

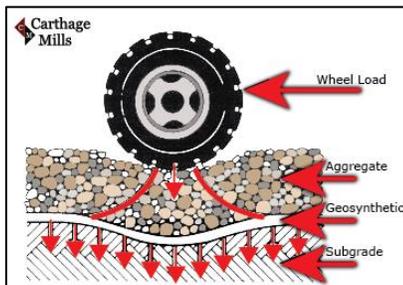
Subgrade Stabilization & Reinforcement

– Lime vs Geosynthetics –

This tech note compares the use of geosynthetics to lime soil treatment for stabilization and reinforcement of a soft subgrade. A soft subgrade can significantly delay roadway construction, and put an entire project behind schedule. Because the traditional method of stabilizing soil by undercutting and replacement is expensive and time consuming, alternative methods such as lime-soil treatment or the use of geosynthetics are used.



Lime-soil treatment works, but it is a chemical process in which lime (hydrated or a slurry) is mixed with the existing subgrade soil, and a chemical reaction between the lime and the clay particles in the soil creates a cementitious



matrix. Lime-soil treatment is a time consuming process involving up to eight different steps, requires specialty equipment and trained personnel, introduces safety/hazard issues, is weather dependent (wind), is limited to only clay soils with high plasticity indices and no sulfates, and some steps may need to be repeated.

Geosynthetic stabilization and reinforcement is a mechanical process. The geosynthetic is placed within the subgrade or subbase using existing equipment and works with the soil and stone to create a reinforced section through separation, confinement and/or reinforcement. This method of employing the use of a geosynthetics is rather low cost compared to alternative methods, and construction can resume immediately after installation. A wide variety of geotextiles and geogrids are available for any subgrade soil type and condition.

Comparison of Lime-Soil Treatment vs Geosynthetics		
Contributing Factors	Lime-Soil Treatment	Geosynthetics
Limited to certain clay soils and without sulfates	YES	NO
Requires specialty equipment and trained contractors	YES	NO
Installation is weather dependent	YES	NO
Poses health hazards during installation	YES	NO
Requires a waiting period for mellowing or curing	YES	NO
Long-term performance is well documented	NO	YES
Relatively low cost	NO	YES