

* ~~8~~ 8 for gap β_{200} : (~~500-600~~) (Petrobongkai)

* If 100% of aggregate retains on sieve no 400, then FM is 1 [ELBL'22]

* SPT Hammer weight 635kg

* Plasticity Limit & Plasticity index are 35% & 25% respectively, calculate Liquid limit 60% [ELBL'22]

$$* I_p = LL - PL$$

$$\Rightarrow LL = I_p + PL$$

~~* If 100% of aggregate retains on sieve~~

* N_c value for deep foundation 9

* $D_{10} = 0.1$, $D_{60} = 0.6$, uniformity coefficient $C_u = \underline{6}$ $\frac{D_{60}}{D_{10}} = \underline{6}$ [ELBL'22]

* Porosity 0.6, void ratio 1.5

~~void~~ \Rightarrow ~~porosity = 0.6~~ $e = \frac{n}{1-n} = \frac{0.6}{1-0.6} = 1.5$

\Rightarrow



* 4 gaps

① ~~The clay soil which swelling index is 100% is fully expansive clay soil.~~

② Energy imparted in standard proctor test is 596 kJ/m³ (For modified proctor test 2703 kJ/m³ [CBCIC'22])

③ Undisturbed/natural $q_u = 100 \text{ kPa}$
remoulded $q_u = 50 \text{ kPa}$, Sensitivity 2

~~(4) PI, PL given, LL = ?~~

(4) $\phi = 30^\circ$, active earth pressure coefficient, $K_a = \tan^2(45^\circ - \frac{30^\circ}{2}) = \frac{1}{3} A$ [Retrobang'22]

* Environment standards 4 br

PH = 6.5 - 8.5

BOD = 0.2 mg/L

Arsenic = 0.05 mg/L

Total coliform = 0

* If the natural water content of a soil was found to be equal to its liquid limit

then its liquidity index 100%
[CBCIC'22]



$$I_L = \frac{W - PL}{LL - PL}$$

In this case $W = LL$ $\therefore I_L = \frac{LL - PL}{LL - PL} = 100\%$

* Degree of saturation of fully saturated soil 100% [CPGCBL'22]

* Clay minerals which gives maximum swelling index is montmorillonite CPGCBL 22

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MCA PGCL'21

- * Fire resistant material \rightarrow compact sand stone
- * Number of bricks required for one cubic meter of brick masonry is 400

* ~~Q~~ Soln:
$$\frac{1 \times (3.28)^3 \text{ ft}^3}{\frac{5}{12} \times \frac{3}{12} \times \frac{10}{12}} \approx 400 \text{ ft}^3$$

- * Purest form of iron wrought iron

- * Slump test instrument height is 12 inch

- * Standard brick length 9.5 inch [BPDB'21]

- * 100% passes through #100 sieve,
FM 0 [BPDB'21]

- * Initial setting time of OPC cement is 45 minutes [BPDB'21]

Fill in the gap [BPDB'21] [BGFL'21]

- (1) Meandering ratio of alluvial soil is ≥ 1.5 [Titus'21] [BPDB'21]

- (2) Unit of noise is expressed as dB

- (3) pH value range for fertile soil pH 6.5 to pH 7.5 [Titus'21]

\downarrow 23/11/2011



* Drinking water to have pH 6.5 to 8.5

Fill in the gap:

calculate discharge, Q . Given, c, I, A

[MGMCL'22]

We know, $Q = CIA$

* Sylhet Sand $FM \geq 2.5$ [GTCL'22]

Gaps:

* The soil transported by wind is called aeolian soil.

~~* porosity = 0.6,~~

* void ratio 0.6, porosity, $n = \frac{0.6}{1+0.6} = 0.325$

~~* clay minerals which gives 100%
swelling index~~

* SAR value for High sodium water (S_3)

18-26 [Titus'21]

* pH value for fertile soil 6.5 to 7.5*
[Titus'21]

* drinking water pH 6.5 to 8.5*

* Salinity of water is measured by electric conductivity values [BPDB'21]

| EC values (micro mhos/cm) | class |
|------------------------------|---|
| < 250 | Low salinity water (C ₁) |
| 250-750 | medium salinity water (C ₂) |
| 750-2250 | High salinity water (C ₃) |
| > 2250 | very high salinity (C ₄) |

Sodium Absorption Ratio (SAR) :

$$SAR = \frac{Na^+}{\sqrt{\frac{Ca^{2+} + Mg^{2+}}{2}}}$$

| SAR value | Water type |
|------------------|---|
| 0-10 | Low sodium water (S ₁) |
| 10-18 | medium sodium water (S ₂) |
| 18-26 (Titus'21) | High sodium water (S ₃) |
| > 26 | very high sodium water (S ₄) |

Q MCQs: (4 Nos) (DMTCL 22)

