Winnipeg Airports Authority’s New Air Terminal Building:
A Candidate for LEED Certification

Winnipeg Airports Authority Inc.

As a partner with the community, the Winnipeg Airports Authority (WAA) has committed to the principles of sustainable development. Our objective is to minimize impacts on the environment from daily operations and development through continuous improvement of environmental performance in a manner consistent with WAA’s overall missions and goals.

We strive to achieve environmentally responsible airport operations and development, going beyond the requirements of applicable laws and regulations. The intent is to integrate environmental protection into all stages of airport operations and extend environmental awareness and responsibility to all employees, tenants and service providers. This entails avoiding environmental impacts by taking a proactive approach and integrating environmental considerations into the decision-making framework.

WAA’s sustainable vision for the New Air Terminal Building (NATB) aligned with the objectives of the Canadian Green Building Council’s LEED® Green Building Rating System.

LEED Green Building Rating System

LEED® stands for Leadership in Energy and Environmental Design and is a rating system for sustainable buildings.

LEED certification distinguishes building projects that have demonstrated a commitment to sustainability by meeting higher performance standards in environmental responsibility and energy efficiency. The LEED rating system recognizes leading edge buildings that incorporate design, construction and operational practices that combine healthy, high-quality and high-performance advantages with reduced environmental impacts. In general, buildings that achieve LEED certification are more energy efficient, have better indoor air quality, generate less greenhouse gas emissions, reduce waste sent to landfills and require environmental protection during construction activities in comparison to average buildings.

LEED is a voluntary program with a market-responsive set of requirements to evaluate project performance from a whole-building, cradle-to-grave (whole-life) perspective. It helps to provide owners and users with assurance that the building will achieve superior performance.

Certification Ratings

The LEED program works by awarding credits when specific building performance criteria are met. Based on the number of credits awarded, a project is given one of the following certification ratings - Certified, Silver, Gold or Platinum. The Winnipeg Airports Authority (WAA) is targeting LEED Silver Certification for the design and construction of the New Airport Terminal Building (NATB). The NATB was the first airport terminal project in Canada – and one of the first in the world – to be pursuing LEED Silver certification.

LEED requires submittals of detailed documentation by an accredited professional. This documentation outlines a project’s performance standards which are technically reviewed by the Canadian Green Building Council (CaGBC) before certification is achieved. The review process may take up to six months.
Performance Categories

There are five LEED performance categories under which credits may be awarded: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources and Indoor Environmental Quality. There is also a sixth elective category titled Innovation and Design where additional credits may be awarded for strategies that exceed LEED requirements.

Sustainable Sites (SS)

The intent of the Sustainable Sites performance category is to encourage project site selection, landscaping and design strategies that use land more effectively and minimize environmental impacts related to construction and operational activities.

Highlights of SS Initiatives

The following are a few highlights of the initiatives that WAA implemented under the Sustainable Sites category:

A Sediment and Erosion Control Plan was implemented during construction which included:

- a settling pond and filtration system
- silt fencing and sewer socks to protect drains
- regular roadway monitoring and cleaning

The campus land drainage sewer system is equipped with an oil/grit separator which is capable of removing 80% of suspended solids and oil and grease from stormwater.

WAA has made a commitment to set aside an area greater than the new terminal’s 22,779 sq. m. footprint to be planted with drought resistant grass and plant species indigenous to Manitoba.

Employees, passengers and building occupants have access to two regularly scheduled local bus lines (routes 15 and 20).
10 percent of the existing employee parking spaces will be set aside as preferred parking for car and van pools. The parkade will also provide preferred parking for visitors driving hybrid vehicles.

**Water Efficiency (WE)**

The intent of the Water Efficiency performance category is to encourage strategies that reduce the volume of potable water used for landscape irrigation and facility operations.

Highlights of WE Initiatives

The following are a few highlights of the initiatives that WAA implemented under the Water Efficiency category:

- The native prairie grass landscape will not be watered after a two year period that is required for establishing the plantings.
- WAA anticipates a 30 percent reduction in water use through the use of low flow and infrared fixtures in all public areas.

