double vapour barrier". In winter the inside of the building is usually warmer than the outside. Conversely, with summer ice, it is usually colder inside

than outside. This property of this panel with insulation sandwiched between two steel sheets prevents vapour transmittance in all weather conditions. The insulated panels also expedite construction scheduling," explains project architect Malcolm Boyd.

The entire rear wall of the Qplex is one graceful concave curve. Shades of blue face the junior Olympic pool, a leisure pool and a tot pool. Shades of green face the adjacent playground. "I think it is very inviting," says Debbie Allen, Qplex manager.

A total of 2,044m² (22,000 square feet) of 46mm (.0180") cladding was used on the building. "The corrugated steel cladding easily curved with our walls," Boyd says. "The colour availability was endless and it is durable."

The project has been designed to LEED "gold" standards from the Canada Green Building Council.

Huge, exposed wood composite roof trusses hold up a roof substrate made of 38mm (1.5") galvanized acoustic steel deck exposed from below.

"Adjacent to the cold arena the insulated steel panels are ideal due to their double vapour barrier".

DESIGN AND CONSTRUCTION TEAM

CLIENT: Town of Quispamsis 506-849-5995

ARCHITECT: Murdock and Boyd Architects 506-646-9200

DESIGN TEAM: Malcolm Boyd, Stephen Kopp, Kirk Russell

STRUCTURAL CONSULTANT: Eastern Designers & Company Limited 506-452-8480

CONTRACTOR: Marco Maritimes Ltd. 7 09-754-3737

MECHANICAL CONSULTANTS: Stantec Consulting 506-634-2185
Peerless Consulting Ltd. 506-387-3083

GEOTECHNICAL CONSULTANT: Stantec Consulting 506-674-9146

ELECTRICAL CONSULTANT: Ralph Smith Engineering Ltd. 506-451-0005

CIVIL CONSULTANT: CBCL Limited (Consulting Engineer) 506-633-6650

LANDSCAPE ARCHITECT: BDA Landscape Architects 506-853-3083

STEEL WALL CLADDING: Vicwest 506-758-8181

INSULATED STEEL PANELS (ARENA): Vicwest 506-758-8181

STEEL ROOF DECK AND HOLLOW STRUCTURAL SECTIONS:
Eastern Canadian Structures, Jeff Kay 902 897-9553

LIGHT STEEL FRAMING: RW Drywall, Roger Ward 506-653-1961

PHOTOGRAPHER: Murdock and Boyd Architects

INSULATED STEEL PANELS:

Z275 galvanized, conforming to ASTM A653M Grade 230

EXTERIOR SIDING SHEET – striated 0.46mm (0.018") prepainted galvanized steel in the 10000 Series (PVDF) coloured QC7394 Imperial White.

INTERIOR LINER SHEET – fluted .046mm (0.018") prepainted galvanized steel in (SMP) coloured QC17619 Imperial White.

INSIDE WALL CLADDING

AROUND WALKING TRACK: QC2624 Silver Metallic

ABOVE WALKING TRACK – PERFORATED PANEL:
QC16161 Cambridge White

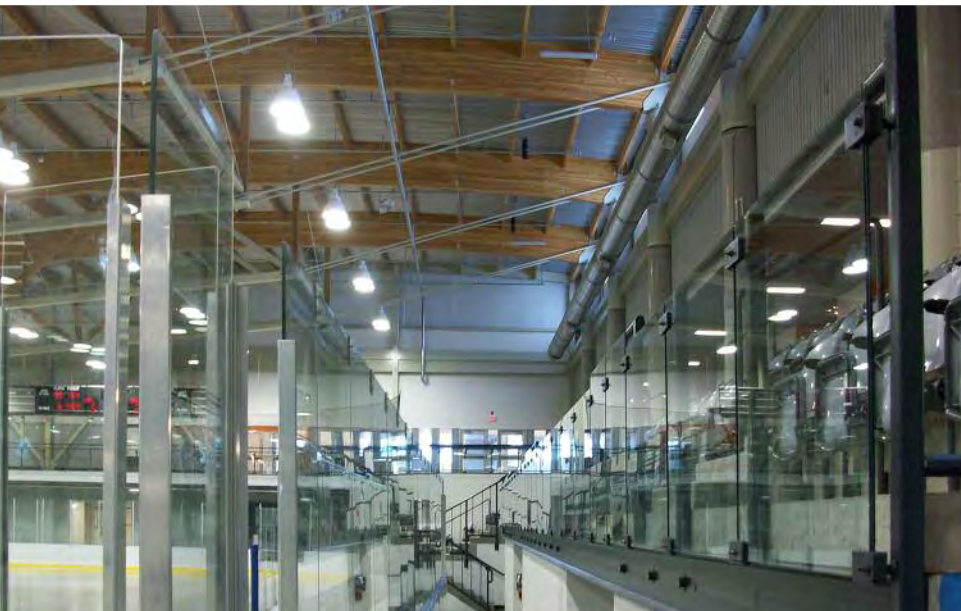
EXTERIOR STEEL CLADDING:

Prepainted Z275 galvanized steel thickness and colours as follows: 0.46mm (0.018") corrugated profile 60.235mm x 22mm (2-3/8"x7/8") coloured:

2060-40 Toronto Blue	2028-10 Iguana Green
2060-60 Turquoise Haze	QC16081 Royal Blue
2060-50 Cayman Blue	QC16069 Bone White
2027-10 Dark Lime	QC16161 Cambridge White
2028-40 Pear Green	(Metallic Series)
2027-30 Eccentric Lime	QC16086 Bright White

0.76mm (.0299") corrugated profile (60.235mm x 22mm 2-3/8" x 7/8") coloured: QC16069 Bone White

0.46mm (.018") CL725SR profile coloured: QC16086 Bright White





Churchill Manitoba offers one of the most unique opportunities for scientific research in the world. Until recently, scientists housed at the Churchill Northern Studies Centre stayed in a gray, shed-like building with few windows and no visual appeal. "It was an aging facility purchased from the federal government in the '80s," said LeeAnn Fishback, scientific coordinator for the studies centre. Construction began on a new 2,600m² (28,000 sq. ft.) facility in July 2010 and it was completed in May 2011.

Steel Plays Significant Roll in Building Envelope Design

Prairie Architects in Winnipeg designed the building. "It's been great. The clients were really happy to get out of the previous building they were in," said Melissa McAlister, Principal Architect with Prairie Architects. McAlister served as project manager for Prairie Architects for the design and construction of the new studies centre. "They" have been able to market it as a sustainable building, which is important to their clientele."

Accu-Steel Standing Seam in 76mm (.0299") prepainted AZM150 Galvalume coated sheet steel, coloured QC18273

The structure consists of an insulated panel envelope with minimal projections. The building envelope is designed to be air-tight and well-insulated with R-40 panel construction and low-e, argon-filled, triple-glazed windows.

Bone White, from Flynn Canada, was used for all four elevations of the building's roof cladding. The square footage installed was 3,252m² (35,500 sq. ft.). On the roof and floors 76mm (3") deep Galvalume steel deck was used.

For the exterior wall cladding, "Electric

Blue was chosen specifically to match their Brand colour," McAlister explained. "They'd spent many years in a gray building and they didn't want that anymore."

Light Steel Framing was used both in the exterior wall assemblies and interior partition walls, except shear walls. Wind bearing steel studs measuring 1.5mm (.060") thick by 152mm (6") were used as infill between glulam columns in the construction of the exterior walls, and 92mm (3.6") steel studs were used on the interior walls.

"Steel was the best material given the climate up there. It's very cold for the majority of the year, without a lot of sun or daylight. "We needed something that would stand up to the elements," said McAlister. "There isn't another material that would allow us to make the shape we wanted with the same durability. They've had a lot of problems with (polar) bear vandalism and steel will be more resistant."

The East side wall of the Centre is a SW250 Profile solar



One of the main challenges for this project, from a construction perspective, was the remote, northern location. Some of the obstacles included:

- Scarcity of local building trades – most personnel had to travel from southern Manitoba and stay in purpose-built accommodation, at significant cost for remote-location bonuses and travel.
- Scarcity of local construction materials – shipped by rail (ideally), sea or air. Gravel and sand must be made locally or shipped to the site.
- Lack of energy resources – no natural gas, propane or diesel, had to be transported in tanks or drums.
- Polar bears on the construction site, were an all-too-common hazard.



wall supplied by NRG Management, coloured QC 6084 Navy Blue and it is used for passive ventilation heating. Steel was also used for the protective anti-bear bars on the windows.

"We wanted to provide a comfortable, welcoming atmosphere for our researchers," Fishback said. "The new building has allowed us to expand our operations with much larger laboratories and more comfortable dormitories. It has cut down on our maintenance costs and it proves that you can

create a sustainable building in the north. We hope it will encourage others to try a more sustainable way of living."



INTERIOR WALLS: 92mm (3.6") steel studs

EXTERIOR WALLS: 2 layers of 102 mm (4") and 152mm (6") wall studs infill between glulam columns.

EXTERIOR WALL CLADDING: .76 mm (.0299") pre-painted Una Clad® Wall Panels AZM150 Galvalume coated steel coloured Electric Blue and Bone White in the Kynar paint system.

ROOF CLADDING: .76mm (.0299") pre-painted AZM150 Galvalume Accu-Steel Standing Seam, coloured QC18273 Bone White, was used on all four elevations and the roof - square footage installed 3,252m² (35,500 sq. ft.). 76mm (3") deep Galvanneal steel deck was used on the roof and floors.

