Roadbond Service Company

In 2001 the City of Arlington, TX widened Matlock Road from 2-lane blacktop with ditch drainage to 4-lane concrete pavement separated by a median. The plans required that eight inches of concrete paving be placed over eight inches of lime treated subgrade. However, the transition areas between the now widened new construction and the narrow existing intersecting roads were stabilized 8-inches deep with Roadbond EN 1. Those sections were then paved with a 4-inch asphalt overlay.

Roadbond EN 1 was installed in the eastbound section of the transition area and then the lime was placed in the eastbound lane. It took two weeks to install the lime section. Once that was completed the Roadbond EN 1 section was paved.

Traffic was then diverted to the eastbound lane and the construction was repeated on the westbound section. After the Roadbond EN 1 was installed in the westbound transition area, seven inches of rain fell over the next 5 weeks. The Roadbond EN 1 section was exposed to the rainy weather for 5 weeks, but required no re-work prior to paving.

After fifteen years, the lime treated section has been extensively repaired, including replacing whole panels of concrete pavement. However, the Roadbond EN 1 section has required no base repairs, only routine pavement maintenance.

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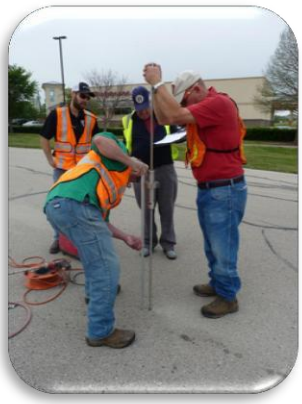
On April 15, 2016, fifteen years after construction, the Roadbond EN 1 section was tested for in-place CBR with a Kessler Dual Mass Dynamic Cone Penetrometer. (DCP) The device is hand held and is equipped with a 10.1 pound (7.59 kg) weight that drops from 22.6 inches (57.4 cm) and strikes an anvil. These blows drive a 7/8" (22.2 mm) diameter 60° cone into the ground. Measurements in millimeters of the penetration depth into the soil are recorded. Once the data is obtained, the number of blows delivered to the anvil and the total depth of the penetration are entered into a Microsoft XL template that was developed by the US Army Corps of Engineers. The template converts the raw data to CBR. CBR is then easily converted to resilient modulus and used in pavement design.



A one-inch diameter hole was bored through the pavement to gain access to the treated clay soil at several locations. Once the treated soil is accessed, the DCP is positioned and the weight is dropped 2 times to seat the cone into the soil. The initial depth is recorded and the weight is dropped 20 times and the penetration is recorded. The number of blows delivered and the total penetration is entered into the XL template to calculate CBR.

The results are in the following table.

Hole 1	20 Blows	8 mm
Hole 2	20 Blows	7 mm
Hole 3	20 Blows	10 mm
Hole 4	20 Blows	14 mm
Total	80 Blows	37 mm
CBR		**> 150**
Resilient Modulus		**> 400 MPa**

The DCP is most accurate when testing soils with a CBR between .5 and 100. Fifteen years after installation, the CBR of the Roadbond EN 1 treated soil was much stronger than 100, but because of the very high strength of the treated soil, the software was unable to assign an absolute value.

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