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steel design

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PROJECT SUBMISSIONS

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

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COVER PHOTO: PARK ONE EAST AND PARK ONE WEST, EDMONTON, ALBERTA – KEN ORR

ArcelorMittal

transforming
tomorrow



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3 Township of Wilmot Recreation Complex

For the ice pad arena facilities we chose the Behlen Industries CORR-SPAN convex steel building system (SBS) not only because of the competitive up-front costs, but also because, when we looked 30 years out, there are significant energy savings that put us way-way ahead of a conventional structure.

6 Park One East and Park One West

Sustainable construction is not something that is exclusive to expensive projects, but can be applied to virtually any development, even specific aspects of a project. Park One East and Park One West are side-by-side upscale condominiums built around a light steel framing system (LSF) in the heart of Edmonton.

8 University of Lethbridge – Water and Environmental Science Building

The Key Word Is Ability – as in availability, buildability, and durability. So says architect Robert Jim regarding the choice of steel cladding and light steel framing (LSF) for the Alberta Water and Environmental Science Building (AWESB) at the University of Lethbridge.

10 Moose Cree First Nation – EP&R Centre

The construction season in remote northern Ontario is relatively short – beginning, on average, in June and ending early October with the winter freeze. That presents an incredible challenge to any major building project, but the use of steel was the ideal solution for a superstructure in Moose Factory, Ontario in the James Bay region.

12 Granum School

The Granum School, a 641m² (6,900 sq. ft.) 200 capacity K-9 school, was part of the education facility "right-sized" initiative that took place across the province under the direction of Alberta Infrastructure, which now is the responsibility of Alberta Education.

14 The Last Word in Steel News

Swaner EcoCenter – seeking to obtain the first LEED Platinum certification in Utah • Galvalume™ – the Steel Product of Choice for Superior Corrosion Resistance • Weatherford Place, Roswell, Georgia • Petersen Events Center, University of Pittsburgh, Pennsylvania • Geraldton Interpretive Centre, Ontario • Bethel Middle School achieves LEED Silver, Alexander, Arkansas • Metal – Energy Efficient Roofing.

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The township of Wilmot in Waterloo County, Ontario has an arena with a history – a former World War II aircraft hangar from Port Albert. The Municipality wanted a new arena that retains that same 'feel'. The solution – with additional significant benefits – was a CORR-SPAN® Convex steel building system (SBS) from Behlen Industries

Convex Steel Building means significant savings for Township of Wilmot Recreation Complex

The overall project includes a two ice pad arena with change rooms, offices, kitchen etc., plus seven soccer fields and a community centre.

Wilmot's Mayor Wayne Roth tells us, "For the ice pad arena facilities we chose the Behlen Industries CORR-SPAN convex steel building system (SBS) not only because of the competitive up-front costs, but also because, when we look 30 years out, there are significant energy savings that put us way ahead of a conventional structure. We have R50 in the roof and R40 in the walls. As well, we like the cleaner interior design with no columns and beams."

The roof is 114.3mm (4.5") corrugation 2.28mm (.090") ArcelorMittal Dofasco Z275 (G90) galvanized. It is clad with prepainted 2.28mm (.090") Z275 (G90) galvanized coloured QC18305 Stone Grey.

Paul Jackson of Jackson Barill Management who managed the project and handled structural design adds, "The arena has a clear span 75.6m wide x 64m long (248 ft. wide by 210 ft. long) with a 7.93m (26 ft.) eaves height. Our company specializes in high R-value buildings. The Wilmot people talked to their counterparts in Milverton re their similar arena structure and learned that the energy savings alone were paying for the building."

Jackson adds that from a construction standpoint the cost effectiveness is contributed to by walls, roof and ceiling being erected at the same time, so when halfway up the building length, the sub-trades can start working inside. Overall he thinks savings of around \$200,000 were achieved. With foundations and site work started in the Fall of 2006, the Complex was completed in late 2007. He continues, "The erection time was 10 weeks, which, for a building this size is fantastic. The Wilmot Complex is the largest convex building in North America and at the time of construction was the second largest in the world."



The convex CORR-SPAN steel building system provides for clear uninterrupted views and significant energy savings.

Specifications:

Side Walls:

190.5mm (7.5") corrugation, 2.28mm (.090") prepainted Z275 (G90) galvanized, coloured QC18305 Stone Grey.

Roof:

114.3mm (4.5") corrugation, 2.28mm (.090") Z275 (G90) galvanized.

