SCREW PILING INFORMATION SHEET
LOAD TESTING & MOMENTS

Load Testing
We have conducted in excess of 200 load tests and P.J.Yttrup & Associates Pty Ltd, Consulting Engineers have over 1,000 results. This has improved our understanding of the effects of different types of soil conditions, helix pitch and torque.

Methodology
All of the load tests we have conducted have been static load tests using the incremental sustained load method, as described in AS 2159- 2009 Piling Installation and Design. Most have gone on to test the pile to failure on completion of the test as laid out in AS 2159, so that the ultimate capacity is determined.

In order to minimise on site disruption, an additional pile can be installed on site for testing purposes. That way the builder can proceed with his construction program with minimal interruption.

Where possible we prefer to conduct load testing prior to construction, as the results may assist refining and optimizing the pile design.

Load Test Results
The following load test is the result of a test done in sand. The pile was installed to 70,000Nm and load tested to prove that 70,000Nm did not equate to 700kN axial capacity.

LOAD TEST RESULTS

Pile Test 1

Load Test Results
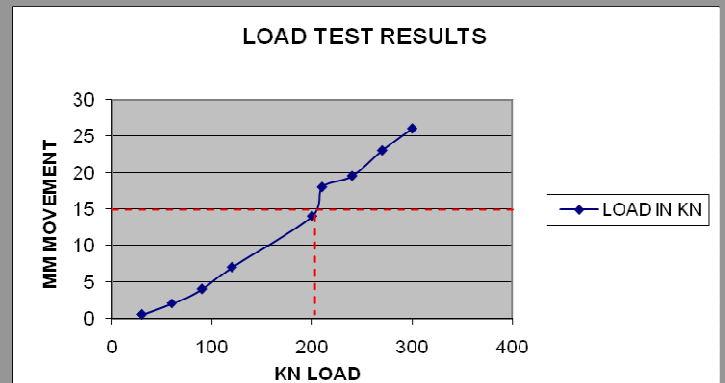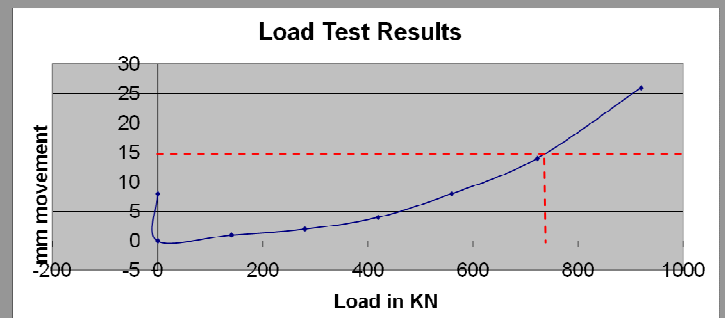
Pile Test 2

The pile was then installed to 167,000Nm and then load tested, showing this torque achieved the required loading of 700kN.
*Please note that the above data is an example only.*

Moment Load
Another stress a pile tube can be subjected to is the eccentric moment. AS 2159 stipulates the pile should be considered for 75mm eccentricity.

There are significant advantages in using concrete filled piles, which are capped at the bottom, in terms of increasing axial capacity as well as protection against corrosion.

Moment Curve Example
This M-N CURVE is for a 168 X 6.4 tube with 0.03 mm corrosion over 50 years with external corrosion only.

M-N Curve

- M-N curve of concrete filled CHS
- e=0.05D
- e=75mm
- M-N curve of unfilled CHS
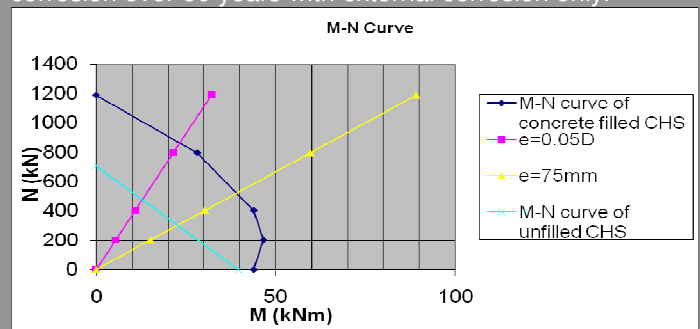
Assuming there is a N* load of 371kN, the moment will be 27.85 kNm. Using the above graph the pile will need to be concrete filled.(32mpa used in this example).