DESIGN AND CONSTRUCTION TEAM

OWNER: Churchill Northern Studies Centre

ARCHITECT: Prairie Architects 204-956-0938

PROJECT MANAGEMENT:
Integrated Designs Inc. 306-934-6818

GENERAL CONTRACTOR:
Penn-Co Construction Canada (2003) Ltd. 866-326-1341

STRUCTURAL ENGINEERS:
Crosier Kilgour & Partners Ltd. 204-943-7501

MECHANICAL & ELECTRICAL:
Enermodal Engineering 204-943-3178 x 3888

COMMISSIONING AGENT:
Integrated Designs Inc. 306-934-6818

SOLAR THERMAL AIR HEATING – SOLAR WALL:
NRG Management 1-877-674-6468

ROOF AND WALL CLADDING INSTALLER:
Flynn Canada 204-786-6951

WALL CLADDING SUPPLIER:
Firestone Metal Products 1-888-292-6265

LIGHT STEEL FRAMING INSTALLER:
Prairie Specialty Interiors Ltd. 204-415-7490

LIGHT STEEL FRAMING SUPPLIER:
Bailey Metal Products Limited 1-800-668-2154

PROJECT MANAGER: Integrated Designs Inc. 204-669-6818

TagTough™ steel features a factory-applied coating that is difficult to tag and washes easily. TagTough eliminates the need for graffiti removal products applied in the field. In addition, taggers find it very difficult to apply their paints to the surface. Tagging requires more time and more paint product, which often causes the paint to sag. Even if taggers are persistent, in most cases TagTough steel is easily washed, using only a pressure washer and water.

ArcelorMittal Dofasco's new TagTough coating causes paint to bead on the surface

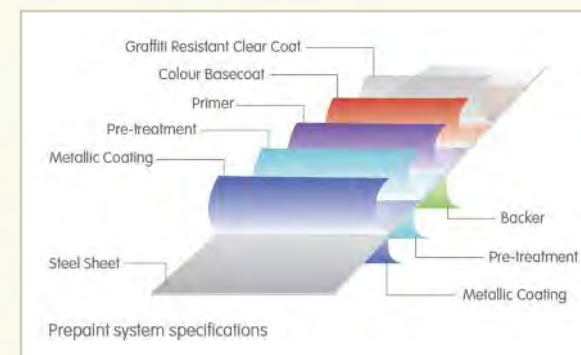
Now you can fight back – with new, graffiti resistant, pre-painted steel from ArcelorMittal Dofasco

The TagTough paint system

TagTough is a 3-coat system comprised of a corrosion inhibiting primer, a polyvinylidene fluoride (PVDF) colour base coat and a fluoropolymer clear coat for maximum colour retention.

Key features

- Graffiti is washed away easily with a power washer and water
- Overspray (paint droplets) is removed by rubbing the surface with a household scrub sponge.
- There is generally no additional need for chemicals, solvents or cleaners.
- Clean-up is safe and cost effective.



TagTough technical specifications

Performance Specifications	ASTM	TagTough
Film Thickness	D5796	1.5 +/- 0.2 mil
Film Hardness (Pencil)	D3363	HB minimum
Formability (T-Bend test)	D4145	2T no taped removal
Gloss (60 degree)	D523	Standard: 35 +/- 5
Accelerated Weathering (QUVA)	D4587	After 2000 hours, – Colour change (Delta E) < 2 units – Gloss Retention > 80%

Other unique performance features

- TagTough makes most graffiti lacquers bead on the surface which deters taggers.
- TagTough is available in a broad range of standard colours as well as custom colours.
- TagTough has excellent resistance to weathering (colour, chalk and gloss) due to its PVDF system.
- TagTough has excellent corrosion protection with its three coat system.

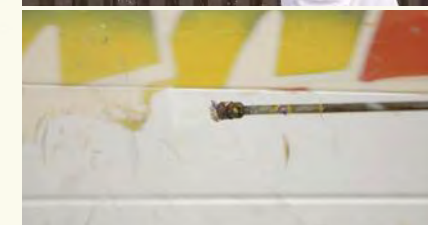
Special notes

- TagTough steel provides protection against most graffiti applications. For optimal results, graffiti product must be removed within 72 hours from the time of application.
- Some handcrafted spray paints or marker types may leave a permanent stain on the surface.
- The effect of commercial graffiti cleaners on TagTough cannot be guaranteed and the use of these chemicals is not recommended.
- In some cases, our technical service representatives may provide guidelines in cases where adhesion of the graffiti product is too strong and cannot be removed using the power washer technique.
- For detailed information on how to clean graffiti from TagTough steel, please contact ArcelorMittal Dofasco. For the video go to: arcelormittaldofasco.com – What we do – Products – TagTough.

Base metal

The base metal furnished before painting shall conform to one of the following specifications:
(a) ASTM A653/ASTM A653M for Zinc coated steel (galvanized)
(b) ASTM A792/ASTM A792M for 55% Aluminum-Zinc alloy coated steel (Galvalume®).

