

Experimental Investigation on the Efficiency of Expanded Polystyrene Geofoam Post and Beam System in Protecting Lifelines

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Abstract : Expanded polystyrene (EPS) geofoam is a cellular geosynthetic material that can be used to protect lifelines (e.g. pipelines, electricity cables, etc.) below ground. Post and beam system is the most recent configuration of EPS blocks which can be implemented for this purpose. It provides a void space atop lifelines which allows settlement of the loading surface with imposing no pressure on the lifelines system. This paper investigates the efficiency of the configuration of post-beam system subjected to static loading. To evaluate the soil surface settlement, beam deformation and transferred pressure over the beam, laboratory tests using two different densities for EPS blocks are conducted. The effect of geogrid-reinforcing the cover soil on system response is also investigated. The experimental results show favorable performance of EPS post and beam configuration in protecting underground lifelines.

Keywords : beam deformation, EPS block, laboratory test, post-Beam system, soil surface settlement

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