



Study About Soil Stabilization, Its Principles And Applications

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Abstract : Stabilization in a broad sense incorporates the various methods employed for modifying the properties of a soil to improve its engineering performance. Stabilization is being used for a variety of engineering works, the most common application being in the construction of road and airfield pavements, where the main objective is to increase the strength or stability of soil and to reduce the construction cost by making best use of locally available materials.

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Introduction : Natural soil is both a complex and variable material. Yet because of its universal availability and its low cost winning it offers great opportunities for skilful use as an engineering material.

Not uncommonly, however the soil at any particular locality is unsuited, wholly or partially, to the requirements of the construction engineer. A basic decision must therefore be made whether to:

- Accept the site material as it is and design to standards sufficient to meet the restrictions imposed by its existing quality.
- Remove the site material and replace with a superior material.
- Alter the properties of existing soil so as to create a new site material capable of better meeting the requirements of the task in hand.

Evolution



Soil Stabilization or Rammed Earth has been used for thousands of years as a basic building material. Soil stabilization from the Ancient Pyramids to the Great Wall of China, soil has provided structural solutions that were principally based on the binding properties of clay soils. Throughout Latin America soil stabilization of sorts was achieved with clay-based soil blocks (rammed earth blocks or earthen blocks) were known as the Adobe Block. In our rapidly changing and developing world we have needed to find alternatives to dependency clay-based soils for soil stabilizing and soil stabilization.

Unlike portland cement, soil cement with low tensile strength, asphalt, tree resin, ionic stabilizers and others,

- AggreBind’s unique characteristics offer soil stabilization solutions that are readily available from most on-site materials.
- AggreBind offers environmentally friendly solutions.
- AggreBind was developed to meet today’s environmental concerns and today’s specific engineering challenges.
- AggreBind is a cross-linked styrene acrylic polymer that makes it the perfect soil stabilizing product.
- Soil Stabilization with AggreBind does **not** need clay.
- AggreBind can effectively stabilize a wide range of on-site materials including sub-soils, sands, and waste construction/mine materials. Sieve analysis is highly recommended.
- AggreBind works with stabilizing soil contaminated mining materials and non-organic waste materials.
- Recycled AggreBind roads and blocks are ideal for soil mixing and aerating of fields.

APPLICATIONS



AggreBind is ideal for Specialty Applications and can replace traditional house construction methods and road construction soil stabilization methods such as:

- Soil-cement base (SCB)
- Soil nailing
- Jet grouting and Grout of the soil
- Erosion Blanket and Erosion control for dust control
- Sediment Control and management of mine dumping waste

Soil stabilization products are varied on the market and often mislead the user because they refer to their product as a soil stabilizer. This is a very misused term and unfortunately it misleads the users. In many parts of the world, Indonesia and Malaysia, India, in various countries of Latin America and Africa, there have been stabilized soil projects that failed or did not perform as promised and represented.

- Some of these products simply neutralize the interaction between clay particles to allow the platelets to be compacted with no true binding or soil stabilization action.
- Some soil-binders do not work with non-cohesive materials such as sand.
- Some soil stabilizers improve the CBR by only 2-3 times. (Any conventional soap product can do this.)
- Some products require medium to high clay content for stabilizing, essentially lubricating the clay to bind when compacted. (Sometimes they call this increasing plasticity and to do so they say add clay. In fact, they are actually clay-based soil stabilizers.)
- Some soil stabilizer products are based on tree resins, presenting themselves as “ionic stabilizers” and a “green” alternative to bitumen, etc. This class of resin-based soil stabilizers generally needs a minimum of 15% clay content and an annual maintenance



program or topping-up of the surface. (There claim is to be bio-degradable. A bio-degradable road is guaranteed to breakdown rapidly.)

These various alternatives cause confusion and doubt in the marketplace. These assumptions, based on poor experiences with so called soil stabilizers, create misconceptions about AggreBind.

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