EWCE 333
Wastewater Engineering and Sanitation

Lecture 7

Instructor
Lt Col Kazi Shamima Akter, