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steeldesign

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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.

> The Editor, Steel Design 1039 South Bay Road Kilworthy, Ontario POE 1G0 E-mail: davidfollis@vianet.ca

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COVER PHOTO: WING COMMANDER HILLY **BROWN BUILDING – GERRY KOPELOW**



transforming tomorrow



3 Wing Commander Hilly Brown Building

The 8,600m² (92,570 sq.ft.) Wing Commander Hilly Brown Building is a shining architectural beacon in a community rich with aviation heritage.

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Designers used the Canada Green Building Council's LEED Rating System for New Brunswick's Department of Natural Resources' new office in Richibucto, completed this year. To help qualify for LEED Silver certification, they specified Galvalume Plus™ steel roof and wall cladding.

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Just west of Quebec City, lies the town of Saint-Augustin-de-Desmaures and the Campus Notre-Dame-De-Foy, home to 1,800 students. The clean architectural lines of its modern buildings and its airy campus are mirrored in the simplicity and modularity of its new 66.4m by 102.4m (218 ft. x 336 ft.) indoor soccer facility.

12 Drift Bay House, Queenstown, New Zealand

This 280m² (3,000 sq. ft.) family home was designed as a single fluid form that reclines into the sloping landscape on the edge of Lake Wakatipu, New Zealand. The long black form shifts and expands to suit the sun, the occupants' needs and the site.

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With utmost speed and precision, a military endeavor dubbed "Operation Cool Steel" took shape at Southport Aerospace Centre, a former military base, near Portage la Prairie, Manitoba. The 8,600m² (92,570 sq.ft.) Wing Commander Hilly Brown Building is a shining architectural beacon in a community rich with aviation heritage. It's the crown jewel at the Canadian Forces Flight Training School (CFFTS), used to train Department of National Defence small plane and helicopter pilots.

Steel cladding creates camouflage effect on Wing Commander Hilly Brown Building

The colour of the 19mm (.75") deep corrugated .76mm (.0299") thick prepainted Z275 (G90) galvanized wall cladding supplied by Roll Form Group, alternates between QC8317 White White and QC2624 Bright Silver and some Black QC8262. "The fact the colours change in the light, makes it look like a different building," explains installer Russ Hinds of Tri Clad Designs.

"The checkerboard pattern follows the internal divisions of the building. What you see on the outside of the building is the way the structure and the interior corridors on the inside of the building are organized," explains Garth Norbraten.

The Hilly Brown houses \$75 million in computerized equipment, including full motion and fixed flight simulators. It includes lecture rooms, briefing rooms, a library, study rooms, lounges, offices, a weight room, a medical suite and a counseling room.

Exterior and interior walls are framed in non-load

bearing galvanized steel studs, erected by K. Sleva Contracting Ltd. The roof structure, consists of steel deck and open-web steel joists. The ZF075 galvanneal steel deck has a 1.5" profile, in a variety of thicknesses – .76mm, .91mm and 1.22mm (.0299", .036" and .048") supplied and installed by Flynn Canada.

Commandant Lt. Col. Paul Dittman says the facility has had a tremendous impact on air force pilot production, with students coming from as far as Norway to study at the Canadian Forces Flight Training School. The school produces 80 percent of Canada's air force pilots every year. "The quality of the students we're graduating now compared to 20 years ago is hugely improved, with a much broader range of skills and capabilities in a high tech aircraft environment," Dittman said. There's no doubt this design and construction team earned its wings.

Built in just a year and a half, The Hilly Brown Building meets rigorous program and technical specifications laid out by the DND. The building and site work were completed at a cost of \$12.9 million or \$1,500 per m² (\$139 per sq. ft.), meeting a strict budget.

> The building is an exercise in camouflage, thanks to the 2,694m² (29,000 sq. ft.) of wall cladding made from Arcelor/Mittal Dofasco's prepainted galvanized steel.



Strong, accurate, dimensionally stable and durable – light steel framing eliminates problems such as cracks and warped joists and studs. Light steel framing provides the basis for the highest quality and lasting interior finishes.

In addition to extensive use of steel roof and floor deck, light steel framing in a variety of thicknesses and sizes was used throughout the building, including wind bearing exterior walls. (See sidebar).





