

TxDOT Field Test Pad Project



Application of EMC SQUARED® System Stabilizer Treatment

Mixing And Compaction of Treated Clay Soils



STABILIZED EXPANSIVE CLAY SERVICES HEAVY DUTY REQUIREMENTS FOR TEXAS HIGHWAY CONTRACTOR



Compaction of Treated Clay Soil

Rubber Tire Rolling of Working Platform Surface

Stabilization Products LLC



As much as 20,000 tons of aggregate was hauled in and stored for each production run. The stabilized working platform supported the stockpiling operations as well as thousands of loaded truck trips and thousands of front-end loader trips.

The EMC SQUARED® System treatment proved to be highly effective, and at a fraction of the cost of cement or lime treatment.



**Stabilized Concrete Batch Plant Site One Year After Stabilization
With Scattered Aggregate Remaining From Footprint of Large Aggregate Stockpile**

CLAY STABILIZED WITH EMC SQUARED® SYSTEM SERVES AS WORKING PLATFORM FOR CONCRETE BATCH PLANT OPERATION

Major freeway and highway construction projects often require construction of yards for equipments parking, project offices and equipment maintenance operations and construction of pads for portable batch plants and stockpiles of aggregate materials. While the construction project itself may last only a year or two, these construction yards and pad areas nevertheless undergo severe service with high frequency use by trucks and heavy construction equipment and the loading and unloading of stockpiled materials. To provide year-round platforms of pavement surfaces usually requires placement of thick aggregate structural sections or construction of stabilized earth pads to support the heavy loads.

Dallas, Texas, is well-known in the field of soil stabilization as an area with highly expansive clay soils and where much of the pioneering effort in the application of lime to soil took place as part of the effort to limit the destruction effects of the shrink-swell phenomenon of expansive soils under manmade structures. While lime is not suitable for all types of expansive soils in the Dallas area, its use has been fairly standardized for subgrade treatment of highway projects.

Lime application is a relatively expensive form of soil treatment and it has proven to be highly counterproductive to stability values when added to sulfate-bearing clay soils. With both of these issues of concern for a major Dallas area highway contractor on a Texas Department of Transportation (TxDOT) highway project, the contractor and the TxDOT Dallas District made the choice to familiarize their construction crew and TxDOT engineers with the application and performance of the EMC SQUARED®

System, a concentrated liquid stabilizer system. While the contractor had previous experience using lime treatment for stabilization of their construction yard and batch plant sites, the low cost and simple application of the EMC SQUARED System was attractive and the effectiveness of the treatment with sulfate rich Dallas area soils had been recently documented in research funded by the TxDOT Research & Technology Implementation (RTI) Office and conducted at the Texas Transportation Institute. The contractors previous experiences with lime treatment for these unpaved yard areas was also less than exciting as the addition of gravel would normally be required to repair muddy and rutted areas while the yards and pads were in use.

In service for more than one year, the EMC SQUARED System treatment successfully supported three mobilizations of the portable concrete batch plant, aggregate stockpiling and loading operations, transport trucks, and cement trucks and other construction equipment servicing the highway construction project. The eight inch (200 mm) deep stabilized clay working platform (PI 37 and 83.9%. Passing No. 200 sieve) required no repair.

The EMC SQUARED System was clearly demonstrated in this field test pad as effective for providing a working table for construction equipment. The environmentally friendly EMC SQUARED System products are non-toxic and relatively neutral in pH, so they are ideal for an application such as this where the integrity of the soil as a growing medium at some point in the future remains of concern.



Concrete Batch Plant with Concrete Placement in Progress

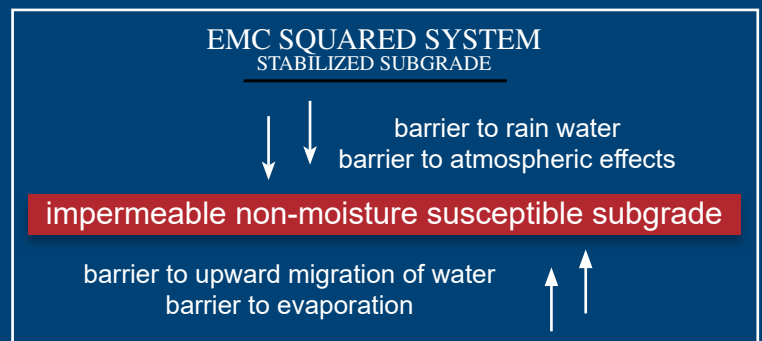
Advanced Stabilizer Technology



When cement and lime are utilized for soil stabilization treatment, they typically create rigid soil layers that provide strength without necessarily reducing moisture flow through the layer. Rigid layers are subject to cracking, similar to concrete pavements, which must be constructed with expansion joints to compensate for natural shrinkage phenomenon that otherwise propagate random cracking. In soil and base course stabilization there is no way to provide expansion joints, so cracking is an expected side effect of cement and lime treatment. This reduces their overall effectiveness and often subjects pavements above to reflective cracking generated from below.

The EMC SQUARED System layer supports loads without a tendency to cracking. Equally important, it ordinarily reduces the rate of moisture flow through the layer, shedding water off the surface and impeding the upward capillary flow of moisture from groundwater sources below. This ability to function in this manner as a moisture barrier is a revolutionary and fundamental advance in stabilization of expansive clay soils. The stabilized layer impacts the stability of native soils below the constructed layers by promoting a more consistent and stable moisture distribution. Stabilization in this manner is largely achieved by stabilizing moisture content in the constructed layers and soils below, rather than by constructing a single rigid layer with cement and lime treatment that remains susceptible to moisture flow

moving through the layer. As evidenced in profilometer monitoring of freeway projects, this ability of EMC SQUARED System treatments to beneficially influence stability at a deeper level is resulting in smoother running roads and highways with extended service life. This is the multiplier effect, the exponential power of the EMC SQUARED System (EMC²) Stabilizer Technology. It promotes greater stability in soils below as well as within the treated layer.



EMC SQUARED System products are unique and uniquely effective. The moisture barrier aspect separates them from cement and lime, as does their ability to beneficially improve soils with organic and high sulfate content.

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