Evaluation of Horizontal Subgrade Modulus for Clays*

by

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While appreciating the efforts of the author, the writer likes to point out that a similar method of determining the horizontal subgrade modulus for clays and sands using the results of lateral load tests is already in use (Davisson and Salley, 1970). The method utilizes the non-dimensional deflection coefficients.

The deflection at the top of the pile (y_o) is given by

$$y_o = A_y \frac{Q R^3}{E I} + B_y \frac{M R^3}{E I} \quad \ldots (11)$$

A_y = non-dimensional deflection coefficient at top of the pile due to lateral load at ground surface.

= 1.43 [for clays — k — constant with depth (Davisson and Gill, 1963)]

= 2.435 [for sands — k — linearly increasingwith depth (Reese and Matlock 1961)]

B_y = non-dimensional deflection coefficient at top of the pile due to moment at the ground surface

= 0.95 (clays)

= 1.623 (sands)

EI = flexural rigidity of pile

Q = lateral load applied at the ground level

M = moment applied at the ground level

$$R = 4 \sqrt{\frac{EI}{k}} \text{ (for piles in clay)} \quad \ldots (12\,a)$$

$$= 5 \sqrt{\frac{EI}{n_h}} \text{ (for piles in sand)} \quad \ldots (12\,b)$$

k = coefficient of horizontal subgrade reaction (FL^{-2})

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