Relieved by areas of black siding, as seen in this view, the outer perimeter of the building is finished in a silver and white checkerboard. The effect is a constant metamorphosis. Throughout the day, the pattern appears and disappears.

DESIGN AND CONSTRUCTION TEAM

CLIENT: Allied Wings / Canadian Base Operators / Black & McDonald Limited Corporate Headquarters 416-920-5100

CONSTRUCTION MANAGER: Akman Construction Ltd. 204-944-9721

ARCHITECTURAL: Daniel Johnson Architect Inc. and Garth Norbraten Architect Inc.

ARCHITECTS IN ASSOCIATION: Norbraten 416-405-8251 Johnson 416-920-0040

STRUCTURAL ENGINEERS: Halcrow Yolles 416-363-8123

MECHANICAL AND ELECTRICAL ENGINEERS: SMS Engineering Ltd. 204-775-0291 LANDSCAPE: Victor Ford and Associates Inc. 204-703-0081

CIVIL ENGINEERING: AECOM 204-477-5381

GEOTECHNICAL ENGINEERING: ENG-TECH Consulting Ltd. 204-233-1694

STEEL CLADDING SUPPLIER: Roll Form Group 905-270-5300

STEEL CLADDING INSTALLER: Tri Clad Designs 204-878-3480 Russ Hinds

STEEL ROOF DECK INSTALLER: Flynn Canada 204-786-6951

STEEL STUD SUPPLIER: Steelform Building Products 780-440-4499 STEEL STUD INSTALLER: K. Sleva Contracting Ltd. 204-897-0442

STRUCTURAL STEEL INSTALLER: Abesco 204-667-3981

STRUCTURAL STEEL FABRICATOR: Shopost Iron Works

PROJECT TEAM: Garth Norbraten, Daniel Johnson, Magnus Johnson, Peter Mullin, Renny Cannon, Jonathan Friedman

END USER: Department of National Defence, Canada

PHOTOGRAPHY: Gerry Kopelow 204-772-3696



QC8262 Black cladding is used at the main entrance and the interior lobby. "We've brought the steel product inside," says Norbraten. "The checkerboard pattern follows the internal divisions of the building. What you see on the outside of the building is also the way the structure and the interior corridors on the inside are organized."

Garth Norbraten Architect Inc.



New Brunswick Department of Natural Resources Richibucto Office, New Brunswick



Designers used the Canada Green Building Council's LEED Rating System for New Brunswick's Department of Natural Resources' new office in Richibucto, completed this year. To help qualify for LEED Silver certification, they specified Galvalume Plus[™] steel roof and wall cladding. Galvalume Plus met the LEED recycled content criterion, plus it is itself recyclable.

Galvalume Plus[™] Steel roof and wall cladding help meet LEED requirements

To help qualify for LEED Silver certification, the Department of Supply and Services specified Galvalume Plus™ steel roof and wall sheathing. Galvalume Plus met the LEED recycled content criterion. Using Galvalume steel cladding, rather than vinyl siding, also made the building eligible for a LEED durable building credit.

1. 11911





Using Galvalume[™] steel cladding, rather than vinyl siding, also made the building eligible for a LEED durable building credit.

"All new provincial government buildings are to be designed with the objective of achieving a minimum of LEED silver certification," explains Pam Barteaux, Director of Planning and Project Development, New Brunswick Department of Supply and Services.

The roughly cross-shaped office building has a 691m² (7,438 sq. ft.) footprint. The roofing material is unpainted .76 mm (0.0299"), AZM180 Galvalume Plus. The profile is Tradition 100-4, with an "I"-style batten cap hidden fastener system.

The office building and garage walls were clad with 1,579m² (17,000 sq. ft.) of corrugated .61mm (0.0239") prepainted AZM150 Galvalume steel cladding with a 22mm (0.875") corrugated profile. Three colours



The roof is clad with the Tradition profile in unpainted .76 mm (0.0299"), AZM180 Galvalume Plus. The roofs of the two garages, one with a $241m^2$ (2,594 sq. ft.) footprint, the other a $215m^2$ (2,314 sq. ft.) footprint, are similarly clad. A total of 1,486m² (16,000 sq. ft.) of cladding covers the three roofs.

