

Quiz 3

Soil Mechanics

Name: Mohammad Al-Swaity

ID: 1181136

Q 1:-) ① The flow curve on Excel sheet
(Attach with the pictures)

$$LL = 26\% \quad "N = 25"$$

For one point: $N = 12 \rightarrow LL = 32.21\%$

$N = 19 \rightarrow LL = 28.54\%$

$N = 27 \rightarrow LL = 25.64\%$

$N = 37 \rightarrow LL = 22.02\%$

$$\textcircled{2} \quad PI = 6.5\% / LL = 26\%$$

$$PL = 26 - 6.5 = 19.5\%$$

$$\textcircled{3} \quad I_p = \frac{35.2 - 21}{\log_{10} 12 - \log_{10} 37} = 29.04$$

$$\textcircled{4} \quad LI = \frac{w - PL}{LL - PL} = \frac{23.8 - 19.5}{26 - 19.5} = 0.662$$

$$0 < LI < 1$$

The soil statuse is plastic.

Q 2:-) For Table ①: USCS Classification:

Soil ①: Percent of Gravel = 30%

// // Sand = 40%

// // Fines = 30% > 12%

LL = 33%

PI = 21% > 7

more than 50% passes No. 4

→ Sand

→ SC

Clayey Sand with Gravel

→ Table ①: Soil ②: percent of Gravel = 52%
 // // Sand = 28% > 15%
 // // fines = 20% > 12%
 LL = 41%
 PI = 22% > 7

more than 50% retained on No. 4

∴ → Gravel

percent of fines > 12%

→ ∴ GC
 Clayey Gravel with sand

Soil ③: percent of Gravel = 5%

// // Sand = 25%

// // fines = 70%

LL = 52%

PI = 28%

* Sand (%) > Gravel (%)

* Gravel < 15%

* more than 50% passes on No. 200

→ fines

* LL > 50%, → Silts and clay

on "A" line: (PI) = $0.73(32) = 23.36 < 28%$

∴ above the line → CH (Sandy fat clay)

* Table (2): AASHTO Classification:

* Soil (1): percent finer on No. 200 = 45% \geq 36%

$$LL = 28 \leq 40 / PI = 20 \geq 11$$

→ A-6

$$GI = (10) [0.2 + 0.0005(-12)] + 0.01(30)(10) \\ = 4.4$$

→ A-6 (4)

* Soil (2): Percent finer on No. 200 = 62% \geq 36%

$$LL = 43 \geq 41 / PI = 28 \geq 11$$

$$\rightarrow 28 > (43 - 30)$$

$$GI = (27) [0.2 + 0.0005(3)] + 0.01(47)(18) = 14.265$$

→ A-7-6 (14)

* Soil (3): Percent finer on No. 200 = 30% \leq 35%

$$LL = 25 \leq 40 / PI = 16 \geq 11$$

→ A-2-6

$$GI = 0.01(10)(6) = 0.6$$

→ A-2-6 (1)

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