The recommended minimum coating mass designations for use in exterior building applications are as stated in ASTM A755/A755M



Do you want to learn more about TagTough™ Graffiti Resistant Coating by ArcelorMittal? please visit us at **METALCON 2015** October 14 – 15, 2015 in Tampa Bay, Florida ArcelorMittal Booth #630



The Tridel Group of Companies is one of the largest residential real estate groups in Canada. Delmanor Corporation is Tridel's retirement residence subsidiary with seniors' facilities across the Greater Toronto Area. They include Delmanor Glen Abbey in Oakville Ontario, within walking distance of the famed Glen Abbey Golf Course, which was home to the Canadian Open on more than 25 occasions.



Flexibility is the key for Seniors Residence

Delmanor wanted 'a vibrant residential atmosphere which supports the physical, emotional and spiritual needs of our residents, families, friends and staff,' and one that also emphasized 'independence, privacy, and individuality.'

From a construction standpoint the design objectives were to develop a modular residential unit that could be repeated on multiple sites with a variety of building configurations adaptable to the programming needs of a seniors' residence. It should also be economical to construct and facilitate timely completion. Global Architect Inc. of Toronto was the firm chosen to accomplish that vision through their design.

Amenities include a café, a library, computers, fireside lounges, mature landscaped grounds, an outdoor putting green and shuffleboard court, chapel, as well as a movie theatre, bar and a spa. Plus 24-hour registered nursing care.

The result: a 125-suite complex with a variety of layouts – each with a keyed entrance door, individ-

ually controlled heating and air conditioning, as well as an emergency 2-way response communication system. The 3-storey complex has built-in flexibility to convert to a long-term care facility if need be.

Principal architect Ranieri 'Ron' Possamai describes the challenges leading to the use of steel throughout the facility: "We had to seamlessly integrate and coordinate the different components of the building as well as merge the many mechanical services within the system. We had to do so in a manner that allowed fast, simple construction and flexible floor plan layouts, which resulted in a building that fit into an existing upscale residential neighbourhood."

Construction had to be of non-combustible materials and after a cost/time comparison by Delmanor between

steel and concrete, the owner stipulated the use of steel. The builder for the project was Deltera, headquartered in Toronto and the construction arm of the Tridel Group.

The total gross floor area for the building is 9,255m² (99,620 sq. ft.). Structural steel has been used for the framing together with a Hambro floor system and KML/Genesis pre-engineered light steel framing (LSF) for exterior wind-bearing walls and interior walls. Granular (stone coated) steel is used for the 1,100m² (11,840 sq. ft.) mansard roofing. Ron Possamai adds, "The project demonstrates the successful integration and adaptability of a hybrid structural system for a multi-residential building. It provides a high-quality living environment, especially impressive given the time and budgetary constraints, and it was completed within a 12-month timeframe."

DESIGN AND CONSTRUCTION TEAM

OWNER: Delmar/Tridel

ARCHITECT: Global Architects Inc. 416-256-4440

STRUCTURAL ENGINEER:
Millennium Engineering Inc. 905-631-9294

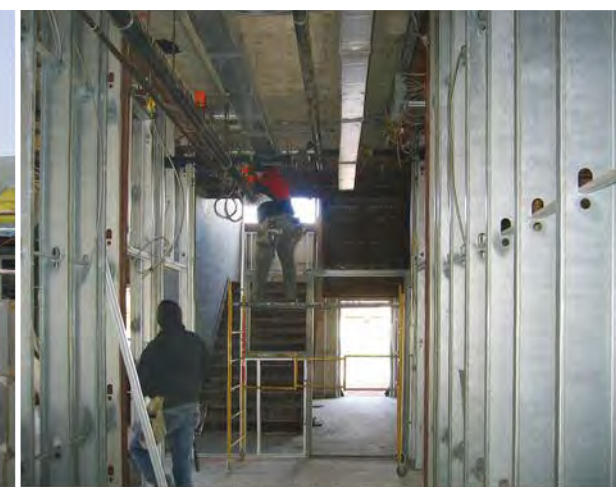
GENERAL CONTRACTOR: Deltera 416-736-2555

FLOOR SYSTEM:
Hambro Composite Floor Systems 1-877-499-6049

ROOF FRAMING AND LIGHT STEEL FRAMING SUPPLIER:
KML Homes/Genesis 519-653-2159 Cambridge

STEEL ROOF TILE SUPPLIER: Decra Roofing Systems 877-463-3272

From a construction standpoint the design objectives were to develop a modular residential unit which could be repeated on multiple sites with a variety of building configurations – adaptable to the programming needs of a seniors' residence.



"We had to integrate and coordinate the different components of the building seamlessly and we had to do so in a way that allowed fast, simple construction. As the construction had to be of non-combustible materials, the owner stipulated the use of steel."



