POTENTIAL CONTRIBUTION
LEED® CANADA-NC & CS 2009

LEED® TECHNICAL DATA SHEET

THE COMPANY HONCO STEEL BUILDINGS

A leader in the design, manufacturing, and installation of steel buildings, HONCO has acquired extensive expertise and know-how since its founding in 1974. This vast experience has earned HONCO an enviable reputation in the commercial, industrial, and recreational construction industry.

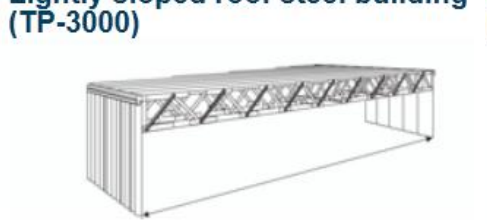
The key to HONCO's success is not only the structural panels but also the roof trusses. Made of struts, gussets and lateral spacers connecting the roof and ceiling structural panels, the HONCO roof trusses are designed to evenly distribute the loads toward the bearing walls. HONCO manufactures two main types of self-supporting buildings—with either a curved roof (TC) or a lightly sloped roof (TP).

ONE TECHNOLOGY, MULTIPLE BUILDING SOLUTIONS

Curved roof steel buildings

Curved roof buildings are ideal for projects requiring clear spans up to 80 meters (262 feet)

Lightly sloped roof steel building (TP-3000)



The TP-3000, with its lightly sloped roof to ensure drainage, also features an insulatable attic space and a clear span.

Lightly sloped roof steel building (TP-4000)

The TP-4000 boasts the same features as the TP-3000; however has intermediate supports system combined with HONCO roof trusses allowing a greater width.

CURVED ROOF STEEL BUILDING

Complexe de soccer Honco de Lévis, Charny, Qc

CURVED ROOF STEEL BUILDING is ideal for projects requiring clear spans up to 80 meters (262 feet) depending on the region. They are a cost-effective solution for construction of arenas, indoor soccer fields, gymnasiums and applications requiring column -free space

CURVED ROOF STEEL BUILDING is optimized by its method of insulation, the well ventilated attic and ceiling finish that reflects light. The structural ceiling reduces the volume of air to cool or heat in addition to enhance the architectural appearance inside.

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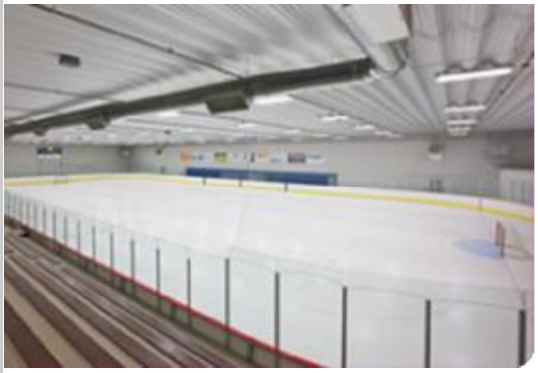
LEEDÒ CANADA NC & NE 2009

A positive impact with LEED® Canada-NC & CS 2009

The growing interest for sustainable building design & operations, of which we are part, is embodied in the Leadership in Energy and Environmental Design (LEED®) Green Building Rating Systems in North America.

This document explores the potential contribution for the use of HONCO products for a LEED® Canada-NC & CS 2009 (New Construction and Major Renovations) and (Core and Shell) project.



The CaGBC LEED® Canada-NC & CS 2009 Rating Systems have 110 points divided in seven categories for certifying the design and construction of commercial or institutional buildings and high-rise residential buildings of all sizes, both public and private.

Geometrix Precast Canada inc. products can assist in earning points towards the various LEED rating system certification levels. In some cases, HONCO products contribute directly to individual LEED points, but in other cases can only help meet the overall intent.

