

Topping off Green Schools

by Andy Vander Woude LEED AP

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In November 2009, Stratford Hall achieved a milestone in the fulfillment of its vision of a world-class urban campus: the opening of the new Stratford Hall Lower School for its Primary Years Program (grades K-5). Stratford Hall, Vancouver, B.C., is one of two schools in Canada that offer all three International Baccalaureate programs exclusively from kindergarten to grade 12. Omicron Canada Inc., Western Canada's largest integrated design and construction firm, provided master planning, analysis of development options, and site acquisition assistance for the project. They then designed and built the new 20,000 square-foot lower school. Omicron continues to work with the school on a new middle school as the realization of the Stratford Hall urban campus continues.

"Understanding the urban vitality of the campus location, sensitivity to the neighborhood context and commitment to sustainability have guided the design and development of this project," said Peter Joyce, project director, Omicron.

When the Lower School opened, one important element seemed to be missing: a safe place for the children to play without having to cross busy streets to get to local parks.

"Topping off the Lower School with a roof deck was a sensible solution and appropriate for our urban campus," said James McConnell, Ed.D, head of school, Stratford Hall.

Going Green, Staying Green



The Lower School was envisioned as a LEED certified project. However, given the costs of the certification process, Stratford Hall elected to re-direct the budget allocation for certification to the building itself in order to add and retain as many sustainable and energy efficient initiatives as possible. The project incorporated geothermal exchange, displacement air ventilation, a highly insulated building envelope and radiant floor heating together with many other green concepts and materials.

So when it came to choosing materials for the 6,500 square-foot rooftop play area, finding a green material was a preference. Rubber safety tiles, made with



recycled rubber, were considered but found to be expensive. Omicron determined that it had to find a more cost-effective alternative to these playground

safety surfaces. Concrete pavers installed on adjustable pedestals were a possibility. And during the product research stage Omicron learned about a new alternative: VAST Composite Pavers.

“We turned our attention to VAST, which is manufactured in a composite of 95 percent recycled car tires and plastic containers,” said Joyce. “In addition, the VAST production process consumes by 94 percent less energy and generates 89 percent less in greenhouse gas emissions relative to the production of concrete products.”

Fulfilling Key Performance Requirements

Slip resistance and fall protection are key considerations for play areas. While not as soft as the rubber tiles, the pavers have a softer feel than concrete. VAST and rubber tiles offer comparable slip resistance.

Durability to hold up under children’s play and to withstand frequent freeze-thaw cycles were important considerations as well. “VAST pavers are unbreakable and maintenance-free,” said Joyce. “The composite material’s inherent resilience will better withstand colder Canadian climates than concrete surfacing products, and VAST pavers have been proven not to crack in repeated freeze-thaw cycles.”



Building regulations require roof coverings to be tested against fire in accordance with CAN/ULC S-107 or ASTM E108. Together with Omicron, VAST undertook the necessary product testing to fulfill code requirements and gain approval for use on roof surfaces of non-combustible buildings in Canada. Competitive paving products have yet to obtain this requisite product approval.

Architectural Aesthetics

“When Peter brought the VAST product to us for our consideration, its recycled content impressed us as did its superior aesthetics,” said McConnell.

To McConnell and other school officials, 12x12-inch square rubber tiles look like what they are: a playground material. In contrast, VAST offers the more refined architectural appearance of paver bricks. “The VAST pavers are more visually appealing,” he said.

Another Advantage



The pavers are one-third the weight of concrete pavers. When it comes to rooftops, the total load factor has to be considered. The weight limitations that come into play whenever a material is used in rooftop applications make VAST a good choice.

“Each pallet of the VAST Composite Permeable Pavers weighs just 2,200 pounds. That allowed us to load the roof with all the required material for secure storage during construction,” said Jarome Sheriland, Refuge Design & Landscaping, Inc., the landscape subcontractor on the project. “The light weight makes the pavers easy to get up to a roof and easy to work with up on a roof as well.”

Successful Installation

The project was completed in June 2010. VAST pavers were used in the 6,500 square-foot installation with a permeable design for stormwater management.

“The design ensures proper drainage,” said Sheriland. “And because of the inclement weather during the project, we found out right away that VAST pavers can be effectively installed in the rain.”

Omicron developed a repeating boxed basket weave pattern in a customized color composition with 65 percent in the Redwood color and 35 percent in the Waterwheel color. The paver color scheme complements the red color that serves as a signature element of the school building’s design.

“VAST pavers enabled us to achieve a degree of design complexity and visual interest not normally possible or affordable with a concrete pavers or rubber tiles,” said Joyce.

“We are pleased with the play area, the color pattern and the texture and feel of the VAST pavers under foot,” said McConnell.

“I’m impressed with the results,” said Sheriland. “In all the years I have been installing pavers – starting in Germany 50 years ago – VAST is the first true innovation I have seen.”



Commitment to Green Building

Examples of green elements incorporated by Omicron in the Stratford Hall Project

Green Building Element: *Windows for Building Envelope (design by Omicron)*
Tinted Double Glazing with Low E Coating and Argon Fill (supplied by Columbia Glazing Systems)

Manufacturer: Guardian Glass

Green Building Element: *Geo-exchange System for HVAC (design by Omicron)*
Energy Recovery Units Below Ground HDPE Piping

Manufacturer: Venmar, Innergy Tech Sclairpipe

Green Building Element: *Energy Management Digital Controls*

Manufacturer: Control Solutions

Green Building Element: *Displacement Air System (design by Omicron)*

Displacement Air Diffusers **Manufacturer:** Nailor Industries

Green Building Element: *Lighting Direct/Indirect Lighting Fluorescent Lighting*

Manufacturer: Cooper Lighting Fluorescent Lighting

Green Building Element: *Elevator Energy-saving MRL Elevator* **Manufacturer:**

Kone

Green Building Element: *Fixtures Low-flow Washroom Fixtures Flush Controls*

Manufacturer: Kohler Delta

Green Building Element: *Wood Products FSC-certified Millwork*

Manufacturer: Feature Millwork

Green Building Element: *Play Area Surface (permeable design by Omicron)* VAST

Composite Permeable Pavers

Manufacturer: VAST Enterprises, LLC

Rooftop play area installation: permeable design by Omicron

VAST Composite Permeable Pavers

VAST Installation Grid

Minimum 1 ½-inch Compacted Free-draining Sand

Non-woven Filter Fabric

Minimum 1 ½-inch Stone Roofing Ballast

Woven Filter Fabric

Inverted Roof Assembly

6-inch Styrofoam SM High Density Insulation with Drainage Grooves

2-ply SBS Roofing Membrane System

One-hour Fire Rated Roof Structure

2 ½-inch R/F Concrete Topping (with minimum 2 percent slope to drains)

1 ½-inch galvanized metal deck on steel structure (open web steel joists and wide flange beams)

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