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## Indian Tribes

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# Protecting Their History

A Vegetative Roof Protects the Irreplaceable Artifacts of the Mashantucket Pequots' Past

By Christina Koch

The Mashantucket Pequot tribe of southeastern Connecticut has had a long and sometimes difficult history. Before European settlers came to America, the tribe estimates it had 8,000 members and lived on 250 square miles (648 km<sup>2</sup>) of land. In 1636, a two-year war between colonists and the tribe left the Pequots nearly decimated; of the tribe members who survived, many were placed into slavery or other tribes. In 1666, the tribe regained land in Mashantucket, Conn., but they fought to maintain this land and their tribe for years afterward. By the 1800s, less than 50 tribe members remained there. Many left to find work or join Christian movements that took them to other parts of the country. And state land sales left only 213 acres (86 hectares) of the reservation by 1856.

In the 1970s, many Mashantucket Pequot tribe members returned to Connecticut to regain the land they had lost, help the tribe become economically self-sufficient and promote the culture of which they were proud. They legally reclaimed their lost land and became federally recognized in 1983. In 1992, the tribe opened Foxwoods Resort Casino, which made them economically self-sufficient and laid the financial groundwork for the Mashantucket Pequot Museum and Research Center.

Ten years after being federally recognized, the Mashantucket Pequots held a ceremonial groundbreaking to celebrate the commencement of construction for the museum and research center, which would share the heritage of the tribe and all Native Americans through exhibits and libraries. Of great importance to the tribe was a structural design that would celebrate their history and respect the environment and archeological significance of the site. To meet these guidelines, Polshek Partnership Architects, New York, designed the 308,000-square-foot (29356-m<sup>2</sup>)



In August 1998, the Mashantucket Pequot Museum and Research Center, Mashantucket, Conn., held its grand-opening ceremony outside the gathering space — on the vegetative roof.

structure to be mostly underground. To protect the ancient artifacts the Mashantucket Pequots have tirelessly collected and refurbished, the firm decided to specify a vegetative roof system. Not only does the roof connect the museum to the beautiful land surrounding it, it also has protected the tribe's artifacts from moisture for seven years.

## AN EXPERT INSTALLATION

Polshek Partnership Architects designed the museum and research center into three sections, each interconnected yet separately expressing the spirit of the space. For example, the structure consists of a gathering space, which is the life of the facility and consists of a circular glass enclosure in

the center of the building. The museum, which holds all the precious artifacts, is underground and therefore resembles a natural landform. The research center is a linear bar behind the museum and gathering space, figuratively providing support for the rest of the structure. As visitors approach the site, they notice a 200-foot- (61-m-) high stone tower, which offers the opportunity to view the reservation in its entirety.

To ensure this structure was built to the highest of standards, Polshek Partnership Architects charged general contractor, Pavarini Construction Co. Inc., Stamford, Conn., with finding a roofing contractor who could install the specified American Hydrotech Inc. vegetative roof system. The general contractor contacted American Hydrotech, which is based in Chicago, to find experienced roofing contractors in Connecticut. The manufacturer suggested Ernest Peterson Inc., Hartford, Conn., who recently had installed an American Hydrotech vegetative roof system on CityPlace I, a skyscraper in downtown Hartford.

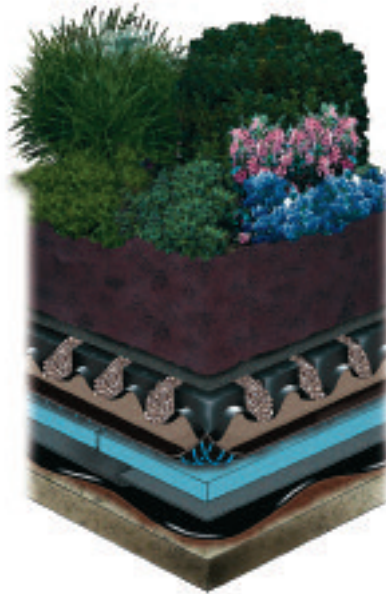
Malcolm Ross, president of Ernest Peterson, knew they had a big job ahead. "We were asked to do all the underground waterproofing and roofing of the structure above ground. It was a big, big project."

Costing about \$2.5 million dollars, the roofing included 75,000 square feet (6968 m<sup>2</sup>) of vegetative area and 53,000 square feet (4924 m<sup>2</sup>) of protected-membrane roof area above the research center and gathering space.

