LEED®-NC Gold Certified

Owner:
Steelcare Inc.

Architect:
Chamberlain Architect Services Ltd.

LEED Consultant, Commissioning Agent:
Enermodal Engineering Ltd.

M/E, Civil Engineers:
Stantec Consulting Inc.

Landscape Architect:
Reynolds & Associates Landscape Architects

Steelcare Inc. Plant 19

Hamilton, Ontario

PHOTO CREDIT ENERMODAL ENGINEERING

Steelcare is one of Canada's leading industrial service companies, providing sophisticated warehousing, inventory management, and transportation to the steel industry. Always committed to state-of-the-art facilities and services for their clients, Steelcare expanded its corporate ethic to include concern for the environment. A commitment to minimizing environmental impacts during building design, construction, and operation resulted in an industry-leading example of a low-impact, environmentally-responsible building.

Plant 19 is a 7,927 m^2 building with a two-storey office area, loading area with air lock, and a fully-automated, climate-controlled steel warehouse. The warehouse temperature and humidity must be carefully controlled to prevent condensation on the stored steel rolls.

Site Remediation Improves the Environment

Built on soil reclaimed from Hamilton Harbour, the Steelcare site is rehabilitated to promote biodiversity and provide a natural setting. Plant 19 provides open space equal to 31% of the lot size. A water-efficient landscaping plan using native and non-invasive species eliminates the need for a permanent irrigation system and improves local habitat.

Stormwater run-off is handled through on-site detention ponds. Post-development water runoff is at or below pre-development volumes. In addition, 80% of post-development total suspended solids and 40% of post-development total phosphorous are removed from stormwater.

To reduce the negative impacts of automobiles, bike racks and showers are provided and a carpool program is being developed.

40% Savings in Water Use

Potable water use is dramatically reduced through the use of waterless urinals, and low-flow lavatories, showerheads and kitchen faucets, and the use of a rainwater cistern. Together these measures allow Plant 19 to use 40% less potable water than a conventional building. Water-efficient landscaping further reduces potable water consumption by eliminating the need for a permanent irrigation system.

ENERMODAL ENGINEERING
Creating energy and resource efficient buildings

56% Energy Savings

The Steelcare building design team determined to meet the most stringent energy performance standards, resulting in a remarkable 56% energy savings. Demetrius Tsafaridis, President of Steelcare, is proud to relate the following story regarding energy performance: "Our gas and electric bills are ridiculously low compared to our other facilities. Our gas supplier said we had better get our meter checked because it shows we are using way too little gas."

The design includes a highly insulated building envelope and high-performance windows. Lighting power densities meet or are lower than MNECB requirements and occupancy sensors control lighting fixtures. Plant 19 features infrared natural gas tube heaters, a heat recovery ventilator, and a carbon dioxide monitoring system. A comprehensive commissioning program ensured that all building elements and equipment are installed and operating as designed.

An innovative feature of Plant 19 is the use of a SOLARWALL, a dark-coloured perforated metal wall attached to the building's exterior, south-facing wall. As ventilation air is pulled through the Solarwall, it is heated by the solar radiation absorbed by the metal cladding. The heated ventilation air rises in the cavity behind the Solarwall to a plenum at the top of the wall, where it is distributed throughout the warehouse area. This technology results in an energy cost savings of 10% compared with a conventional building.

Resource Conservation through Material Selection

The design of Plant 19 reflected a desire to use local and recycled materials. The steel walls and roof are of recycled content steel from Dofasco, a leader in sustainability within the steel industry. Recycled materials make up an impressive 46% of the material cost for this project.

The building was designed for adaptability. The steel structure is assembled with bolted connections to easily facilitate the expected future expansion. Similarly, the warehouse floor is made from concrete pavers instead of poured concrete so that it can be easily re-configured and re-used at the end of building life.

A Quality Work Environment

Indoor environmental quality not only reduces environmental impacts, but creates a work environment that is healthier and safer for employees. A carbon dioxide monitoring system controls the ventilation system—this ensures adequate fresh air for building occupants and reduces energy used for heating ventilation air. Indoor air quality is protected by permanent entryway systems in high traffic areas and MERV 13 filters in mechanical equipment.All regularly occupied spaces have access to natural light and provide a view to the outdoors.

Lessons Learned

Steelcare Inc. Plant 19 is a testament to the economical and technical feasibility of advanced, environmentally appropriate building design. This industrial facility has proven so successful that Steelcare is working on retro-fitting older facilities to the higher standard of Plant 19.

For more information, contact
Enermodal Engineering Limited
LEED Consultant
info@enermodal.com

ENERMODAL ENGINEERING
Creating energy and resource efficient buildings