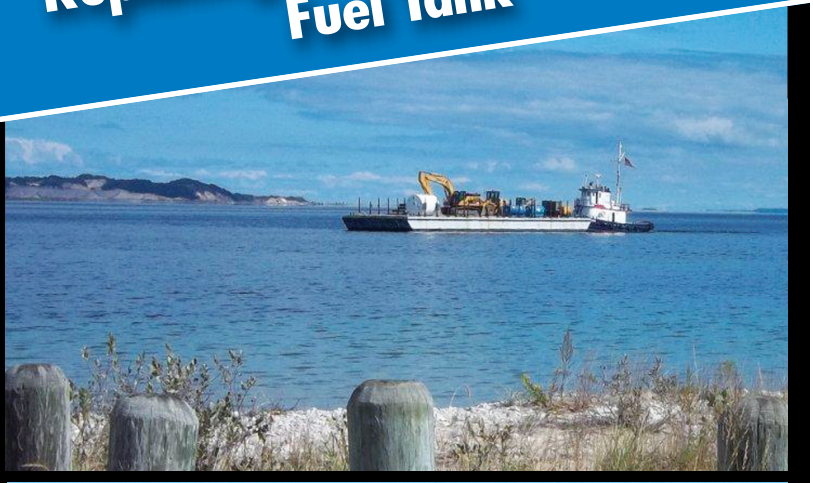
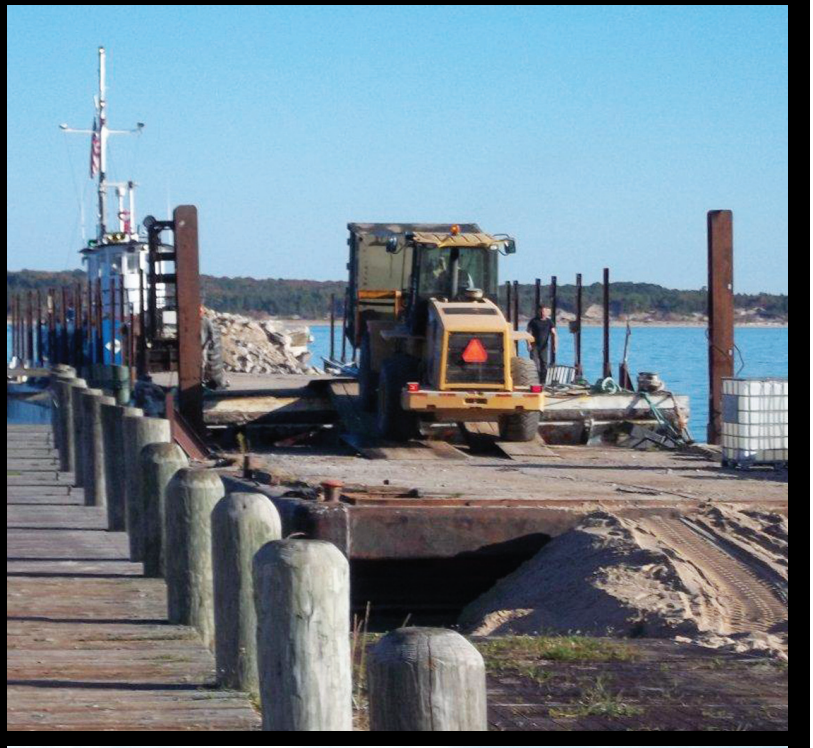
Barge Bridge: Replacing the South Manitou Fuel Tank





PROJECT: South Manitou Island Fuel Tank Replacement

CHALLENGE: Weather delays and island accessibility difficulties resulted in a complex logistical situation to get the fuel tank ashore for installation

SOLUTION: Enlisting the help of knowledgeable lake crews (with experience in moving materials via barge) and building a ramp to get the massive tank to shore

OWNER: National Park Service

CONTRACT PRICE: $65,050

DESIGN ENGINEER: Bob Hemmer, RB Construction Company (618-974-9682)

CONTACT: Jim Nordlund, Jr. (231) 843-3485

LOCATION: South Manitou Island, Ironton, Michigan

DATE COMPLETED: October 2012

PARTNERS: RB Construction (construction management), R.W. Mercer (tank installation), St. James Marine Company (loading dock, tug, and barge operation)

SELF PERFORMED: 75%

Such was the case for Team Elmer's as we prepared to transport a massive aboveground fuel storage tank from the docks of Ironton, Michigan to the shores of South Manitou Island. The 12,000 gallon tank, used to hold diesel fuel to run the Island's generators and equipment, was intended to replace a rundown unit of the same vein on South Manitou. The unit was barge-loaded and ready to make its maiden voyage across the waters of Lake Michigan...until the rain and waves started. But the storm wasn't the only delay. In addition, when Team Elmer's finally made it to South Manitou, the water table was down far enough to make an island approach nearly impossible for our sizable barge.

But Team Elmer's is always up to the task when it comes to innovative solutions, and this one might have been the most inventive yet. Using St. James Marine Company's second, smaller barge, as well as a tugboat to push it as close to shore as possible, we built a "bridge of barges," negotiating two and four-foot drops (between the first barge and the second and then down to the beach) by installing temporary ramps to bridge the gaps. Finally, Team Elmer's put that bridge to use, crossing the ramps and boats with our cumbersome and sizeable cargo, and safely getting it to shore.

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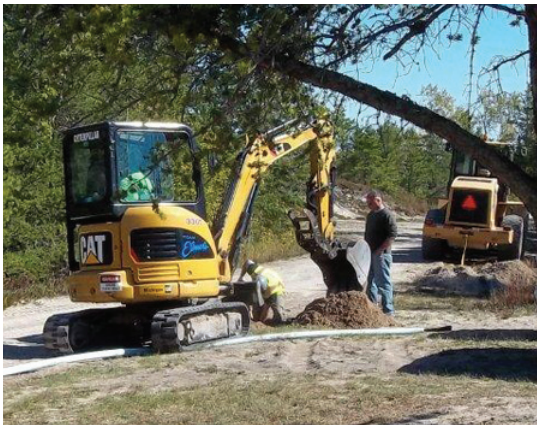

After the logistical problem inherent in actually getting the empty fuel tank onto the island, the rest of the project seemed almost effortless in comparison. Team Elmer's transferred 3,700 gallons of excess fuel from the old tank into holding cells for safe storage until the new tank's installation was complete. After vacuuming all remaining fuel from the plumbing lines, we busied ourselves with the removal of the existing tank's concrete skeleton and above-ground piping, extricating the old product from more than 1,500 feet of underground piping, and then removing enough of that piping to make way for the replacement.

As our partners from R.W. Mercer set to work installing the new tank, replacing necessary piping, and getting the system ready for operation, Team Elmer's reversed our previous steps, again utilizing our "bridge of barges" to re-load the old tank onto the boat for our return journey. After we had pumped the reserve fuel into the new, safer tank and gotten R.W. Mercer's assurance that there were no leaks or installation faults with the project, we said our goodbyes and set sail for Ironton.

This time our trip was blessed with blue skies and calm waters. A reminder of a job well done and a logistical hurdle cleared with grace and innovation.

By The Numbers

Old tank	12,000 gallons
New tank	4,000 gallons
Fuel transferred from old tank to new tank	3,700 gallons
Plumbing system	1,500 lineal feet
Barge trip from Ironton to South Manitou	8 hours
Boat trip from Leland for the personnel (each way)	45 minutes
Delays due to weather	8 days
Mobilization and demobilization to the dock in Ironton	3 days
Additional days for unloading and loading at the Island and to complete all the work	7 days