



▲ View of the main entry adjacent to the library.

quick facts

LEED®:	Certified LEED® Gold
client:	Interlake School Division
location:	222 Good St., Woodlands, MB
contractor:	Red Lake Construction Ltd.
consultants:	S/ Wolfrom Eng. Ltd. M & E/ Enermodal Eng. Ltd. L/ HTFC
area:	25,000 Square Feet
cost:	\$8.3 Million
status:	Opened September 2015

This 25,000 sf elementary school will replace the communities existing pre-engineered building built in 1974. Prairie was commissioned to design a new 150 student school, with a core capacity to accommodate 200 students on the adjacent site. With an increased emphasis on early childhood development, the pre-school day care will be a fun, stimulating environment where children will begin to foster a love for learning. The new Childcare Centre will accommodate 24 pre-school children and 4 infants. The new Woodlands School will be accessible, and will provide a place for students and community members to learn and interact thereby having a positive impact on the community. The project is certified LEED® Gold opened in 2015.



▲ The main façade of Amber Trails Community School.

Following is a summary of the health, performance and environmental features of the building based on LEED® (Leadership in Energy and Environmental Design) criteria:

sustainable sites



active transportation

The school design includes covered bike storage and changing facilities provided for both students and staff. These amenities are meant to encourage cycling to school and work.



open space

The landscape design includes vegetated open space greater than the footprint of the building. This green space will remain open and vegetated for the life of the school.



stormwater management

Stormwater management was a priority for the project team, which led to a landscape that maintains pre-development stormwater discharge and adequately removes total suspended solids and phosphorus from stormwater before it is discharged from the site.



lighting and surfaces consideration

Careful thought and planning were put into the interior and exterior lighting design, minimizing lighting power density so as to reduce the impact of light pollution on the night sky and adjacent land.

Light coloured materials and shading from trees were used on the site's impervious surfaces, mitigating the heat island effect.

water efficiency



efficient fixtures

The building maximizes water efficiency with the use of aerator faucets, dual flush toilets, and low flow urinals. These measures contribute to a total water use reduction of over 35%.



drought-tolerant plants

Landscape design includes drought-tolerant plant species, selected to withstand our climate. No permanent irrigation equipment is needed for the school's green spaces as the vegetation selected will not require irrigation once established.



▲ Landscape concept with native plants and rain garden features.

energy & atmosphere



maximum comfort, minimal energy

The HVAC system described below has contributed to an energy savings of 54% and energy cost savings of 51% compared to its reference building (built to the Model National Energy Code for Buildings, 1997). Mechanical design features are as follows:

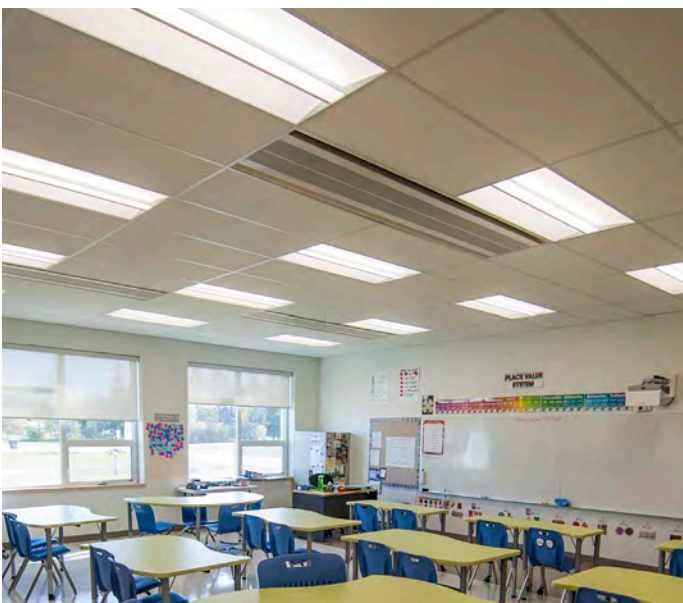
- The school is heated with radiant floors and 2 – 60kW electric boilers supplying hot water to a 1-pipe distribution system controlled by several wall-recessed manifold cabinets.
- Ventilation air is ducted to active ceiling beam terminals.
- Well water will be treated by a combination of filters and UV-sterilizers, partly relocated from the existing school next door.
- Triple glazing

To ensure the mechanical system is functioning as designers' intended, a commissioning agent has been part of the design process, acting as a third-party reviewer of the system design for the Owner.



ozone protection

To minimize the impact of the building on the depletion of the ozone layer, all systems are CFC and HCFC free. The fire suppression system contains no halons.



▲ Classroom with chilled beams visible on the ceiling in the foreground.



▲ The majority of wood used in the project is FSC certified as responsible.



▲ The recycling initiative begun during construction is being maintained during the operation of the school with student participation.

materials & resources



recycled & responsible materials & construction

Together, the contractor and sustainability team have diverted over 90% of construction waste from the landfill for reuse, recycle, or repurposing. Currently, over 12% of new materials, including rebar, concrete, and millwork, contain recycled content and over 35% of new building materials used were extracted and manufactured within an 800km radius of the project site (or transported by rail within a 2400km radius).