- (1) MLSS full form \rightarrow Mixed Liquor Suspended Solids
- (2) Purest form of iron \rightarrow Wrought iron
- (3) EMP full meaning \rightarrow Environmental Management Plan
- (4) Which one of the following is not a common component of photochemical smog?
(A) ozone (B) Acrolein (C) Peroxyacetyl nitrate
 (D) chlorofluorocarbons

* Basic wind speed of Chittagong is ~~74 m/s~~ ^{80 m/s}
 (Cox's Bazar also) ~~65.7~~ ^{65.7} m/s
 Basic wind speed of Dhaka is ~~65.7~~ ^{65.7} m/s
 * Cox's Bazar, Bhola, Khulna, Patuakhali, Bogerhat, ~~20 m/s~~
 [DNCC 'MIST 22]



DNCC'22

DNCC 2022
 MCQS

Date: / /

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Seismic zone

- Zone - 1 → Faridpur, Khulna, Barisal division
($Z = 0.12$)
- Zone - 2 → Dhaka, Chandpur, Comilla division,
Rajshahi division ($Z = 0.20$)
- Zone - 3 → B. Barua, Part of Rangpur division
($Z = 0.28$) → Gazipur
- Zone - 4 → Sylhet zone & Mymensingh
($Z = 0.36$)

* For special moment frame (SMF) design
 the minimum & maximum reinforcement
 ratio for columns 1% and 6%
 respectively.

* Response modification factors for
 SMF & IMF are 8 & 5 respectively.

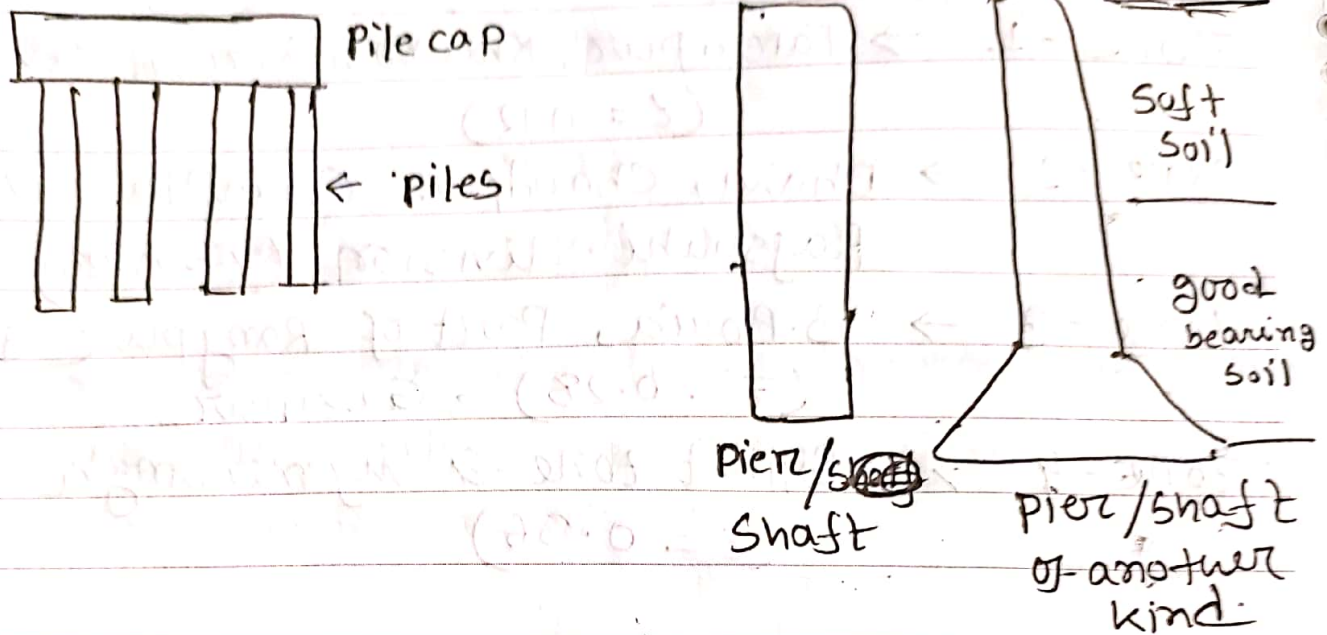
* IMF = Intermediate Moment Frames

OMF = Ordinary Moment Frames (since last
 value 2 to 3)

* When design is based on pile load test,
 FOS for drilled shaft is 2, when
 load is unknown, FOS for drilled shaft
 shall be 3.

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Dynamic Analysis

⇒ When dynamic analysis is required?
[Criteria - DNCC 22]

- (1) Regular buildings with height greater than 40m in zones 2, 3, 4 & greater than 50m in Zone 1
- (2) Irregular buildings with height greater than 12m in zones 2, 3, 4 and greater than 40m in Zone 1

~~Methods of dynamic analysis~~

⇒ Methods of dynamic analysis

(i) Response spectrum Analysis

(ii) Time History Analysis