Interior Wall Liner:

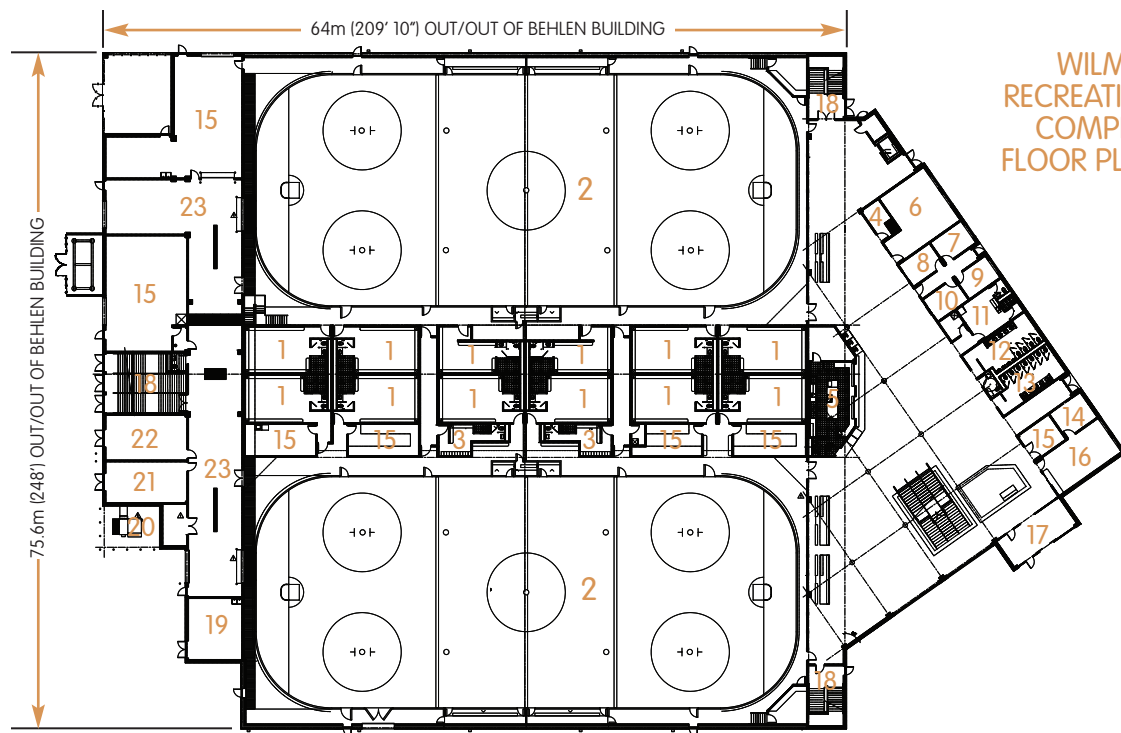
114.3mm (4.5") corrugation, .45mm (.0179") prepainted galvanized, coloured QC18273 Bone White.

Interior Ceiling:

Unpainted Z275 (G90) galvanized.



"We chose the Behlen Industries CORR-SPAN steel building system (SBS) not only because of the competitive up-front costs, but also because, when we look 30 years out, there are significant energy savings that put us way-way ahead of a conventional structure".
Wilmot Mayor, Wayne Roth



WILMOT RECREATION COMPLEX FLOOR PLAN

1. Dressing Rooms
2. Ice Surfaces
61m x 26m (200' x 85')
3. Refs' Room
4. Concession Storage
5. Concession
6. Meeting Room
7. Aqua Swim
8. Figure Skating
9. Minor Soccer
10. Minor Hockey
11. Staff Room
12. Men's Washroom
13. Women's Washroom
14. Administration Storage
15. Storage
16. Administration Office
17. Vestibule
18. Stairs
19. Soccer Storage
20. Transformer Vault
21. Electrical Room
22. Mechanical Room
23. Resurface Area

DESIGN AND CONSTRUCTION TEAM

OWNER:
Township of Wilmot

ARCHITECT:
GB Architect Inc. 519-272-0073

PROJECT MANAGEMENT:
Jackson Barill Management Inc. 519-272-9710

STRUCTURAL DESIGN:
Dan Barill 705-445-4905

STEEL BUILDING SYSTEM (SBS) CONTRACTOR:
Vic's Contracting 519-569-0236

STEEL BUILDING SUPPLIER:
Behlen Industries 1-800-663-7538

STEEL DECK SUPPLIER:
Vicwest 1-800-387-7135

STEEL DECK INSTALLER:
CSM Canadian Sheet Metal 905-206-1655

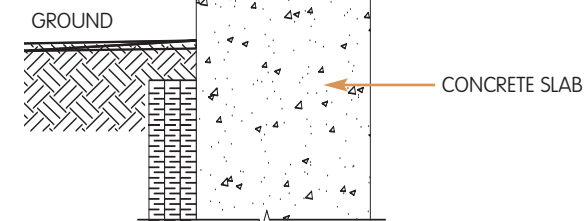
BLOWN FIBREGLASS INSULATION

BEHLEN ROOF PANEL:
ArcelorMittal 114.3mm (4.5")
corrugation 2.28mm (.090")
galvanized Z275 (G90)

GUTTER:
Stone Grey QC18305

EXTERIOR SIDE OF WALL:
190.5mm (7.5") corrugation
2.28mm (.090") ArcelorMittal Dofasco
Z275 (G90) galvanized and
clad with prepainted 45mm (.0179")
Z275 (G90) galvanized coloured
QC18305 Stone Grey

SIDEWALL SECTION FOR 190.5mm (7.5") CORRUGATION WALL



The overall project includes a two ice pad arena with change rooms, offices, kitchen etc., plus seven soccer fields as well as a community centre.

