LOADTEST
O-Cell® Technology in Moscow City, Russian Federation

Project: **The Moscow International Business Center**

Location: Moscow, Russian Federation

RMJMs Twisting Wedding Palace

The City of Capitals (photo Bradmoscu)

Naberezhnaya Tower

Federation Towers

The Moskva-City (also known as the Moscow International Business Center) Project is a $12 billion development close to the heart of Moscow and is comparable in size and scale of London's Dockland development. This new international business centre will consist of offices, hotels, retail and residential development. It will be the first of its kind in Eastern Europe and will offer the most up-to-date transport and telecommunications network.

These large high-rise projects in Moscow have required foundations into the Suvorov Limestone through the Voskrensky clay. Since the behaviour of the limestone is relatively unknown pile tests have been recommended to verify the foundation designs. Bi-directional testing using O-cells was employed to verify rock socket behaviour. Tests were performed on piles of diameters between 900 mm and 1500 mm, located on several separate plots, mobilising total capacities in excess of 60 MN.

Plots 2-3 required testing for the foundations of the City Palace, formerly known as the Wedding Tower, designed by RMJM as "a wedding chapel in the sky". This 46-storey twisting skyscraper will incorporate a top floor ball room with stunning views over Red Square.

Plot 4, Imperia Tower, is a multipurpose 2-building complex; the mixed-use Building A and the water park entertainment complex in Building B. Office space, apartments, a 280-room hotel and a water park will make up the project and will be a focus of entertainment for MIBC with a shopping mall, restaurants and cafés.

Plot 9, the first project for Loadtest in Russia, was the twin 53- and 63-floor towers, the City of Capitals, consisting of Moscow Tower and St.Petersburg Tower.

Plot 10, the Naberezhnaya Tower C, is a 250m high, 56-storey tower block.

Plot 11 incorporates the transport link, which will be the transfer point between different subway lines and light rail lines and other public systems. There will also be offices, hotels, a clinic and parking.

Plot 13, The Federation Tower complex consists of three towers; Tower A at 93 floors, Tower B at 62 floors and Tower C, Spire, at a maximum height of 506 m.

Moscow International Business City at night *Source: Wikipedia.com*

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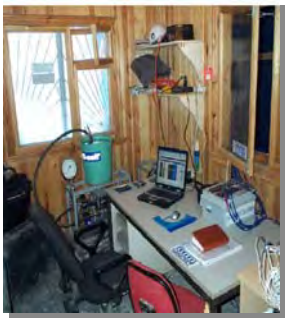
Load testing program

Testing was performed with two bi-directional tests using O-cell technology on each site. Unique to bi-directional tests, the applied load could immediately be directed onto the end bearing portion of the pile. By using the skin friction as a reaction, there is no need for a reaction beam at the surface with expensive anchor piles. If the tests were carried out by top down testing, it would have been necessary to devise complex sleeving arrangements to reduce the friction above the rock rocket.

Reinforcing cage with O-cell installed

Pile Tests

Despite snow and freezing weather conditions, all of the testing programs were successful. The effective mobilised capacity in each of the test piles was carried out to the desired maximum loading, and upon request taken to higher loads; in the case of plot 13, the piles were tested to twice the required capacity. Total mobilised capacities were in excess of 40MN on Plots 9 and 10, and capacities of over 60MN were achieved on Plot 13.



Testing monitored and controlled from inside a heated cabin

Source: Wikipedia.com

Testing in progress protected from the elements