Analysis of Full-scale Load Tests on Bored Piles Socketed in Weathered Rock: A Case Study of the Subsoils of Phnom Penh Area

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Abstract

:

1. Introduction



Fig. 1

3. Geotechnical investigation of test site

2. Geological conditions of Phnom Penh area

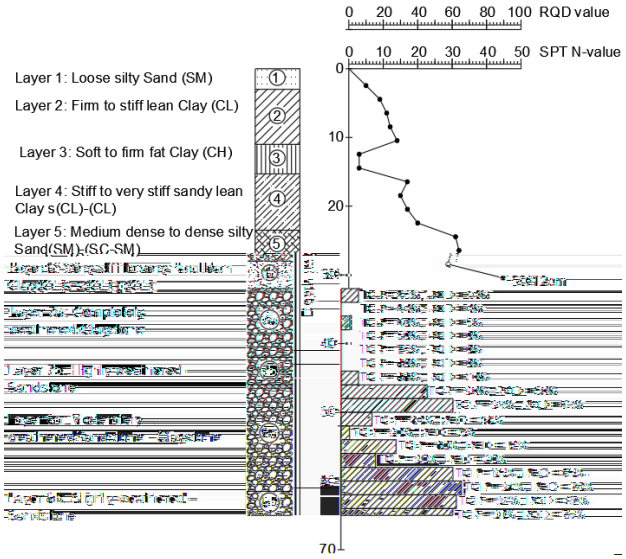


Fig. 3

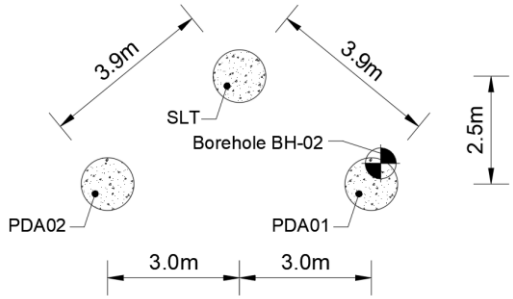


Fig. 2

4. Field load tests

4.1 Static pile load test

P_a

P

$P=$ *4.2 High-strain dynamic test*

P_a

$P= 2P_a$

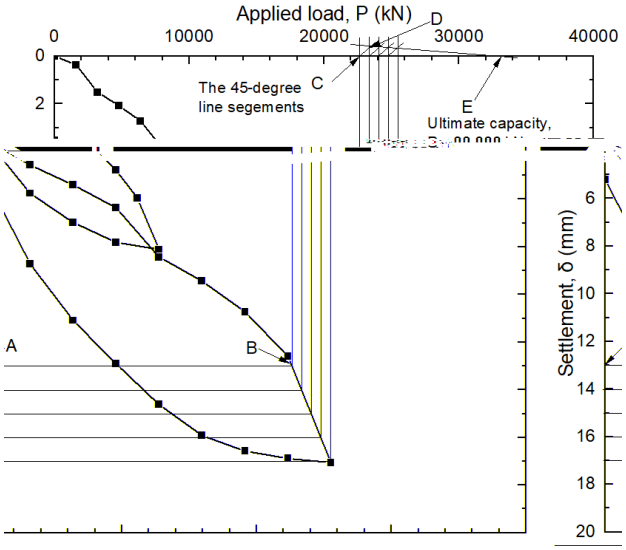


Fig.5

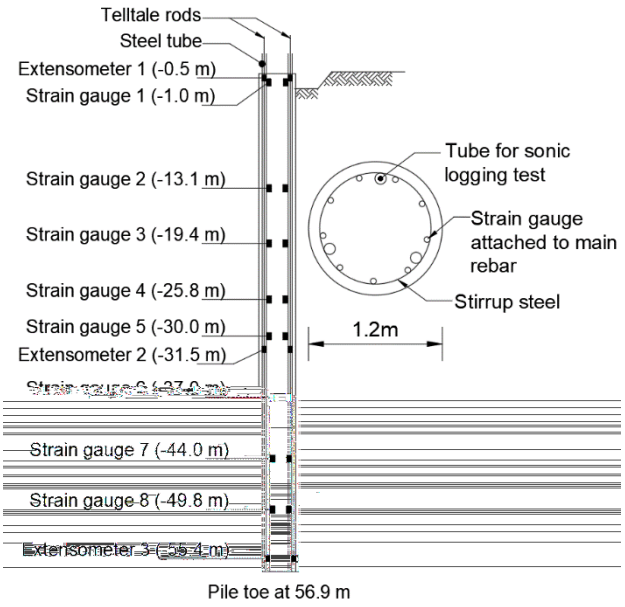


Fig. 4

5. Field test results