Sustainable construction is not something that is exclusive to expensive projects, but can be applied to virtually any development, even specific aspects of a project. Park One East and Park One West are side-by-side upscale condominiums built around a light steel framing system (LSF) in the heart of Edmonton. The 32-suite buildings are intended to appeal to both young professionals and homeowners seeking luxurious maintenance-free living.

Light Steel Framing Contributes to Sustainability in Condominiums

The light steel framing is used throughout the structures – exterior and interior walls, as well as the floors, helps to contribute to a healthy environment. Additionally, ArcelorMittal Dofasco steel used for building construction has the highest recycled content of typical building materials.

Suites range from 70.6m² to 111.5m² (760 to 1200 sq. ft.), providing features such as air-conditioning, granite kitchen countertops with under-mount double stainless steel sinks, stainless steel appliances and ceramic tile flooring in the foyers, kitchens, and bathrooms. Kerr Interior Systems of Edmonton installed all the light steel framing (LSF) panel assemblies built by its sister company Composite Building Systems Inc., also of Edmonton. The LSF is supplied by Steelform Building Products Inc. and the Q-Deck by Vicwest.

Each building is 3,917m² (42,159 sq.ft.)

Quantities of framing involved:

The structural load bearing light steel framing is industry standard Z275 (G-90) finish and the non-load bearing is Z120 (G-40).

LIGHT STEEL FRAMING ASSEMBLIES – LSF Sections

MPA 340 (Grade 50) Z275 (G90) Coating
254mm stud x 41.3mm flange x 1.73mm
– 18,841m Joist and track
(10"x 1.625" x .068") – 61,815 L.F. (1000S162 – 68mil)

92mm stud x 41.3mm flange x 1.37mm
– 48,560m Load bearing stud and track
(3.625" x 1.625" x .054") – 159,370 L.F. (362S162 – 54mil)

MPA230 (Grade 33) Z180 (G60) Coating
92mm stud x 41.3 flange x 1.09mm
– 8,583m Load bearing stud and track
(3.625" x 1.625" x .043") – 28,156 L.F. (362S162 – 43mil)

92mm x 41.3mm x .84mm
– 6,629m Load bearing stud and track
(3.625" x 1.625" x .033") – 22,075 L.F. (362S162 – 33mil)

MPA230 (Grade 33) Z120 G40 Coating
63.5mm x 31.75mm x .46mm
– 15,866m Non load bearing stud and track
(2.5" x 1.25" x .018") – 52,054 L.F. (250S125 – 18mil)



Front of the four story Park One East. The exterior load bearing EIFS envelope and interior panel assemblies were assembled in the plant and then shipped to the site. This allowed greater quality control, as well as, removing weather and scaffolding issues from the construction challenges.

involving a wide variety of light steel framing LSF studs and panel assemblies. Steel was chosen because of the reduced fire risk during construction and to eliminate settling issues (drywall cracks, door/hardware adjustments etc.) that occur with other building materials due to shrinkage and compression of the structure.

The heated underground parkade is concrete, with the ground and above floors framed with load-bearing and non-load-bearing galvanized and Galvalume steel panel assemblies of varying gauges based on the floors and spans involved. For instance, steel in the exterior walls ranges from load-bearing 1.811mm (.0713") to .879mm (.0346"). Corridor walls range from 1.146mm (.0451") down to .879mm (.0346") with party walls a double row with gauges from 1.438mm (.0566") down to .879mm (.0346"). Interior walls range from 1.811mm (.0713") to .879mm (.0346") with non-load bearing interior partitions of .478mm (.0188") material.

The flooring throughout is 50.8mm (2") concrete over 38mm (1.5") Q-Deck utilizing .91mm (.036") ZF075 galvaneal steel supplied by Vicwest, and 1.9mm (.075") and 1.52mm (.060") steel floor joists.

Each building has a flat roof with 254mm (10") light steel framing (LSF) joists, Q-Deck and a BUR.

Meticulous care was taken in designing the buildings to fit in with, and complement, the existing neighbourhood ambience. The resulting combination of light gauge load bearing steel sections and concrete cost less than all-concrete construction.

DESIGN AND CONSTRUCTION TEAM

OWNER:
Cal Casa Ltd.

ARCHITECT:
Arndt Tkalcic Architecture 780-428-8001

CONSTRUCTION MANAGER:
Abbey Lane Homes 780-425-2884

STEEL PANEL FABRICATOR/ERECTOR:
Composite Building Systems Inc./
Kerr Interior Systems Ltd. 780-466-2800

FRAMING SUPPLIER:
Steelform Building Products 780-440-4499

Q-DECK SUPPLIER:
Vicwest 780-454-4477

PHOTOGRAPHY:
Ken Orr 780-455-0925

Light steel framing wall assemblies are lightweight, strong, fire resistant and easy to maneuver.

Light steel framing (LSF) was chosen for its reduced fire risk during construction and to eliminate settling issues.

The floor joists are supported by the load bearing wall assemblies, with ZF075 galvaneal steel deck screwed down to the joists. Furring channels are attached to the joists for future attachment of drywall. Joists are spaced 609 to 1,219mm (24" to 48") depending on span and load. Mechanical and electrical services are easily installed.

