

NaturalPave Case Study

Stabilization of Event Center Roads



Project Background

The Santa Maria Event Center hosts two major sanctioned rodeo events a year with 5,000-8,000 vehicles traveling on their roads a day. The event center is also the bedrock of the community, hosting high school rodeo, junior rodeo, and charity events.

The event center's three main entrance roads are unpaved, two of which are directly off the freeway ramp, and huge clouds of dust and debris would go airborne whenever they experienced traffic. For most visitors, this makes for an unpleasant experience; for those with respiratory issues, the situation became downright hazardous. Furthermore, dusty, unstable roads can lead to slow or unsafe driving conditions, backing up traffic for miles.

These stability issues made the event center roads not only aggravating, but also considerably more expensive. The loose sediment forming their surface makes them vulnerable to the area's inclement weather, and last year, a severe storm event washed away entire swathes of roadway. 500 feet of road had to be completely rebuilt, requiring the use of expensive equipment and threatening to shut down activity at the event center.

The SMEC quickly realized that it needed a fix for its road problem. But the organization relies on donations for funding, and the administrators knew that asphalt would be a cost prohibitive option. They contacted Midwest Industrial Supply, Inc. in search of a lasting solution that wouldn't break the bank.



Challenges

The following challenges were identified:

- **Inconsistent Soils** - The three unpaved entrance roads, Gates 1, 2, and 3, were comprised of a variety of different native soils, silty sediments, and other unevenly applied aggregates used to strengthen the roadway over the years.
- **Weak Subgrade** - Their poor underlying soil structure gave weak support to the roadway -- trucks were getting stuck in portions of the road.
- **Tight Budget** - Upkeep and cost were equally crucial considerations. The new road surface would have to perform well under punishing weather conditions but require sufficiently little maintenance over time to remain within the confines of a tight budget.



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Solution

Midwest's NaturalPave Stabilization System is an innovative solution that uses a variety of custom-designed chemistries to blend natural soils into a robust, pavement-like surface. It's also completely sustainable, making zero ecological impact on surrounding areas. This makes the NaturalPave Stabilization System ideal in situations like the one in which the SMEC found itself, because it can transform a wide variety of soil and aggregate compositions into a smooth, uniform road surface.

Plus, the installation process can be completed much faster (in days, rather than weeks), and at a shallower depth than traditional paving, which means that construction costs are greatly diminished. The use of the NaturalPave Stabilization System also eliminated the need for the SMEC to haul in expensive aggregate for the construction of new roadways, and the speedy turnaround meant that there would be no disruptions to the center's busy schedule.

Midwest's application of its NaturalPave Stabilization System allowed for different solutions to match the needs of different areas. Best of all, the SMEC should expect its new roads to perform better over time, as NaturalPave roads becomes harder and more durable with continual use.

NaturalPave Installation

The following steps were taken to install the NaturalPave Stabilization system at the Santa Maria Event Center:

1. Scarify and loosen the existing surface".
2. Apply and incorporate the NaturalPave Base Stabilization System using a computerized spray truck and a tractor-mounted reclaimer.
3. Shape the treated road surface with the proper crown and profile.
4. Compact the treated road surface.
5. Apply a seal coat to prevent dust and surface erosion.

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



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Geotechnical Evaluation

Nine years after the original installation, Midwest returned to the event center to perform Dynamic Cone Penetrometer (DCP) testing on the stabilized roads. DCP testing is a widely accepted and recognized field test to determine the in-situ strength of soil layers. DCP readings were collected at 8 locations along the centerline of the road and converted to California Bearing Ratio (CBR) readings.

The field testing shows an average CBR of 57 on the stabilized road surfaces - indicating a significant improvement in the bearing strength of the marginal native soils which are estimated to have an untreated CBR value of 10-15.

Long-Term Performance

Once the original installation was completed, it became clear that Midwest had not only solved the SMEC's dust problem, but completely transformed its roadways. Rutted roads that once caused coughing and congestion were replaced with pristine and beautiful-looking surfaces. As a token of thanks, the SMEC presented Midwest with an award for their work at one of their rodeo events.

Since the original NaturalPave installation, the event center has added new events to their already busy facility including their "Haunted Hills" and "Christmas in the Country" drive-thru experiences. Each of these events completely sells out, bringing thousands of vehicles every weekend from October through December.

After almost a decade of heavy use, the NaturalPave roads are in as good a shape as the day construction finished!



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NaturalPave Surface

Due to the success of the original NaturalPave installation, nine years later SMEC requested Midwest return to stabilize a new section of road that runs behind their rodeo grandstands. Given the high visibility and pedestrian traffic in this part of the event center, they opted for a NaturalPave Surface to be installed on top of the NaturalPave stabilized road base.

The NaturalPave Surface is created by laying and embedding specifically selected stones into the surface prior to the stabilized layer curing. Following compaction of the stones, a seal coat is typically applied to further protect the surface against weather, abrasion, and erosion. NaturalPave Surfaces are durable, skid resistant surfaces that preserve the natural look of the surrounding area and help preserve the integrity of the NaturalPave stabilized road base. The surface stones can be chosen to meet the aesthetics of most natural environments.

