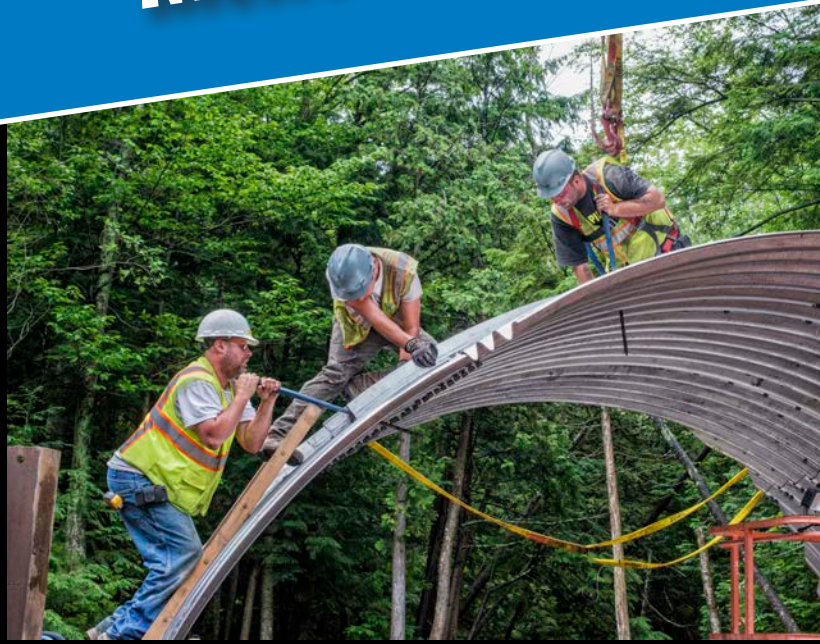


McKeese Road



PROJECT: McKeese Road Resurfacing & Culvert Replacement

CHALLENGE: Working with a tall culvert design; tightening 4,000 bolts to put the culvert together; keeping the project area dry enough to work

SOLUTION: Using a man basket and complying with MIOSHA fall protection regulations; taking three passes through to ensure that bolts were tightened to an exact specification; using sheet piling, stone, and pumps to redirect a creek and keep the water table low

OWNER: Leelanau County Road Commission

CONTRACT AMOUNT: \$896,760.00

DESIGN ENGINEER: GoslingCzubak Engineered Services, Martin Graf

LOCATION: McKeese Road, Suttons Bay, Michigan

DATE STARTED: June 2015

DATE COMPLETED: August 2015

SELF-PERFORMED: 90%

PARTNERS: Roemer Utility Services, Bella Concrete Construction, Action Traffic Maintenance, Northslope, Inc.

In 2014, Team Elmer's helped the Michigan Department of Transportation install an 11.5-foot, 8,000-bolt culvert on I-75, near Sault Ste Marie. As a result, when the Leelanau County Road Commission needed help with a similar culvert installation in the summer of 2015, we were the natural candidates for the job.

The Leelanau culvert was to be installed on McKeese Road in Suttons Bay, Michigan. The project brought many of the same challenges as the I-75 job. However, the McKeese Road culvert was also even larger than the one Team Elmer's installed in the Upper Peninsula, a factor that added extra challenges into the mix. The McKeese Road culvert measured 19 feet, 10 inches in width and 12 feet, 1 inch in height. In other words, when Team

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Elmer's went in to put the sheets of the culvert together and tighten the bolts, we had to use a man basket to reach the top side of the culvert.

Fitting a full-sized man basket into the culvert was a challenge, but it also added another complication to the project. Since our crew members would have to be well over six feet above ground while attending to the top part of the culvert, MIOSHA regulations required us to use fall protection. For certain parts of the project, the Team Elmer's crew even had to strap into full harnesses.

As with the culvert off I-75, tightening the bolts to put the McKeese Road culvert together was a major hurdle. This particular culvert consisted of four pieces that had to be connected with some 4,000 bolts. In order to get all of the bolts tightened evenly, Team Elmer's had to take three passes from one end of the culvert to the next. On the first pass, our crew had to install each of the bolts loosely. On our second pass, we had to go back through and start tightening. On the third pass, we had to go back through one more time, to hand-torque the bolts to a pre-determined specification.

The height of the culvert and the tedious process of tightening the bolts weren't the only challenges that the project presented. On the contrary, the difficulties began from the moment Team Elmer's arrived on the worksite. The water table at the site required our team to constantly fight three feet of water to put in the culvert, while a nearby creek added logistical challenges into the equation. Our team installed a temporary creek to reroute the water, put in sheet piling to hold back the creek, and used a combination of stone and electric pumps to keep the hole dry and workable.

Once the culvert was in, Team Elmer's used air hoses to get a pea stone bed down underneath the culvert. We also conducted other bits of site work for both aesthetics and function—including the installation of a storm sewer and a few retention ponds to control storm water. Finally, Team Elmer's capped the project by pouring 3,600 linear feet of asphalt to restore the roadway and open McKeese Road to public traffic once more.



McKeese Road By The Numbers

- Storm Sewer: **3,521 lineal feet**
- Directional Drilled 8" Water Main: **250 lineal feet**
- Directional Drilled 4" Sanitary Sewer: **190 lineal feet**
- Culvert Installation: **135 feet**
- HMA Base Crush & Shape: **11,400 square yards**
- HMA Mixtures: **2,865 tons**
- 6" Aggregate Base: **4,460 square yards**
- 4" Concrete Sidewalk: **2,840 square feet**
- Guardrail: **102 feet**
- Native Streambed Material: **218 cubic yards**

