STABILIZED BASE STANDS IN FOR ASPHALT PARKING LOT FOR FIVE YEARS WITHOUT MAINTENANCE

"The service life of the lot was exceptional"

University of California, Irvine (UCI) Project Manager Steve Halcum

Faced with a quandary - a need to put in something of so-called "temporary" classification that would function as a safe, low-maintenance parking lot adjacent to large student housing complexes, and to build it so that no sediment or contaminant materials would be generated and work their way into the adjacent natural drainages, the University of California's engineering consultants called Soil Stabilization Products Company, Inc. (SSPCo) for appropriate product technology. The University wanted a functional and environmentally appropriate surface with a planned service life of one or two years, at which time they were expecting to have funding available to construct a new parking structure. The consultants were also challenged by University directive to make this a reality on a very low budget.

The consultants and UCI facilities engineering staff were impressed with an environmentally friendly stabilizer and emulsion surface treatment in service at that time for the access to the Port of Los Angeles' huge Pier 400 project. Asphalt millings and crushed concrete pavement materials recycled as road building aggregates were treated with SSPCo's advanced stabilization technology, the EMC SQUARED® System, and then protected by a dust control armor coat provided by a spray applied emulsion treatment. This combination held up to heavy construction traffic and exceptionally heavy construction equipment, plus it satisfied U.S. Fish & Wildlife Service regulations as far as suitability for application adjacent to the waters of San Pedro Bay and in the midst of the nesting grounds of an endangered species of bird, the Least Tern.

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The University took their stabilized base course installation one step further. After their multi-acre parking lot was surfaced with the recycled crushed pavement materials (known regionally as crushed miscellaneous base, or CMB), treated with an EMC SQUARED® stabilizer application and covered by a spray applied emulsion treatment, they decided to invest in the expense of painting parking lot striping to define an orderly parking pattern. Pictured here are photos of the temporary parking lot surface after a year of service. The University facilities engineering staff commented that the stabilized surface performed well beyond their expectations.

Key to the success of this low budget parking lot was the care taken by the University and their design consultants in selecting an appropriate aggregate/stabilizer combination (in this case the CMB material and the EMC SQUARED® Stabilizer product) to address performance requirements, and providing on site quality control and inspection services during construction to assist the contractor in achieving the tightly sealed and well-drained surface necessary for a parking lot application.

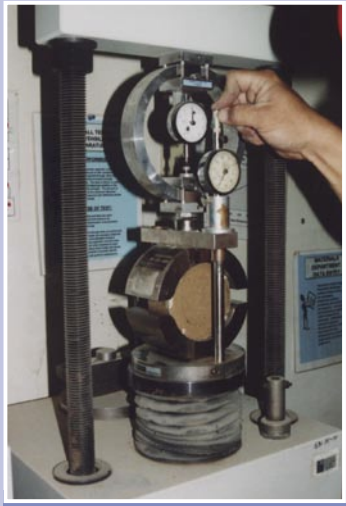
According to UCI Project Manager Steve Halcum, the lot required no maintenance over the first five years, at which time they cleaned the lot and filled in a few depressions and repainted the parking stripes. He commented, "The service life of the lot was exceptional." In the sixth year, while the stabilized base course continued to be fully functional as a parking lot surface, the University decided to upgrade the parking lot to permanent status. Asphalt pavement was placed on the stabilized base in September 2005.

MATERIALS LABORATORY TESTING

Given the pavement-like performance of the stabilized base layer constructed with the recycled pavement aggregate material, it is interesting to review test results from a pavement materials testing laboratory using asphalt pavement testing equipment for additional perspective.

The Marshall Stability Test Method (ASTM D 1559) has long been a standard procedure used by materials testing laboratories for evaluation of hot mix asphalt pavement mixtures. The stability of a pavement mixture is tested after the pavement specimen is heated to 140° Fahrenheit temperature, which is representative of hot weather service conditions. Stability is the maximum load resistance that a pavement mix test specimen will develop under compression. Stability translates into the resistance distortion, to displacement, to shearing stresses, to rutting and to shoving. The Marshall Design Criteria provided by the Asphalt Institute requires minimum values for different traffic classifications starting at 750 pounds for Light Traffic, 1200 pounds for Medium Traffic and 1800 pounds for Heavy Traffic. Typical Marshall Stability values for high quality hot mix asphalt pavement materials range from 4,000 to 6,000 pounds.

Marshall Stability Testing services were provided by materials testing firm Kleinfelder, Inc. They demonstrated that a recycled aggregate (classified as CalTrans Class II Recycled) treated with EMC SQUARED Stabilizer provided a Marshall Stability of 13,230 pounds, which is over twice the stability of hot mix asphalt, and a Flow measurement of 11, indicating flexibility similar to hot mix asphalt pavement materials



Stability Testing

Now protected by an asphalt pavement surface course, this stabilized base provides solid moisture resistant support for the pavement layer while maintaining flexibility similar to that of the hot mix asphalt surface course. This is in distinct contrast to rigid cement treated base layers which are susceptible to cracking which then reflects upward through the asphalt surfacing. As demonstrated during five years of service without protection by a paved surface, the EMC SQUARED Stabilizer treatment provided a high durability base course with no evidence of cracking.

To learn more about Soil Stabilization Products Company and the EMC SQUARED System visit www.sspco.com

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