

UPDATE

ROOFING/COMMERCIAL WALLS

College Facility Teaches Environmental Studies Through its Design

Oberlin College, a small, private liberal arts college in Oberlin, Ohio, is receiving national and worldwide attention for its new campus building. The Adam Joseph Lewis Center for Environmental Studies will not only be a place where environmental studies are taught, but also a place where they are practiced. The building's main purpose is to be a tool for students to learn how nature works and how humans interact with it. Spearheaded by David Orr, a national expert who chairs Oberlin's environmental studies program, the \$6.2-million "green" building "reflects the best environmental standards and thinking that we could muster," Orr said.

William McDonough + Partners of Charlottesville, Va., had the challenge of designing the 13,600-square-foot building. The architecture firm specializes in sustainable design, also known as green architecture or green design, based on the concept of meeting today's needs without compromising health or human needs in the future.

"The goal is for the building to be a net energy exporter – to create more energy than it uses yearly," said Kevin Burke, AIA, project architect of McDonough + Partners. "We conducted several extensive energy models to ensure an efficient thermal envelope." To help maintain the thermal integrity of the building, the firm selected STYROFOAM* brand insulation to insulate the walls, floor and roof of the center. Manufactured by The Dow Chemical

Company, STYROFOAM brand insulation provides superior moisture resistance, long-term thermal performance and compressive strength due to its dense, closed-cell structure. It is CFC-free** and reusable.

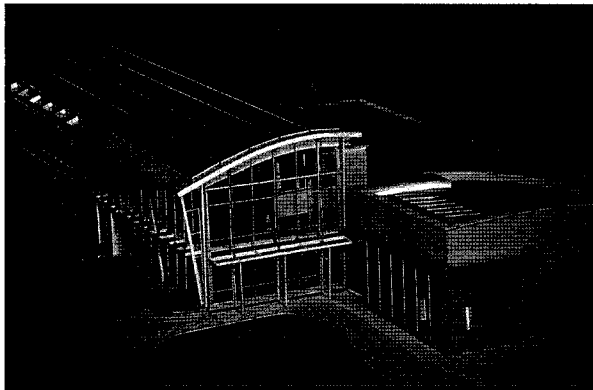


Photo courtesy of Scott Smith

The Adam Joseph Lewis Center for Environmental Studies is located on a 1½-acre site and includes an atrium, an auditorium, a conference room, offices, classrooms and a library. Situated on the site are a pond, wetland, plazas, orchards and gardens.

Impenetrable Walls and Floor

Used in the wall construction and made from a patented carbon-black technology, STYROFOAM CAVITYMATE* Ultra brand insulation provides a higher insulation value at a lesser thickness, which appealed to the architect. "It has a higher R-value per inch – 5.6 – and we saw this as a great opportunity to get a pretty significant increase of overall thermal protection," Burke said. "We were able to push the cavity wall out 4" and introduce an air barrier system that reduces air infiltration and air exfiltration."

The wall construction consists of 8" and 12" concrete masonry units, an air barrier, STYROFOAM CAVITYMATE Ultra brand insulation mechanically fastened with wall ties on 16" centers, a 1" air space and the masonry brick. Using STYROFOAM CAVITYMATE Ultra brand insulation for the first time, Richard Frederick, mason foreman of Mosser Construction, Fremont, Ohio, said the specially made, 3"-thick insulation was easy to install. "It's fine to install," he said. "It is easy to cut and shape, and it's very workable." The insulation features a convenient 16" width that can be directly installed between masonry wall ties, saving time by eliminating the need to cut and snap boards.

Protecting and insulating the floor, 2" of STYROFOAM brand High Load 40 insulation were installed. The floor insulation has an R-value of 5 per inch and a compressive strength of 40 psi.

The Roof's Learning Curve

The center has two roofing systems that incorporate STYROFOAM brand insulation. A PMR (Protected Membrane Roof) assembly over the office spaces consists

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**STYROFOAM brand products are manufactured with HCFC blowing agents which have ozone depletion potentials that are 93.5 percent less than standard CFC blowing agents.

