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Approval & Reception Procedure

DG – Geotechnical Department		
Pile Bearing Resistance Verification Procedure A Pile Static Loading Test	Document no.	**ARP/DG/13**
	Date:	**2010/07/01**
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1. Reference standard

Regulamento de Fundações, Guia de Dimensionamento de Fundações, ASTM D1143

2. Approval procedures

2.1 Piles manufacturer approval

For PHC piles, GDF requirements should be followed and the LECM Report N° 2024

For Steel piles, REAE requirements should be followed

3. Reception procedure

3.1 Reception procedure of piles delivery on site

According to LECM Report N° 2024 requirement for PHC piles

According to REAE requirement for Steel piles

3.2 Reception procedure of driving pile

Information to be submitted

Pile characteristics (type, diameter and verticality)

Pile installation records (location, contractor, length and embedded length)

Pile driving devices characteristics (technical data for hammer)

Assumed load of pile

Pile driving records

Site investigation results

Calibration record of devices for the determination of forces, stresses or strains and displacements.

Sampling amount

at least 1% of the total number of piles, with a minimum of one

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4. Acceptance criteria

Unless otherwise stated in the Technical Specification of the project, on completion of testing, the results of load tests on piles shall comply with all the following requirements simultaneously (ASD, 1993:86):

a)   the settlement at any load shall be less than twice the settlement at 90% of that load (Brinch Hansen's criteria); otherwise, the pile is considered to have failed;

b)   If one of the values of the total or residual settlement exceeds the respective calculated value given by the following formula, the pile is considered failed according to the settlement criterion in the loading test.

$$S_t = 0.7\frac{F_cL}{AE} + \frac{B}{120} + 4mm$$

$$S_r = \frac{B}{120} + 4mm$$

where

S_t -   total settlement

S_r -   residual settlement

B -   diameter or least lateral dimension of the pile;

F_c -   test load;

L -   total length of pile;

A -   cross section area of pile;

E -   Young´s modulus of pile.

When a pile fails a loading test, two additional piles must be driven and two additional pile static compressive load tests shall be performed. If any one of the two piles fails to comply with the requirements, the design of the pile foundation shall be reassessed or improvement of the soil shall be considered.