

# North Manitou Shoal Lighthouse

## JOB PROFILE



## The Project

**Name:** North Manitou Shoal Lighthouse re-roof

**Location:** Lake Michigan

**Square Footage:** 1,040

**Duration:** 5 days

**Contractor:** Doyle Inc. Roofing

**Existing Roof:** Concrete and tar

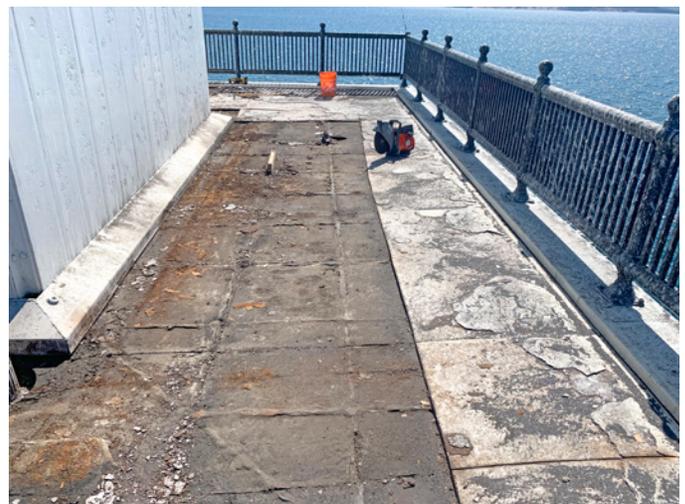
**Warranty:** 15 years



Located in the heart of the Sleeping Bear Dunes National Lakeshore, the North Manitou Shoal Lighthouse was purchased at public auction from the United States Coast Guard in 2016. Abandoned and gutted by the Coast Guard in 1980, the lighthouse sat vacant for 36 years until the nonprofit North Manitou Light Keepers (NorthManitouLightKeepers.org) purchased it at auction in 2016 with the goal of restoring the lighthouse and opening it to the public for tours and overnight stays.

## The Problems

1. The lighthouse is nine miles from the closest marina and all materials and workers had to be transported via boat.
2. There was no electricity or functioning plumbing.
3. Cranes only reached the first deck – all materials then had to be carried up two flights of stairs.
4. The wind and weather presented constant challenges. The weather on Lake Michigan can be unpredictable and changes quickly, which requires flexibility and can cause delays and cancellations to work.
5. There are strict local, state, and federal environmental regulations. This project had to have zero negative environmental impact on the air and water quality and was closely monitored by officials.
6. Because the lighthouse is on the National Register of Historic Places, all work had to comply with the Department of Interior's Historic Preservation Standards. The actual work and specifications were approved and monitored by Michigan's State Historic Preservation Office. This added cost and complexity to the project.
7. Due to the unique location and environment, a typical project costs 2x–4x what it would cost on land.



Before

## The Proposal

1. On this unique project, the roof is more of a walkway surface for the third level of the lighthouse. There are two roof drains as well as wall flashing on all sides.
2. Doyle Inc. Roofing of Cheboygan, MI, recommended a hybrid roofing assembly from Versico Roofing Systems. The new roof would consist of both mechanically fastened and fully adhered ½"-thick 100 psi polyiso insulation with gray VersiFleece® TPO membrane on the deck and white VersiWeld® TPO membrane for the wall flashing. This system would provide the lighthouse with excellent protection against the harsh weather and conditions. The project would achieve a 15-year warranty and Versico's gray color option would replicate the lighthouse's original aesthetics. This system was recommended by Doyle Inc. Roofing, supported by Versico, and accepted by the State Architect.



After

## The Products

- ½" SecurShield® HD Polyiso Insulation
- Flexible DASH Adhesive
- MP 14-10 Fasteners
- Gray 135-mil VersiFleece TPO
- White 60-mil VersiWeld TPO adhered at wall flashing using CAV-GRIP® 3V

## The Process

Dave McWilliam, the Chief of Restoration and Operations for North Manitou Light Keepers, says, "In 2017, an aggressive restoration project began on the North Manitou Shoal Lighthouse, focusing primarily on the exterior. The outside of the lighthouse was cleaned of hazmat, sandblasted, painted, the windows were rebuilt and restored, and the lantern glass was replaced. The last area of water intrusion was the mid-level deck (called the L3 deck). Water intrusion at the L3 deck was causing major structural and cosmetic damage to the interior living quarters. This was the last major exterior project which would dry-in the interior and allow restoration to begin on the interior."

"When the government mothballed the lighthouse in 1980, ¾-inch steel plates were installed on the L3 deck to prevent water intrusion and secure the structure for long-term preservation. These plates were badly deteriorated and delaminated and had to be removed before the Versico roofing membrane could be installed."

"As part of this project, approximately 7,300 pounds of steel were cut up and removed. The steel had to be cut to pallet-sized pieces, lowered to a workboat via crane, and hauled to shore to be recycled."

"Fortunately, the underlying concrete surface was in relatively good shape and required minimal repairs before the roof membrane installation. In mid-September, Doyle Roofing of Cheboygan, MI, began work on the new membrane roof. Over a period of four or five days (in some challenging weather!), the new underlayment and roofing membrane from Versico was installed."

"We are very pleased with the final product. The work from Doyle Roofing was high-quality, and the support and warranty from Versico was appreciated. We also appreciated the coordination and cooperation from Doyle and Versico to ensure that the work was done to historic standards and met the approval of the State Architect."

"All parties worked well together to ensure a successful outcome of this project. We have an aesthetically pleasing and long-lasting product which will serve the needs of the lighthouse for many years to come."



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