Pre-engineered light steel framing (LSF) was chosen for the exterior wind-bearing walls as well as for the interior walls with, of course, structural steel for the overall structural framing. Decra granular (stone-coated) steel tiles were chosen for the mansard roof.



The community centre in Thompson, Manitoba needed a facelift. The town's University College of the North needed a new campus. Combining the two projects would create a multipurpose community meeting place. And that's just what Doug Corbett of Architecture49 Inc. intended. "The overall vision was to create a hub in Thompson where people could congregate and enjoy recreational activities," he says. "The new building would be a place for traditional and advanced learning."

Good craftsmanship is often modest architecture

He added, "It would also attempt to reach out to those who have not previously felt welcome in a university college environment." Corbett had spent ten years working in Thompson and recognized the need for a new city centre where people would naturally gather. The project was a tough sell at first. "There was a lot of negativity in the beginning. No one believed it would get built. They thought it was just another political promise. And then, once they realized it was going to happen, they were expecting to get a vanilla box," he explains.

The new campus building has a floor area of 8,155 m² (87,780 sq. ft.). It was designed and built in conjunction with renovations to the existing Thompson Regional Community Centre. The two buildings are connected, sharing amenities such as food services, a gymnasium, day care and a library. Also connected to the TRCC is the curling club which is clad with unpainted Z275 (G90) galvanized steel. The campus building is a four-storey structure with a visual and spiritual connection to the Burntwood River on the north side of the site.

"What we intended to do was make a ceremonial entrance to both buildings. The First Nations people have very strong connections to the river, so we wanted the buildings to have this connection as well," says Corbett, adding that over 2,000 people came to the grand opening.

"It's a striking-looking building. The community is very proud of it. They tend to show it off quite a bit."

The flexibility and durability of steel made it a natural fit for the project. The super structure, roof, standing-seam paneling, and the studs of the buildings are steel.

"We left a lot of the materials exposed. Steel was the main part of our design process. We wanted a natural galvanized look. The design concept was raw," Corbett says. "One of the main advantages of using steel in a Northern climate is that you can erect it at any time of year. Steel is durable for the buildings' purpose and climate. If a panel gets damaged, you can take it off and replace it pretty easily."



The building envelope is encasing, conceived as a skin, conveying support and enclosure. It is easily maintainable in a context of the severe winter climate and isolated northern site location.



Construction started on the Thompson Regional Community Centre in June 2010 and finished in November 2011. Work began on the University College of the North (UCN) campus in May 2011, and finished in September 2014.

"Architecture has a social responsibility. Our intent was to express the community's values through architecture," says Corbett. "Aboriginal youth are the fastest-growing demographic in Canada, but the lack of access to good education is a major problem facing First Nations people. The new UCN campus is an inviting destination that inspires and connects the community, and makes the First Nation students feel welcome."



Both the Thompson Regional Community Centre and the Curling Club are clad with unpainted Z275 (G90) galvanized steel AR 38 standing seam roof panels and are easily maintainable.

CLADDING MATERIAL:

UCN – AGWAY METALS AR 38 STANDING SEAM ROOF PANEL:

.759mm (.0299") pre-painted Z275 (G90) galvanized steel coloured QC18306 Charcoal

THOMPSON REGIONAL COMMUNITY CENTRE & CURLING CLUB:

.759mm (.0299") unpainted Z275 (G90) galvanized steel AR 38 standing seam roof panel.

LIGHT STEEL FRAMING:

EXTERIOR WIND BEARING: 1.22mm (.048") Z275 (G90) – 152mm & 203mm (6" & 8")

INTERIOR: .91mm (.036") Z275 (G90) 92mm & 152mm (3-5/8" & 6")

STEEL ROOF DECK:

.76mm (19.3") Z275 (G90) roof deck.

DESIGN AND CONSTRUCTION TEAM

OWNER: Province of Manitoba

ARCHITECT: Architecture49 Inc. 204-477-1260

CONSTRUCTION MANAGER UCN: PCL Constructors Canada 204-949-8900
TRCC: Akman Construction 204-944-9721

STRUCTURAL STEEL SUPPLIER: Columns & Beams: Abesco 204-677-3981

STRUCTURAL ENGINEERS: Crosier Kilgour & Partners 204-943-7501

MECHANICAL & ELECTRICAL ENGINEER: WSP 204-477-1260

CIVIL ENGINEER: Neegan Burnside Ltd. 204-949-7110

ELECTRICAL & MECHANICAL CONTRACTOR: Wescan 204-786-3384

ROOFING & GREEN ROOF: Oakwood Roofing & Sheet Metal 204-237-8361

MISCELLANEOUS STRUCTURAL STEEL SUPPLIER: Glendale 204-943-7501

WALL CLADDING SUPPLIER UCN AND TRCC: Agway Metals 1-800-268-3100

MASONRY & WALL CLADDING INSTALLER UCN: Brxton Construction LP 306-530-6806

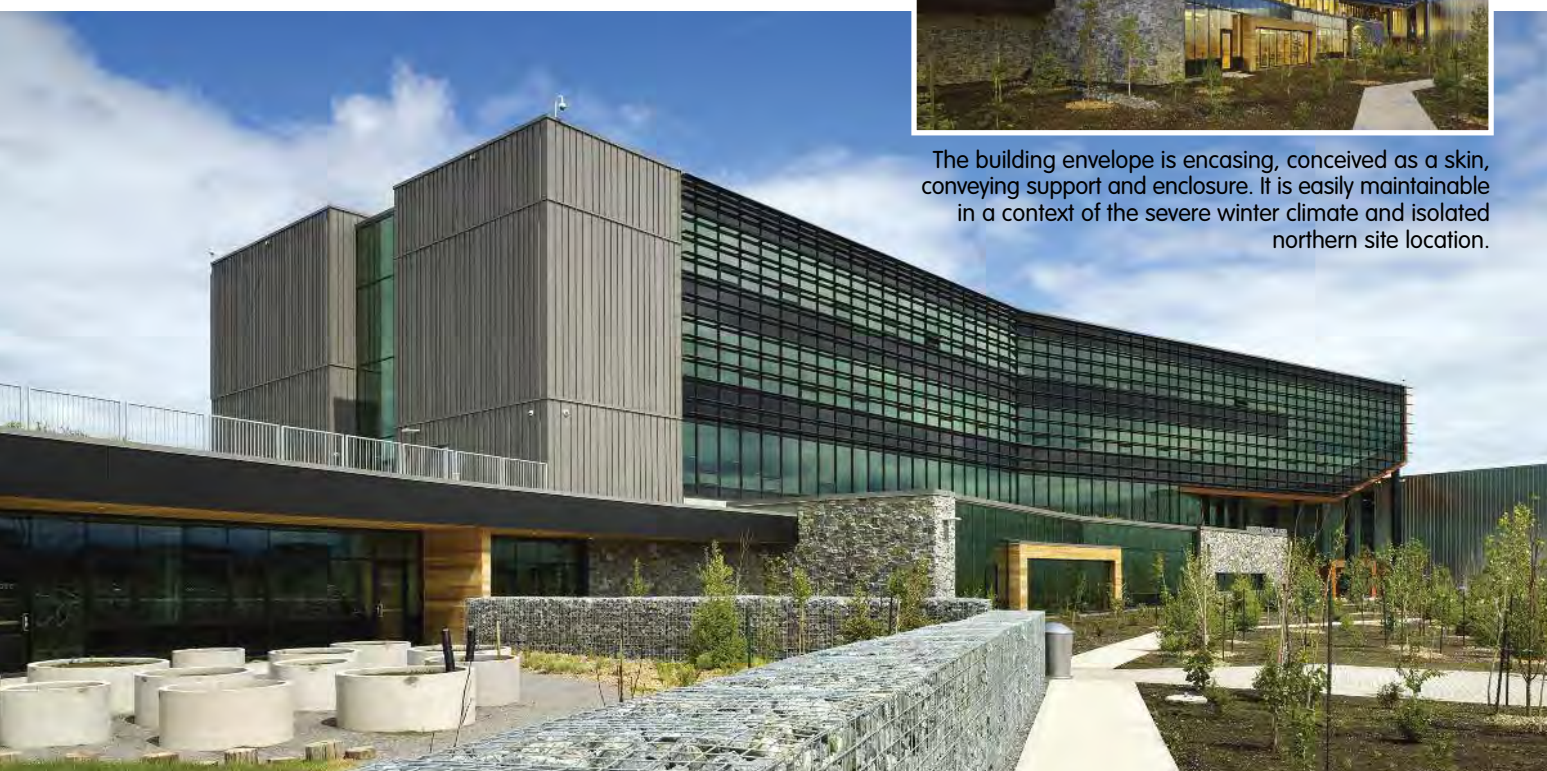
WALL CLADDING INSTALLER TRCC & CURLING CLUB: Tri-Clad Designs Inc. 204-878-3480

LIGHT STEEL FRAMING SUPPLIER: Winroc Gypsum Supplies 204-488-4477

LIGHT STEEL FRAMING INSTALLER: QSI Interiors 204-953-1200

STEEL DECK SUPPLIER: Tri-Clad Designs Inc. 204-878-3480

SUNSCREEN SUPPLIER: Border Glass & Aluminum 204-957-7200



SEMINAR

Design in Cold Formed Steel

For locations and dates, visit the CFSEI Canada web site at www.cfsei.ca

The objective of this seminar is to bring the participant up-to-date with the current design provisions contained in CSA Standard S136-12 *North American Specification for the Design of Cold-Formed Steel Structural Members*, highlighting significant changes from the previous edition along with numerous illustrative examples. Also, the latest editions of the AISI North American Design Standards for Cold-Formed Steel Framing will be reviewed since these design standards are referenced by CSA S136 for use in Canada. Anyone involved in the design of cold formed steel structural members should plan to attend. This seminar will provide a quick and effective means of learning about the latest edition of CSA S136. The speakers will be Dr. R.M. Schuster, PEng., University of Waterloo, and Dr. S. R. Fox, P.Eng., Canadian Sheet Steel Building Institute