Over 70% of all permanently installed wood, such as the gym flooring and millwork, in the building is FSC (Forest Stewardship Council) Certified. This certification requires chain-of-custody documentation accompany wood products to confirm wood is sourced from sustainable and responsibly managed forests.



durable construction

Woodlands School has been designed for a 60-year lifespan. A durable building ensures the selection of durable materials and components, quality control during construction, and increases the service life of the building.

indoor environmental quality



minimal air pollutants

Woodlands is a non-smoking building, following guidelines of the Interlake School Division's no-smoking policy on all school grounds. The building has been designed with optimal ventilation that includes a 100% fresh air ventilation system to provide excellent indoor air quality for staff, students, and visitors. All carpet, adhesives sealants, paints and coatings used in the building were specifically chosen to have a low level of Volatile Organic Compounds (VOC). All composite wood used, including plywood, MDF and particleboard, contains no added urea-formaldehyde.

An Indoor Air Quality Management plan was in effect during construction and included measures such as covering openings in ductwork, keeping a clean worksite and scheduling to protect the indoor air quality of the building. A building flush was also completed to minimize indoor air quality problems resulting from the construction process.



integrated systems & localized user controls

With occupant comfort of the utmost importance, outdoor air and humidity monitoring is integrated into the mechanical system controls. Classrooms and offices are designed with a high degree of controllability for users (accessible lighting and thermal comfort controls).



natural light & views

The building was designed so that 90% of regularly occupied spaces have views to the outdoors and are receiving natural light.

regional priority



Regional priority focuses on giving extra weighting to existing credits that are important to a particular region. Optimized energy Performance, Enhanced Commissioning, and Durable Building are all identified as important to rural Manitoba sites.

CSA Guideline on Durability of Buildings adhered to during design and followed during construction.

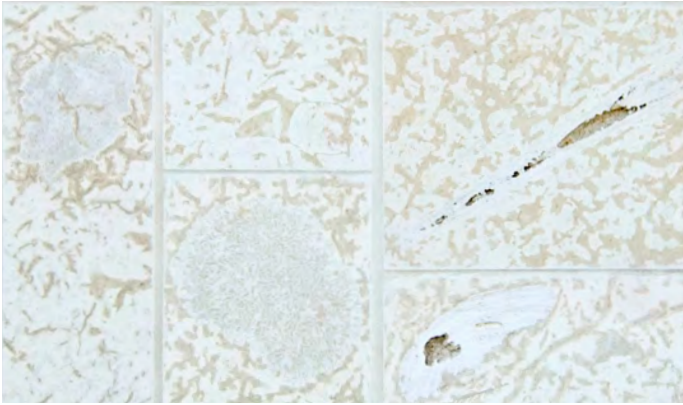
integrated design process



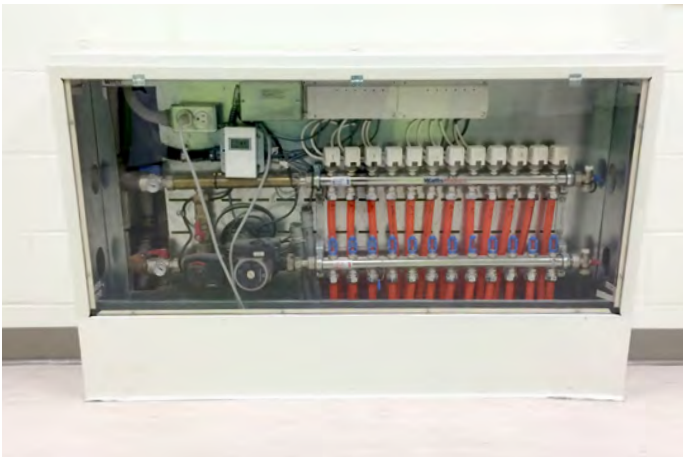
Woodlands was been designed using an Integrated Design Process, whereby team members are able to advocate how system/design decisions impact their specific discipline. This results in decisions that have been critically evaluated and that aren't made without full understanding of their impact. During the design process, the project team reviewed several options for HVAC systems and compared them along many criteria, such as: energy savings, capital cost, life-cycle cost, and Greenhouse Gas emissions. The team decided on the option that eliminated the use of Natural Gas in the building, making the largest impact on Greenhouse Gas emissions projected for the project.



▲ Large windows bring light deep into all classrooms and most spaces.



