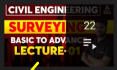
Soil

By Rajat Singh

Day 06

RRB JE/SSC JE 2023 | RRB JE/SSC JE Civil Engineering | Rajat Sir

Civil Engineering | All Subjects | By Rajat Sir



Sur v...
En...
22 vi...

Op e...
En...
5 vid...

Irri g...
En...
6 vid...

RC C...
En...
13 vi...

5 videos

SOIL MECHANICS CIVIL ENGINEERING | RRB JE/SSC JE/DDA JE Civil Engineering | RRB JE/SSC JE 2023
Engineers Adda247

SOIL MECHANICS CIVIL ENGINEERING | RRB JE/SSC JE/DDA JE Civil Engineering | RRB JE/SSC JE 2023
Engineers Adda247

SOIL MECHANICS CIVIL ENGINEERING | RRB JE/SSC JE Civil Engineering | RRB JE/SSC JE 2023 | Rajat Sir
Engineers Adda247

SOIL MECHANICS CIVIL ENGINEERING | RRB JE/SSC JE Civil Engineering | RRB JE/SSC JE 2023 | Rajat Sir
Engineers Adda247

SOIL MECHANICS CIVIL ENGINEERING | RRB JE/SSC JE Civil Engineering | RRB JE/SSC JE 2023 | Rajat Sir
Engineers Adda247

By- Rajat Sir

USE CODE Y293 FOR MAX. DISCOUNT

Adda247

ADDA247 Application

Gate & Engineering Exams

DISCOUNT CODE

Y293

78%

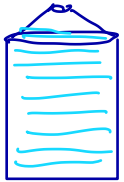
Tech

NON Tech

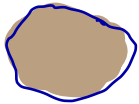
Pycnometer Method

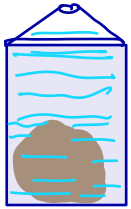
↳ water

Volm = 900ml



W_4

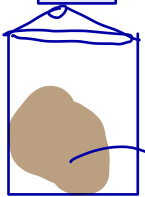




W_3

W_1

W_2



moist soil

- Wash, clean and dry the pycnometer and note down its mass (M1) along with brass cap and washer
- Now place a sample of wet soil in pycnometer and note down its mass (M2).
- Then add water to the soil in the pycnometer to make it about half full.
- Stir the soil using glass rod to remove air voids of the soil sample. If available connect the vacuum pump to the soil specimen to remove entrapped air.
- Add some more water and after eliminating the entrapped air stop stirring and fix the brass cap. More water is added through hole in brass cap until the water is flush with the hole.
- Now take the mass of pycnometer (M3).
- Now empty and wash the pycnometer. Then fill it with only water and take its mass (M4).

$$w = \left[\frac{M_2 - M_1}{M_3 - M_4}\left(\frac{G-1}{G}\right) - 1\right] \times 100$$

This method is suitable coarse grain soil

G = must be known

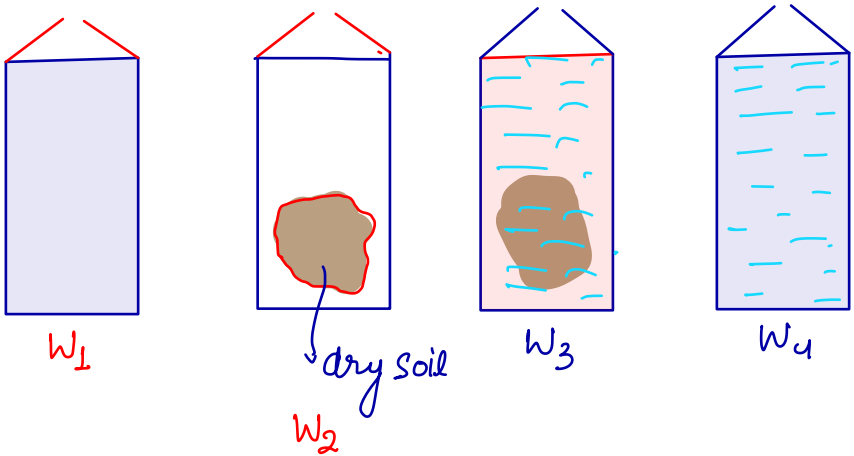
$$w\% = \left[\frac{\omega_2 - \omega_1}{\omega_3 - \omega_4}\right]\left(\frac{G-1}{G}\right) - 1 \times 100$$

Specific gravity Soil

Density bottle 50ml

Flask 500 ML

Pycnometer 900ml


W_1
dry soil
W_2
W_3
W_4

$$G = \left[\frac{w_2 - w_1}{(w_4 - w_1) - (w_3 - w_2)}\right]$$

$$= \frac{w_s}{(w_4 - w_3) + (w_2 - w_1)}$$

$$G = \left[\frac{w_s}{(w_4 - w_3) + w_s}\right]$$

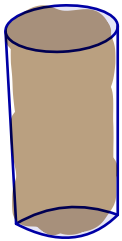
$w_{dry\ soil} = w_{soil\ solid} = w_s$

Method to find unit weight of soil :-

1) Core cutter method (drive cylinder method)
2) water Displacement method.
3) Submerged mass density method.
4) sand replacement method. (sand cone method)

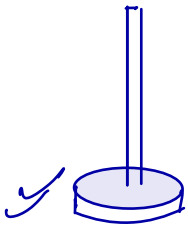
1) Core Cutter method :-

* Field Method.



sharp edges

Volm = 1000cc



dolly & hammer

2.5cm

1.5cm

✓ Below the ground.

W_1

W_2

wt. of soil $= W_2 - W_1$

$$\gamma_{bulk} = \frac{W}{V} = \frac{W_2 - W_1}{Volume}$$

Suitable for cohessive soil.