5.1 Load-settlement relations as determined from static load test

$P=$

P_a

$P= 2P_a$

5.2 Load-settlement relations as determined from PDA tests

P

P

P

P

P

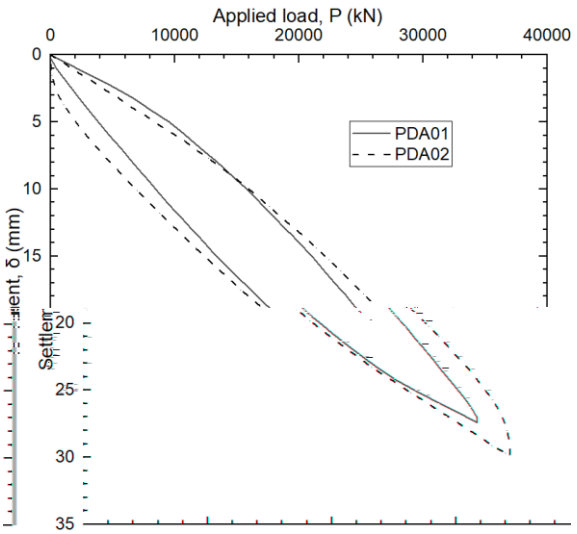


Fig. 6

5.3 Load transfer along pile depth

$P = \varepsilon EA$

P E

A

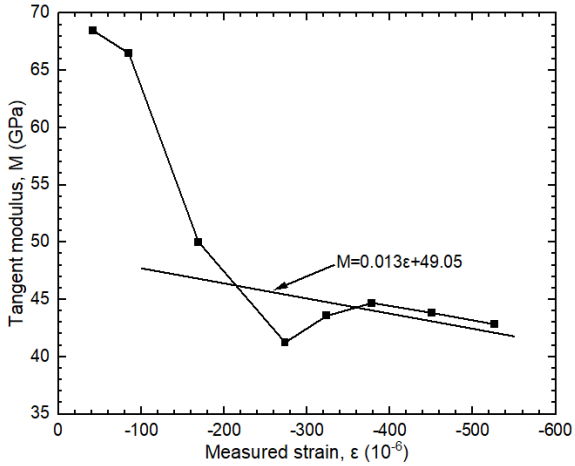


Fig. 7

(M)

(n+1 1) *(n+1 1)*

a

M

b.

$$M = \frac{d\sigma}{d\varepsilon} = a\varepsilon + b$$

P

$$\sigma = \frac{a}{2}\varepsilon^2 + b\varepsilon$$

E

/

$$E = \frac{a}{2}\varepsilon + b$$

a b

M

6.1

E_{oed}^{ref} OCR

E_{50}^{ref} c s_u

Table 1

		$_{sat}$	$_{unsat}$	E_{50}^{ref}	E_{oed}^{ref}	E_{ur}^{ref}	OCR	K_0	$_{ur}$	p_{ref}	c'			m	R_f

