

# LOADTEST

## O-cell Technology in Vietnam



**Project:** Saigon M & C Tower  
**Location:** Ton Duc Thang St., Ho Chi Minh City, Vietnam  
**Client:** Bouygues Batiment International  
**Consultant:** Institute For Building Science and Technology  
**Project Description:** Fugro Loadtest was engaged to carry out a pile load test on another addition to the Ho Chi Minh City skyline. Located in the heart of the City's commercial hub and on the banks of the Saigon River, the Saigon M & C Tower is the centre piece of a mixed use development. The tower enjoys views over the Saigon River and the picturesque city and is reputed to become the second tallest building in Ho Chi Minh City when completed.



Artists Rendering  
source: archetype-group.com

O-cell assembly fieldwork commenced on a 2000 mm diameter working test pile at just over 102 m deep. Excavation was carried out under bentonite through the clay and sand soils. A 32.0 MN pile loading O-cell assembly and associated instrumentation was fixed in the steel reinforcement cage. A total of eleven cages were joined over the excavation until a full length cage had been lowered to the pile base the concreting was carried out using tremie method.

One month after installation, Fugro Loadtest returned to the site with their testing equipment to commence the O-cell test. A reference beam and test shelter had already been set up and full scale basement construction was already underway. All test gauges and instrumentation were connected through a data logger to a laptop computer to display the progress of the test in real time. The pile was loaded in nineteen increments of 30 minutes with two load steps held for 24 hours. A bi-directional load of just over 30 MN was applied to the pile. Computed top-loaded load displacement behavior indicated that pile head movement at test load was within the specified tolerance.

As the O-cell load test was conducted on a working pile and the pile was required to carry structural load and restoring the compressive structural performance required grouting. Two separate circuits can be cement grouted. One through the O-cells which can be grouted independently; and alone is sufficient to restore the compressive integrity; but additionally to the annular gap surrounding the O-cell. The grouting works were carried out by the foundation contractor.



Fabricating of O-cell Assembly



Testing in Progress



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## O-cell Technology in Vietnam



Project **Vietin Bank Tower**  
Location Ciputra, Hanoi, Vietnam  
Client Turner International  
Consultant Halvorson and Partners

### Project Description

When it comes to Vietnam's frenzied construction boom, Hanoi has played second fiddle to the ever-changing skyline of Ho Chi Minh City. However, with this landmark development at the gateway to Hanoi, all this is about to change on what will be one of the tallest buildings in Vietnam.



Artists Rendering  
source: skyscrapercity.com

Situated at Ciputra some distance from the current central business district, the mixed use development is about to turn this suburban zone into maybe the next Canary Wharf. The Vietin Bank Business Centre has been designed by the world famous Foster & Partners featuring two towers of 363 m and 250 m connected by a retail podium. The taller tower will become the headquarters of Vietin Bank. The design of the building incorporates environmental and green concepts intended to deal with the tropical humidity that Vietnam can experience. The building facade is also covered with projecting "fins" to provide shade from the searing sunlight.



O-cell Assembly in Pile Cage (Bored Pile)

Fugro Loadtest was engaged to conduct two O-cell bi-directional tests on a 2.0 m diameter rotary bored pile and a 2.8 m x 1.0 m barrette constructed by a trench rope grab, both to 45 m depth. Using a combination of 870 mm and 610 mm O-cells to achieve the desired test loads requested, the O-cell assembly and related instrumentation were attached to the reinforcing cages. Seven levels of strain gauges were also fixed along the cage length to assess the load distribution along each test pile.



O-cell Assembly in Barrette Cage



Instrumented Barrette Cages & Hoisting

Testing was successfully completed with a load of approximately 32.0 MN applied to each test.