> Trim and highlite panels are corrugated 0.61mm (0.0239") prepainted AZM150 Galvalume steel cladding with 22mm (0.875") corrugated profile, coloured Metro Brown QC16154 and Copper Metallic QC3234.

were used: 743m² (8,000 sq. ft) of WeatherX (SMP) Metro Brown QC16154 697m² (7,500 sq. ft.) of unpainted Galvalume Plus; and 139m²

(1,500 sq. ft.) of Copper Metallic Finish QC3234. The office building was constructed with ICF block walls and wooden roof trusses and the garages with both wooden walls and roof trusses.

"There is not nearly as much waste and clean-up with steel as there is with shingles or other materials," said Dennis Fiander, Project Manager, Castle Rock Construction Services Incorporated, Saint John. "However there are challenges in installing steel roofing and siding. Care must be taken in placing the siding and panels along with the flashing and soffits."

Working to LEED requirements was not particularly difficult, Fiander adds, "The manufacturer supplied some additional submittals and information."





DESIGN AND CONSTRUCTION TEAM

OWNER: New Brunswick Department of Natural Resources 506-453-3826

ARCHITECTURAL AND ELECTRICAL ENGINEERING TEAM: New Brunswick Department of Supply and Services 506-444-3742

STRUCTURAL ENGINEER: Phillips Engineering and Consulting Services Fredericton 506-459-8476

MECHANICAL ENGINEER: Tweedie & Associates Consulting Engineers Ltd. Riverview 506-383-8223

BUILDING ENVELOPE SPECIALIST: Stantec Consulting Limited Saint John 506-634-2185

GENERAL CONTRACTOR: Castle Rock Construction Services Incorporated Saint John 506-693-7625

ROOFING AND CLADDING SUPPLIER: Vicwest, Moncton 506-857-0057

INSTALLERS: Losier Aluminum Ltee. Tracadie-Sheila 506-394-9694 8 SPRING 2010

Forest Manor Public School Toronto, Ontario

The two storey, eight classroom and two seminar room addition at Forest Manor Public School has recently Designed by ATA Architects Inc., and constructed by KCL and KML for the Toronto District School B this school is the first totally factory fabricated structure for the TDSB. The methodology for the construction developed jointly by ATA Architects, KML Building Solutions and CGC. Both exterior and interior walls, as as, the roof structure are fabricated from light gauge steel.

School is at the Intersection of Architecture + Education

Constructed from steel with high recycled content, the system was designed for buildings requiring a higher insulation value and an aggressive construction schedule when compared to traditional school building practices. The system utilizes pre-assembled light steel framed panelized assemblies, for both the exterior walls, interior wall and roof structure, for rapid and precise construction. The resulting structure has a high performance envelope that contributes to energy conservation.

The concept was derived from ATA's years of school construction experience, as well as conversations with school board officials. The board's primary concern was cost, followed closely by durability of the assemblies. Remediation and repair work for issues such as, a lack of durability in

Schools must be designed to be a viable place for learning, experience and life. The architect's goal is to achieve well-being, comfort and acceptance of the building by children as well as the teaching staff

Alexander Temporale, ATA Architects



Flexible interior partition system, layout can easily change with the times.



Light gauge steel framed assemblies throughout the school are mould resistant, inert and do not outgas.

selected materials and mold, were using up much of the present days budget. The architects solution was to combat all of these issues plaguing school boards while also incorporating proven building technologies used in other sectors.

The Forest Manor Public School addition was the first project constructed using this new system

of pre-assembled light gauge steel

framed panel assemblies and has

proven that it is a viable alternative

to portables, yet more flexible and

more efficient to construct.

Forest Manor Public School Addition was the school Board's first project constructed using this new system and it has been a great success. It is a viable alternative to portables yet more flexible and more efficient to construct. Additionally, steel framing is non-combustible and does not add fuel to a fire. Forest Manor demonstrates the flexibility of the technology and its ability to address the future needs of schools to meet the challenges and changes of the 21st Century. The technology is permanent, and can be used for multi-storey renovations or new structures.



