

NaturalPave Case Study

Evaluating Eco-Pave Stabilized Roads After 1 Year



Project Background

A Californian vineyard reached out to Midwest Industrial Supply, Inc, seeking an environmentally friendly stabilization solution for several private roads within their ranch. The objective of the installation was to create stabilized road surfaces capable of supporting farm equipment and vehicle traffic year-round while keeping the natural appearance of the surrounding landscape. It was critical that the solution chosen for this project was environmentally friendly and would not negatively impact their grapevines.

The Solution

In the fall of 2018, Midwest's Eco-Pave stabilization system was installed into the upper 4" of native soil. A seal coat of Eco-Pave was topically applied to the stabilized wear course surface to provide additional protection and dust control.

Eco-Pave is an environmentally friendly polymer-enhanced, resin-based organic emulsion. When incorporated into native soils, aggregate or recycle asphalt – the results are a durable, resilient surface that can withstand heavy traffic demands. In addition to the superior performance realized with an Eco-Pave stabilized road, the surface keeps its natural, aesthetically pleasing look.

Geotechnical Assessment

A geotechnical assessment was conducted to evaluate the performance of the Eco-Pave stabilized roads approximately 1 year after the installation. As part of the geotechnical investigation, Midwest conducted a site visit on 7-31-2019 which included Cone Penetrometer (DCP) testing.

The objective of the geotechnical assessment was to confirm the depth of the Eco-Pave stabilization and determine the strength increase achieved in the stabilized layer. DCP testing was conducted on a total of 17 different locations throughout the ranch. Of the 17 locations, 14 of them were areas where Eco-Pave was installed. The remaining three test areas were on untreated road surfaces to provide baseline strengths for comparison. DCP testing was conducted to a depth of approximately 8". All DCP testing was performed in accordance with ASTM D 6951-03 "Standard Test Method for Use of the Dynamic Cone Penetrometer in Shallow Pavement Applications".



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Confirming the Depth of Stabilization

The Dynamic Cone Penetrometer readings were plotted versus depth to confirm the depth of the Eco-Pave stabilization. The DCP is a portable, handheld device used to measure the strength and thickness of soil layers. The results from each of the DCP tests can be easily converted to a California Bear Ratio (CBR). CBR values are a universally accepted strength measurement for soil layers. The stabilized layer will yield significantly higher CBR values than untreated soil therefore allowing for the identification of different pavement layers.

Based on the readings collected, Midwest can confidently identify three distinct layers of pavement. The three pavement layers as follows:

- 0–4" = Eco-Pave Stabilized Surface Layer
- 4–6" = Transition Layer (between stabilized and untreated layer)
- 6–8" = Untreated Layer / Native Soil

Determining the Strength Improvement

Midwest analyzed the DCP readings to determine the strength improvements achieved and maintained one year after the Eco-Pave installation. Based on the 17 DCP readings collected, the average California Bearing Ratio (CBR) of each of the three pavement layers is plotted in the chart below.

The results collected one year after the installation indicate that **the Eco-Pave stabilized surface layer's CBR value increased by over 200% compared to the untreated, native soil.**

Comparison of Average CBR Values By Layer
Treated vs Untreated

