LOADTEST
New Supreme Court of Singapore

Project:	**Singapore Court House**
Location:	Singapore, Republic of Singapore
Client:	Sato Koyo Pte Ltd
Period:	2002
Foundation Contractor:	ZAP Piling Pte Ltd.

Project Description:

For the new Supreme Court building in Singapore, an existing building with four basements needed to be removed. Zap Piling Pte Ltd performed the bored piling for Sato Koyo Pte Ltd (general contractor), and Fugro LOADTEST performed the Osterberg Cell® testing. The piling work was done from temporary steel decking at ground level through access holes in the existing basement slabs down to the existing basement floor (16-m below ground). 255 new bored piles were to be constructed with plunged columns using a steel H-beam ("king post") inserted in the top of piles of diameters of up to 1400 mm.

Placing cages within piles constructed in existing car park

Load tests inside the existing building using the Osterberg cell (O-cell) method was preferred, since this technique requires no additional reaction system at the pile head, as opposed to traditional loading methods, and was the only viable procedure for performing static maintained load tests to loads greater than 24 MN on the test piles. Additionally, the preliminary pile testing could be done ahead of the demolition of the existing basements.

Installation through the basement levels

The O-cell bi-directional static load test method works by installing the O-cell loading arrangement inside the bored pile prior to installation and casting of concrete. During testing, the loads applied by the O-cell act in two opposing directions, resisted by the capacity of the pile above and below (hence no external reaction system is required). The award-winning method is simple in its concept but requires expert assistance for successful execution. The cages are instrumented and prepared prior to installation with the O-cell assembly, mechanical extensometers and strain measurement devices. Prior knowledge of the soil parameters and scope of testing is used in determining the O-cell level in the pile.

Besides testing building foundations for some of the signature landmarks in Singapore, such as Marina Bay Sands, Marina Coastal Expressway, Resort World at Sentosa, One Raffles Quay and the MRT-NEL, Fugro LOADTEST has used the O-cell method for testing foundations for large infrastructure projects like bridges and rail lines all over the world. These include the Taiwan High Speed rail line, KCRC West Rail in Hong Kong, Dubai Metro, My Thuan River Bridge in Vietnam, Incheon Bridge in Korea, Bandra Worli Sea Link in Mumbai, India and bridge projects in remote areas of Bangladesh like the Rupsa Bridge and Paksey Bridge.

Testing within an existing parking garage

Source: iac.gov.sg