

The Office of Technology Management

UNIVERSITY OF TEXAS  ARLINGTON

Tech ID: UTA 14-15

Device for Assessing Soil Heave

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TECHNOLOGY NEED

Expansive soils are known to be one of the problematic soils found in the world. They undergo swell and shrinkage upon moisture wetting and drying from seasonal changes. Both swell and shrinkage behaviors of expansive soils can cause severe damage to civil engineering structures. Chemical stabilization is the most widely adopted technique for stabilizing expansive soils. In the presence of sulfate compounds, chemical stabilization leads to heaving. The estimation and prevention of heaving require screening of vulnerable soils. Existing studies on the evaluation of sulfate-induced heave in the laboratory are based on volumetric swell measurements on treated soils and these studies will take several weeks to complete. This necessitates the need for a field usable device that estimates heaving faster than conventional laboratory tests.

INVENTION DESCRIPTION/SOLUTION

Researchers at UT Arlington have built an integrated hybrid sensor capable of assessing sulfate heave in treated soils in less than a week. Tests show that the sensor has the same effectiveness as the conventional approach, and was suitable for both laboratory and on field testing, providing flexibility. The sensor also monitors stiffness and moisture simultaneously, saving time and giving more information about the suitability of soils for construction.

APPLICATIONS

- Construction
- Soil testing
- Road and highway planning

KEY BENEFITS

- Faster screening
- Field testing
- Time savings

STAGE OF DEVELOPMENT

- Prototype
- Extensive tests done

INTELLECTUAL PROPERTY STATUS

Patent Pending:

[US 20150197908 A1](#)



Contact information

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