

## Structural Insulated Panels

### At the Core of *Living Building Challenge* D.C. Area Showcase

Structural Insulated Panels (SIPs) featuring expanded polystyrene (EPS) insulation provide the basis for the high-performance roof assembly of the recently constructed [Alice Ferguson Foundation “Grass” Education Center](#); a LEED® Platinum project that is expected to also meet the requirements of the [Living Building Challenge v2.1 \(LBC\)](#).

Located on the ecologically sensitive Potomac River, the building is recognized as one of Washington D.C. Metro *Top 25 Best Real Estate Deals of 2015* by *Washington Business Journal*. The building owners anticipate the project will be Living Building Challenge certified (a distinction shared by only eight buildings to date) in 2017 once a full year of energy and water usage data is submitted, and its net-zero energy, and net-zero water goals are verified. The project will achieve carbon neutrality by purchasing CERs (Certified Emission Reductions) to offset carbon production from construction.

The Center serves as a real-world case study for Living Building concepts, which consider how structures can work as a dynamic, interconnected system to reduce environmental impacts. Although the whole is greater than the sum of its parts, the contributions towards reducing cooling and heating loads made by the EPS SIP roof cannot be understated. The SIPs are 12-1/4" thick with an insulating R-value of 45.

In fact, the building is two and a half times more energy efficient than a typical building of the same size.

The Grass Education Center, designed by Philadelphia's Re: Vision Architecture and built by Facchina Construction Company, showcases best practices in sustainable construction and a compelling proof point for Alice Ferguson Foundation's environmental leadership.

"This building reflects our guiding principles: education, inspiration, and innovation," says Alice Ferguson Foundation Executive Director Lori Arguelles. "This building is an excellent addition to our campus—it's more than just a structure; it's a teaching tool to help students have an even more meaningful experience connecting with and understanding both the natural and the built world."

The EPS core SIPs were made by Porter SIP manufacturer and feature FSC- certified, urea formaldehyde-free oriented strand board.

"To utilize the SIP panels, the project had to apply for an LBC exception for Halogenated Flame Retardants (HFRs) contained in the insulation core. As more rigid foam insulation manufacturers bring HFR free insulation to the market, it is our hope that we will see SIP manufacturing begin to incorporate it into their products," said architect Chris Lee.



**Grass Day-Use Building:** The recently completed 'Grass' educational building is located at the sunny edge of a south facing field where its roof spreads out like wings to capture the sun's energy. A network of 20 geothermal wells, located in the grassy field in front of the building, helps ensure the sun's power is used most efficiently. The building's tight "envelope" provides an "R" factor that is up to five times as effective as an average building.