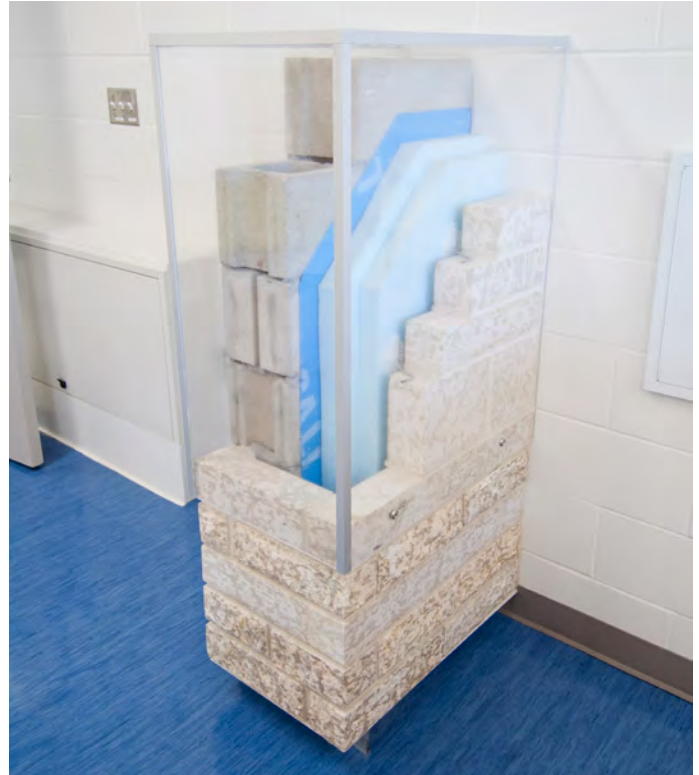
▲ A panel displaying some of the fossils found within the Tyndall Stone.



▲ Clear manifold cover allows student investigation of the inner mechanisms.



▲ Observational Bee-Hive installed in school with active bee colony.



▲ Mock-up wall reveal to show the different layers to students.

innovation in design



school as a teaching tool

A new standard by the Public Schools Finance Board (PSFB) is incorporating sustainable education into the curriculum through building design. A sampling of sustainable features which have been integrated into the school and that allow the school to act as a teaching tool include:

- An Outdoor Learning Environment
- Fossils showcased in locally sourced Tyndall stone. Students were part of the fossil picking process for the exterior, which teaches children about local resources.
- Clear manifold panel showcasing the radiant floor piping.
- Labelled pipes / beams.
- A cutaway of the wall will show wall assembly components.
- Integrated Observational Bee-hive.

outdoor learning environment and landscaping



The Woodlands O.L.E project was developed as a mosaic of natural areas with connecting trail. Framework planting typical of Prairie, Parkland and Boreal Forest have been provided. Plant selections feature native and adaptive species including grasses, flowering perennials, shrubs and trees. These are typical to the region and do not require irrigation for survival under normal growing conditions. Bird & butterfly attractors are included.

Storm water run-off from the building is managed through a system of drainage swales and temporary detention areas, planted to flourish with periodic flooding. This functional requirement provides an opportunity to explore wetland natural habitats and examine sustainable rainwater management. A weir with drop gate to manipulate flooding level, was installed between detention cells. A rain barrel to harvest part of the roof run-off was installed next to a planting bed. This can be used to help water student gardening projects.

The school staff noted a local interest in rock collecting, so the yard includes areas of rock-work to explore, sit and climb on.

The yard includes several paved spaces for outdoor gathering; teaching; performance and quiet study. There is currently table seating to accommodate a full art class or outdoor lunch groups. Conduit for future electrical service was installed next to a performance circle. A water service connection is available on the adjoining school wall, to provide for art wash-up and yard maintenance.

The intention is for future teacher / student / parent groups to add planting; rocks; site furnishings and garden elements over time. These contributions will enrich opportunities for discovery and provide delight in the exploration of the outdoors.

Examples of curricular opportunities provided by the Outdoor Learning Environment include:

- Natural Habitats and Ecology
- Plants for Learning
- Rainwater Management / Sustainable Technology
- Art / Music / Performance in an Outdoor Setting



▲ Elevated view of the developing Outdoor Learning Environment in a dry condition.

eco-facts

Sustainable Features Summary



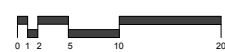
▲ Harvesting rain-water reduces the water use of the O.L.E. and landscaping even further.



▲ Seating area within the O.L.E. which encourages passive engagement with the learning environment. (Facing the main face of the school.)



- A Boreal Wetlands Habitat
- B Aspen Parkland Habitat
- C Prairie Habitat
- D Boreal Forest Habitat



▲ Preliminary landscape plan for the Outdoor Learning Environment.

eco-facts

Eco-Facts is written and designed
by Prairie Architects Inc.



Interlake School Division
192 2nd Ave. North
Stonewall, MB R0C 2Z0
(t) 204.467.5100
(f) 204.467.8334
www.isd21.mb.ca

prairie
architects inc.

Prairie Architects Inc.
101-139 Market Ave.
Winnipeg, MB R3B 0P5
(t) 204.956.0938
(f) 204.943.5597
www.prairiearchitects.ca



This building was LEED®
Registered in 2010 and is
certified LEED® Gold.



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