

A building named for Dr. David Suzuki has to be more than green – it has to change the way people think about the world. Windsor's Greater Essex County District School Board has constructed its newest elementary school to a level worthy of the acclaimed environmentalist.

Giuliana Hinchliffe, coordinator of engineering for the school board, says Dr. David Suzuki Public School replaces two smaller schools, one of which had a history of environmental stewardship. Aiming for LEED Platinum was logical, says Hinchliffe. "If we want our children to strive for the best, we have to strive for the best."

The 58,522-square-foot, two-storey steel structure with poured concrete floors holds 22 classrooms, a double gym, a music room, art room, science room and resource centre, as well as support amenities. Approximately 560 students and 35 staff members will call the school their own.

The building is built on a north-south orientation and folds in the middle to create the main entrance. The large opening between the two components connects visually to the north play area and is joined by a steel bridge that stretches through a two-storey atrium. "Orientation and circulation are major drivers of the design," says Gregory McLean, principal with McLean + Associates | Architects. "You know where you are at all times."

Technologies not usually seen in schools like wind turbines, geothermal exchange heating and rooftop rain-water collection will be part of the environmental education program. "It isn't meant as a cost-effective example of how to build a green school," says Stephen Carpenter, president of Enermodal Engineering, LEED consultant. "It shows school boards across Canada what is possible."

Preliminary modelling shows the school will achieve a 65 per cent energy reduction over building code and reduce water consumption by 63 per cent compared to the LEED baseline. Generating 10 per cent of its demand load are 171 photovoltaic panels at the entrance, which are part of a suspended canopy system supported by a branched tree structure made of steel.

Light is brought in through the ceilings and funneled into carved-out spaces in the corridors to penetrate the lower spaces. Light shelves and translucent glass panels in the windows maximize natural light in all of the rooms, as do solar pipes and sun tracker active daylighting domes.

Radiant in-floor heating and cooling systems on both floors tie into a geothermal vertical loop that runs from 28 wells, each 370 feet deep. A solar wall – essentially a black perforated



Dr. David Suzuki Public School

by Jessica Krippendorf

metal panel through which air is pulled – preheats ventilation air which is run through a displacement system.

The technology was introduced in a literal way. Recessed glass "truth windows" in the floors show the insulated in-floor heating system, and display panels in the corridor provide real time data about the mechanical system's performance. "Education occurs everywhere," says McLean. "We've designed no dead spaces."

In the lobby, a construction display wall provides a cross-section of the exterior wall assembly. Glass piping that carries rainwater from the roof to a cistern for treatment and use in the toilets runs floor-to-ceiling in the resource room, and the mechanical rooms have windows through which the equipment is visible.

The interiors incorporate cork floors in the administrative and resource rooms, and linoleum in the classrooms. The corridors feature polished concrete floors containing fly ash, and the millwork is made of FSC-certified bamboo plywood with low-VOCs and no added formaldehyde. The living wall is two-storeys of plant material grown in an irrigated wall to remove VOCs from the air.

Opresnik Engineering acted as LEED consultant for Mady Contract Division, ensuring the contractor's work complied with all environmental requirements while staying on budget and on schedule. "The contractor was trying to be proactive in ensuring the spec was executed correctly and that the scheduling didn't incur any delays," says Mark Opresnik, principal.

Mady Contract Division Ltd. had to meet building air tightness and indoor air quality requirements, while diverting a specific amount of waste

from the landfill and performing the final building flush-out. "Credits are extremely important with a LEED Platinum building because you don't have the luxury of making them up in another category," says Opresnik.

The contractor exceeded the 75 and 50 per cent waste diversion requirements, keeping 95 per cent of the site's waste out of the landfill. The final building tightness level exceeded the requirement by 100 per cent.

Outside, the foundation landscaping blurs the line between designed and natural by removing the typical bed edging and letting the foundation planting run out to the naturalized turf areas, says Gerry Bezaire, principal with Bezaire & Associates Landscape Architects. "The result should be a landscape that looks like it was there and the school was built around it rather than a landscape that is defined by the shape of the building, roads and sidewalks," says Bezaire.

Bioswales, often designed for functionality, are intended to look like natural waterways planted with native trees, shrubs and boulders. A non-irrigated sports turf mix was selected to hold up to foot traffic in the play areas, front lawn and sports fields. The building also features three green roof areas. An outdoor teaching area offers a composite synthetic deck surface, raised planters and portable potting stations and tables for interactive learning, says Terry Wilk, principal, Wilk Associates Landscape Architecture.

A vegetated roof area is separated from the rooftop classroom by a custom lattice screen and an entry arbor that is more industrial looking than one typical of a residential space.

The school board has spent 18 months developing a Web-based

curriculum for the students that uses real time, live data from the school. It will launch with the school's opening in September.

"We are extremely proud," says Hinchliffe. "It's provided an idea about what technologies can be incorporated into new school construction, while still fitting into the provincial funding model." ■

LOCATION

6320 Raymond Avenue
Windsor, Ontario

OWNER/DEVELOPER

Greater Essex County District School Board

ARCHITECT

McLean + Associates | Architects

GENERAL CONTRACTOR

Mady Contract Division Ltd.

STRUCTURAL ENGINEER

Haddad Morgan and Associates Ltd.

MECHANICAL AND ELECTRICAL ENGINEER

Smylie and Crow Associates Inc.

GEOTECHNICAL CONSULTANT

C.T. Soils & Materials Engineering Inc.

ENVIRONMENTAL CONSULTANT

Enermodal Engineering

LEED CONSULTANT

Opresnik Engineering Consultants Inc.

CIVIL ENGINEER

R. Lucente Engineering Inc.

LANDSCAPE ARCHITECT

Bezaire & Associates Landscape Architects and Wilk Associates Landscape Architecture Ltd.

TOTAL AREA

58,522 square feet

TOTAL CONSTRUCTION COST

\$14 million