

## A proposal for the analysis of the PDA testing results of the extra-long piles

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**SYNOPSIS :** These days the construction of extra-long piles increases. It is not unusual to install piles whose length exceed 45m. In such cases, the estimated value of negative skin friction becomes larger, often larger than the design load. In order to be sure of the safety of the super structure, the magnitude of the positive skin friction and the base bearing capacity should be known. In practice dynamic pile loading tests using PDA is the only possible measure to meet this requirement. However the analysis of dynamic pile loading test for such extra-long piles requires a thorough understanding of the pile-soil behaviour. In this paper, a new method to evaluate the positive skin friction and end bearing capacity from the normally performed PDA test is proposed. The proposed method was verified by performing specially designed pilot testings.

Key words : extra-long pile, negative skin friction, positive skin friction, end bearing capacity, PDA, set up

1.

(extra-long pile)                   가    가                   ,                   가                   .  
45m가                   ,                   가 3                   ,                   .  
                 .  
                 .  
                 3                   .  
                 가                   .  
                 [                   +                   ]                   SL  
SL                   [                   +                   ]                   ,  
                 .  
                 PDA                   ,  
                 .

가

PDA

CAPWAP

,

,

,

,

가

PDA

가

가

가

(EOID, end of initial driving)  
(Restrike)

[

+

]

가

2.

가

(

)

가

가

,

[

+

]

가

ø508.0mm ø558.8mm( 12.0mm)  
10m

40m

(

가

)

SL

10 13ton

2mm

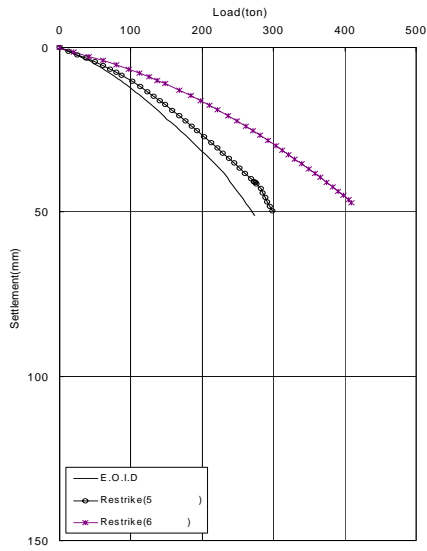
가

1 14

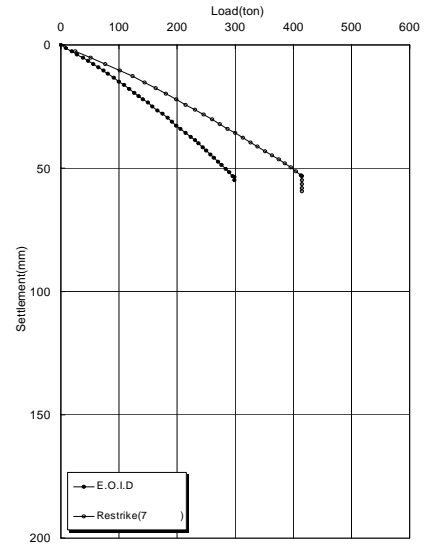
PDA

CAPWAP

[ 1]



(a)



(b)

[ 1 ] - ( )

