

FUGRO LOADTEST

Osterberg Cell® Technology in Luanda, Angola



Luanda, formerly named São Paulo da Assunção de Loanda, is the capital and largest city of Angola, in Southern Africa. Located on Angola's coast with the Atlantic Ocean, Luanda is both Angola's chief seaport and its administrative centre. With a metropolitan population of over 5 million, it is also the capital city of Luanda Province and the world's third most populous Portuguese-speaking city. Luanda is divided into two parts, the Baixa de Luanda (lower Luanda, the old city) and the Cidade Alta (upper city or the new part). The Baixa de Luanda is situated next to the port, and has narrow streets and old colonial buildings. However, the city is experiencing large scale expansion and massive new construction projects have by now covered large areas beyond the traditional city limits.



Map of Angola

Sonangol Headquarters Luanda

Aurecon provided structural design, as well as construction supervision for the 24-storey Sonangol Head Office building, to be one of the tallest buildings in Luanda. In order to optimise the foundation design being carried out by the Contractor, both the stiffness and the capacity of the piles needed to be determined and two bi-directional load tests using 540 mm O-cells were performed in each 1.2 m diameter test pile constructed to over 35 m deep into dense sand.



Completed HQ Building

Geotechnical specialists: Grinaker-LTA

Kinaxixi complex Luanda

The plan for this complex of buildings incorporates both residential and commercial use, incorporating a shopping mall, a restaurant and cafés. The Kualanda building was to be the first phase of construction with mainly housing, 4 underground car parks, ground floor and mezzanine with 4 shops, 3 floors of office space and 40 apartments divided between 8 floors with a penthouse suite on the top floor.



Artist rendering

Two single level O-cell pile load tests were performed on 1.2 m diameter piles with lengths of 26 m and 31 m. Bi-directional loading capacity of more than 17 MN was incorporated into each pile using a pair of 405 mm O-cells.

Consultant: ATKINS

Piling Contractor: Franki Angola

AAA Tower Luanda

One single level O-cell preliminary pile load test was performed on this project. The 1.2 m diameter pile was bored to a length totaling 57.15 m of which only 35.65 m was concreted, the remaining unearthed area back filled with sand to make a safe working platform. One of the many advantages of the O-cell technology is that the pile concrete is not required to be bought to ground level allowing the pile to be cast to design level without the need to remove unnecessary material later.



Artist rendering

A similar loading configuration as the Kinaxixi project was used with bi-directional test load capacity being supplied using a pair of 405 mm O-cells. Vibrating wire sister-bar strain gauges were positioned along the length of the pile concrete allowing the load distribution to be calculated.

Piling Contractor: Sociedade de Construções Soares da Costa, SA

Kilamba Tower Luanda

O-cell tests were performed on 4 x 30 m long, 1 m diameter test piles at this site. Two initial preliminary test piles and two working test piles were constructed by Geo-Rumo. A pair of 330 mm O-cells were installed in each test pile to provide a gross maximum loading potential of 15 MN.



Artist impression

Consultant: Dar Al-Handasah

Piling Contractor: Geo-Rumo