Although he started the project later than expected, the installation went smoothly, according to Ross, and was completed within the expected timeframe.

Above the structural poured-concrete deck, Ross's crew installed a Monolithic Membrane 6125®-EV for the vegetative roof system. The product is an environmentally friendly rubberized asphalt that features a minimum of 25 percent recycled content. A fabric, Flex Flash F<sub>1</sub> was applied in the hot 6125. The fabric is designed to reinforce the membrane over cracks, construction joints and changes in the plane.

Next, the crew installed the root-barrier product, Hydroflex® RB. The granule-covered rubberized-asphalt sheet features a root-deterrent agent and is reinforced with polyester. Moisture Retention Mat SSM45® was installed over the root barrier. It retains moisture and nutrients for the plants in its nonrotting, recycled polypropylene fibers.



Because the vegetative roof would include widespread landscaping to meld in with the ecology around it, Floradrain® was applied to the system. The recycled polyethylene 3-D panel provides moisture-retention cups on the top and drainage channels on the top and bottom, as well as holes in the cup tops for ventilation and evaporation. Finally, the nonrotting, polypropylene-fiber Systemfilter® SF was installed. The product resists natural acids and alkalis and provides a bed for the soil.

Another subcontractor installed the soil, sod, plants and trees to complete the roof system.

"Aesthetically, the Mashantucket Pequots wanted the look of a lawn," Ross explains. "I also think Native Americans are much attuned to the green movement; they try to be very careful of their own land and blend into the surroundings."

Ross admits the size and complexity of the job were challenges, but he's proud of the roof system's performance.

"The entire system was subject to a 48-hour water test prior to any overburden being placed," Ross notes. "I think accomplishing a

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This cross section depicts the Garden Roof® Assembly installed on the Mashantucket Pequot Museum and Research Center, one of Chicago-based American Hydrotech's first intensive vegetative roofs installed in the United States.

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waterproofing job of this complexity and size and having zero leaks after seven years is very rewarding."

### WIN-WIN

In August 1998, the Mashantucket Pequot Museum and Research Center held its grand-opening ceremony outside the gathering space—on the vegetative roof. Those who gathered surely marveled at how the museum melds into the precious land surrounding it.

Not only have the tribe's irreplaceable artifacts been housed under a protective roof system, those who were part of the work have gained from the experience. Ernest Peterson's crews have installed many more vegetative roof systems since, and the success of the Mashantucket Pequot project became a selling tool for American Hydrotech's representatives.

In addition, today, people from all over the world can experience the history of the Mashantucket Pequots and gain knowledge about other Native American cultures in the world's largest Native American museum and research center. 🌱

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## MASHANTUCKET PEQUOT MUSEUM AND RESEARCH CENTER

Mashantucket, Conn., [www.pequotmuseum.org](http://www.pequotmuseum.org)

**ARCHITECT** — Polshek Partnership Architects, New York, [www.polshek.com](http://www.polshek.com)

**GENERAL CONTRACTOR** — Pavarini Construction Co. Inc., Stamford, Conn., [www.pavarini.com](http://www.pavarini.com)

**ROOFING CONTRACTOR** — Ernest Peterson Inc., Hartford, Conn., (860) 522-4271

**LANDSCAPE ARCHITECT** — Office of Dan Kiley, Charlotte, Vt., (802) 425-2141

**ROOF SYSTEM MANUFACTURER** — American Hydrotech Inc., Chicago, [www.hydrotechusa.com](http://www.hydrotechusa.com)

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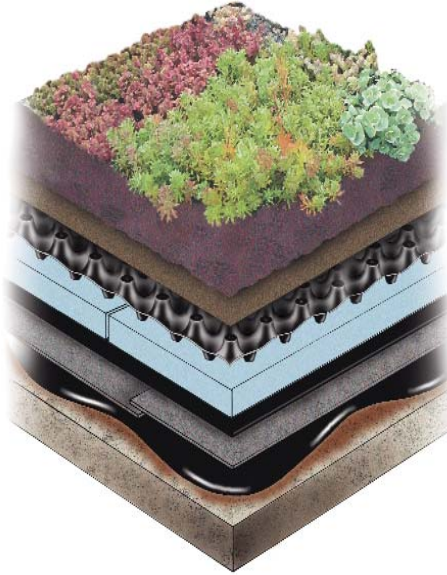
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Vancouver Public Library



Mashantucket Pequot Museum

