ST. CLAIR COUNTY COMMUNITY COLLEGE

Project:
St. Clair County Community College

Location:
Port Huron, MI

Roof Area:
70,000 Square Feet

Completed:
2009

Manufacturer:
IB Roof Systems

System:
Mechanically Attached 80 Mil Membrane with Vegetative Roof System

Project Profiles

As a center of higher education, St. Clair County Community College (SC4) understands its responsibility to prepare students for the burgeoning green economy. SC4's mission is to provide: "future-focused curriculum," "enhance global awareness" and "ensure the appropriate use of technology." From the top down, they're practicing what they preach.

When the school replaced a 20-year-old EPDM membrane on its 70,000-square-foot roof over the Acheson Technology Center, a new roof that encompasses the latest in green design and technology was installed.

At the Forefront of Sustainability

Keeping the client's goals in mind, David Chwalibog of The Avrie Group, a Milford building envelope and roof engineering firm, needed a system that would deliver on the client's energy-efficiency targets, support solar and wind energy generation, and support a vegetative roof. "The idea is to have this sustainable technology project for the students to utilize while we monitor the performance of all three elements," Chwalibog said.

Chwalibog specified an 80 mil white IB Roof Systems (IB) membrane that is puncture resistant and carries a 25-year warranty. It had to withstand the placement of vegetative roof trays. The IB system allowed a garden roof to be installed without a slip sheet. Beneath the membrane was IB Tapered ISO Energy Board. For the edge metals, IB-155 Fascia was chosen, manufactured for IB by W.P. Hickman.

At the "LEEDing" Edge

The EnergyStar® approved IB membrane reflects most of the thermal wavelengths of the sun away from the building. This greatly contributes to keeping the building more energy-efficient, and will help SC4 realize long-term energy cost savings while reducing the building's overall carbon footprint.

The photovoltaic systems at SC4 will require roof penetrations for its supports. "IB was supportive of our plan to interface equipment with their membrane," Chwalibog explained. In the months to come, eight solar panels and a wind power generator will be installed. In addition to accommodating mounting racks for the photovoltaic panels, the membrane allows for IB SolarWise thin-film self-adhering solar electric panels.

Don Ciampichini, Project Manager for Newton Crane Roofing thought the project was well thought out. "The challenge was mapping out the roof," Ciampichini said. Newton Crane designed a walkway with pavers that incorporated irrigation before arriving at the job site.

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Project Profiles

Newton Crane will be called back once the college is ready to install solar panels. The remaining 65,000 square feet of the low-slope roof was mechanically attached with the seams and welded with a Leister Digitally Controlled Robotic Welder.

Marshall Ryerson, sales representative for IB had a compliment for each member of the project team. “In my 30 years in the roofing business, it’s the best designed and best looking roof I’ve seen,” he said.

Closed Loop Sustainability

IB is a carbon neutral company and there have been LEED Innovation and Design credits available for project teams working with carbon neutral products.

When any manufacturer’s PVC roofing membrane has met the end of its service life, IB will recycle the former membrane and replace it. This enables project teams to reduce the amount of waste that enters landfills.

Rooftop Garden Showcase

Perhaps the most innovative feature of the St. Clair project, however, is the 8,000 square feet of “green space.” Usually, a vegetated roof needs extra layers of special membranes as a buffer between the membrane and the organic matter, but IB’s membrane met all the specifications for a loose laid membrane application with the weight of trays to hold it down. “IB Roof Systems’ product met all of the clients’ sustainable parameters and reduced the cost of adding extra materials for the green roof installation,” explained Chwalibog.

The LiveRoof® system was selected for the garden roof. The modules are constructed of 100% recycled polypropylene and were shipped from within a 500-mile radius of the project. Such product attributes can assist project teams with LEED Material & Resources Credits for Recycled Content and Regional Materials. The LiveRoof system of 2.5 inches of soil depth did not require any additional structural changes to the original specifications, an engineer determined.

Maintenance is a breeze with tray-type rooftop garden installations, according to Marshall Ryerson of IB. “The happiest maintenance guy is one who can immediately access the roof; lift out the trays using an everyday spade, access the roof immediately and then replace trays—unlike systems with filter fabric.”

Rooftop gardens can extend the life cycle of a membrane. The soil minimizes the thermal expansion and contraction of the roofing system, as well as blocking harmful UV wavelengths.

Stormwater Benefits

Green roofs provide stormwater management benefits by retaining anywhere from 60% to 100% of incoming rainfall. This reduces sewer system overflow events and runoff of contaminants. They offer acoustical buffering, produce oxygen and aesthetically beautify the community. Green roofs can assist in the Sustainable Site credits in the LEED rating system for reducing the quantity and improving the quality of stormwater runoff.

Function and Beauty

Beyond the blooming plants, the challenge of making the roof look good was made easier with the IB-155 custom edge metal profile and counter flashing, which comply with FM-1-465. That means the product was tested to withstand 155 mph wind uplift resistance as required by the International Building Code. The pavers and garden roof will act as ballast for extra protection from wind driven peeling. That’s good news for the building owner that needed a roof capable of enduring the mighty blasts coming from nearby Lake Huron.

The college is pleased with the appearance of the Acheson Technology Center’s new roof and timeliness of its delivery. This roof will not only prove to be durable and economical over time, but it is educational, innovative, and will certainly showcase the college’s environmental stewardship for generations of students to come.