



## ACM Tunnel Slope Repair Ypsilanti, MI

UNITED STATES



**Owner**  
American Center for Mobility

**Engineer**  
SME

**General contractor**  
N/A

**Dates of work**  
08/2018 to 08/2018

### Main figures

Deep soil mixing  
800 yd<sup>3</sup>



### Description

The American Center of Mobility (ACM) proposed the opening of an autonomous-car test facility in Ypsilanti, MI. The site was once home to a massive factory built by Ford to manufacture bombers during World War II. It includes a 2.5-mile highway loop, a 700-foot curved tunnel, two double overpasses and the same intersections and rotaries one would find on standard public roads.

Companies such as Ford, Hyundai, Toyota, AT&T and Visteon have invested in the facility, giving them access to track time. The Ypsilanti site would be open during all four seasons, regardless of weather, to allow for testing the self-driving vehicles in less-than-ideal conditions.

After the installation of the of a 36-ft wide elliptical shaped tunnel, a washout was caused by an error in directional drilling along the side of the tunnel. A slope failure occurred in the zone of the washed out material and the impacted area required ground improvement. Menard Group USA was contracted to provide a solution – the selected technique was soil mixing.



### Ground conditions

A sinkhole developed in the washed out area – the soils to be remediated were fine sands in nature and very unstable due to the lack of cohesion in the sand.

### Solution

For this project, in-situ shallow soil mixing was chosen to remediate the condition so that soil pressures on the tunnel could be maintained. A conventional remedial approach of excavate and replace was impractical due to the design of the tunnel. The tunnel was made of thin skin corrugated metal that required surrounding soil pressures being consistent. Failure to achieve consistent pressures could result in damage to the tunnel.

The site required 800 cy of soil treatment to an average depth of 20 ft below the working surface.

To remediate a section of the impacted ground at an autonomous car-test facility, Menard Group USA provided shallow soil mixing to repair a slope failure caused by subsurface washout. Soil mixing allowed for the soils to be remediated without damaging the tunnel.