LOADTEST
O-Cell® Technology in Azerbaijan

Project Management: DIA Holdings FZCO

Foundation Contractors: Azer Torpu

Geotechnical Engineer: Enar

Artist's impression of finished project

Azerbaijan lies on the border between Eastern Europe and Western Asia. A member of the European Council since 2001, and a CIS member country, the former Soviet state is delicately balanced between Russian interests to the North and European interests to the West.

On the Eastern coast of the Caspian Sea lays Baku, the capital and largest city of Azerbaijan.

The Modern day city of Baku

The name Baku (or Baky) is thought to come from the Persian meaning 'Wind Pounded City.' The strength of this wind is indeed legendary and the city is renowned for its harsh winter storms, strong northern Khazri winds and the southern Gilavar winds.

The city and surrounding region has been long famed for its oil springs and natural gas, when in ancient times Zoroastrians, for whom fire is an important symbol, erected temples around the burning gas vents in the ground.

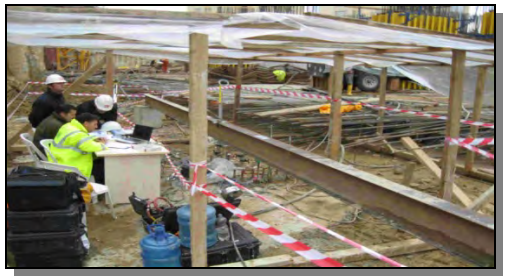
Exploitation of the oil in this region started as early as 1846 and by the start of the 20th Century almost half of the known oil reserves in the world had been extracted near Baku.

The construction of an oil pipeline to export Caspian Sea reserves has lead to massive investment in the city, with many new projects planned or under construction.

A new and exciting construction project, The Flame Towers will overlook Baku. The design is based upon the seal of Baku which depicts three flames representing oil wells over the sea. Three towers are to be constructed, one as a hotel, one for offices and one as residential; each tower representing a symbolic flame.

O-cell load test profile

Loadtest was hired to perform load testing for this project. The towers will be founded on 1200mm diameter piles, bored into the underlying hard silt strata. The geotechnical properties in this area are relatively unknown, since little development has occurred in this area of the city. In order to prove their foundation design, Enar the geotechnical consultants, requested the O-cell testing.



Preliminary Pile Under Test

Two 405 mm diameter O-cells were installed in the first preliminary 45 m long, 1200 mm diameter test pile. The O-cells would provide a minimum gross loading of 25.2 MN, 12.6 MN in each direction.