



Design and Installation of Deep Benchmarks in Expansive Soil

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ABSTRACT

Benchmarks are typically regarded as stable points to provide references for elevations. In areas with expansive soils, special techniques are necessary to provide benchmarks that are free from ground movements. To prevent the movement of benchmarks due to heaving of expansive soils, benchmarks must be anchored below the depths where these movements originate. This paper presents a design and installation procedure for three benchmarks installed to depths of approximately 30–37 m in areas with expansive soils. The performance of the benchmarks has been monitored since September 2000. The monitoring results of the deep benchmarks indicate that the deep benchmarks are stable and reliable for elevation surveying.

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