Forest Manor Public School Toronto, Ontario



The main floor of the addition consists of seven classrooms and a seminar room located off a central hallway. The second floor consists of one classroom, and a seminar room.

This is the end wall of the light well area on the North side of the school. Its purpose is to minimize lighting requirements during the day, while pulling natural light through the corridors. The stud size is $152mm \times 41mm \times 1.15mm$ (6' x 1.6"x 0.048") @ 400mm O/C, with the height being 3.4m (11.16 ft.).



The solution provides:

Architect designed, accurate factory constructed structure, delivered to the site in pre-assembled panels.

The possibilities of a single subcontractor providing the entire shell – therefore eliminating coordination headaches and costly extras.

Minimal waste and pollution – there is no cutting on site.

100% recyclable components.

Cleaner and quieter construction sites.

An interior sheathing that is resistant to impact and scoring.

Materials that are mould resistant, inert and do not outgas.

Twice the insulation value of traditional school construction (which means smaller and more efficient HVAC systems).

A more flexible interior partition system (classroom layout can easily change with the times).

Easier service runs for added equipment (walls are hollow).

A proven technology.

A reliable construction schedule (factory controlled; the ability to work through inclement weather; winter heating not required).

Wall Assembly Sizes

EXTERIOR WALL: 152mm (5.98") stud of various thicknesses

INTERIOR WALL: 152mm (5.98") stud of various thicknesses

i-SPAN Floor Joist

SPAN: Max span 10m (32.8ft)

JOIST DEPTH: 356mm (14") JOIST SPACING:

300mm – 400mm (11.8′ – 15.7′)

ROOF JOIST ASSEMBLIES: 365mm – 10m maximum span (14.4" – 32.8') maximum span



DESIGN AND CONSTRUCTION TEAM

CLIENT: Toronto District school Board

ARCHITECT: ATA Architects Inc. (905) 849 6986

STRUCTURAL ENGINEERING: Genesis TP Inc. (905) 832-9286

MECHANICAL & ELECTRICAL ENGINEERING: G+M Technical (416) 778-6553

GENERAL CONTRACTOR: KCL (416) 661-2140 Larry Casinelli

PANEL ASSEMBLY SUPPLIER AND INSTALLER: Genesis TP Inc (905) 832-9286

TORONTO DISTRICT SCHOOL BOARD TEAM: Project Manager: David Percival Design: Richard Kalmin and Sofia DiSabatino Construction Manager: Sergio Campoli

Campus Notre-Dame-de-Foy Saint-Augustin-de-Desmaures, Quebec

On the shore of the Saint Lawrence River, west of Quebec City, lies the town of Saint-Augustin-de-Desmaures and the Campus Notre-Dame-De-Foy, home to 1,800 students. The clean architectural lines of its modern buildings and its airy campus are mirrored in the simplicity and modularity of its new 66.4m by 102.4m (218 ft. x 336 ft.) indoor soccer facility, with a 12m (39 ft.) high ceiling, 66m (217 ft.) clear span under a curved roof and bleachers for 250 fans.

Clean lines mirror campus architecture



Each truss is manufactured from Galvalume coated cold formed steel and measure 66m (217 ft.) The total linear length of trusses is 6,864m (22,520 ft.).

truss system creates an attic space appropriate to

install blown-in insulation

resistance factor required.

The walls and area above

well-ventilated, keeping the

insulation dry and effective.

the structural ceiling are

The reflective finish of the unpainted Galvalume Plus™

ceiling panels reduces the amount of artificial light

required, contributing to the lower cost of heating,

cooling and lighting. Another cost-saving element is

the absence of columns in the arena: The foundation required less reinforcement, since the building load is

distributed uniformly by the walls along the foundations.

building attached to the arena includes amenities such

storage rooms, boutique and a snack bar with seating

The design of the self supporting structure optimises

interior space, thus allowing wide clear spans with

the absence of lateral columns. The superior design

the load of the building is uniformly distributed on its

as lockers, first aid, conference, multi-purpose and

A 2,150 m² (23,142 sq. ft.) conventionally built two-story

that conform to the thermal

3616 m² (38,922 sq. ft.), 1.37mm (.054"), 128 mm (5") deep corrugated structural panels, manufactured from ArcelorMittal Dofasco's prepainted Z275 (G90) galvanized coloured QC18317 White/White in the Perspectra Series paint system.

