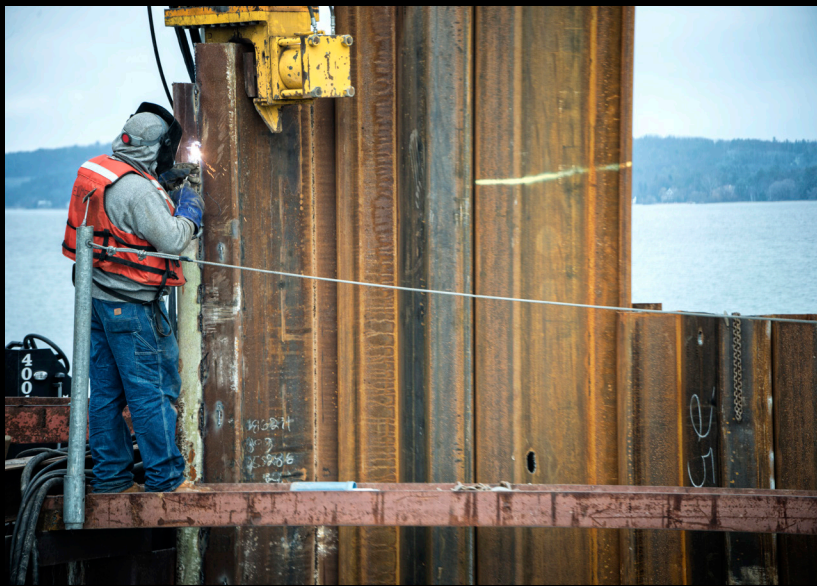


Clinch Park Marina



PROJECT: 2016 Clinch Park Improvement Project

CHALLENGE: Balance project operations among three different work areas; install design upgrades to new break wall; repair tunnel drain pipe

SOLUTION: Reduce costs by salvaging and repairing large segments of break wall; use a 40-foot caisson to repair drain pipe

OWNER: City of Traverse City

CONTRACT AMOUNT: \$517,000.00

DESIGN ENGINEER: Tim Lodge, City Engineer

LOCATION: Duncan L. Clinch Marina, Traverse City

DATE STARTED: March 2016

DATE COMPLETED: June 2016

SELF-PERFORMED: 90%

PARTNERS: Bay Masonry, Hallmark Construction, Lautner Irrigation, Traverse Outdoor

In 2013, the City of Traverse City hired an outside design firm to implement an extensive remodel of the Duncan L. Clinch Marina. The design incorporated a stone block break wall, a new kayak launch, and a new splash pad at Traverse City's Clinch Park — a popular destination for families in the summertime. The \$2.9 million project modernized the marina to welcome Traverse City's ever-growing summer tourist crowds. Design elements needed to be addressed after wave action caused repair issues with the kayak launch area and retaining wall areas. The City of Traverse City had to find the right company to repair the problems to maintain public safety. Team Elmer's was the low bid on the City of Traverse City re-engineered work.

Repair and redesign work began in March 2016 by segmenting the project into three main goals and work areas:

1. The Break Wall: The stone revetment break wall, as installed in 2013, was built of square stone blocks that were grouted in. However, the design

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didn't was weakened under the force of the waves and gales of a Traverse City storm. Team Elmer's was tasked with installing 81 feet of steel sheet piling to reinforce the wall. In addition, we rebuilt the existing stone wall, salvaging 82 feet of terraced stone and installing 17 additional feet. We also installed 30 feet of enclosed steel sheet pile crib wall to extend the pier and protect the break wall, and we reinstalled the washed out kayak ramp. The pier extension required a new concrete walkway, which accounted for a significant portion of the 1,925 square feet of sidewalk that Team Elmer's installed for the project. Finally, we added new riprap base as called for in the design, to ensure extra wave protection.

2. The Tunnel: To prevent additional flooding of the tunnel under Grandview Parkway, Team Elmer's needed to repair the existing tunnel drainage system, install a dry well for surface draining, and restore the site. The tunnel drain pipe repair provided arguably the biggest challenge of the project, given the inaccessible nature of the pipe. We had to drive a 40-foot caisson (a watertight retaining structure) over the damaged pipe in order to perform the difficult repair.

3. The Splash Pad: The original design by others did not include a backflow preventer or a means to mitigate the large amount of storm water drainage to the splash pad area. To prevent any possible repeat of sewage overflow that led to children playing in contaminated water in 2013, the City of Traverse City had to pay special attention to the splash pad. The key was a new storm water diverter, the housing which Team Elmer's manufactured specifically for the project. The diverter uses electrical valves to open or close sewage drain pipes remotely from a nearby building. Team Elmer's also installed underground dry wells and drainage piping, to prevent water overflows during rainfall. Finally, we restored the site with concrete and brick pavers, to keep the splash pad the aesthetically pleasing attraction it was intended to be.

With some additional sidewalk and restoration work, plus a few landscaping improvements to prevent debris from clogging drains or filters in the future, Team Elmer's was able to complete the Clinch Marina repairs by June 2016. Just in time for the busy summer season, the park's splash pad was back in operation, the kayak ramp was repaired, and the break wall was more secure than ever before. Way to go, team!



Clinch Park Marina By The Numbers

- Terraced Stone Wall Repairs: **82 feet**
- New Terraced Stone Wall: **17 feet**
- 6" Sidewalk & Concrete Pavement: **1,925 square feet**
- 4" Stormwater Underdrain Trench: **23 feet**
- Permanent Steel Sheet Piling: **1,296 square feet**
- Clay Brick Pavers: **1,346 square feet**
- Paver Ribbon: **49 feet**

