

Project Profile



Project

Wal-Mart Store
Chicago, IL

Owner

Wal-Mart Stores, Inc.

Architect

BSW International, Inc.
Tulsa, OK

Roofing and Waterproofing Contractor

Anderson & Shah Roofing, Inc.
Joliet, IL

Green Roof Engineering and Design Firm

Roofscapes, Inc.
Philadelphia, PA

Green Roof Contractor

Enviroscape, Inc.
Madison, IN

Roofing and Waterproofing Systems

Loose Laid System, using 80 mil, G476 waterproofing membrane; and Mechanically Attached System, using white, 60 mil S327 EnergySmart Roof® membrane

Total Project Size

140,000 square feet

Completed

April 2006

Green Roof Helps Meet Wal-Mart's Sustainable Construction Initiatives

It should come as no surprise that one of the nation's largest retailers has one of the Midwest's largest green roofs. At 76,300 square feet, the green roof on the Wal-Mart store in Chicago is the first large-scale demonstration of a green roof with sedum cuttings in the Chicago area, and is one of the largest green roofs in the Midwest, according to John Bruns, president of green roof company Enviroscape, Inc. in Madison, IN.

It should also be no surprise that the roofing and waterproofing membranes used on this roof come from the world's largest thermoplastic roofing and waterproofing manufacturer — and a key player in the green roof industry — Sika Sarnafil.

A Budding Development

When Wal-Mart decided to build its first store within Chicago city limits, it had to comply with Chicago's New Building Green/Green Roof Initiative's requirement that roofs of new commercial construction be 50 percent *green* — meaning that half of the roof had to be covered with vegetation. Mayor Daley began this environmental initiative in 2005, and green roofs are a component since they offer benefits such as storm water retention, better air quality, and a reduction of the urban heat island effect. Chicago City Hall, the first municipal building in the

city to be crowned green, also used a Sika Sarnafil Green Roof System composed of Sika Sarnafil waterproofing membrane and Roofscapes, Inc. Roofmeadow® vegetative assemblies. The project reaped excellent results, prompting other building owners in the area to follow suit.

Since this was the first green roof Wal-Mart had done, Wal-Mart's architectural firm, BSW International, Inc. of Tulsa, OK worked closely with Roofscapes, a green roof engineering and design firm based in Philadelphia. Roofscapes provided the Roofrug® plant assembly and recommended Sika Sarnafil for both the roofing and waterproofing designs for the project.

"The Sika Sarnafil membrane is highly durable, watertight and root resistant, and eliminates the need for a root barrier," said Melissa Muroff, chief operating officer at Roofscapes. "Sika Sarnafil is a great company to work with and the quality of the product is excellent."

An important consideration for Wal-Mart was that Sika Sarnafil, together with Roofscapes, offer a single source warranty agreement for the entire green roof system, including both the waterproofing integrity and the viability of the vegetative cover. This warranty is the first offered by a single-ply manufacturer and provides the building owner the peace-of-mind of having a single warranty from Sika Sarnafil.

Sika®

Sarnafil®

Mary Kell, client services manager at BSW International, said "Sika Sarnafil was very helpful in providing details and information. I would recommend them to other clients considering a green roof."

Roofing Installation Meets a Tall Order

Anderson & Shah Roofing, Inc. of Joliet, IL, a 27-year-old minority-owned roofing company that has been installing green roof systems since 2003, installed both the waterproofing and the roofing membranes on the building. Installation of the Sika Sarnafil waterproofing system began with ¼ inch of Dens Deck® prime roof board, followed by two layers of Sarnatherm two-inch 40 PSI extruded polystyrene insulation, and another layer of Dens Deck. Then a foil membrane that is a component of a leak detection system was applied. Finally, a NWP-HD leveling layer was installed, followed by the Sarnafil G476 waterproofing membrane, with all seams hot-air welded to ensure watertight protection.

On the exposed roof area, the crew mechanically fastened Sika Sarnafil's 60 mil EnergySmart Roof® membrane over 2.8 inches of Sarnatherm ISO insulation. The membrane's white, reflective color reduces the amount of solar heat absorbed by the building, reducing cooling costs.

"One big challenge of the installation was the 15-foot parapet walls, which instead of going straight from the roof deck to coping actually stepped out of the roof deck," Dave Wehrle, project manager at Anderson & Shah Roofing stated. "We mechanically fastened a term bar every five feet on the walls, and also continued the flashing up and over the parapet walls, which required us to have rolling scaffolding and fall protection to protect the workers," Wehrle said. "There were also many penetrations and skylights that we had to work around."

Testing Proves a Challenge

Perhaps the biggest challenge with the waterproofing membrane installation was figuring out how to flood test a two-inch low slope 76,300 square foot area built to ¼ inch per foot slope. "Sika Sarnafil and Wal-Mart decided to use International Leak Detection's passive system, which required us to place rolls of foil membrane below the waterproofing membrane and electrically tie them together," Wehrle explained. "After the waterproofing membrane was installed,



The vegetated roof atop the Wal-Mart in Chicago earned the company First Place in Sika Sarnafil's 2006 Waterproofing Project of the Year competition.

the area was wetted and specialized equipment identified any flaws, punctures, and anomalies through a process called electrical field vector mapping. This system can also be used to locate leaks in the future."

Wehrle said that one factor that helped the roofing crew overcome the challenges posed by this project was the hands-on training they received at Sika Sarnafil's Lemont, IL training facility. "The support and training we receive from Sika Sarnafil is always very good," he stated.

Anderson & Shah Roofing's hard work and preparation paid off, earning them first place in Sika Sarnafil's 2006 Waterproofing Project of the Year competition for the quality of their work on this installation.

The Greening of Wal-Mart

After the roofing and waterproofing systems were installed, the next step was installing the Roofrug green roof assembly. According to Bruns, the Wal-Mart installation was pretty clear-cut. First a drainage mat, made of recycled tennis shoes, was installed, along with a drainage conduit. This was followed by a separation fabric, and then three inches of engineered soil media, planted with cuttings and sedum. Paver walkways were then installed.

"Sika Sarnafil had a representative watching

and inspecting us the entire time — the company is awesome to work with," Bruns said. "The Sika Sarnafil system is very good and durable — it gives you a level of comfort that helps you sleep better at night."

A Growing Result

Now that plants are starting to grow on the roof, Wal-Mart is closely watching to see what benefits they might realize from their first vegetated roof in the U.S. "We are studying this roof and making an investment to learn from this," said Don Moseley, director of sustainable facilities at Wal-Mart. "We didn't simply do this because the city wanted us to — we also saw this as an opportunity to learn about what cost savings it might offer in terms of reduced maintenance, better insulation, and a longer-lasting roof."

Other potential benefits include reduced storm water run-off and better air quality. "Green roofs are a great idea, and something I'd like to see more retailers doing," Kell stated. "It's a way to recreate what was on the land before the building was there."

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