LEED® Canada-NC & CS 2009 Summary Table					HONCO STEEL BUILDINGS	
Category		Prerequisite	Credits	Points	Potential Contribution	
					LEED Canada-NC 2009	LEED Canada-CS 2009
SS	Sustainable Sites	1	8	26	1 point	1 point
WE	Water Efficiency	1	3	10	0 points	0 points
EA	Energy and Atmosphere	3	6	35	19 points	21 points
MR	Materials and Resources	1	7	14	6 points	5 points
IEQ	Indoor Environmental Quality	2	8	15	1 point	0 points
ID	Innovation and Design	0	2	6	3 points	3 points
RP	Regional Priority	0	2	4	4 points	4 points
Total		8	36	110	Up to 34 points	Up to 34 points

** It is important to consider that the total amount of possible points reflects the number of achievable points in each credit categories. The product by itself cannot achieve this score, as defined above, but is considered as a beneficial element in order to achieve LEED® credits.*

POTENTIAL CONTRIBUTION LEED® CANADA-NC & CS 2009

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CREDITS	DURABLE STRATEGIES	POTENTIAL	CREDIT RELE-	CONTRIBUTION AND COMPLIANCE* HONCO STEEL BUILDINGS
SS 7.2	Heat island effect: Roof	1 point	Direct	COMMENTS

SUSTAINABLE SITES (SS)

Requirements

Option 1 - Use roofing materials with a solar reflectance index (SRI) equal to or greater than the values in the table below for a minimum of 75% of the roof surface.

Roofing materials having a lower SRI value than those listed below may be used if the weighted rooftop SRI average meets the following criteria:

$$\frac{\text{Projected area of SRI roof}}{\text{Total projected roof area}} \times \frac{\text{SRI of installed roof}}{\text{Required SRI}} \geq 75\ \%$$

Roof type	Slope	SRI
Low-sloped roof	≤ 2:12	78
Steep-sloped roof	> 2:12	29

HONCO's STEEL BUILDINGS are built using roofing materials displaying a solar reflectance index (SRI) that can be up to 75.

During a LEED® project, all requests related to the solar reflectance index (SRI) can be considered, depending on the project specifications.

EAp2	Minimum Energy Performance	0 (required)	Direct	COMMENTS

ENERGY AND ATMOSPHERE (EA)

Requirements

Select 1 of the 3 compliance path options described below.

Chosen option must also be used for EA Credit 1.

Option 1 – Whole building simulation:

Either Model National Energy Code For Buildings (MNECB) *or* ASHRAE 90.1-2007, Energy Standard for Buildings Except Low-Rise Residential Buildings.

In comparison with the reference building performance rating, demonstrate a 23% cost improvement in the proposed building performance rating for new buildings or a 19% cost improvement in the proposed building performance rating for major renovations to existing buildings, for the MNECB *or* 10% cost improvement for new buildings or 5% cost improvement for major renovations to existing buildings for ASHRAE 90.1-2007.

Option 2 – Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide appropriate to the project scope, for one of the following path: for Small Office Buildings 2004 *or* for Small Retail Buildings 2006 *or* for Small Warehouses and Self-Storage Buildings 2008 *or* for K-12 School Buildings.

Option 3 – Comply with the prescriptive measures identified in the Advanced Buildings™ Core Performance Guide developed by the New Buildings Institute.

HONCO's STEEL BUILDINGS can contribute to prerequisite EAp2 since their unique design can help achieve a good energy efficiency.

Moreover, the structural panels system allows for a more efficient wall insulation since the insulation is:

- Installed horizontally, from inside the building, with wood lathing that does not compress it;
- Laminated with a reinforced aluminium vapour barrier (FSK) that reflects heat;
- Held up with the help of special hooks and supports that prevents the insulation to sag in the walls;
- Sealed on horizontal lathing;
- Located in a continuous line with the foundation insulation;
- Installed by the inside preventing the insulation from being exposed to the elements during its installation

HONCO's STEEL BUILDINGS include insulation materials having a thermal resistance of R-36 (for 13½ inch thickness) as well as a reinforced aluminum vapour barrier that reflects heat.

During a LEED® project, HONCO can provide the performance data specific to your requirements.

HONCO has all required documents regarding LEED® and can rapidly provide information for a specific project.

* Vertima's interpretation regarding potential contribution and compliance of the product and/or system for the LEED® credits are based on information given by the clients who are responsible for its veracity and integrity. Vertima is validating given proof and vouchers with manufacturers and their suppliers. Therefore, Vertima cannot be held responsible for false information or misinterpretation.

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ENERGY AND ATMOSPHERE (EA)

CREDITS	DURABLE STRATEGIES	POTENTIAL POINTS	CREDIT RELE-
EA 1	Optimize Energy Performance	1 to 19 points (NC) 3 to 21 points (CS)	Direct

Requirements

Select 1 of the 3 compliance path options described below.