1.9mm (.075"),128-mm (5") deep corrugated structural panels manufactured from AZM165 Galvalume Plus

Prepainted Z275 (G90) galvanized, Channel Wall, with 12.5mm (1/2") deep corrugations and coloured QC16076 Pure White, in the 10000 Series paint system.

6732 m² (72,462 sq. ft.) 1.9mm (.075"), 128-mm (5") deep corrugated structural panels manufactured from ArcelorMittal Dofasco's unpainted AZM165 Galvalume Plus

The structural panels and roof trusses were made by Honco Steel Buildings and shipped to the campus, where the kits were assembled entirely with bolts. These systems are competitively priced and reduce the cost of construction by 20% to 50% of the total cost, according to Honco. They also come with a 25-year warranty. The complete installation of the self-supporting steel structure, with insulation material and the interior wall liner, was executed last year in less than 10 weeks. "The construction was very rapid," says Frederic Fecteau, "with the contractor Pomerleau."

The arena insulation is very efficient, as it is not compressed by structural elements such as girders. The roof



DESIGN AND CONSTRUCTION TEAM

OWNER Campus Notre-Dame-De-Foy, Québec 418-872-8041

ARCHITECT: Lemay associés, Québec 418-647-1037

CONTRACTOR: Pomerleau, Sainte-Foy Québec 418-626-2314 STEEL BUILDING SYSTEM SUPPLIER: Groupe Honco Inc., St-Nicolas, Québec 418-831-2245 ROOF AND WALL CLADDING:

Groupe Honco Inc, St-Nicolas, Québec 418-831-2245 INTERIOR WALLS:

Vicwest 905-825-2252

for around 100 people.

entire perimeter.

6946 m² (74,766 sq. ft.)

12 SPRING 2010 Drift Bay House Queenstown, New Zealand

"We wanted to relax and let the house fit the landscape," says Kerr, who collaborated with her partner Peter Ritchie, a landscape architect, on the home's design. This 280m² (3,000 sq. ft.) family home was designed as a single fluid form that reclines into the sloping landscape on the edge of Lake Wakatipu, New Zealand. The long black form shifts and expands to suit the sun, the occupants' needs and the site.

Architecture and nature in perfect harmony

I like our buildings to have a strong sculptural form – not just a generic cultural interpretation like a barn or a modernist box, but something that comes from the landscape, that responds to and suits the site !!

Peter Richie

The main house pulls away from an eastern bank, to provide courtyards sheltered from the prevailing wind and summer sun. The roof and walls of the house are primarily clad in black prepainted AZM150 aluminum/zinc steel.

As the architects state, "we are committed to making buildings and landscapes that maximize the experience of place and improve the quality of life of the people who use them". The roof and walls of the house are extensively clad in 0.4mm (.0157") prepainted 55% aluminum/zinc steel (AZM150 Galvalume), coloured black, with a trapezoidal profile. However, where the occupants move in and out of the house, to the north and south elevations and the entry, the steel is replaced with softer timber boards.

The entry is through a hole punched in the middle creating a courtyard. This allows visitors to enter either the family home to the north or the studio/guest wing to the south. The main house pulls away from an eastern bank, to provide courtyards sheltered from the prevailing wind and summer sun. It then expands upwards to form a double level maximizing the northern sun. The house rises up again to the studio, at the tail, before snaking back towards the sun and the north.



Entry is through a centre entrance creating a courtyard. This allows visitors to enter either the family home to the north or the studio/guest wing to the south.



This beautiful home with its innovative design, is constructed of bold, simple materials. The exterior is clad in prepainted 55% aluminum/zinc coated steel, coloured black, with a trapezoidal profile, along with timber boards around the entrance way.