This seminar is organized by the Cold-Formed Steel Engineers Institute Canada, a not-for-profit organization created solely to promote the use of cold formed steel in Canadian building construction through education. To learn more about the CFSEI and to register for the seminar, go to www.cfsei.ca



COLD-FORMED STEEL ENGINEERS
INSTITUTE CANADA

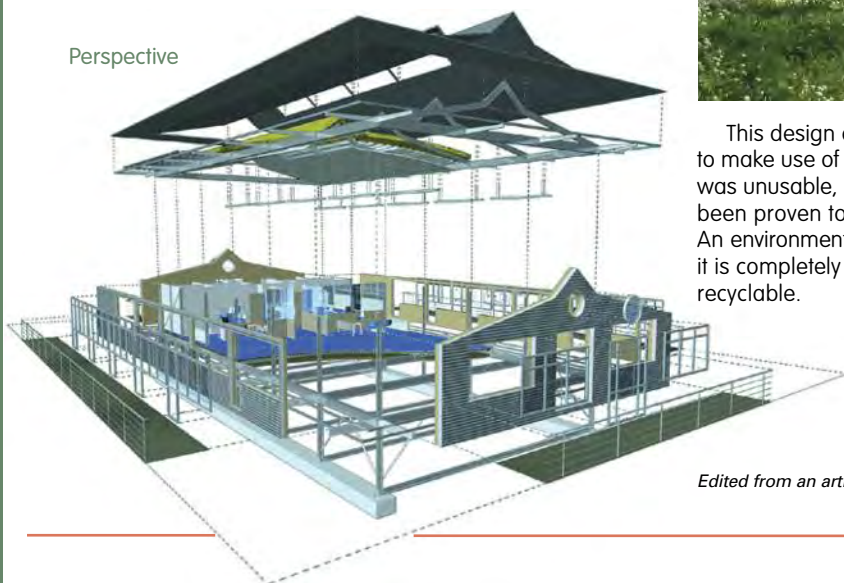
Le Bourget du Lac Complex, France

Arranged like the teeth of a comb around a 'pier' – ten small, detached, single-storey bungalows form this cluster of modular office buildings. The lightweight construction of these bungalows, that seem to float on the marshland, reminds one of boats tied to a pier. which explains the (registered) name: House Boat. Each bungalow has a useful area of open space ranging from 50m² to 200m² (540 sq. ft. to 2,150 sq. ft.), which can be divided at will into 15m² (160 sq. ft.) units.

The character of this building style is based on the radical simplicity of its components, entirely made of steel, and of the erection technique.

The foundations support galvanized steel H-pillars forming a 6m x 3.60m (19.68 ft. x 11.81 ft.) grid. The floor beams support a composite floor slab on steel floor panels. The double-skin walls are lined with a wall cladding, formed by single corrugated steel sheet painted grey. The roof has the same corrugated profile but with a wider spacing between the corrugations. The roof is supported on triangular trusses, which are left visible inside.

Perspective



This design allowed the architect to make use of a land area which was unusable, until then, and it has been proven to be a huge success. An environmentally-friendly project – it is completely dismountable and recyclable.



PROJECT INFORMATION

ARCHITECT: Patriarche & Co

CLIENTS: SCI House Boat

ENGINEERING FIRM: Duverney Ingénierie

CONTRACTOR: Bordas – Ercem Industrie

WALL CLADDING: Alp' Aciert

Edited from an article by Bertrand Lemoine.

Basic Characteristics of Organic Coated Steel

Organic coated steel is generally composed of a steel substrate (with a zinc-based or aluminum/zinc metallic coating) with a surface treatment layer, a paint primer coating and a top coat. For certain applications, a temporary protective film may be added, if required.

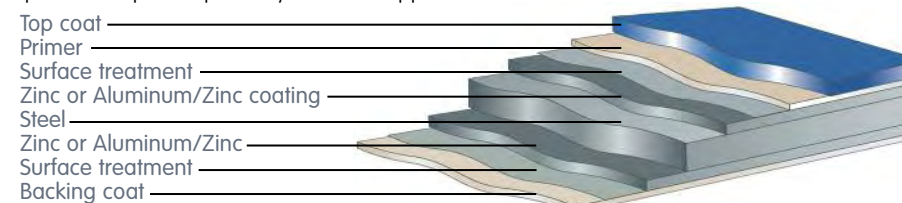
The choice of substrate has a direct influence on the processing performance and corrosion resistance of the organic coated product. For good corrosion resistance, a relatively thick sacrificial zinc-based or aluminum/zinc metallic coating is the best choice. On the other hand, if the essential requirement is an ability to withstand severe forming strains without cracking, thin and flexible crack-resistant zinc coatings are recommended.