The Key Word is Ability – as in availability, buildability, and durability. So says architect Robert Jim, of Cohos Evamy Integrate- design, regarding the choice of steel cladding and light steel framing (LSF) for the Alberta Water and Environmental Science Building (AWESB) at the University of Lethbridge.

University of Lethbridge Water and Environmental Science Building – LEED SILVER

Jim explains, “Availability was a must, because of a fast-track schedule; buildability in that it could be easily erected by local building trades; and durability because the cladding has to last for a long period of time. Needless to say, it also had to be cost effective to meet budget limitations.”

The AWESB will be the administrative hub for the Alberta Ingenuity Centre for Water Research as well as its function under the province’s \$30 million investment in water research to ensure the long-term safety, quality, and sustainability of Alberta’s water resources. Design objectives included reflecting environmental responsibility, maximizing energy and water use, and compatibility with the university’s stated preference for simplicity and geometric conciseness and avoidance of “elaborate forms and fussy detail.”

The 5,300m² (57,048 sq.ft.) LEED project comprises three stories with a half basement. The basement contains wet labs, the 1st and 2nd floors offices, graduate study rooms plus wet and dry labs. The penthouse contains the mechanical room and rooftop access to a graduate experimentation area.

LSF was used throughout the project – for exterior wind bearing walls and interior non-load bearing interior walls, with prepainted galvanized steel cladding used on the two side wings of the building in the 10000 Series paint system coloured QC 2899 Medium Bronze Metallic and QC203 Bone White in four different profiles.

In terms of its application on the job, a perspective is provided by Neal Thunder Chief of Graham Construction and Engineering Inc., the GC: “The LSF allowed faster installation than conventional framing and also eliminated the need to heat and hoard during colder periods. That also applies to the steel cladding. And prepaint minimizes time and cost versus the wall installed and painted by two different contractors. As well, the quality of the finish from the manufacturer is superior to that of having it painted on site.”

University of Lethbridge Project Manager



Prepainted galvanized steel cladding used on the two side wings of the building in the 10000 Series paint system coloured QC 2899 Medium Bronze Metallic and QC203 Bone White in four different profiles.

Brian Sullivan adds, “My only comment is based on the look – and it looks fantastic.”

DESIGN AND CONSTRUCTION TEAM

CLIENT: University of Lethbridge 403-329-2592

CONSTRUCTION MANAGER:
Graham Construction and Engineering Ltd.
403-538-9176

ARCHITECTURAL:
Cohos Evamy Integratedesign 403-245-5501

STRUCTURAL:
Cohos Evamy Integratedesign 403-245-5501

MECHANICAL:
Stantec Consulting Ltd. 403-569-5376

ELECTRICAL:
Stantec Consulting Ltd. 403-716-8042

LANDSCAPE: Urban Systems 403-291-1193

We’ve already had a lot of positive reaction to the building’s appearance.”

CIVIL ENGINEERING:
(Stormwater Pond) Westhoff Engineering
Resources, Inc. 403-264-9366

STEEL CLADDING SUPPLIER:
Agway Metals Inc. 1-800-268-2083

STEEL CLADDING INSTALLER:
Flynn Canada 403-720-8155

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

LIGHT STEEL FRAMING SUPPLIER:
Winroc Corporation 403-327-7566

LIGHT STEEL FRAMING INSTALLER:
Alpine Drywall 403-327-8853

“Steel cladding is a relatively simple building material that delivers a predictable result at an efficient cost. Our design team chose to use it in a simple yet unexpected manner to produce unexpected results.”

Robert Jim, Cohos Evamy Integratedesign

Close-up view of the HF12F .76mm (.0299”) prepainted galvanized panels coloured Medium Bronze Metallic QC 2899.

Entranceway interior with exposed ZF075 galvalneal steel deck.



Light steel framing was used throughout the project - for exterior wind bearing walls and interior non-load bearing walls.



Design objectives for the Water and Environmental Science building included reflecting environmental responsibility, maximizing energy and water use, and compatibility with the university’s stated preference for simplicity and geometric conciseness.



Steel Wall Cladding

1,022m² (11,000 sq. ft.) – HF12F profile .76mm (.0299”) prepainted galvanized coloured QC2899 Medium Bronze Metallic (10000 Series paint system)

920m² (9,900 sq. ft.) – HF12F profile .76mm (.0299”) prepainted galvanized coloured QC 203 Bone White (10000 Series paint system)

LIGHT STEEL FRAMING MATERIAL (LSF)

Material – Grade33 (MPA230)

Interior Stud Walls:

.18mm x 92mm – 32mm flange – stud and track	– 17,374m
(.0179” x 3.625” – 1.25”) – 362S125 – 18	– 57,000 feet
.18mm x 152mm – 32mm flange – stud and track	– 8,534m
(.0179” x 6” – 1.25”) – 600S125 – 18	– 28,000 feet
.33mm x 92mm – 32mm flange – stud and track	– 2,743m
(.0179” x 3.625” – 1.25”) – 362S125 – 18	– 9,000 feet
.33mm x 152mm – 32mm flange – stud and track	– 518m
(.0179” x 6” – 1.25”) – 600S125 – 18	– 1,700 feet
.43mm x 38.1mm channel	– 2,743m
(.043” x 1.5”) channel	– 9,000 feet
Studs framed at 406mm (16”) on centre main and second floor wall heights – 5m (16 ft.)	
Ratings – 45 min, 1 hour and 2 hour fire rated walls	
– STC 45 – 49 sound rated partitions.	

