**Key achievements**

- Our local capability and specialised geotechnical knowledge resulted in reduction of foundation construction time and hence overall project time for the end user.
- Vibro stone column addressed the settlement and stability requirement.

**The project**

Indian Oil Corporation Limited had proposed to develop a tank farm in their refinery at Paradip, Orissa. The tank farm comprised of 49 nos. of steel storage tanks such as crude oil tanks, product storage tanks, demineralized water units and condensate polishing units etc. which were of a mixture of fixed and floating roof structures having maximum internal diameter of 79 meters and to a maximum height of 17 meters. Keller was commissioned by the main contractor to execute ground improvement works using Vibro Stone Column technique as foundation to storage tanks.

**The challenge**

In addition to satisfy the geotechnical performance requirements, the challenge was to deliver the entire foundation works of 600,000 meters within a short time span and needed to mobilize over 10 rigs. The stone columns were of approximately 10 meter length.

**The solution**

To tackle the performance criteria of edge to edge settlements and to increase the bearing capacity, 0.8m diameter stone columns were designed. High intensity Vibrofloats were used to speed up the productivity and deliver the project in 6 months time. Post installation of columns, single and group column load tests were performed to validate the performance requirements.