



Tabango Shell Refinery Bitumen Import Facilities

Batangas City, Philippines

The Geopier GP3® system offered substantial savings in cost and in construction time compared to traditional alternatives

Description: This project consisted of support for three tanks and for auxiliary facilities, which included a warehouse, control station, truck loading/gantry and pipe bridge with a max. column load of 95 kips and an uplift load of 112 kips.

Subsurface Conditions: Subsurface conditions for tank 7001 consisted of loose to medium dense silty sand to a depth of 4 m, underlain by loose to medium silty sand and silt to a depth of 15 m (with a soft sandy clay layer from 10 to 11 m). Soil conditions for tanks 7002 and 7003 consisted of soft to stiff silty clay and very loose to loose silty sand and gravel to a depth of 3 m, underlain by loose to medium dense silty and clayey sand to a depth of 21 m. Groundwater was encountered at 1.5 to 2.5 m below grade. Soil conditions for the facilities were similar to those of tank 7001 with the exception, some areas contained buried Lime, Sulfur, Insulation, Coke and Refractor.

Geopier Solution: The Geopier® system provided significant savings in cost and construction time. As well as it had the advantage of its mitigating effect



on this potentially liquefiable area over other foundation options considered. A total of 366 Rammed Aggregate Pier® (RAP) elements, 62 of which were outfitted with tension harness to control uplift loads, were installed for the tanks extending to a depth of 4 m. An additional 133 RAP elements were installed for the auxiliary facilities.

PROJECT TEAM

Owner:

Pilipinas Shell Petroleum Corporation

General Contractor:

JGC Philippines, Inc.

Geopier Installer:

PGA Geopier Philippines, Inc.

Geopier Designer:

PGA Geopier Philippines, Inc.