Exterior Stud Walls:

.33mm x 64mm – 41.3mm flange – stud and track	– 1,829m
(.0179” x 2.5” – 1.625”) – 250S162 – 18	– 6,000 feet
.33mm x 152mm – 41.3mm flange – stud and track	– 1,950m
(.0179” x 6” – 1.625”) – 600S162 – 18	– 6,400 feet
.43mm x 203mm – 41.3mm flange – stud and track	– 9,144m
(.043” x 8” – 1.625”) – 800S162 – 43	– 30,000 feet
.43mm x 38.1mm channel	– 1,067m
(.043” x 1.5”) channel	– 3,500 feet

The construction season in remote northern Ontario is relatively short – beginning, on average, in June and ending early October with the winter freeze. That presents an incredible challenge to any major building project, but the use of steel was the ideal solution for a superstructure in Moose Factory, Ontario in the James Bay region.

Moose Cree First Nation Emergency Preparedness and Response Centre

Aerial view of the building structural system for the 2,583m² (27,800 sq. ft.) EPR Centre used light steel framing extensively.

Light steel framing was used for the load-bearing walls, wind bearing walls, steel roof trusses, steel floor trusses at the mezzanine, a steel deck with concrete topping at the mezzanine and pre-finishing steel roofing.

It was a race against time to build the facility to a closed-in state in one construction season – including the pouring of a 2,323m² (25,000 sq. ft.) engineered concrete slab. As well, fabrication and erection needed to be as simple as possible given the lack of a local highly-skilled labour force.

FNA Building Systems Inc. was chosen to supply the complete light steel framing (LSF) building system and provide construction management services for the project. The building structural system for the 2,583 m² (27,800 sq. ft.) EPR Centre used light steel framing for the load-bearing walls, wind bearing walls, steel roof trusses, steel floor trusses at the mezzanine, a steel deck with concrete topping at the mezzanine and pre-painted steel roofing.

FNA worked in conjunction with the Moose Cree First Nation to establish a government funded training program for local workers FNA President, Tom Lehari explains, "The EPR Centre of Excellence Light Steel and Energy Efficient Construction Training Project was implemented to provide trainees with high quality training and work experience in light steel and energy efficient construction techniques, as well as in commercial building construction and finishing work."

A temporary fabrication facility was established at Moose Factory and FNA shipped pre-cut material and components, which were then assembled over the course of the winter months. Construction on site started in the spring. Wall panels were shipped to the site in July and assembly of the superstructure took place in July and August.

"The light steel framing system proved to be the logical choice in building this facility in the remote north," emphasizes Lehari, noting that shipping to Moose Factory is via train from

DESIGN AND CONSTRUCTION TEAM

OWNER:

Moose Cree First Nation 705-658-2740

ARCHITECT: Two Row Architect 519-445-2137

CONSTRUCTION MANAGER:

FNA Building Systems Inc. 416-232-9801

LIGHT STEEL FRAMING SUPPLIER:

Bailey Metal Products 1-800-668-2154

STEEL DECK/STEEL ROOF CLADDING SUPPLIER:

Agway Metals Inc. 1-800-268-2083

LOAD-BEARING AND WIND-BEARING WALL SYSTEMS: FNA Building Systems Inc.

FLOOR TRUSS AND ROOF TRUSS SYSTEMS: FNA Building Systems Inc.

The standing seam steel roof is ArcelorMittal's pre-painted galvanized Z275(G90) coloured QC18260 Slate Blue in Agway Metals' 6-150F panel.

Cochrane and then either by barge in the summer or ice road in the winter." So lightweight steel in knock-down form proved to be the most economical system to ship," remarked Lehari.

The superior energy performance of the building (wall R Value achieved was 32 and the roof R Value achieved was 52).

The lightweight nature of the LSF system also proved to be an economical advantage in erection of the foundations. The site consisted of large quantities of backfill material and a high water table. In winter, frost can reach ground depths of eight feet so conventional strip foots and foundation walls were cost-prohibitive. "FNA's engineers designed a six inch engineered floating slab to support the superstructure only possible because of the lightweight LSF system."

The LSF wall and roof assemblies, combined with rigid and spray foam insulation, contributed to the high energy-efficient levels of the building. The Walls are R32 and the roof is R52. The entire LSF wall and roof structure is effectively wrapped with insulation, providing for a tightly sealed building envelope and elimination of expansion, contraction or building movement.

All in all, the use of light steel framing was significant to successfully achieving a number of project requirements – from design flexibility for interior partitions and work, and speed and simplicity of construction to energy efficiency and sustainable development mandated by the Moose Cree First Nation. The superior energy performance of the building will contribute to approximately 53% lower annual energy costs than the Model National Energy Code of Canada.

