LOADTEST
O-Cell® Technology in Kiev, Ukraine

Project	**Solomenka Project**
Location	Kiev, Ukraine
Client	Bauer-Altis Ltd
Foundation Contractor	Bauer-Altis Ltd.
Consulting Engineer	Katzenbach Engieneure
Period	July 2007
Project Description	

Piling opposite Voksal Central Train Station, Kiev

Lifting of multi-level cage at Solomenka, Kiev

Pile head during testing

Pile test in progress protected from the elements

Summary:
The Solomenka project is a mixed use project in the heart of the capitol city of the Ukraine - Kiev. Located near the historic Voksal Central Train Station, little prior knowledge about the soil properties in this area, made preliminary pile testing essential before main piling works could commence.

Project:
This prestigious project required detailed geotechnical information from the pile testing. The testing parameters required the test pile to be founded in the underlying clay and marl formations and the sandy soil deposits above the marl are isolated from the loading. Conventional top-down techniques would not be possible unless measures were taken to provide a friction free length of 26 metres through the sandy overburden.
Since a bi-directional test does not require concreting to ground level nor is any form of shaft friction isolation required, the O-cell was the ideal test method for this project.

Bi-directional load test arrangement:
The test pile consisted of an 880 mm auger bored pile with multilevel O-cell assemblies located at depths of 0.5 m and 5.5 m above the pile toe. Each assembly was made up of 2 number 330 mm diameter O-cells. The pile was bored to a depth of 37.80 m with the final concrete level stopped approximately 26 m below ground level. The upper O-cell level would test the pile within the clay, leaving a 5 m socket section into the marl deposits to be tested by the lower O-cell assembly.

Test Procedure:
The test procedure required the top section to be loaded first using the lower shaft friction and end resistance as reaction. After expansion of almost 100mm the cells were unloaded and left to drain creating a gap between the upper and lower pile sections approximately 5.5 metres from the pile toe. The lower O-cells were then pressurized to evaluate the skin friction of the mid section using the base as reaction. Once the mid-section had moved upwards by approximately 100 mm, the top section re-engaged to provide additional reaction to determine the end bearing capacity. The test was completed once the O-cells in the bottom assembly had opened to their full 150mm expansion.

Conclusions:
Isolation of pile sections on the test pile was only possible by using to advantage the multilevel bi-directional technique. The inclusion of strain gauges within the pile section gave mobilised unit friction values previously unmeasured in these materials.

Artistic rendering of the Solomenka project *Source: 3dom.com.ua*