

Steel Building System Case Study CS-104-17

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AXWORTHY HEALTH AND RECPLEX University of Winnipeg, Manitoba

Steel Building System brings quality and speed to new heights

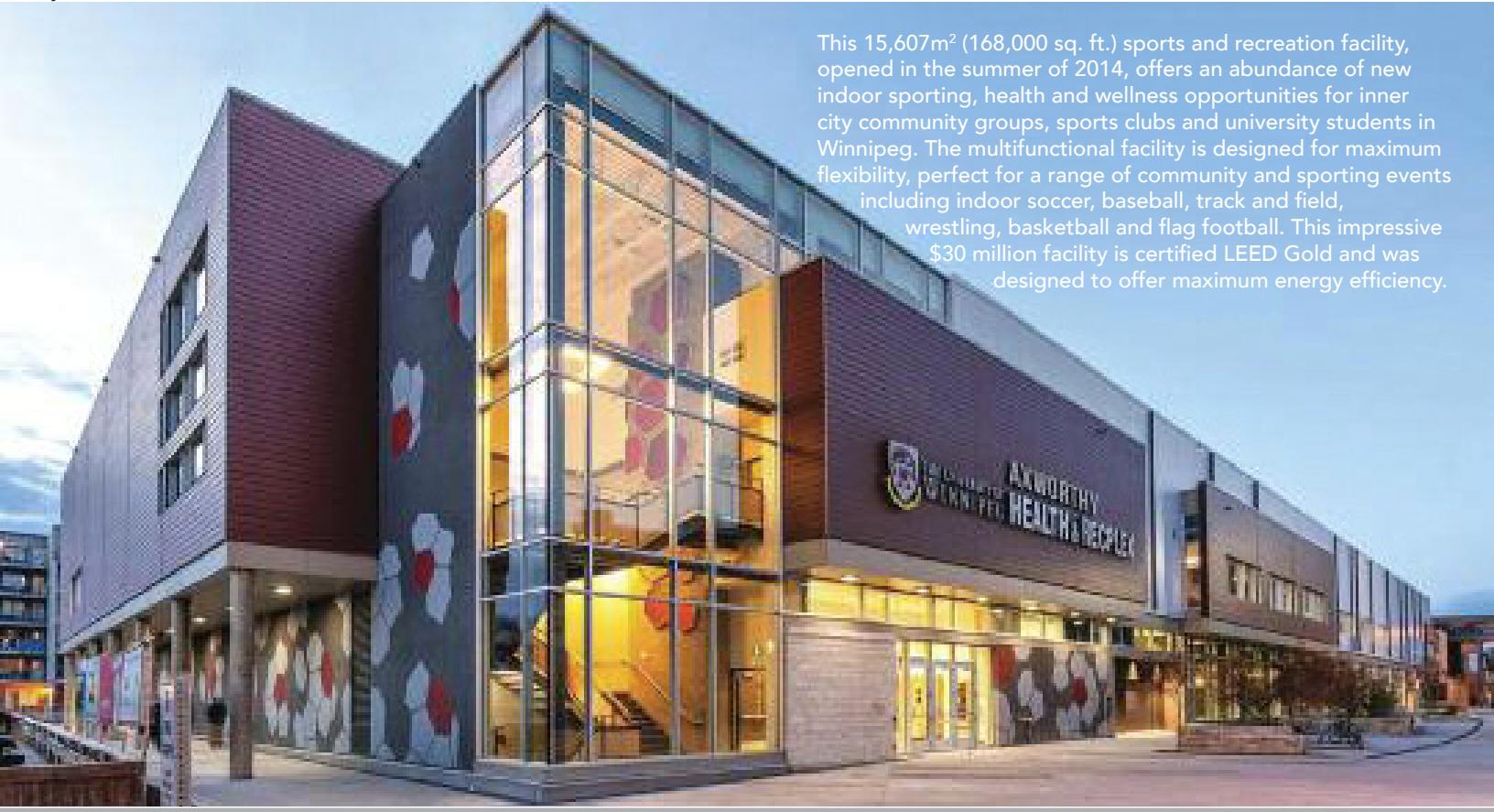
In order to address a chronic shortage of indoor recreational space, the University of Winnipeg created the Axworthy Health and RecPlex. The building houses a 50.5 x 90m soccer field, a 4-lane, 60m rubberized sprint track, a gymnasium and many other bells and whistles for the sport-loving citizens of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

When it came time to build the 15,607m² (168,000 sq. ft.) RecPlex in January of 2013, a steel building system was chosen and by July of 2014, the RecPlex was completed.

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

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

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



This 15,607m² (168,000 sq. ft.) sports and recreation facility, opened in the summer of 2014, offers an abundance of new indoor sporting, health and wellness opportunities for inner city community groups, sports clubs and university students in Winnipeg. The multifunctional facility is designed for maximum flexibility, perfect for a range of community and sporting events including indoor soccer, baseball, track and field, wrestling, basketball and flag football. This impressive \$30 million facility is certified LEED Gold and was designed to offer maximum energy efficiency.

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

Other features include reused historic Tyndall stone foundations from the earliest U of W college which are being used in the building, the cladding and the landscape. As well, the plan identified existing site trees for protection and the remaining trees were recycled back onto the campus as finished projects, lumber, furniture, art pieces or mulch.

