

SOIL STABILIZATION

The physical and chemical enhancement of soil for the purpose of improving its workability and load carrying properties.

Soil stabilization, when applied to soil areas of varying deficiencies according to proper specifications, can simply dry soil, increase its strength, or permanently limit its shrink-swell properties. Treatment will improve the area's load bearing capacity and thus better support pavement structure or building foundation.

Soil stabilization can treat a wide array of soil sub-grade materials – everything from organic clays to gravelly mixtures to 100% R.A.P. The process is achieved by using one, or combinations of several chemical additives: lime, lime by-products, C-grade fly ash, Portland cement and cement by-products.

Three main practices of soil stabilization: drying, modification and full stabilization

Soil drying has short-term effects, but is used when there is excess moisture in the soil and will thus improve its workability. Placing and compacting materials can then continue and the job is able to stay on schedule.

Soil modification is a soil enhancement sometimes referred to as soil conditioning or “mud drying.” Its effects are longer lasting than drying, however not permanent. Modification is used to reduce a construction site's soil moisture content in order to speed up the project or keep it from falling behind.

Full soil stabilization can substantially increase the shear strength of a material permanently so that it can be incorporated into the project's structural design. The determining factors associated with soil modification vs. full soil stabilization are the treatment rate, the planned use of the soil structure, and the cost benefit to be provided.



The grounds around the Northern Illinois University Convocation Center, in DeKalb, Illinois required extensive soil stabilization.

Class C Fly Ash

Of the different chemical additives used in the different soil stabilization methods self-cementing Class C fly ash is American Road Reclaimers' choice for several reasons. Fly ash is readily available in this part of the country. It is produced at electric power plants – a by-product of the combustion of coal. What would otherwise be waste, and deposited in local landfills, can instead be used for the purpose of soil stabilization. Specialized contractors with the proper spreading equipment are able to keep the agitation of fugitive dust to a minimum.

Stabilization occurs through chemical reactions

Self-cementing Class C fly ash has the ability to form cementitious compounds when coming in contact with water – much like the hydration of Portland cement. When a reclaimer mixes self-cementing fly ash with the existing soil and water, chemical reactions occur which cause rapid setting and early strengthening of the mixture. Oxides produced in the mixture, form the basis for long-term strength gain in the stabilized soil.

Reasons to soil stabilize using Class C fly ash:

- Class C fly ash is capable of treating the widest spectrum of materials requiring stabilization
- Unsuitable material in the ground can be stabilized and reused in place rather than expensive removal and replacement
- When conditions are excessively wet, applying Class C fly ash in the correct amounts can keep the project on schedule – and time is money!
- Stabilized soils allow for cost savings engineered into project, as reduced amounts of new aggregate and thinner layers of new surface course asphalt may be permitted
- The projected life span of an asphalt structure built on fully stabilized soil may be double that of untreated areas
- What's in the ground is the foundation for the structure planned above, whether it's a building, parking lot, street, or roadway -- the structure is only as good as its foundation!



Before soil stabilization was available, wet conditions that could have stopped a job for days, now can quickly be rectified, keeping the job on schedule.

Any structure is only as good as its foundation. At American Road Reclaimers, we have the expertise and the equipment necessary to provide the exacting standards your job requires.

Call American Road Reclaimers today. Learn how we can help you save time and money.

