



# **SNS COLLEGE OF TECHNOLOGY**

**Coimbatore-35**  
**An Autonomous Institution**



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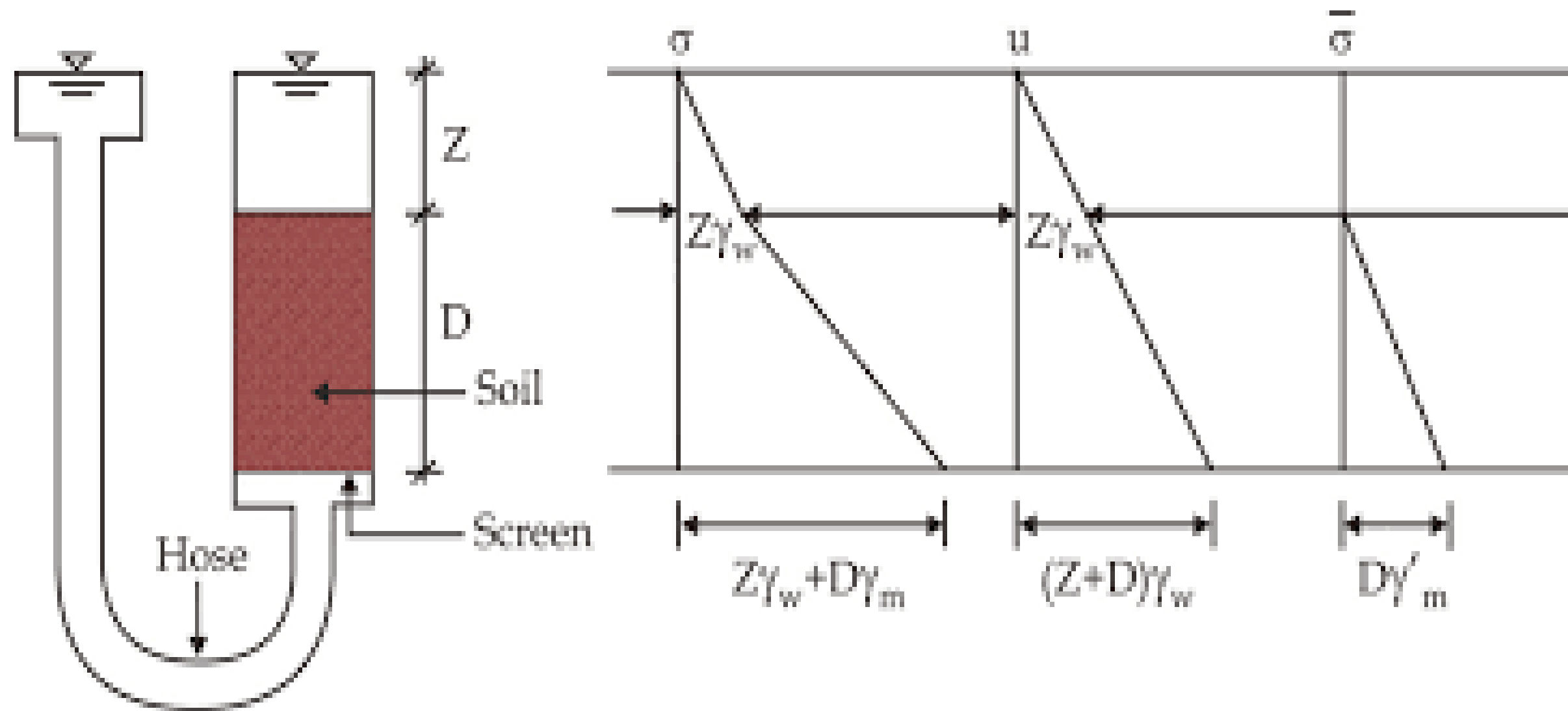
## **DEPARTMENT OF CIVIL ENGINEERING**

### **19CEB301- SOIL MECHANICS**

III YEAR V SEM

#### **UNIT 2 – SOIL WATER AND WATER FLOW**

**Topic 3 : Total, Effective and Neutral Stresses**





# TOTAL STRESS



- ❖ It is the stress acting at a point in a soil mass with a horizontal top surface.
- ❖ The total stress is computed as the total weight of a column of unit area above the point

$$\sigma = \gamma z$$



# EFFECTIVE STRESS



- ❖ It is the stress acting at a point in a soil mass without pore water pressure.
- ❖ It is computed as the weight of soil mass excluding the neutral stress



# NEUTRAL STRESS



- ❖ The pore or neutral stress ( $u_w$ ) is the stress within the water voids.
- ❖ Since this stress is hydrostatic, it acts equally in all directions. Under no flow conditions (static)

$$u_w = \gamma_w h_w$$



# ASSESSMENT



- ❖ What is pore water pressure?
- ❖ How is effective stress computed ?
- ❖ Name the Stress considered in bearing capacity calculations?



# REFERENCES



- ❖ Coduto, D.P., “Geotechnical Engineering Principles and Practices”, Prentice Hall of India Private Limited, New Delhi, 2002
- ❖ McCarthy D.F., “Essentials of Soil Mechanics and Foundations Basic Geotechniques”, Sixth Edition, Prentice-Hall, New Jersey, 2002
- ❖ Das, B.M, “Principles of Geotechnical Engineering”, (fifth edition), Thomas Books/ cole, 2002



# THANK YOU