Precut material and components, were assembled over the course of the winter months in Moose Factory. Construction on site started in the spring. Wall panels were shipped to the site in July and assembly of the superstructure took place in July and August.

Quantities of framing involved:

Total exterior wall	256m (840 linear feet)
Total exterior 152.4mm (6") stud	3,456m (11,340 linear feet)
	Material – Grade 33 (MPA230)
Total steel deck	4,366m ² (47,000 sq. ft.)
Total pre-finished metal roof	4,180m ² (45,000 sq. ft.)
Roof truss system	1.36m (39'-0") with spans
Standing seam steel roof	.45mm (.0179") pre-painted galvanized, coloured QC8260 Slate Blue, Agway profile 6-150F
Roof deck	.76mm (.0299") ZF075 galvalume Agway profile RD36
Mezzanine	.76mm (.0299") ZF075 galvalume Agway profile CD36 composite deck.

The Granum School, a 641m² (6,900 sq. ft.) 200 capacity K-9 school, was part of the education facility "right-sized" initiative that took place across the province under the direction of Alberta Infrastructure, which now is the responsibility of Alberta Education. The "right-sized" facility lowers operating costs for utilities and maintenance by replacing two older schools of 966m² (10,400 sq. ft.). At a cost of \$3.5 million Granum school is streamlined for efficiency and flexibility.

Colour, Nature and Education

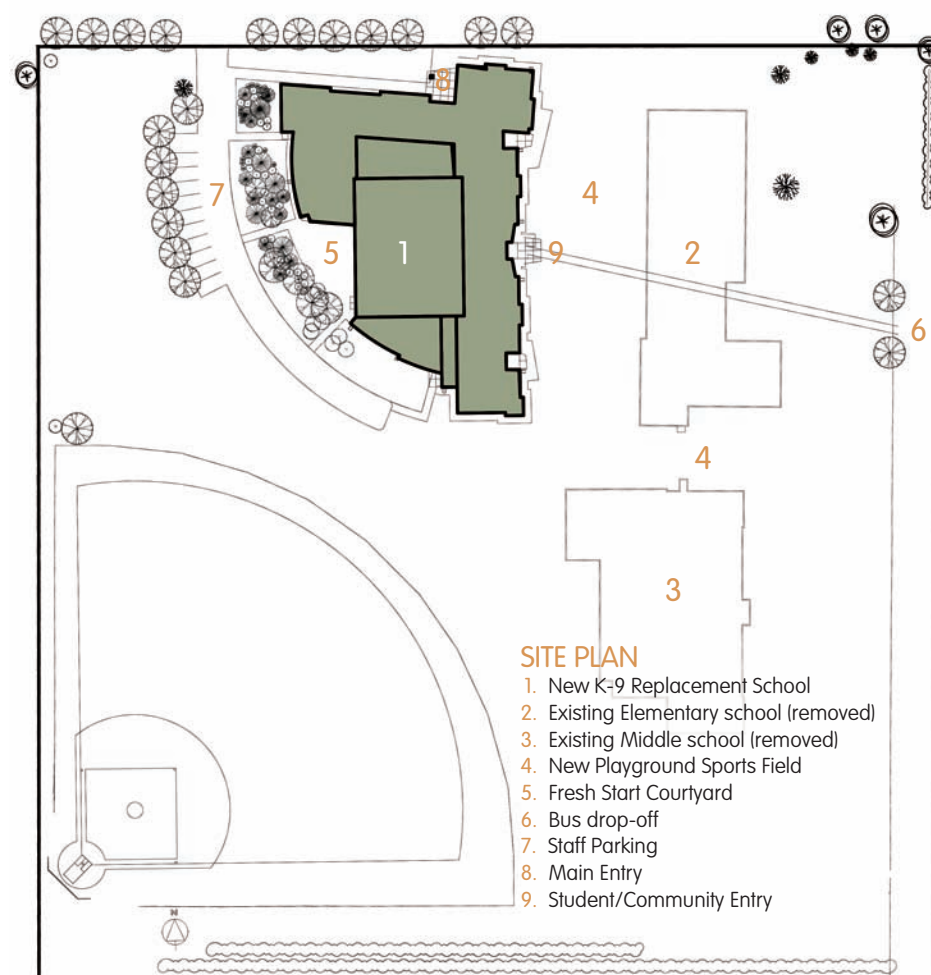
As can be seen in the photographs, the combination of unpainted Z275 galvanized steel cladding and painted stucco on the exterior of the school evokes simple agrarian forms with colours that compliment the vivid blue, white and green of the sky, the snow and fields that define the rural environment.

A major north/south corridor extends

down the length of the school, connecting the common areas located on the western half, with the classrooms on the eastern half. The classrooms are 'paired', to facilitate the three division (1 to 3, 4 to 6, 7 to 9) multi-grading nature of instruction.

