



GULF ISLANDS

NATIONAL PARK RESERVE OF CANADA

OPERATIONS CENTRE SUSTAINABLE DESIGN FEATURES



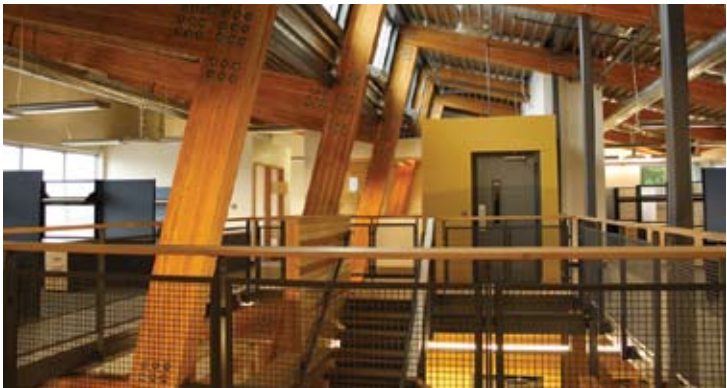
Sustainable Design Project Vision

Parks Canada's goal is to play a leadership role and to provide an example of responsible environmental management in the creation of this new facility.

The sustainable design vision for this project is to demonstrate how in the island ecology of the national park reserve, a building must respond to its site and environment to minimize dependence on outside sources of energy and its impact on the environment.

The building has been designed in accordance with the LEED (Leadership in Energy and Environmental Design) Canada Green Building Rating System and has achieved Platinum certification.

The new Operations Centre for Gulf Islands National Park Reserve is designed to house the park operations and administration staff in a new three-storey building. The lowest level is oriented to the waterfront and is primarily a support facility for the marine operations of the national park reserve. The upper two floors accommodate the administrative functions of the park.



Sustainable Design Features

The natural resources available on site—the ocean, sunlight and the abundant rainfall—have all been incorporated into the building systems.

STORM WATER STORAGE AND TREATMENT

Rainwater collected off the roof is directed to a 30,000 litre underground storage tank. This water is utilized for flushing toilets and for wash water needs in the marine operations area. Surplus rainwater passes through a sediment and oil separator before being discharged into the ocean. It is expected that over 108,000 litres of rainwater will be harvested and used annually.

OCEAN-BASED GEOTHERMAL SYSTEM

The ocean provides for all the heat requirements of the building. Ocean water is pumped into the building and passes through a heat exchanger and heat pumps to extract and upgrade the available heat energy to heat the building.

PHOTOVOLTAIC PANELS

Sunlight is converted directly to electricity by the photovoltaic panels installed on the roof of the building. This system provides for 20% of the building's total energy needs.

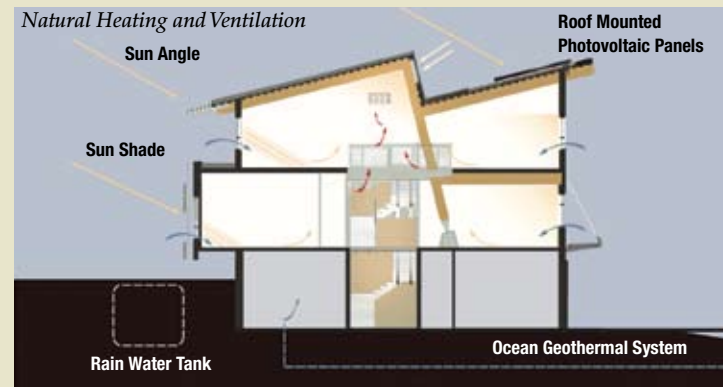
ENERGY EFFICIENCY

This building will consume only about one quarter of the energy of a comparable building designed with conventional heating and mechanical systems, resulting in a reduction of 33.3 tons of Greenhouse Gas Emissions annually.

Sustainable Design Strategies

SITE DESIGN STRATEGIES

- The existing on-site house has been preserved, along with the lawn and ornamental gardens to maintain the neighbourhood character.



- Strict erosion and sedimentation control measures were followed throughout the construction process.
- Parks Canada encourages the use of alternate modes of transportation and has provided bicycle racks and showers for staff use.
- Contaminated soil on the site has been removed following Federal standards.
- New plants are drought resistant species.
- All exterior lighting has been selected to prevent light trespass across property lines.