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

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

DESIGN AND CONSTRUCTION TEAM:

OWNER: University of Winnipeg

ARCHITECT: Number Ten Architectural Group

GENERAL CONTRACTOR: PCL Constructors Canada Ltd.

STEEL BUILDING SYSTEM SUPPLIER: Behlen Industries LP

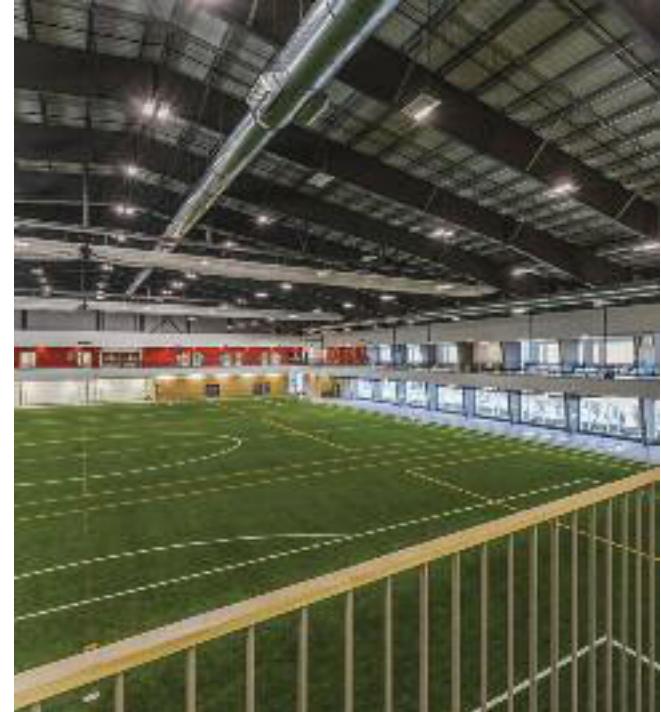
STEEL BUILDING SYSTEM ERECTOR: Contempora Steel Builders

PHOTOGRAPHY: Number Ten Architectural Group

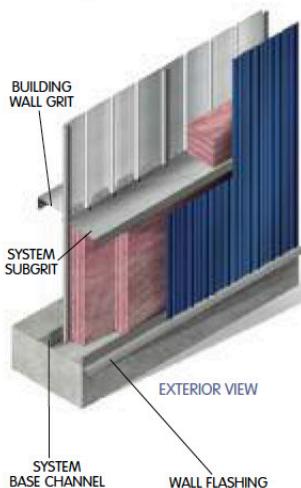
The RecPlex boasts conventionally framed steel areas, added to either gable end of the pre-engineered Behlen (SBS) building. Tightly sealed insulated metal exterior wall panels with an R-value of R28 combined with an R38 roof assembly reduces heat loss, energy use and greenhouse gas emissions. Also,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



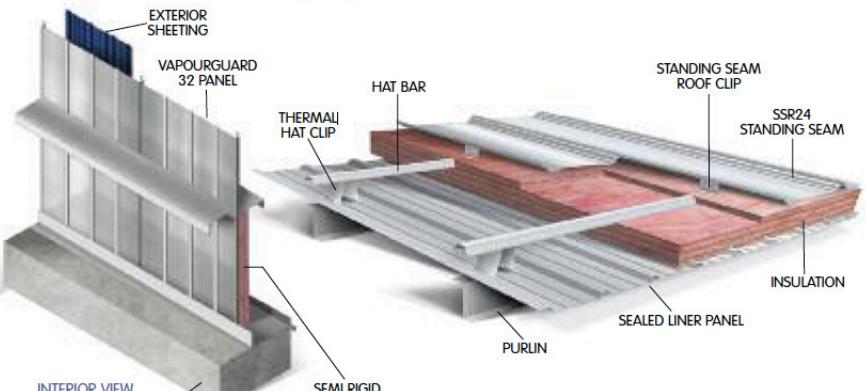
The Field House is a wide span rigid frame pre-engineered steel building. The roof of the steel building system (SBS) housing the soccer field is a "bright white" finish selected to achieve LEED heat island effect credit. The roof also utilizes Behlen's 'Thermalguard' and 'Vapourguard 32' systems.



Thermalguard® Insulation System:



Vapourguard 32° Notched Zee Bar:



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

SPECIFICATIONS:

OVERALL HEALTH & RECPLEX: 15,607m² (168,000 sq. ft.).
ROOF: .61mm (.0239") AZM150 Galvalume – 20" wide steel standing seam coloured Bright White QC8317.
BUILDING: Supplied with a thermal roof cavity on top of purlin liner installed, then the thermal clip and hat bar followed by roof panel.
LINER: Behlen AR profile, .48mm (.0179") coloured Bright White QC 8317.
ROOF DECK: Galvalume AZ150 substrate .48mm (0.018").

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

ACTUAL SBS BUILDING:

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

INSULATED WALL PANELS:

Mini-Micro-Rib (KS42MMR) Wall Panel – Insulated-core with steel wall panels

Z275 (G90) galvanized steel sheet to ASTM A653 / A653M coating.

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

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