[ 1 ] - 가 가 가

5 , ([ 1(a)) 가 가

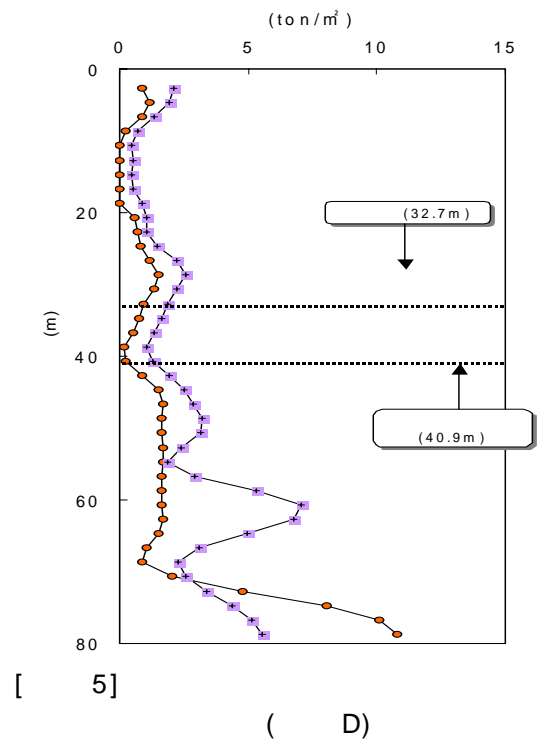
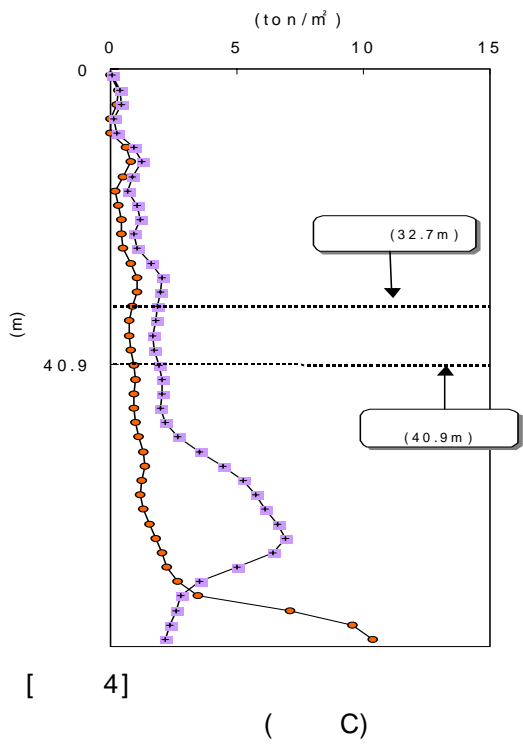
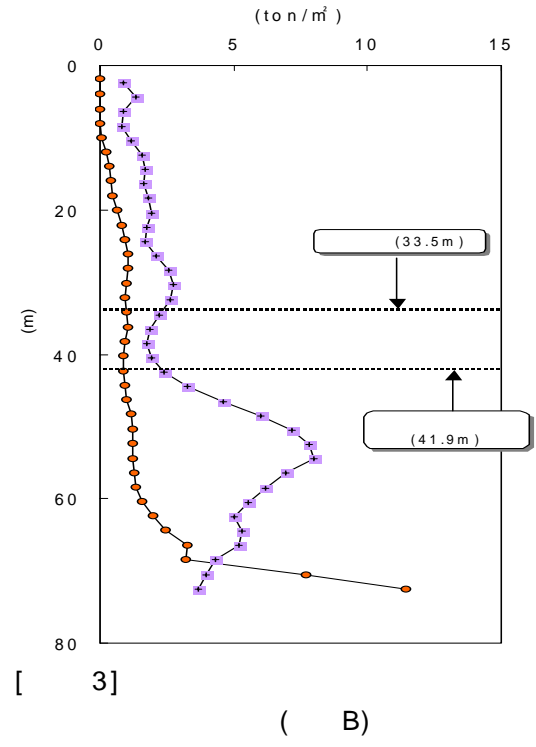
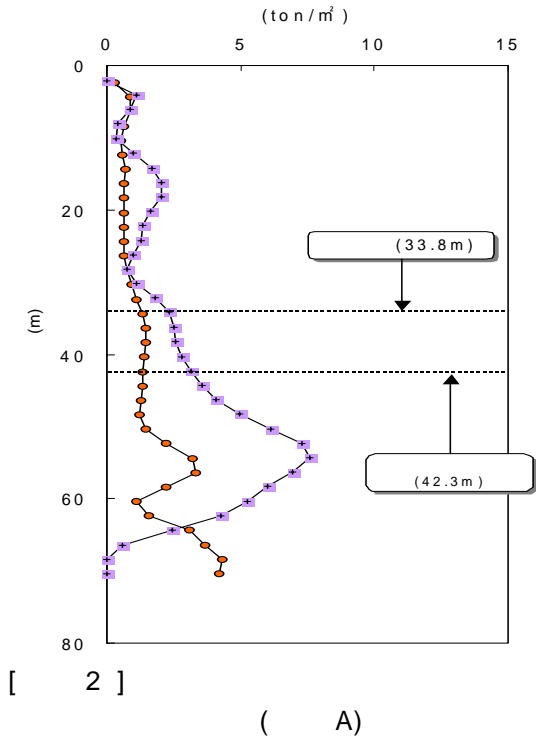
가 [ + ] 가 ( ) 가

