

NaturalPave Case Study

Stabilization of Sand Dune Access Roads for Utility Provider



Project Background

A California-based power company owns power lines that run through the dunes of Nipomo and Lompoc. The utility provider has a right of way through the dunes to allow for the servicing and maintenance of the lines, but because the dunes are protected by the California Coastal Commission, it cannot build a traditional access road to do so.

Removing built-up dirt, dust, and salt from power lines requires a high-pressure stream of water, which in turn requires the use of heavy vehicles and machinery. Previously when transporting these AWD vehicles through the dunes, the power company used a dozer to tow them in and out of the work site - a process that proved inefficient, slow, and costly.

The company's most pressing concern was an expected heavy rain season and excessive rain could create dangerous conditions in the dunes. Workers feared that service trucks would sink into the wet sand, and that the dozers tasked with hauling them would not be able to get traction. Rescuing stalled or submerged vehicles increased the likelihood of environmental disturbance, and therefore, of heavy fines by the Coastal Commission.

Seeking a solution that would stabilize the path towards their power lines without violating any of the strict regulations that protect the dunes, the power company reached out to Midwest Industrial Supply, Inc. for help.

Challenges

The following challenges were identified:

- **Prohibition of traditional roadways** - The installed pathway would need to be built sustainably with native soils and look as little like a road as possible to discourage trespassing ATV riders and other vehicles.
- **Regulations protecting the dunes** - The dune system hosts over a hundred endangered animal species and over two dozen kinds of imperiled plants. Every aspect of the road-building solution, from its chemical makeup to its method of implementation, had to be carefully planned to avoid endangering any of the birds, animals, or plants that thrived in the ecosystems supported by the dunes.
- **Race against time** - The right of way needed long-term erosion protection, but as concerns of a major rain event built, that need was becoming more and more immediate. work could be halted by flooding that would make the dunes impossible to traverse.



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Solution

Midwest engineered a sustainable solution to construct a stabilized road through the dunes that facilitates year-round access to the power lines. Midwest's innovative stabilization technique incorporated a two-part system (Eco-Pave and synthetic fibers) into the upper 18 inches of the sandy surface to create a durable, pavement like surface using the in situ soils. Because Eco-Pave relies on the strength of in-place soils rather than hauled-in materials, it minimizes environmental disturbance.

To ensure that the installation had zero impact on the endangered plants and animals, the Coastal Commission sent a botanist to guide Midwest through the environmental consequences of each step of the process. Midwest's team was able to complete the entire project without disturbing the dune's ecosystems, a considerable feat given the area's diverse and delicate array of wildlife

Installation

The following steps were taken when installing the Eco-Pave System:

1. Excavate the upper 18" of the dune sand.
2. Place the first 6" lift of sand back on the road and incorporate the Eco-Pave and Fibers using a tractor-mounted reclaimer.
3. Shape and compact the 1st stabilized 6" lift.
4. Place the 2nd 6" lift of sand back on the road and incorporate the Eco-Pave and fibers using a tractor-mounted reclaimer.
5. Shape and compact the 2nd stabilized 6" lift.
6. Place the final 6" lift of sand on top of the stabilized base and incorporated Eco-Pave (no fibers) using a tractor-mounted reclaimer.
7. Shape and compact the final stabilized 6" lift.

The stabilized road was allowed to cure for several days without traffic.



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Results

The resulting pathway was stable enough to be traversed by AWD vehicles, had little to no impact on the surrounding environment, and provided long-term protection against erosion. The road also experiences zero ATV traffic because it was designed to blend naturally with the surrounding dunes, rather than welcome or encourage passersby to use it as an access route to the protected area.

Impressed with the project's overwhelming success, the power company has contracted Midwest to build three more roads using the same technology. And because Midwest's natural paving techniques create roads that increase in strength as they're used over time, the utility provider has also saved on future maintenance costs. This pathway, along with the others that Midwest is contracted to build, will be a safe and sturdy route to the provider's power lines for years to come.

