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		VISSAN	BORING No: UV-02												UV - 02				
		content		Unit weight		Forosity n (%)	Void ratio	Degree saturation S (%)	Atterberg limit			×		Consolidation					
#200 0.075 0.005	Iral water w (%	Natural Y (g/cm³)	Dry γ _a (g/cm³)	Specific gravity Gs	Liquid limit LL (%)				Plastic limit PL (%)	Plastic index PI (%)	Liquidity index B	Unconfined compression q _u (Kg/cm²)	Compression index Cc	Coefficient of consolidation Cv (cm²/s)	Preconsolidation pressure Pc (Kg/cm²)	Coefficient of volume compressibility m _v (cm ² /g)	Coefficient of permeability k ₂₀ (cm/s)	REMARK	
(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(29)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)
07.3	00.1	06.22	1	0.550															
97.2 96.0		86.32 82.79	1.413	0.758	2.611	0.71	2.443	92.3	72.2	40.1						***************************************			
70.0	05.5	02.79	1.363	0.736	2.360	0.71	2.413	88.7	72.3	42.1	30.2	1.35	0.097	1.2539	2.50E-04	1.059	8.02E-02	1.95E-08	
95.1	70.3	92.4	1.397	0.726	2.596	0.72	2.575	93.1											
94.6	73.4	96.01	1.364	0.696	2.578	0.73	2.705	91.5	90.8	48.2	42.6	1.12	0.077	1.3623	2.40E-04	1.058	8.18E-05	1.96E-08	
																***************************************	0.702 03	1.905-08	
95.4	68.2	92.67	1.394	0.724	2.608	0.72	2.605	92.8											
96.6	60.2	96.51	1.380	0.702	2.579	0.73	2.672	93.1	92.1	49.8	42.3	1.10	D.097	1.3761	2.47E-04	1.116	8.22E-05	2.05E-08	
95.7	63.2	91.23	1.391	0.727	2.608	0.72	2.585	92.0											
93.0	52.1	27.33	1.895	1.488	2.694	0.45	0.810	90.9	50.7	25.5	25.2	0.07							
94.7	68.1	30.38	1.903	1.460	2.697	0.46	0.848	96.6											
96.0	64.9	31.15	1.896	1.446	2.691	0.46	0.861	97.3	51.3	25.7	25.6	0.21	1.566	0.0723	7.91E-04	0.577	1.56E-05	1.13E-08	
94.5	62.7	30.24	1.924	1.477	2.689	0.45	0.820	99.1											
25.7	12.1	20.95	1.852	1.531	2.661	0.42	0.738	75.6	22.9	15.7	7.2	0.73							
26.4	13.2	22.17	1.891	1.548	2.669	0.42	0.724	81.7											
21.6	6.0	21.75	1.907	1.566	2.654	0.41	0.694	83.1											
22.8	7.2	22.18	1.934	1.583	2.661	0.41	0.681	86.7											

4.2 BEARING CAPACITY OF FOUNDATION

For example, a concrete pile with the dimensions 0.4 x 0.4 x 22.0 m is taken, the calculation is as follows:

$$P = 1.6 \text{ m}$$
 $As = 0.16 \text{ m}^2$

Applying formula

where q

Qult =
$$C \text{ Ncs } As + C_A 2 \pi R L$$

and formula Qult = $q As + ((K_H/2) \gamma \text{sub } L^2 \text{ tg } \delta) * P$
where $q = \gamma \text{sub } R N \gamma + K_B * \gamma \text{sub } * L * Nq - \gamma \text{sub } * L$

At the borehole UV-01, with following parameters:

- Layer 1 + layer 2: 18.0 m. L $0.068 \text{ kg/cm}^2 = 0.680 \text{ T/m}^2$ C 0.680 T/m^2 C_A 0.462 T/m^3 γ sub =

- Layer 3a 4.0 m 30° 35° 0.976 T/m^3 γ sub =

0.5 K_H 0.25 $tan \delta =$ 0.4 KB 40 Ny 40 = Nq $tan \delta =$ 0.25

Because the pile gets through 3 layers so the total bearing capacity is the sum of skin friction through all layers (layer 1 + layer 2 and layer 3a) and bearing capacity of tip in layer 3a:

Calculation:

Layer
$$l + 2$$
: $Q = C_A 2 \pi R L$
 $Q_{1+2} = 0.680 \text{ T/m}^2 \text{ x} 1.6 \text{m} \text{ x} 18.0 \text{ m} = 19.584 \text{ T}.$

Layer
$$3a$$
: $Q_{3a} = q As + Po x K_H x tan \delta x L x P$
 $Q_{3a-1} = Po x K_H x tan \delta x L x P$

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$$0.462 \times 18.0 + 0.976 \times 4.0/2 = 10.268 \text{ T/m}^2$$

$$Q_{3a-1} = 10.268 \times 0.5 \times 0.25 \times 4.0 \times 1.6 = 8.214 \text{ T}$$

 $Q_{3a-2} = q \times As$

$$q = \gamma sub R N\gamma + K_B * \gamma sub * L * Nq - \gamma sub * L$$

$$q = 0.976 \times 0.2 \times 40 + 0.4 \times 0.976 \times 4.0 \times 40 - 0.976 \times 4.0 = 66.368 T$$

$$Q_{4-2} = q x As = 66.368 x 0.16 = 10.612 T$$

$$Q_{total} = Q_{1+2} + Q_{3a-1} + Q_{3a-2} =$$

$$Q_{total} = 19.584T + 8.214T + 10.612 = 38.410 T$$

Choosing safety factor Fs =
$$3$$
 , Qult = 12.803 T

Conclusion

Po

With the above mentions, some following remarks can be made:

- Up to 30.0 m deep, the foundation is constructed by Holocene and Pleistocene deposit layers. The Holocene deposits have low bearing capacity.
- According to load of construction, foundation can be put on the layer 2 after improving, may be to use cajeput pile foundation, sand pile foundation or draining plastic stripes (for small load construction) or use concrete pile foundation to transmit the construction load to Pleistocene deposit soil layers (layer 3, layer 3a or layer 3b)

Calculation for a concrete pile at borehole UV-01 with section $(0.4 \times 0.4 m)$ and length of 25.0m has following results:

Qult =
$$12.803 \text{ T}$$
.

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4.3 OBSTACLES DURING DRILLING.

During drilling at some the boreholes caught some rotten woods have not yet completely disintegrated when drill through layer 2 (Very soft, high plasticity blackish grey).