CHAPTER II

LITERATURE REVIEW

1. WIROJANAGUD, P. (1974)

WIROJANAGUD suggested from the bearing capacity theories that,

$$q_c = 1.3 \times 2(\bar{\sigma}_{vo} N_q + cN_c) \qquad \text{——————(2.1)}$$

in which,

q_c = cone resistance.

$\bar{\sigma}_{vo}$ = effective overburden pressure.

c = cohesion

N_c, N_q = bearing capacity factor.

For cohesive soil, to determine the undrained shear strength (assuming $\phi = 0$) the quick test should be performed on saturated clay. The rate of penetration of the Dutch cone penetration test is about 2 cm./sec. can be considered as the quick test.

From Eq. (2.1)

$$q_c = 2.6\, N_c S_u + 2.6\, \bar{\sigma}_{vo}$$

Effect of surcharge ($2.6\, \bar{\sigma}_{vo}$) will balance the weight of the driving rods, then,

$$q_c = NS_u \qquad \text{——————(2.2)}$$

in which,

S_u = undrained shear strength.

N = cone factor.

N depends on type of cone, type of soil and type of undrained shear strength.

From the experiment at various places, values of N were tabulated in Table 2.1 (WIROJANAGUD, 1976).

Let,

$UC_{(w)}$ = the predicted values of UC strength as computed by WIROJANAGUD method.

$FV_{(w)}$ = the predicted values of FV strength as computed by WIROJANAGUD method.

and,

$UU_{(w)}$ = the predicted values of UU strength as computed by WIROJANAGUD method.

then,

$$UC_{(w)} = \frac{q_c}{19} \qquad \text{——————(2.3)}$$

$$FV_{(w)} = \frac{q_c}{16} \qquad \text{——————(2.4)}$$

$$UU_{(w)} = \frac{q_c}{17} \qquad \text{——————(2.5)}$$

2. SCHMERTMANN, J.H. (1975)

The relation between undrained shear strength and cone resistance for young clays with plasticity index greater than 10 were presented by SCHMERTMANN J.H. as follows:

$$UC_{(s)} = \frac{q_c - \sigma_{vo}}{18} \qquad \text{——————(2.6)}$$

REFERENCE	CLAY	$N = \frac{q_c}{S_u}$	S_u Type
BEGEMANN (1965)	Clayey Soil	14	FV
THOMAS (1965)	London Clay	18	UU
WARD et al (1965)	London Clay	16	UU
MEIGH and CORBETT (1969)	Arabian Gulf Clay	16	FV
PHAM TIEM NAM (1972)	Soft Bangkok Clay	19	UC
ANAGNOSPTOPOULOS (1973)	Patras Clay	17	UU
WIROJANAGUD (1974)	Soft Bangkok Clay	19,14	FV

TABLE 2.1 Values Of Cone Factor(N)

$$FV_{(s)} = \frac{q_c}{16} \tag{2.7}$$

$$UU_{(s)} = \frac{q_c - \sigma_{vo}}{16} \tag{2.8}$$

in which,

$UC_{(s)}$, $FV_{(s)}$ and $UU_{(s)}$ are the predicted values of UC, FV and UU strength as computed by SCHMERTMANN method respectively.

σ_{vo} is the total overburden pressure above the depth of penetration (Z).