DESIGN FOR WATER CONSERVATION

The use of potable water will be reduced by over 60% when compared to buildings using conventional plumbing fixtures. This is accomplished by:

- Use of low-flow water conserving faucets and showerheads
- Dual-flush toilets.
- A 30,000 litre underground storage tank is used to collect and store rainwater for toilet flushing and for wash water needs in the marine operations area.
- The volume of potable water used for the conveyance of sanitary waste will be reduced by 98%.



A marine silt fence was maintained throughout construction to reduce siltation

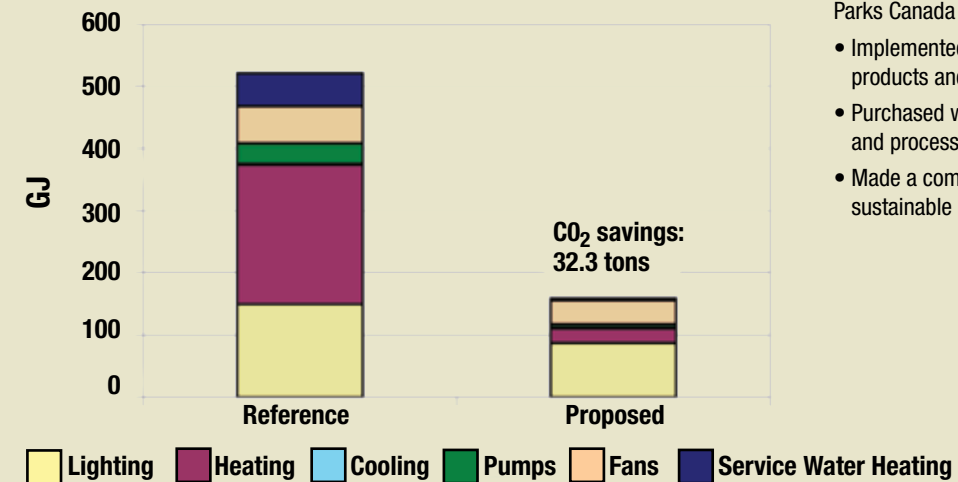
DESIGN FOR ENERGY CONSERVATION

- The ocean-based geothermal system provides for all the heat requirements of the building.
- A system of plastic pipes embedded in the concrete floors is used to distribute heat around the building. This radiant heating/cooling system greatly reduces energy consumption.
- This building's complex mechanical systems will be monitored and adjusted to ensure that they operate at peak efficiency.
- Lighting system design features:
 - Use of energy efficient fluorescent lamps.
 - Photosensors to control lights adjacent to windows.
 - Occupancy sensors turn off lights when occupants are not present.
 - Placement of lighting fixtures is coordinated with the furniture and office layout.
- Exterior sunshades have been installed to limit amount of direct sun into the building.
- The photovoltaic system on the roof will provide 20% of the building's energy requirements.
- The exterior wall assembly has been engineered to minimize air leakage and heat losses.

MATERIALS AND RESOURCES CONSERVATION

- Approximately 85% of all waste generated from the construction of this facility was diverted from landfill.
- The building has been designed to maximize content of local materials.
- The value of recycled content of building materials exceeds 27% of the total materials cost.
- The waterfront is a relatively harsh environment for buildings requiring careful selection of materials chosen to provide a durable building.

Annual energy consumption



INDOOR ENVIRONMENTAL QUALITY

- All occupied rooms are equipped with multiple controls designed to enable occupants to have a high level of control over their indoor environment.
- Carbon dioxide sensors are located throughout the building. Fresh air is provided to those rooms where increased CO₂ levels are detected.
- All workstations and offices have opening windows.
- The building has been designed to provide high levels of natural light.
- Finishes and materials used in the interior of the building were selected on the basis of low chemical emissions.
- An Indoor Air Quality Management plan was created at the beginning of the construction.
- The building was flushed out prior to occupancy to help remove contaminants in the air.

ADDITIONAL FEATURES

Parks Canada has:

- Implemented a policy which will allow only the use of green housekeeping products and procedures.
- Purchased workstations selected on the basis of the sustainable materials and processes used in their manufacture and for low chemical emissions.
- Made a commitment to educating both its staff and the public about the sustainable design features incorporated into this building.