OBERLIN COLLEGE
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of a rubberized asphalt membrane, 6" of STYROFOAM ROOFMATE* brand insulation and stone ballast. In a PMR system, which was patented by Dow in 1968, the insulation is placed on top of the roofing membrane, protecting the membrane from light degradation, thermal shock and foot traffic.

A PMR system allows for the reuse of the insulation if the building is expanded vertically or when an original roof is replaced. Since STYROFOAM brand insulation is so water resistant, it can be reused, allowing the college to save money in new materials and minimize landfill waste.

Above the auditorium, a standing seam metal roof was installed on a curved metal deck. The deck is covered by a vapor



A vapor barrier, two layers of STYROFOAM DECKMATE brand insulation, a single-ply membrane and metal panels cover the curved roof deck above the auditorium.

barrier, two layers of 3"-thick STYROFOAM DECKMATE* brand insulation, a single-ply membrane and curved metal panels that will have solar panels attached to them. Dale Cartwright, general manager of

Willham Roofing Co. Inc. of Strongsville, Ohio, said the STYROFOAM DECKMATE brand insulation was the correct insulation for the job. "In this particular situation, it's a high humidity area," he said. "The Dow board has a lower absorption rate compared to polyiso or other types of polystyrene. The moisture resistance of the DECKMATE is the main advantage of the product."

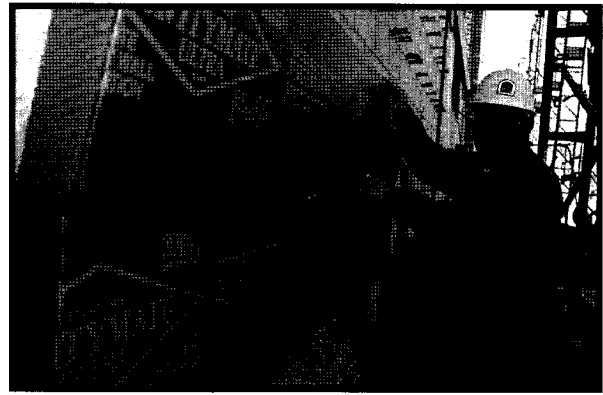
STYROFOAM DECKMATE brand insulation is the first extruded polystyrene insulation that meets the requirements established by Underwriters Laboratories for direct application on metal decks in fire-classified assemblies. It offers an R-value of 5 per inch, a minimum compressive strength of 18 psi and a 15-year limited thermal warranty.

Product of Choice

The college required McDonough + Partners to not specify or use materials known to be carcinogenic, mutagenic or endocrine disrupters. Each building product was scrutinized, reviewed and studied for toxicity. "We looked at MSDS (Material Safety Data Sheets) and chemical compositions to make sure that the product had a low VOC (Volatile Organic Compound) or didn't off-gas," Burke said.

Another main consideration of material selection was durability. "We wanted materials that will last and not need to be replaced," he said. "On the campus, there are buildings that are 100 to 150 years old. We want this building to last a long time."

Burke said STYROFOAM brand insulation was specified because it is reusable and durable. He also commented that STYROFOAM brand insulation has a better water resistance compared to expanded polystyrene.



STYROFOAM CAVITYMATE Ultra brand insulation features a convenient 16" width, allowing the boards to be directly installed between masonry wall ties.

Burke admits that the Lewis Center for Environmental Studies at Oberlin College has been the most challenging program ever given to his firm. "The college has set the highest ecological design standards for this building," he said. And with STYROFOAM brand insulation on the walls, floor and roof of the center, McDonough + Partners has reached that standard by selecting energy-efficient, durable and reusable products that will help protect our natural resources for decades to come.

For more information on STYROFOAM brand insulation products, contact your Dow sales representative or write to The Dow Chemical Company, P.O. Box 1206, Midland, MI 48674; or call 1-800-441-4369. For information on STYROFOAM DECKMATE brand insulation, request Form No. 179-5451. For information on the line of STYROFOAM CAVITYMATE brand insulation products, request Form No. 179-4285. To obtain the Sweet's brochure of STYROFOAM brand products, request Form No. 179-4298.



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