DESIGN AND CONSTRUCTION TEAM

ARCHITECT: Kerr Ritchie Architects 64 03 441 4513 CONTRACTOR: Barker Construction 64 02 7433 9542 CLADDING SUPPLIER: Calder Stewart Roofing 64 03 442 2204 PHOTOGRAPHER: Paul McCredie 64 02 147 7617



This 280m² (3,000 sq. ft.) family home was designed as a single fluid form that reclines into the sloping landscape on the edge of Lake Wakatipu. New Zealand. The long black form shifts and expands to suit the sun, the occupants' needs and the site.



Light steel Definition

technology consistency port the growth corrosion. of mould nor

Metallic Coated Steels

Generalities

The wide range of metallic coated steel is an integral part of our daily life. It is used to protect, shelter, package and transport while, at the same time, meeting the demand for a solid, durable and aesthetically pleasing material. Continuous metallic coated steel has experienced a remarkable growth and continues to be used in increasingly varied new applications. This is due to its outstanding economic, technological and environmental advantages. In building and construction, metallic coated steel has been used for cladding, roofing and deck for many years. It is also used for applications such as light steel framing (studs, wall and roof assemblies), doors, stairs, ceilings etc.

framing is Metallic coated steel can be defined as a steel substrate coated with a layer of either zinc, aluminum/zinc alloy, aluminum/ a proven silicon alloy or pure aluminum. These products are manufactured on continuous production lines.

There are several different coating processes. The hot dip coating process, whereby the steel strip is immersed in a bath of which reflects molten metal. The composition of the molten metal (zinc. zinc/aluminum, aluminum/silicon or pure aluminum) determines the the superior nature of the metal coating. The electro-galvanizing process, in which metal is deposited electrolytically on the cold steel strip. strength and Coating under vacuum such as PVD (Physical Vapour Deposition), CVD (Chemical Vapour Deposition) etc.

of steel. Steel, Durability and Protection

being inorganic, The principal advantage of metallic coated steel is that the coating protects the steel substrate from corrosion. Metallic does not sup- coatings such as zinc, aluminum and their alloys are the coatings most commonly used to protect steel from atmospheric

In practice, zinc and other sacrificial coatings can protect the steel from does it give corrosive environments in two ways: Barrier effect – the steel is physically off gas, thus isolated from the corrosive environment by the presence of the coating. In contributing to addition, the formation of corrosion products due to the corrosion of the excellent indoor coating provides a protective layer which slows down the rate of corrosion air quality. and renews the protection of exposed areas where the coating has been damaged. Cathodic protection – steel exposed in areas where the coating has been damaged (scratches, cut edges, holes etc.) is protected by the dissolution of the adjacent coating, which is corroded preferentially rather than the steel. This is referred to as sacrificial protection.

> Metallic coated steel may be given a subsequent surface treatment to further enhance the performance of the metallic coating.



Enhanced Prepaint System – PERSPECTRA SERIES™ available from ArcelorMittal Dofasco for the construction industry



Perspectra replaces the popular 8000 Series with updated technology providing outstanding film integrity, leading edge colour retention and superior chalk resistance in prefinished sheet steel. The specifications offer 40 years' film integrity, e.g. no peeling or cracking, and 30 years' chalk and colour fade values for cladding and roofing. Forty standard colours comprise nine shades of white, 16 pastel, 13 earth tones and two exotics. Ceramic and inorganic pigments provide superior resistance to UV exposure. Custom colours, gloss, and textures such as embossing can be developed to provide projects with high levels of creativity, versatility, durability and individuality.

On a more technical note, Perspectra Series™ is a Silicone-Modified Polyester (SMP) film over either a hot dipped galvanized or 55% aluminum-zinc coated steel. The system utilizes either a zinc phosphate pretreatment on hot dipped galvanized, or a metal oxide conversion coating on 55% aluminumzinc coated steel.

A Galvalume substrate is ideal for applications in coastal and light-to-moderate industrial areas and where superior atmospheric corrosion resistance is required. For aggressive atmospheric corrosion a Barrier Series paint system should be used rather than Perspectra Series.



As well, where 'cool roofing' is specified to minimize total solar reflectance (TSR) and emissivity, Perspectra Series™ has been designed to provides the desired properties with TSR values of at least 0.25 and up to 0.65 or 0.70 with reflective whites if required. A listing of Total Solar Reflectance (TSR) and Emissivity values is available from your Technical Representative, as are colour cards and repainting instructions. Perspectra Series is available at no additional cost.

