



PROJECT SUMMARY Texas Sand Plant Underpinning



Project Description: This sand processing facility utilized three 50', 280 ton sand storage silos during their daily sand production operation. Shortly after construction, movement was observed at the connection of the conveyors to the silo. As this movement continued, it was determined that fill consolidation under the silos was allowing settlement of the 4' thick mat foundation and underpinning was in order.





PROJECT SUMMARY — Texas Sand Plant Underpinning (CONTINUED)

Soil Conditions: Soil borings indicated that clayey sands were present to boring termination at 30'. “N” values ranged from 2 to 20 at boring termination. Subsurface water was also encountered in the borings.

Repair Details: Several possible repair scenarios were considered. Due to the design of the mat foundation and the significant loads produced by the silo legs, changing the ground supported mat foundation to a suspended pile supported

foundation was deemed economically unfeasible. In an effort to slow the settlement and increase the foundation’s stability, it was elected to install driven steel piles to increase the foundation’s capacity. A total of 20 piles were driven to depths between 51’ and 55’. Each pile was proof-loaded to an average of 92.5 kips. At lock-off, the piles were loaded to 35 kips providing the foundation an additional 700 kips of allowable load capacity with a factor of safety of 2.65:1.