**Energy and Atmosphere (EA)**

The intent of the Energy and Atmosphere category is to reduce the depletion of non-renewable energy resources (i.e.: fossil fuels), mainly emissions of local, regional and global air pollutants, and encourage the selection and use of renewable energy sources (i.e.: hydro-electric power) with lower environmental impacts.

The projected annual energy savings for the NATB is equivalent to the average energy consumption of 2,000 Canadian households and approximately 7,700 tonnes of CO2e GHG emissions reduction, or removing 1,500 cars from the road. (The actual energy consumption and energy costs will be affected by a variety of factors that cannot be known during design, including actual weather patterns and utility rates).

Highlights of EA Initiatives

The following are a few highlights of the initiatives that WAA implemented under the Energy and Atmosphere category:

- The ventilation system is designed to condition the air from ground level to 10ft, which enables significant energy savings -no wasted energy!
- Radiant heating and cooling floor system
- The building takes full advantage of daylight harvesting, the extensive glass walls allow sunlight into the building which provides heat (solar heating). Solar shades and ceramic frits help prevent direct solar glare which would be uncomfortable for visitors and travelers.
- Energy-efficient artificial lighting
- The NATB has electric passenger bridge equipment rather than the diesel powered equipment which is used at most terminal buildings. This helps to reduce the carbon footprint of the airport.
Materials and Resources (MR)

The intent of the Materials and Resources performance category is to encourage design strategies that reduce and reuse materials, reduce construction waste and encourage the selection of more environmentally-friendly building materials.

Highlights of MR Initiatives

The following are a few highlights of the initiatives that WAA implemented under the Materials and Resources category:

WAA expanded their existing recycling program to include paper, metals, plastic, glass and cardboard. The recycling program was further enhanced through participation with the Canadian Beverage Container Recycling Association’s (CBCRA) Recycle Everywhere campaign.

A Construction Waste Management Plan was implemented in an effort to divert as much waste from the landfills as possible.

The majority of the construction materials contain recycled content.

The building was constructed using durable, high quality materials which have a longer life span and require less maintenance. The building envelope (the outer shell of the building) underwent extensive testing to ensure that it is durable and air & water tight. The building envelope is a large contributor to the overall energy performance of the NATB.

Indoor Environmental Quality (EQ)

The Indoor Air Quality performance category provides specific guidance for enhancing indoor environmental quality through enhanced design, thoughtful selection of materials and careful construction practices to reduce or eliminate sources causing poor indoor air quality while providing high-quality ventilation.

Highlights of EQ Initiatives

The following are a few highlights of the initiatives that WAA implemented under the Indoor Environmental Quality category:

Jet fuel odour can be a problem at airports. As such, WAA implemented a state of the art air filtration system that will remove much of the potential odours and particulate matter without the use of chemical or absorptive air filters. The system requires significantly less energy to operate and will maintain better air quality than normally seen in an airport.

The interior finishes (flooring, carpeting, paint, sealants, adhesives and composite materials) contain low Volatile Organic Compound (VOC) materials. Low-VOC materials not only improve indoor air quality but also reduce demand on the Heating Ventilation and Air Conditioning (HVAC) system.

Carbon dioxide (CO2) and VOC air quality sensors monitor the indoor air quality and control the amount of outdoor air supplied to the terminal building.
Innovation in Design (ID)

Sustainable design strategies and measures are constantly evolving and improving. The purpose of the Innovation in Design category is to recognize projects with innovative building features and/or those that promote sustainable building knowledge. Strategies may result in superior building performance that exceeds the requirements of a LEED credit.

Highlights of ID Initiatives

The following are a few highlights of the initiatives that WAA implemented under the Innovation in Design category:

An educational outreach program will be established in early 2012 to inform visitors about the sustainable features of the New Airport Terminal Building (NATB). The program will include guided tours and educational brochures. Brochures are available at the terminal Info Booth. For more information on the tours, please call the WAA Customer Service Coordinator at 987-2027.

A Green Cleaning Program is in place at the NATB that will reduce exposure of building occupants, maintenance personnel and travelers to potentially hazardous chemical, biological and particle contaminants.

Emissions Management Plan: WAA has created a 5-year emissions reduction phasing plan to further reduce overall emissions at the airport. This plan will not only look at emission reductions for the NATB but also what is happening on the airside. It will address a number of measures that include how planes take off, land and taxi, and the machinery that services them.