Our website contains numerous Fact Sheets and Performance Specifications. For further information go to www.arcelormittal.com/hamilton/dofasco – Products and Markets – Products – Prepainted Products – Colours. Or contact Leo De Meo at 1-800-363-2726 leo.demeo@arcelormittal.com

Global Study to Reduce Energy Use In Buildings

New modeling by the World Business Council for Sustainable Development (WBCSD) shows how energy use in buildings can be cut by 60 percent by 2050 – essential to meeting global climate change targets – but this will require immediate action to transform the building sector.

This is the central message of the report from the four-year, \$15 million Energy Efficiency in Buildings (EEB) research project, the most rigorous study ever conducted on the subject. The EEB's report "Transforming the Market: Energy Efficiency in Buildings", its unique simulation model and the project's roadmap to transform the building sector were presented in



an event in Paris, France. The report was also released in Washington, D.C., U.S.A. and Beijing, China.

The project took a bottom-up, marketdriven approach to understanding the barriers to lower energy use, based on the most detailed view ever of the current state of energy demand in buildings.

Energy use by building type was analyzed for millions of existing and new buildings and projected out to 2050, accounting for differences such as climate and building design. Using computer simulations, researchers were able to

show the market response to various combinations of financial, technical, behavioural and policy options, identifying the optimum mix to achieve transformation for each market studied.

- The project's resulting report makes six principal recommendations:
- 1. Strengthen building codes and energy labelling for increased transparency.
- 2. Use subsidies and price signals to increase sensitivity to energy-efficient investments.
- 3. Encourage integrated design approaches and innovations.
- 4. Develop and use advanced technology to enable energy-saving behaviour.
- 5. Develop workforce capacity for energy saving.
- 6. Mobilize for an energy-aware culture.

Immediate action

"Energy efficiency is fast becoming one of the defining issues of our times. Unless there is immediate action, thousands of new buildings will be built without any concern for energy efficiency, and millions of existing, inefficient buildings using more energy than necessary will still be standing in 2050", said Björn Stigson, president of the WBCSD.

ArcelorMittal's commitment to the EEB project -

Steel solutions' contribution to improving buildings' energy demands

As a major supplier to the construction industry, ArcelorMittal is working to develop innovative steel building materials that will help the EEB to realize its vision. The group produces and develops innovative steel solutions to reduce energy consumption in buildings. Insulated panels meet the latest requirements in terms of thermal insulation. ArcelorMittal Construction also designed and sells Arsolar®, a photovoltaic system awarded the gold medal for innovation during the BATIMAT international construction industry exhibition (Paris, France) in 2007. Arsolar® photovoltaic systems can be used on a wide range of roofs, from small housing to large commercial solar-electric stations but also as energyproducing wall cladding and sunscreens. This solar energy production system, incorporated into steel roofs or cladding, is capable on its own of covering a building's energy costs.

Georges Axmann, Head of Technical Advisory for ArcelorMittal's Commercial Sections, comments: "ArcelorMittal's commitment to 'Safe Sustainable Steel' includes increasing the awareness and use of high-strength structural steel in the construction industry which results in a lighter structural frame, thus reducing the amount of steel, CO₂ and natural resources used."

Peak2Peak Gondola Station – Whistler/Blackcomb, B.C.

The primary structural steel frame "sawhorse" layout was conceived and designed by : Glotman Simpson Consulting Engineers 604-734-8822



Available on line – ArcelorMittal Dofasco Prepainted Steel Colours

Easy web access to Colour Palette. The selection of colours available for Prepainted Steel is available on the Arcelor/Mittal Dofasco website. Sixty-eight colours are shown in the Perspectra Series™, 10000 Series, Metallic and Elite Series paint systems. For new projects other custom colours can be developed. The format allows designers and specifiers to cut and paste colours from this Palette on to your roofing or cladding application.

Also available on the website are the Quality and Performance specifications covering these paint systems.

www.arcelormittal.com/hamilton/dofasco – Products and Markets – Products – Prepainted Products – Colours

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 POE 1G0 Or email: davidfollis@vianet.ca



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