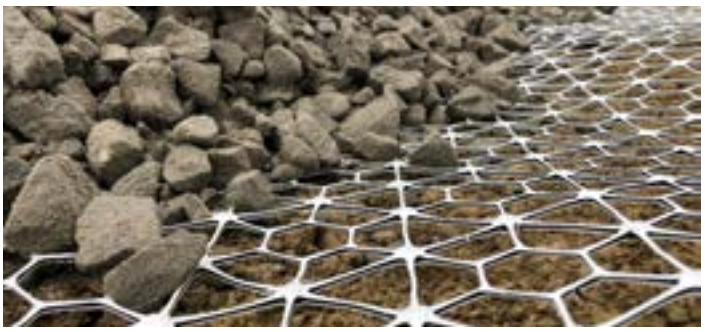
University of Kansas's geotechnical engineering professor, Dr. Jie Han, recently published an article in Geostrata magazine that summarized the benefits for using chemical stabilization and geosynthetic stabilization for in-situ soils and the practicality of implementing each method on a job site. Based on his comparison, geosynthetics seem to have an advantage in multiple situations, because they could speed up construction and reduce material costs. Geosynthetics as a category include many different products to enhance the engineering properties of soil, so seeking guidance for your specific stabilization needs is highly recommended. In this publication, we compiled available data to summarize the pros and cons of using chemical stabilization methods compared with Tensar geogrids, the most advanced geosynthetic for soil stabilization. Before we dive in, let's first define chemical and geogrid stabilization for those who are unfamiliar:

CHEMICAL STABILIZATION refers to the method by which cementitious materials such as lime, Portland cement, or fly ash are used to chemically alter the composition of the in-situ soil to improve its mechanical properties. When this process takes place, soil particles are bound together, which ultimately increases their shear strength and load distribution ability.

GEOGRID MECHANICAL STABILIZATION refers to the method by which multiaxial geogrids are used in conjunction with well-graded angular fill material to create a stable working surface over soft and unsuitable in-situ soils. A multiaxial geogrid used for stabilization has openings called apertures which allow the particles of the granular material to strike through and interlock. As particles interlock with the geogrid, they become laterally restrained and obtain a higher degree of confinement. The composite system created by combining compacted well-graded granular fill materials and multiaxial geogrid for stabilization is known as a Mechanically Stabilized Layer (MSL). The MSL is significantly stiffer than an unbound aggregate layer because soil particle movement under applied loads is restricted. This improvement in stiffness can be quantified with performance validation testing and later applied to the design. Roads, both paved and unpaved, are primary applications for stabilization geogrids.



Now that we have a clear definition of each method, let's see what happens when they go head-to-head during various phases of a project.