The surface treatment carried out at the beginning of the process section prior to coating ensures good bonding between the primer and the metal substrate.

The role of the primer is mainly:

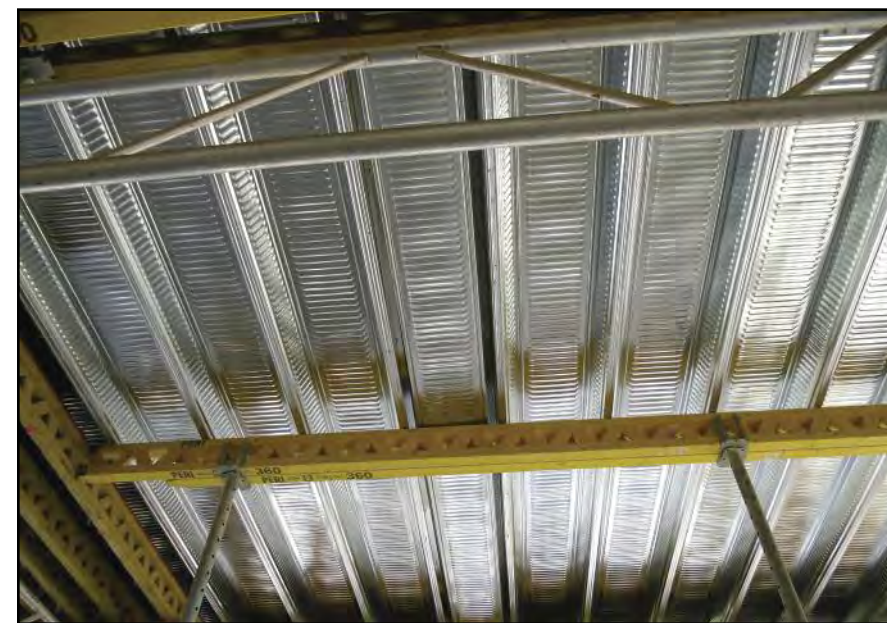
- To enhance the adhesion of the top coat
- To improve flexibility and corrosion resistance
- To determine the final texture in case of orange peel products

The top coats provide the required external surface characteristics, such as the final appearance (colour, texture, gloss, finish etc...), hardness and resistance to abrasion and ultraviolet radiation. Depending on the required performance, a single (primer) or double (primer + top coat) paint layer can be applied on one or both sides of the sheet.



The processing performance and other characteristics required will vary greatly according to the type of substrate and the paint system used. These characteristics include paint adhesion, flexibility, hardness, resistance to surface abrasion, corrosion resistance, appearance, gloss, suitability for food contact, heat resistance, shock resistance, chemical resistance, photochemical stability (UV resistance), resistance to soiling etc.

Of course, there is no such thing as a 'universal' organic coated product that can meet all these requirements, but we have been able to develop special products for each type of application. It is often necessary to give priority to one or more properties to the detriment of others. The wide range of characteristics that can be built into organic coated products explains the diversity of the solutions proposed by ArcelorMittal. It is therefore essential to define precise specifications prior to production, so that we can determine the optimum solution in terms of technical and economic criteria.



Lightweight Steel Framing

Although "Steel" may conjure up images of a heavy, cumbersome material for construction, Lightweight Steel Framing (LSF) from coated sheet steel products is just the opposite. Cold-formed sheet steel is an easy to handle, economical, non-combustible, high quality alternate to more traditional framing materials. Steel framing offers a strong, accurate, dimensionally stable and durable framing system. Lightweight steel framing will appeal to any one interested in building construction..



Steel has been in use for over 100 years in the North American Construction market. While it is often associated with skyscrapers and bridges, steel is emerging as the material of choice for industrial, commercial and institutional (ICI) buildings. Lightweight steel framing (LSF) is an increasing popular choice in low to medium rise structures such as schools, shopping malls, box stores, stacked row houses, hotels, assisted care residences and office buildings. LSF is used in the wall, floor and roof assemblies in buildings from one to six stories in height. LSF alone can provide all necessary structural elements or it can be used in combination with other materials for greater building diversity and scope.

EDITORIAL INQUIRIES

We would like to hear from you!

If you have comments about this issue or a project you would like to see in an upcoming issue of *Steel Design*, please send a description of the project, include photographs, to:

The Editor, *Steel Design*
1039 South Bay Road, Kilworthy, ON P0E 1G0
Or email: davidfolliis@vianet.ca

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