

ETS Centennial Garage

156 Street & Ellerslie Road, SW

The ETS Centennial Garage is a new, multi-use building located at Ellerslie Road and 156th Street in Edmonton, Alberta. Designed for the storage and maintenance of 250 buses as well as administration offices, dispatch and support spaces for staff, the ETS Centennial Garage balances the requirements of an industrial-use component with office space.

- Officially opened April 10, 2010
- First operational day April 26, 2010
- Broke ground March 2008
- Funding provided primarily by the Province of Alberta's Municipal Sustainability Initiative (Project Budget \$99 M; MSI Funding \$89.3 M)
- Designed and built to LEED Silver standards
- Name commemorates Edmonton Transit's 100th anniversary of service
- Building size: 30,000 square metres (313,000 square feet, 7.1 acres) on one level
- Indoor storage space for 250 regular and articulated buses
- Facility use: vehicle storage and maintenance, ETS administration
- Providing bus service to neighbourhoods in west and southwest Edmonton and downtown
- Cost: \$254 per square foot including site development, landscaping, paving, hoists, crane, refuelling systems and lube systems, exterior & under bus wash systems, vacuum systems
- Average manpower on site during construction peak = 150

Building Material:

- ◆ 81 miles of in slab heating pipe
- ◆ 3,300 sprinkler heads
- ◆ 1.25 miles of foundation grade beam
- ◆ 11,800 cubic metres of concrete
- ◆ 43 roof top units
- ◆ 7 acres of roof
- ◆ 1,325 imperial tons of steel
- ◆ 31 miles of electrical conduit

Architectural: Croy D. Yee Architect Ltd.

Civil: Morrison Hershfield Limited

Structural: Morrison Hershfield Limited

Mechanical: Morrison Hershfield Suncord Engineering Ltd.

Electrical: Morrison Hershfield Limited

Code: Morrison Hershfield Limited

Fire Protection: Morrison Hershfield Limited

Building Envelope: Morrison Hershfield Limited

LEED Facilitation: Morrison Hershfield Limited

Landscape Design: Earthscape Consultants

Construction Management: Clark Builders

Fleet Services Staff: 42.5

- 3 Leadhand Service Persons
- 10 Service Persons
- 4 Service Trained Cleaners
- 8 Cleaners
- 9 Mechanics
- 2 Body Mechanics
- 1 Controller
- 1 Supervisor
- 1 Clerk
- 1 Mechanical Foreman
- 2 Service Foreman
- 0.5 Body Foreman

ETS Bus Operations Staff: 213

- 1 Divisional Supervisor of Bus Operations
- 2 Bus Operations Supervisors
- 1 Supervisor of Dispatch
- 1 Bus Operations Clerk
- 2 Inspectors
- 6 Dispatchers
- 200 Operators



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Our Path to LEED Silver

The ETS Centennial Garage is targeting a rating of *LEED Silver. LEED, short for Leadership in Energy and Environmental Design, is a voluntary green building rating system that assesses and awards ratings of LEED Certified, Silver, Gold and Platinum to deserving projects. To achieve LEED Silver, the design team focused on a range of strategies, from energy efficiency to appropriate use of site to the quality of the indoor environment for those that will work in the facility.

**With a variety of other operational green initiatives (use of green power, use of hybrid vehicles for staff, etc.) there is the potential to achieve LEED Gold Certification.*

Sustainable Sites

Two ways in which the ETS Centennial Garage is sensitive to the site and surroundings are: the reduction of heat islands which can impact the local microclimate, and limiting light pollution of the night sky which can negatively affect nocturnal species and birds.

High albedo (highly reflective) roofing stays cooler than dark roofs, reducing the cooling energy required and prolonging the life of the roof membrane.

Indoor bus storage will provide inherent energy savings. Although not included in LEED calculations, the energy savings will reduce the carbon footprint of the facility compared to those with outdoor bus storage requiring individual pre-conditioning of buses.

Materials and Resources

Building materials are a large consumer of resources. The impact of extracting, manufacturing and transporting materials was reduced through selecting locally manufactured products and materials with recycled content.

To reduce the demand on virgin resources, building materials containing recycled content were used: structural steel, concrete, metal wall systems, drywall and carpet are just some of the materials that contain recycled content.

- ♦structural steel: 90% recycled content
- ♦concrete: 27.5% recycled content
- ♦steel decking: 68% recycled content

Indoor Environment Quality

The design and construction of the ETS Centennial Garage prioritizes a good quality interior environment for building occupants. This means eliminating materials which off-gas contaminants, monitoring indoor air for CO₂, and maintaining comfortable heat and humidity conditions within the building.

Common construction materials release irritating, even noxious substances into the indoor environment, such as volatile organic compounds (VOCs) or formaldehyde. Products were carefully selected to be low emitting.

Low-emitting materials:

- ♦paints and coating
- ♦adhesives and sealants
- ♦carpets
- ♦particle board and MDF

Energy and Atmosphere

Buildings are a major consumer of resources, and improvements in energy efficiency are one of the hallmarks of green design. The ETS Centennial Garage reduces its energy usage for heating by harnessing free solar heat using a solar wall constructed on the building's south façade. Energy modeling results indicate that the ETS Centennial Garage is 33% more energy efficient than a typical Canadian building of its size and type.

Windows are located in all occupied spaces, reducing the need for artificial lighting. Land-locked rooms on the building interior were kept to a minimum. Window placement optimizes natural lighting and provides view to outside green spaces. Operable windows in all offices and other staff areas (including Operator lounge and Maintenance shop) provide natural ventilation.

High, automatically operated clerestory windows in the vehicle storage area will supplement the mechanical exhaust system to remove diesel fumes and provide natural ventilation.

Translucent window glazing used in the vehicle storage and maintenance areas will provide natural light while maintaining high thermal insulation values.

Aluminum louvered shades on all south-facing windows will reduce heat gain.

Light fixtures in all administration and office areas are low energy and operated by motion sensor.

The dark metal panel of the solar wall absorbs solar heat which is gathered for building heating energy.

Water Efficiency

The ETS Centennial Garage reduces water use on both the administration and bus maintenance sides of the building.

- All washroom, shower and kitchen water fixtures are low-consumption.
- Washroom fixtures feature automatic flush plumbing.
- Buses are washed with a specialized system that cuts down on water use by more than half. The water savings for one piece of equipment in one year is over two million litres.
- Landscape plantings are specifically chosen so that they do not need to be watered, saving on water use.

Innovation and Design Process

Two features unique to the ETS Centennial Garage project include the snow melt cooling system and the water-efficient bus wash system, which are both measures that reduce the building's consumption of energy and water.

The adjacent site is a lot for snow dumping. Part of the system to obtain cooling from the adjacent snow dump site has been roughed-in for future implementation and use.

Other LEED Goals

- Divert over 80% of construction waste away from landfill
- Good air quality for construction workers during building phase
- Storm water diverted to the snow dump site to assist in melting process
- Mechanical equipment does not use ozone-depleting refrigerants
- Over 30% of materials are regionally manufactured