

## Experience of Using Expanding Polyurethane Resin for Ground Improvement Under Existing Shallow Foundations on The Arabian Peninsula

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**Abstract :** Foaming polyurethane is a ground improvement technology that is increasingly used for foundation stabilization with differential settlement and controlled foundation structure lifting. This technology differs from conventional mineral grout due to its injection composition, which provides high-pressure expansion quickly due to a chemical reaction. The technology has proven efficient in the typical geological conditions of the United Arab Emirates. An in-situ trial foundation load test has been proposed to objectively assess the deformative and load-bearing characteristics of the soil after injection. The article provides a detailed description of the experiment carried out in field conditions. Based on the practical experiment's results and its finite element modeling, the deformation modulus of the soil after treatment was determined, which was more than five times higher than the initial value.

**Keywords :** chemical grout, expanding polyurethane resin, foundation remediation, ground improvement

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