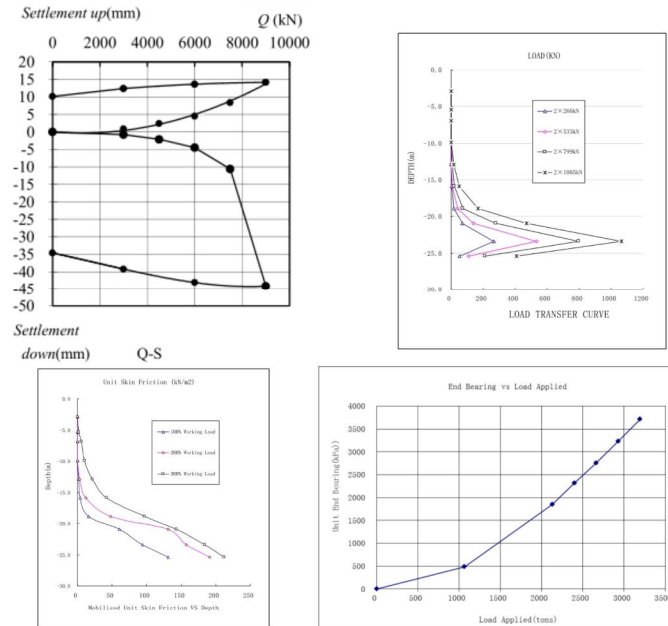


A typical bi-directional loading test is performed until the ultimate capacity in either shear or end bearing is reached, so the maximum unit load can accurately be obtained. In addition, by taking measurements on the strain gauges embedded at different layers, the test will show exactly how the load is distributed.



Bi-directional loading test has been well proven in thousands of projects all over the world. It brings up huge advantages to the industry, including:

- High test load capacities: The Load cell is able to load up to 5,000 ton (50,000kN) under suitable conditions.
- Reducing work area: Testing can be conducted at a very constraint space.
- Time: Testing is able to commence at a short period of time. Usually 7-10 days from pile installation.
- Economy: The load cell method becomes more economical as load increases, unlike conventional static load test.

# ATTAS ITECH

Co. Reg. No.: 201417775R



**BI-DIRECTIONAL  
STATIC LOADING TEST**  
to make static loading test easy, accurate, and affordable.

# ATTAS ITECH

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ATTAS ITECH PTE LTD is a Singapore-based company specialized in providing bi-directional static loading test service, by utilizing patented Super-cells, featured with reliability, precision and cost-effectiveness, ATTAS ITECH provides planning on loading test, installation of super-cells, displacement wire and strain gauges, data-collection on site and test result analysis on ultimate carrying capacity, distribution of load throughout the drilled shaft.

Super-cells were developed and introduced into market in the year 2005, and have been well proven in thousands of projects all over the world, with hundreds added every year.



Hangzhou Bay Bridge (Longest Cross-sea Bridge ever built, 70MN load, Year 2006)



Qingzhoufang Residential Building, Macau, China (1000mm OD, 11.7MN load, Year 2012)



Catholic High School, Singapore (800mm OD, 6.12MN load, 1000mm OD, 5.72MN load, Year 2014)

Unlike conventional cells that virtually are combination of hydraulic cylinders, Super-cells consist of one or multiple inflatable jacks (Super-jacks) that produce large load. The patented Super-jacks adopt special sealing technology, and are made with large loading area, low original height, light weight, and excellent loading performance. Due to the large loading area, no high pressure is needed to produce high load. Usually, the max hydraulic pressure to do bi-directional loading test with super-cells is lower than 30Mpa. This dramatically reduces the risk of hydraulic failure. The Super-cells may be built in various shapes, depending on pile diameters and test purposes.



Ring cell

Combined cell

Each super-jack is tested and calibrated before assembly. The loading pressure is determined by calibration result on linear relation between pressure and load.



Calibration process



Calibration Certificate

ATTAS ITECH utilizes telltale wire to measure displacement. Tied at suitable position of reinforcement cage, the telltale wire transfers the displacement all the way to the other end on ground. The telltale wire is shielded to be separated from concrete, and it's straightened by a steel block hung on the other end. A measurement base is set up to record the displacement.

When loaded, the load cell expands, pushing the upper shaft upwards and the lower shaft downwards, which would mobilize the side resistance and base resistance of the upward and downward pile shaft.