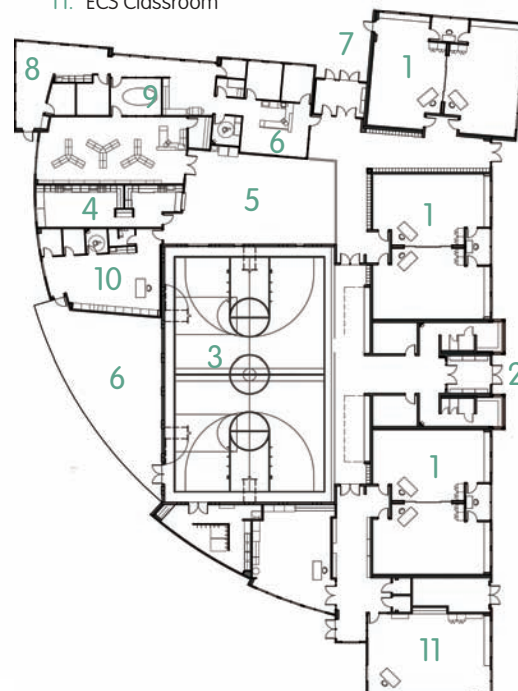
The kindergarten program is on the quiet, southerly end, while the division-three class-

rooms are on the north end. In the interests of plan 'efficiencies', the corridor also functions as a viewing gallery beside the gymnasium. "A Fresh Start program" serving students from across the school division, that are unable to function constructively, productively and/or socially within a traditional school setting, is located beside the outdoor recreation area.



FLOOR PLAN

1. Team Teaching Classroom (Separated with a sliding glass wall)
2. Student/Community Entrance
3. Gymnasium
4. Library
5. Student Gathering Place
6. Administration
7. Main Entrance
8. Staff Room
9. Conference Room
10. Fresh Start Program
11. ECS Classroom



"Through a series of meetings, the building design emerged as we came together to study functional relationships of the school program, the site location and the budget parameters."

Tom Tittmore
Marshall Tittmore Architects

22.3mm (7/8") corrugated .607mm (.0239") Z275 galvanized steel is used for the horizontal cladding along the west side of the school.



The Tradition profile in .607mm (.0239") Z275 galvanized steel is used for both the standing seam roof of the gymnasium as well as for the building's fascia.



BUILDING SECTION

1. Prevailing Westerly/Chinook winds
2. Shelter Belt
3. "Fresh Start" Time Out Courtyard
4. Community Gym
5. Bleachers Area/Corridor
6. Light Well
7. Student/Community Entrance
8. Sheltered Playground Area



Unpainted Z275 galvanized steel cladding and painted stucco on the exterior of the school evokes simple agrarian forms.

DESIGN AND CONSTRUCTION TEAM

OWNER:
Livingstone Range School Division NO 68

ARCHITECT:
Marshall Tittmore Architects 403-264-8700

MECHANICAL ENGINEERING:
Reinbold Engineering Group 403-509-1039

ELECTRICAL ENGINEERING:
Stebnicki Robertson and Associates Ltd.
403-270-8833

STRUCTURAL ENGINEERING:
TRL & Associates Limited 403-244-4944

COST CONSULTANT:
Spiegel Skillen and Associates 403-269-6007

LANDSCAPE ARCHITECT:
Harris and Harris Site Architecture
403-278-0064

GENERAL CONTRACTOR:
Ninety North Construction & Development Ltd.
403-215-1760

STEEL CLADDING SUPPLIER:
Vicwest 1-800-387-7135

PHOTOGRAPHY:
photoganda.ca 403-630-1829



The Galvalume steel standing seam roof contributes to the project's sustainability.

Swaner EcoCenter – seeking to obtain the first LEED Platinum certification in Utah

The Swaner EcoCenter is a 930m² (10,000 sq. ft.) state-of-the-art facility designed to meet LEED's highest standards for green building. (LEED promotes five key areas of human and environmental health: sustainable site development, water conservation, energy efficiency, materials selections and indoor environmental quality).

The Swaner EcoCenter is a non-profit organization that protects 4.86 square kilometres (1,200 acres) of incredible open space surrounding the EcoCenter. Using the EcoCenter as a platform, Swaner will provide programming for people of all ages in order to inspire a deep respect for the natural world.

Jetsingreen.com

ARCHITECT: Cooper Roberts Simonsen Architecture

Galvalume™ – the Steel Product of Choice for Superior Corrosion Resistance

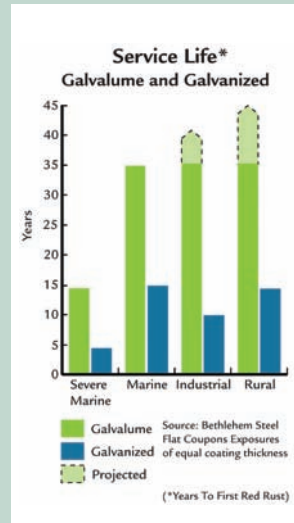
Galvalume™ is the fastest growing steel product in North America. It combines the best protective qualities of aluminum and zinc. In fact, it has proven its superior building material performance in extended field testing in a diverse range of corrosive environments. Galvalume offers these advantages over galvanized at no extra cost on a per square foot basis.