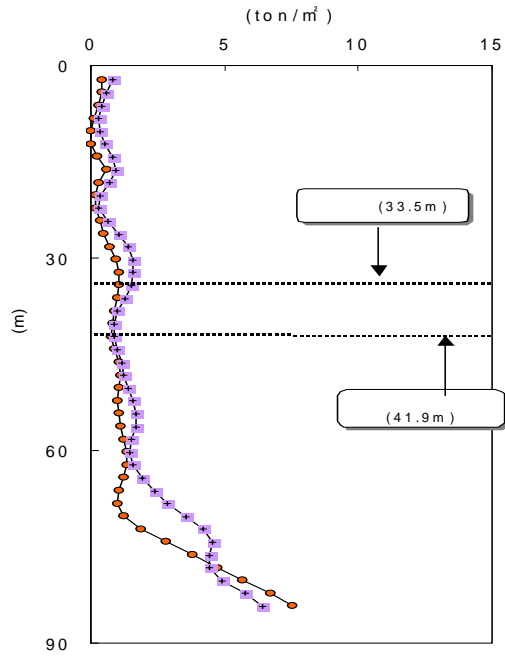
가 , 가 가 가

가

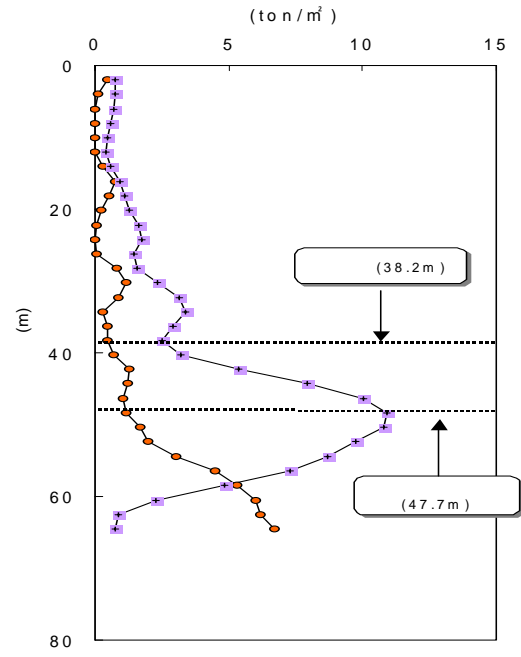
가

[ 2] [ 9] CAPWAP

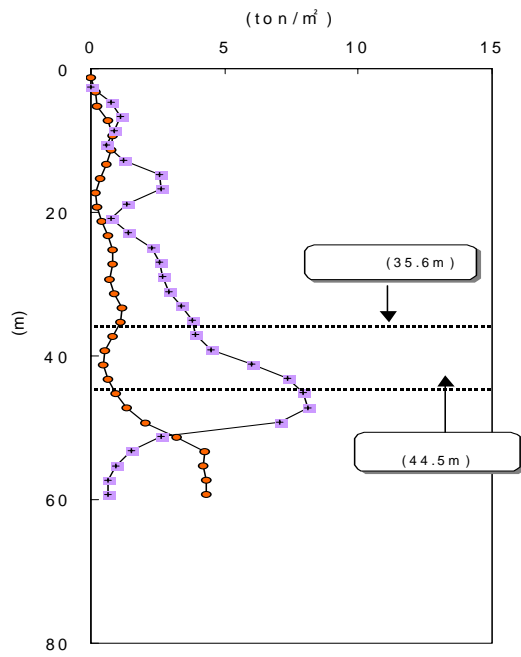




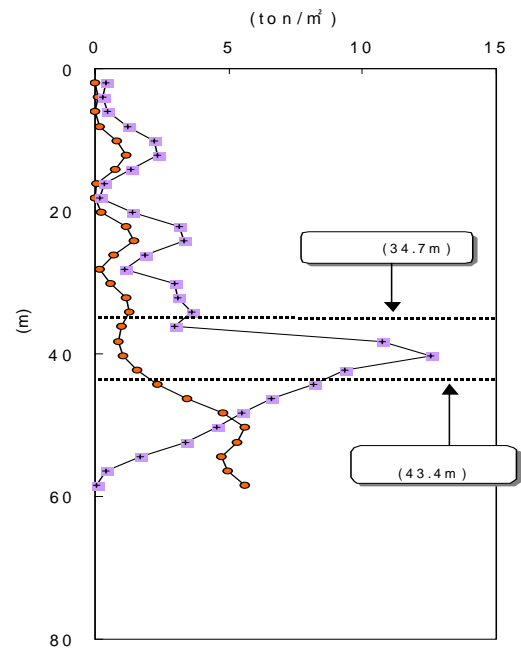
[ 6 ] ( E )



[ 7 ] ( F )



[ 8 ] ( G )



[ 9 ] ( H )

가

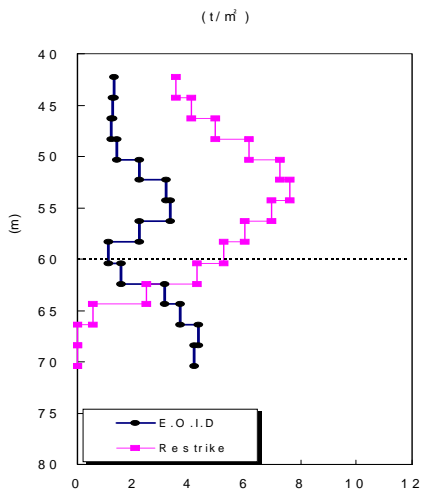
가

가

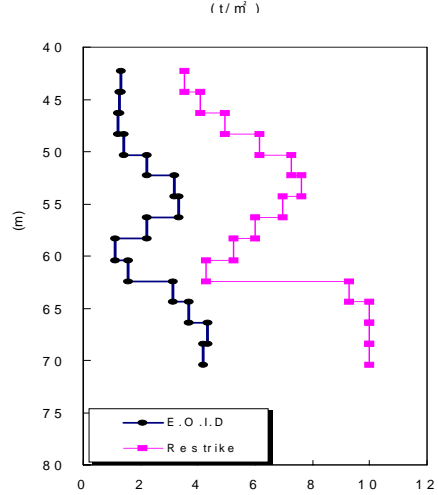
[ 2] A 가 14  
 158.0ton 14 가 74.9ton 가  
 EOID Restrrike ( ,1995/ , 1995) 가 ,  
 가 [ + ] 가 ,  
 , EOID [ 2] [ 9] 가 [ 2] 가 60m  
 14 Restrrike 62.5m EOID 가  
 가

3.

[ 10] A 가 [ 10] 60m 14  
 60m 가 가 , 60m  
 가



[ 10] ( A)



[ 11] ( A)