Comply with EA Prerequisite 2 (Minimum Energy Performance).

Option 1 – Demonstrate a percentage cost improvement in the proposed building performance rating compared with reference building performance rating, according to the chosen path in EA Prerequisite 2. Up to 19 points (NC) or 21 points (CS).

MNECB

One point (1) LEED® NC and three (3) points LEED® CS for an expected cost reduction of 25% (new buildings) or 21% (existing buildings renovations).

ASHRAE 90.1-2007

One point (1) LEED® NC and three (3) points LEED® CS for an expected cost reduction of 12% (new buildings) or 8% (existing building renovations).

Option 2 – Comply with the prescriptive measures of the ASHRAE Advanced Energy Design Guide (1 point) appropriate to the project scope, for one of the following path: for Small Office Buildings 2004 *or* for Small Retail Buildings 2006 *or* for Small Warehouses and Self-Storage Buildings 2008 *or* for K-12 School Buildings.

Option 3 – Comply with the prescriptive measures identified in the Advanced Buildings™ Core Performance Guide developed by the New Buildings Institute. For this credit, additional points must be obtained with this option (3 points maximum).

CONTRIBUTION AND COMPLIANCE* HONCO STEEL BUILDINGS

COMMENTS

HONCO's STEEL BUILDINGS can contribute to credit EA 1 since their unique design can help achieve a good energy efficiency.

Moreover, the structural panels system allows for a more efficient wall insulation since the insulation is:

- Installed horizontally, from inside the building, with wood lathing that does not compress it;
- Laminated with a reinforced aluminium vapour barrier (FSK) that reflects heat;
- Held up with the help of special hooks and supports that prevents the insulation to sag in the walls;
- Sealed on horizontal lathing;
- Located in a continuous line with the foundation insulation;
- Installed by the inside preventing the insulation from being exposed to the elements during its installation

HONCO's STEEL BUILDINGS include insulation materials having a thermal resistance of R-36 (for 13½ inch thickness) as well as a reinforced aluminum vapour barrier that reflects heat.

During a LEED® project, HONCO can provide the performance data specific to your requirements.

MATERIALS AND RESOURCES (MR)

MR 3	Material reuse	1- 2 points (NC) 1 point (CS)	Direct

Requirements

NC : Use salvaged, refurbished or reused materials, the sum of which constitutes at least 5% (1 point) or 10% (2 points), based on cost, of the total value of materials on the project.

CS : Use salvaged, refurbished or reused materials, the sum of which constitutes at least 5% (1 point), based on cost, of the total value of materials on the project.

COMMENTS

HONCO's STEEL BUILDINGS can only contribute to this credit when they are retrieved and reused in another project or if used for other purposes in the same project.

When HONCO's STEEL BUILDINGS are installed for the first time, they cannot contribute to this credit.

With their steel self-supporting structures, HONCO's STEEL BUILDINGS allow an adaptable building vocation. Moreover, the installations reorganization can be easily achieved due to the column-free space.

However, if a relocation of the building is planned, it would be preferable to maintain the building's structure according to its initial design.

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HONCO has all required documents regarding LEED® and can rapidly provide information for a specific project.

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MATERIALS AND RESOURCES (MR)

CREDITS	DURABLE STRATEGIES	POTENTIAL POINTS	CREDIT RELE-
MR 4	Recycled content	1 - 2 points	Direct

Requirements

Use materials with recycled content such that the sum of post-consumer recycled content plus 1/2 of the pre-consumer recycled content constitutes at least 10% (1 point) or 20% (2 points), based on cost, of the total value of the materials in the project.

The recycled content value of a material assembly is determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

CONTRIBUTION AND COMPLIANCE* HONCO STEEL BUILDINGS

COMMENTS

HONCO's STEEL BUILDINGS can contribute to this credit since they contain materials which have pre-consumer and post-consumer recycled content, as shown in the table below:

Component	Pre-consumer	Post-consumer
Steel building's structure	17,8 %	74,3 %
Insulation	9 % à 25 %	1 % à 64 %
Gutters	17,8 %	74,3 %
Metallic siding	7,3 % à 17,8 %	23 % à 74,3 %

HONCO collected all the information for each of the components and suppliers and will thus be able to provide the specific information needed in a LEED® project.

All data relating to recycled content have been validated by a third party - Vertima inc.

