



CHALLENGE: Complete Phase 2 of the Boardman Lake Loop Trail and Boardwalk system in 45 ft deep silt, with tight time lines.

SOLUTION: Use alternative pile driving methods in silt water, and work in bitter cold conditions throughout the winter to stay on schedule.

OWNER: City of Traverse City, Grand Traverse County, and TART Trails

CONTRACT AMOUNT: \$4,401,315.30

ENGINEER: Prein & Newhof, Scott Post, P.E., 231-946-2394

LOCATION: Traverse City, MI

PROJECT DATE: 246 days to complete by 6/30/20222

SELF-PERFORMED: 62%

PARTNERS: Give 'Em a Brake Safety, Bella Concrete, G&J Site Solutions, Paul Maurer General Contracting, Spence Brothers, Art Thureson, Inc., Contech Engineered Solutions

BY THE NUMBERS

Sheet Piling: 178 ft

21-AA Aggregate Base: 787 ton

140' Prefab Steel Bridge: 1

93' Prefab Steel Bridge: 1

Timber Piles: 226

Decorative Concrete: 2,903 sq. yds.

Concrete Sidewalks: 7,960 sq. ft.

Concrete Modular Block Retaining Wall: 3,480 sq ft

Treated Timber Boardwalk (12' wide): 980 ft

The Construction of the Boardwalk

On a beautiful sunny day in May, three Team Elmer's employees go to do what others have dreamed of for 30 years. They walked out onto the boardwalk.

"This is the crown jewel of the whole Boardman trail system," said Team Elmer's project manager Al MacDonald.

Rising over the water between Logan's Landing and NMC's University Center, the boardwalk provides an important connection for the community and signifies the beginning of the end of construction.

A 30-year-old Vision

That end was a longtime in the making. Over 30 years ago a vision for the Boardman Lake Trail was born. It was to be a shared-use pathway that circled the Boardman Lake in Traverse City, showcasing the region's natural, cultural, and recreational resources while helping to support healthier and stronger communities and economies.

Boardman Lake Trail is owned by the City of Traverse City in partnership with Grand Traverse County and Garfield Township. Traverse Area Recreation and Transportation (TART) Trails, Inc. works with the City, County, and Township to support the development and

TEAM ELMER'S PROJECT PROFILE | Keystone Roundabouts @ Cass Rd & River Rd



maintenance of the trail. Prein & Newhof is the engineering firm tasked with turning the vision into a reality.

It Wasn't Always Sunny

According to MacDonald, construction of the boardwalk began in the fall of 2021, and continued throughout the winter - a bitter, cold, windy, Michigan winter. According to MacDonald, it was important to work through the winter to keep the project on schedule.

Challenges Abound

The weather wasn't the only challenge the crews faced. According to MacDonald, the portion of the Boardman Lake that required the boardwalk is very shallow, with silt up to 40 feet deep. Team Elmer's had to get equipment that could stay on top of the silt and still be able to do the work.

Barges weren't an option, as the lake wasn't deep enough. So Team Elmer's came up with a different solution. "We are probably one of the few people in the country who has ever done something like this," said MacDonald. So what is it that MacDonald is referring to? Introducing the Swamp Excavator

Enter the swamp excavator.

"The swamp excavator has wide tracks, it's on pontoons, it will actually float," explained MacDonald. "Then we used a side grip and

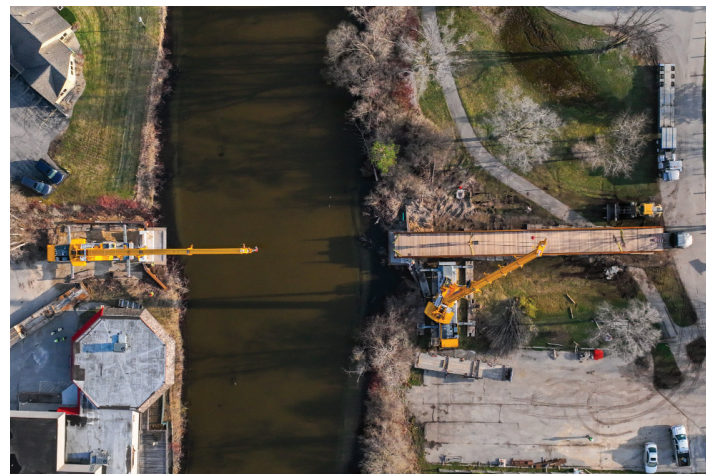
vibratory hammer." Thanks to the swamp excavator, one challenge was solved. But there were more waiting for Team Elmer's. "We really questioned whether wood piles would work, due to the depth of the sediment," said MacDonald.

Wood Pilings

The piles were 45 feet long, and needed to stick up above the water 3-4 feet. Team Elmer's used a vibratory hammer to install them, and then used an impact camera to test them to ensure they had the correct bearing capacity. "With an impact hammer, you've got a known weight on a hammer and you're dropping it a known distance. Therefore you can determine how much resistance you get on the pile," said MacDonald. "We had 45-foot piles, and we'd get them to where we would stop with the vibratory hammer, and then have to cut them to grade." According to MacDonald, there are a few locations where they had to add a third pile to get the required resistance. In total, Team Elmer's installed 174 wood piles to build the base of the boardwalk and 226 total.

The Finish Line Is In Sight

While crews were hard at work on the boardwalk, other Team Elmer's crews were building retaining walls, grading the path, building bridge abutments, and installing bridges. The project is complete, and after 30 years, standing over the Boardman, with the sun shining down and miles of trails ahead of you, it was worth the wait.



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