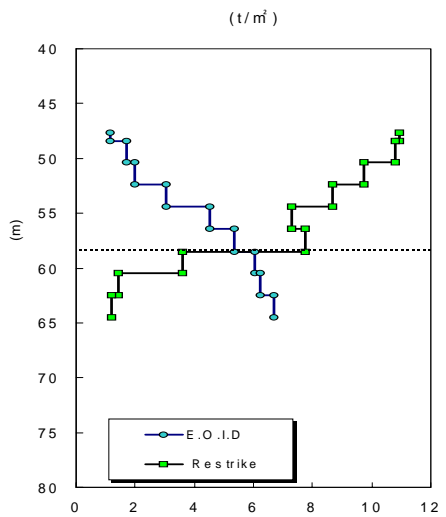
Restrike 가  
 Restrike 가  
 Restrike 가

E.O.I.D Restrike  
 가  
 가

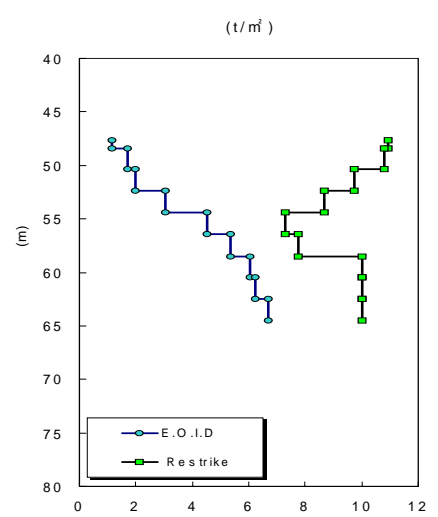
, 10t/m<sup>2</sup>

[ 12] F  
 Restrike 가 E.O.I.D  
 Restrike 가가 )  
 , 50m 58m  
 가 E.O.I.D  
 가 10t/m<sup>2</sup>

[ 11]  
 . 58m  
 50m  
 가 (E.O.I.D  
 가  
 가  
 가 10t/m<sup>2</sup>



[ 12] ( F)



[ 13] - ( F)

가

가

E.O.I.D

CAPWAP

가 가 ,

40 50m

[ 2] [ 9]

Restrike  
(progressive failure)

EOID

(?)

(?)

(?)

G

, EOID

Restrike

F

set up 가

10ton

13ton

SPS490

16mm

(

12mm)

가

가

5 6

[ 14] F

1, 2, 3, 5, 7, 5

. Restrike

[ 14] 7

EOID

가

[ 12]

, EOID

, 가

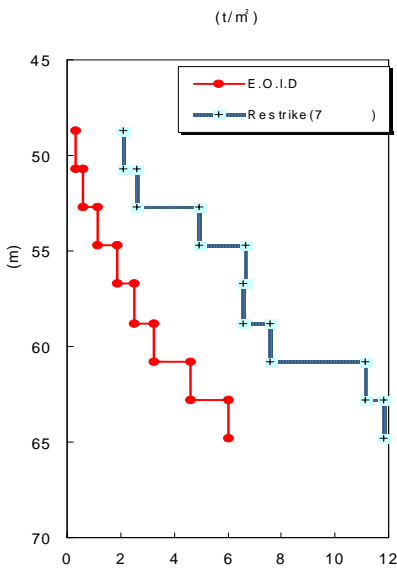
가

Restrike

. [ 12]

(GL-50m )

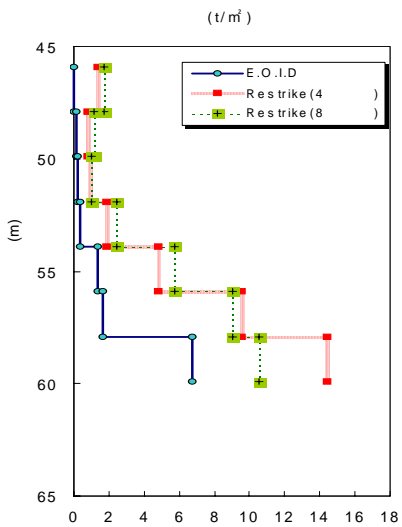
가



[ 14]

( F)





G  
Restrike [ 15 ]  
1, 2, 3, 4, 6, 8, 6  
, [ 15 ] 4 8

E.O.I.D

Restrike

가  
56m 8 4

(GL-45m )

가

[ 15 ]

( G)

[ 8 ]

145ton 180ton

F G([ 7 ]

278ton 300ton  
가

가,

가

2mm

가

7.5mm

( )

9mm

가

3mm

145ton

( )

( )가

5.

[ + ]

( )

set up

Restrike

, E.O.I.D

1. , , , (1996) “ 가(1),” ‘96 , , pp. 145-152.
2. , , , (1995) “ ,” ‘95 , pp. 69-90.
3. , , , (1995) “ ,” ‘95 , pp. 43-53.