CREDITS	DURABLE STRATEGIES	POTENTIAL POINTS	CREDIT RELE-
MR 5	Regional material	1 - 2 points	Direct

Requirements

Use building materials or products that have been extracted, harvested, recovered and processed within 800 km (500 miles) (2,400 km if shipped by rail or water) of the final manufacturing site.

Demonstrate that the final manufacturing site is within 800 km (500 miles) (2,400 km if shipped by rail or water) of the project site for these products.

If only a fraction of a product or material is extracted, harvested, recovered, processed and manufactured locally, then only that percentage (by weight) must contribute to the regional value. The minimum percentage of regional materials for each point threshold is 20% (1 point) or 30% (2 points).

COMMENTS

HONCO's STEEL BUILDINGS can contribute to this credit since they contain components that are extracted, harvested, recovered and processed within 800 km (by truck) or 2,400 km (by rail or water) of the final manufacturing site. The percentage of regional material for the main components are listed in the table below:

Component	% of material extracted at less than 800 km by truck (or 2400 km by boat or train) from the final manufacturing site
Steel building's structure	92,8 %
Gutters	92,8 %
Metallic siding	0 % à 92,8 %

The percentage calculation was performed by considering the requirements of Credit MR 5 and the maximum distance radius (which depends on the means of transportation used).

HONCO's STEEL BUILDINGS final place of manufacturing is located in Quebec, St-Nicolas (G7A 1B1).

The origin of the main components and the mean of transportation used must be validated for every project.

All data on regional materials components were identified and validated by a third party - Vertima inc.

HONCO has all required documents regarding LEED® and can rapidly provide information for a specific project.

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INDOOR ENVIRONMENTAL QUALITY (IEQ)

CREDITS	DURABLE STRATEGIES	POTENTIAL POINTS	CREDIT RELE-	CONTRIBUTION AND COMPLIANCE* HONCO STEEL BUILDINGS
IEQ 3.2 Option 2	Construction IAQ management plan: Before occupancy	1 point (NC) 0 points (CS)	Indirect	COMMENTS

Requirements

Develop an IAQ management plan and implement it after all finishes have been installed and the building has been completely cleaned before occupancy.

Option 2 - Air Testing

Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the United States Environmental Protection Agency Compendium of Methods for the Determination of Air Pollutants in Indoor Air and as additionally detailed in the LEED® Canada Reference Guide for Green Building Design and Construction.

HONCO's STEEL BUILDINGS can contribute to the Credit IEQ 3.2 if option 2 is used in a specific project since they only require the use of adhesives and sealants on the outside of the vapour barrier.

Moreover, the prepainted steel allows the exemption of paint use on the project site. This helps achieve a better indoor air quality, especially when a project includes interior partition walls.

HONCO can provide the information related to the emissions of the specific sealants and adhesives selected in LEED® project.

All data relating to emissions have been validated by a third party - Vertima inc.

IEQ 4.1	Low emitting materials: Adhesives and sealants	Non applicable	Indirect	COMMENTS

Requirements

All adhesives and sealants used on the interior of the building (i.e., inboard side of the weatherproofing system and applied on-site) must comply with the following requirements as applicable to the project scope:

Adhesives, Sealants and Sealant Primers: South Coast Air Quality Management District (SCAQMD) Rule #1168. Volatile organic compounds (VOC) limits are listed in the table below and correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005

The credit IEQ 4.1 only applies to adhesives and sealants used on-site and on the interior of the building (delimited by the vapour barrier).

HONCO's STEEL BUILDINGS are assembled on the project site and only require the use of sealants and adhesives on the outside of the vapour barrier.

The sealants and adhesives applied on site have a VOC content as listed in the table below:

Sika Canada	SikaLastomer 95	Sealing tape	<50g/L
	SikaLastomer 511	Sealing tape	<180 g/L

HONCO can provide the information related to the emissions of the specific sealants and adhesives selected in LEED® project.

All data relating to emissions have been validated by a third party - Vertima inc.

HONCO has all required documents regarding LEED® and can rapidly provide information for a specific project.

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INDOOR ENVIRONMENTAL QUALITY (IEQ)

CREDITS	DURABLE STRATEGIES	POTENTIAL POINTS	CREDIT RELE-
IEQ 4.2	Low-emitting materials: Paints and coatings	Non applicable	Direct

Requirements

Paints and coatings used on the interior of the building (i.e., inboard side of the weatherproofing system and applied on-site) must comply with the following criteria as applicable to the project scope:

Architectural paints and coatings applied to interior walls and ceilings must not exceed the volatile organic compound (VOC) content limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993.

Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates must not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997.

Clear wood finishes, floor coatings, stains, primers, and shellacs applied to interior elements must not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

CONTRIBUTION AND COMPLIANCE* HONCO STEEL BUILDINGS

COMMENTS

The credit IEQ 4.2 only applies to paints and coatings used on-site and on the interior of the building (delimited by the vapour barrier).

HONCO's STEEL BUILDINGS don't require the use of paint since they use prepainted steel.

However, during the on-site installation, the IEQ 4.2 requirements will need to be respected if paint touch-ups on the interior of the building are necessary.

All data relating to emissions have been validated by a third party - Vertima inc.

INNOVATION IN DESIGN (ID)

ID path 2	Innovation in Design	1 - 3 points	Direct

Requirements

Path 2: Exemplary Performance

Achieve exemplary performance in an existing LEED 2009 for New Construction and Major Renovations credit that allows exemplary performance as specified in the LEED Reference Guide for Green Building Design & Construction, 2009 Edition. An exemplary performance point may be earned for achieving double the credit requirements and/or achieving the next incremental percentage threshold of an existing credit in LEED.

One point is awarded for each exemplary performance achieved. No more than 3 points under ID credit 1 may be earned through PATH 2— Exemplary Performance.

COMMENTS

Depending on the project's design, HONCO's STEEL BUILDINGS could contribute to exemplary performance strategies for the following credits:

EA 1 - Innovation and exemplary performance if the energy consumption of the building is reduced by more than 50%, based on AHSRAE 90.1 - 2007, or 58% based on the CMNÉB 1997 code.

MR 4 - Innovation and exemplary performance if the project achieves 30% recycled content.

MR 5 - Innovation and exemplary performance if the project achieves 40% regional material.

HONCO's STEEL BUILDINGS achieve excellent performances in the EA 1, MR 4 and MR 5 credits and can thus contribute to exceed these credits' requirements

HONCO has all required documents regarding LEED® and can rapidly provide information for a specific project.

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HONCO STEEL BUILDINGS

Vertima LEED® CERTIFICATION SPECIALIST

POTENTIAL CONTRIBUTION LEED® CANADA-NC & CS 2009

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CREDITS	DURABLE STRATEGIES	POTENTIAL POINTS	CREDIT RELE-	CONTRIBUTION AND COMPLIANCE* HONCO STEEL BUILDINGS
REGIONAL PRIORITY (RP)				
RP 1	Durable building	1 point	Direct	COMMENTS

Requirements

Develop and implement a Building Durability Plan, in accordance with the principles in CSA S478-95 (R2007) - Guideline on Durability in Buildings, for the components within the scope of the Guideline, for the construction and preoccupancy phases of the building.

Depending on the project's orientation, HONCO's STEEL BUILDINGS can contribute to this credit, in accordance with the principles in CSA S478-95 (R2007) guideline.

HONCO's STEEL BUILDINGS are designed to resist to climate change and, once bolted, the wall panels, the roof and the ceiling form a resistant and durable shell.

HONCO's STEEL BUILDINGS allow the complete uninstalling and reinstalling of the structures in order to facilitate the repairs and optimise the life expectancy of the building's shell.

RP 2	Regional priority	1 - 3 points	Direct/Indirect	COMMENTS

Requirements

Up to 3 points for Regional Priority Credit 2 may be proposed for this credit that is intended to allow adding point emphasis to recognize one OR more issues that have additional regional environmental importance.

To achieve a Regional Priority credit, the applicant must identify LEED® credits which have additional regional environmental importance.

A project must achieve the base credit and then propose that credit as a Regional Priority credit.

Please refer to the Advantages and Aspects to Consider section of the Regional Priority credit.

For a list of applicable credits, please refer to the CaGBC website www.cagbc.org, under the LEED® tools section for the LEED® Canada-NC 2009 & CS 2009 Rating Systems.

HONCO has all required documents regarding LEED® and can rapidly provide information for a specific project.

POINTS	TOTAL	Up to thirty four (34) points LEED® Canada-NC & CS 2009	The HONCO STEEL BUILDINGS can contribute up to a total of thirty-four 34 points for LEED® Canada-NC & CS 2009

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