

Project Management

International

CPTu Testing Transnet Tank Farm, Durban, South Africa

Client: Group Five Construction
Location: Transnet TM1 Oil Products Tank Farm, Bayhead, Durban, South Africa
Period: March to July, 2014

CPTu Testing, Transnet Tank Farm

Group Five Construction is appointed to construct a new oil products tank farm at the Transnet Limited TM1 tank farm in Durban.

Some of the newly constructed product tanks were found to be substandard, when they failed testing under water pressure.

A possible cause of the failures was thought to be differential settlement of the tank foundations.

PMI were thus engaged by Group Five in March 2014 to undertake CPTu testing of the tank foundations, in order to determine foundation ground profiles and engineering parameters.

Scope of Works

The works were carried out in two phases:

- Phase 1- 42no. CPTu tests to 30m or earlier refusal, with pore pressure dissipation testing;
- Phase 2- 33no. CPTu tests to 40m or earlier refusal, with pore pressure dissipation testing.



The Works

PMI prepared well for the project, ensuring that our comprehensive Safety, Health, Environment, and Quality policies and procedures were tailored for the TM1 project, to Transnet's satisfaction.

Work proceeded well in both phases, and was characterised by the following challenges:

- The site was extremely busy and congested, with civil and mechanical engineering trades simultaneously in full production. Positioning and relocation of the PMI rig required careful coordinated planning;
- Anchoring of the rig required different situational approaches - concrete anchor bolts were used as reaction points on slabs, and ground anchors with ballast weight were used on filled surfaces;

- The upper 3m of fill material was in many instances impenetrable with the CPT equipment. In Phase 1 PMI pre-excavated in some instances by hand; in Phase 2 the main contractor predrilled through the hard layers using an auger drilling rig.

Conclusion

PMI's Client (Group Five), the main Client (Transnet), and the project Consulting Engineers (Kentz) all expressed satisfaction in the way that the project was effectively and efficiently carried-out.