- At least twice the corrosion resistance of traditional galvanized coatings of similar thickness under the same exposure conditions.
- Excellent protection of cut edges.
- Exceptional heat reflectivity, resulting in lower energy load on buildings and improved interior comfort.
- A distinctive appearance, with a smooth, fine spangle and silvery metallic finish.
- High temperature resistance

The superior corrosion resistance of Galvalume has been proven by actual exposure tests and confirmed through extensive field evaluations of real buildings. Atmospheric tests were conducted over 36 years in the USA and 17 years in Canada. The tests covered a variety of environments ranging from rural to severe marine.

An inspection for 25+ year old Galvalume roofs confirmed that they are still in excellent condition and are projected to last 30 or more years before requiring major maintenance.

For more detailed and extensive information, write to or call Ken De Souza at Dofasco, telephone 1-800-363-2726 Ext: 3997 or e-mail: ken.desouza@arcelormittal.com



Atlanta, Georgia

Weatherford Place – proves Net-Zero Energy and Platinum Certification is attainable

Perhaps the ultimate green development is an enclave of eight custom solar single family homes now under construction in the Atlanta suburb of Roswell, Georgia. Weatherford Place is a semi-custom neighborhood where this 232m² (2,500 sq. ft.), two-story model has been open since October 2007 and all the homes are designed to be net-zero energy consumers.

The pre-painted steel roofed model has been selling power to Georgia Power and Southern Co. for nine months. Simone du Boise, AIA, CGC, CSI, NCARB, LEED AP, ASGBC, principal of Cadmus Construction, says her design/build firm mandates alternative green, sustainable power sources in all its buildings.

Professional Builder, Sept. 2008

Pittsburgh, Pennsylvania

Petersen Events Center – University of Pittsburgh

Over 9,290m² (100,000 sq. ft.) of structural standing seam steel roofing was used on the \$65 million Petersen Events Center at the University of Pittsburgh. The 1mm (.040")-thick SSR 12 standing seam panels have a Champagne Gold PVDF paint finish.

DESIGNER: Apostolou Associates Inc./Rosser International Joint Venture Partners, Pittsburgh

Metal Architecture



Geraldton, Ontario

Geraldton Interpretive Centre

930m² (10,000 sq. ft.) .61mm (.0239") ArcelorMittal's AZ180 Galvalume Plus.

ARCHITECT:

Peterson, Habib
1-807-623-1021

SUPPLIER:

Ideal Roofing Company Ltd.
613-746-3206

GENERAL CONTRACTOR:

Barino Construction
1-807-876-2294

INSTALLER:

Northern Engineering
1-807-623-0441

Alexander, Arkansas

Bethel Middle School achieves LEED Silver

"High performance" designs – a payback period of 15 years – or less!

The Bryant School District needed a new 750-student middle school. A "high performance" building and "LEED Certification" were desired. A combination of two building types was used to save time. "Red iron" was readily available and was used for the first level, while the pre-engineered second floor was being fabricated in the shop. Land was conserved by utilizing a two-story design, and ground-level entry was achieved for both levels. And, at the same time, security was enhanced by using only a few means of controlled entry to the building.

Daylight throughout the building creates a bright, healthy environment. Student test scores have risen, absenteeism has declined and student requests to attend Bethel are phenomenal.

The building has been awarded LEED Silver, and equally as important, it will return 96 percent of the original cost during its 50-year life through savings to the district. The seven dollars additional building-per-sq.-ft.-costs will be paid out in approximately 12 years, three years below the legislated time.

ARCHITECT: Jackson Brown King Architects, Little Rock, Arkansas



.61mm (.0239") Galvalume substrate standing seam roof with a Kynar 500 finish coloured Light Stone standing seam roof was selected for its ability to deliver high solar reflectance and high thermal emittance. This helps to reduce energy costs, improve occupant comfort, cut maintenance costs, increase the life cycle of the roof, and reduce urban heat islands along with associated smog.



Metal – Energy Efficient Roofing energysmartideas.com

In 2004 the Oak Ridge National Laboratory concluded a three-year study of metal roofing materials. This study evaluated the energy efficiency and the service life of various metal roofing materials which included: painted and unpainted galvanized steel, painted and unpainted Galvalume®-coated steel as well as painted polyvinylidene fluoride (PVDF) aluminum. And, they were tested on both steep and low slope installations.

This study showed that both painted and unpainted metal panels maintain their energy efficiency better than any other roofing system studied. Pre-painted metal roofing retains ninety-five percent of its initial solar reflectance over a three-year period. Some field data showed that PVDF painted metals maintained a resistance to soiling for at least thirty-five years! Infrared emittance increases over time, but that it isn't in any way affected by the climate because of the overall uniformity of the increase.

A basic, unpainted metal roof will reflect much of the solar radiation that is usually absorbed into the attic and home by the traditional asphalt roofs. Pre-painted or granular-coated metal roofs will even go a step further and cool the home by re-emitting much of what solar radiation is absorbed. This is definitely a good choice for warmer climate homes. By installing a metal roof you could cut your summer cooling costs by forty percent! If the roof is a highly emissive metal roof it could even reduce the urban air temperature by as much as twelve degrees Fahrenheit! Metal roofs sure seem like an energy smart idea.

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:

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Kilworthy, ON P0E 1G0
Or email:
davidfollis@vianet.ca



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