SNS COLLEGE OF TECHNOLOGY

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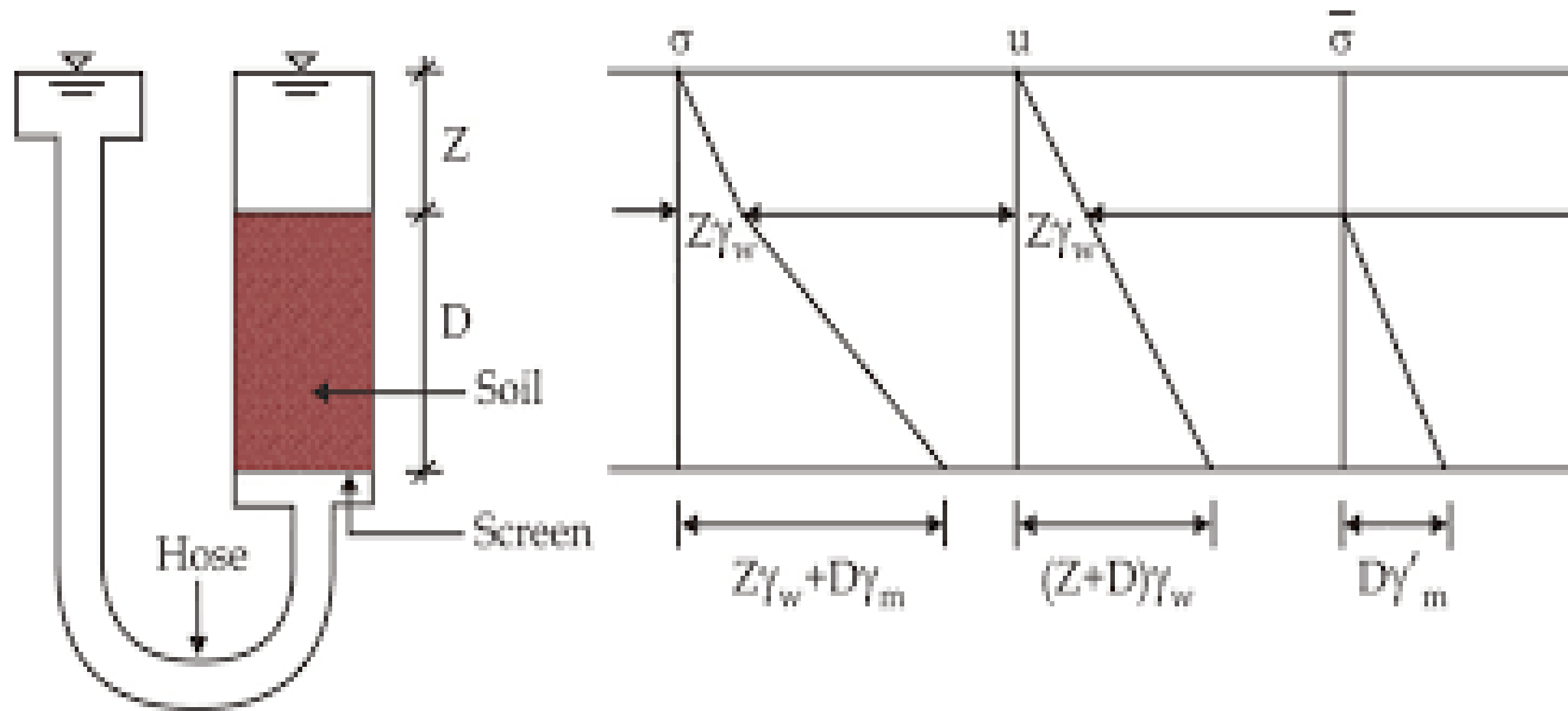Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

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, Effective and Neutral Stresses /19CEB301- Soil Mechanics / P.S.Venkatanarayanan/Civil/SNSCT

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)

$$u_w = \gamma_w h_w$$

❖ What is pore water pressure?

❖ How is effective stress computed ?

❖ Name the Stress considered in bearing capacity calculations?

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❖ Coduto, D.P., "Geotechnical Engineering Principles and Practices", Prentice Hall of India Private Limited, New Delhi, 2002

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❖ Das, B.M, "Principles of Geotechnical Engineering", (fifth edition), Thomas Books/ cole, 2002

THANK YOU