$_{sat}$ $_{unsat}$ E_{50}^{ref}

E_{oed}^{ref} E_{ur}^{ref} OCR

K_0 $_{ur}$ p_{ref}

$s_{u,ref}$ m

R_f

Table 2

		$_{sat}$	$_{unsat}$	E_{rm}		$_{ci}$	m_i	GSI	D

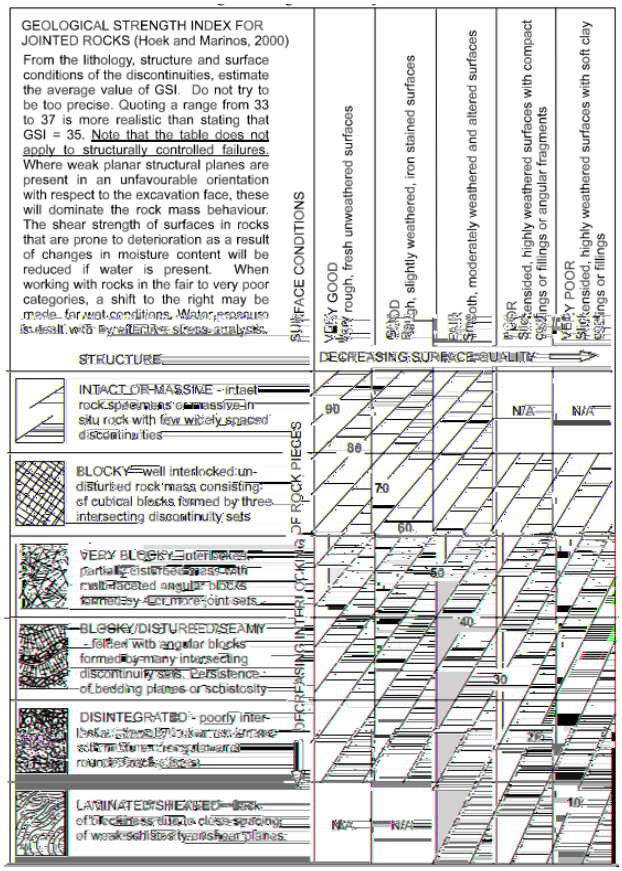


Fig. 10

GSI

D

D

D

D

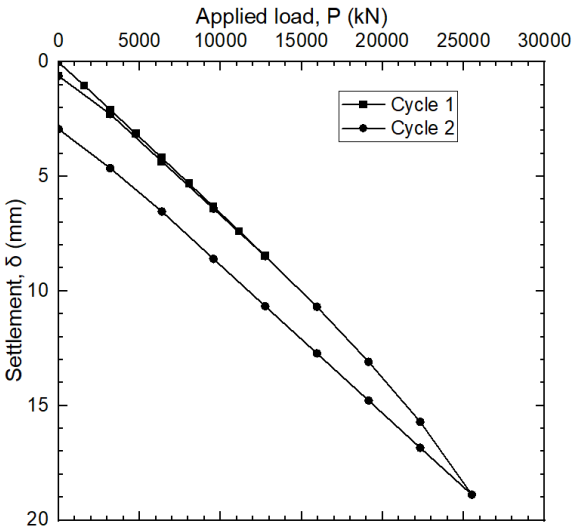


Fig. 11

$$j = 10^{0.186RQD - 1.91}$$

M_R

M_R

R_{inter}

M_R

M_R

7. Results of finite element analysis

m_i

P

m_i

m_i

GSI

GSI

P

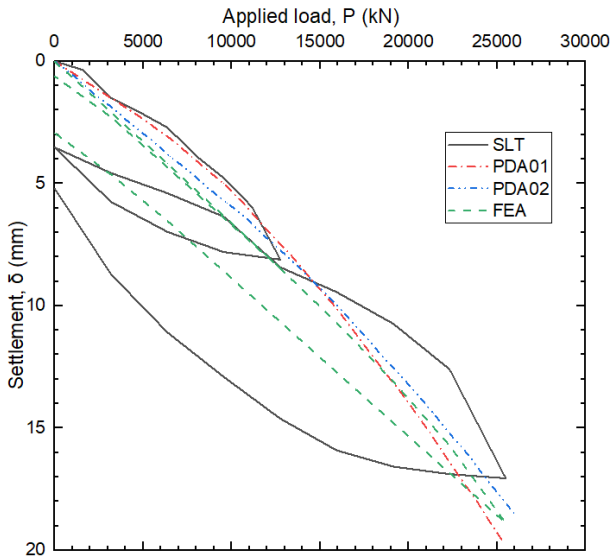

Applied load, P (kN)
0
5000
10000
15000
20000
25000
30000
Settlement, δ (mm)
0
5
10
15
20
SLT
PDA01
PDA02
FEA

Fig. 12

8.

Acknowledgement

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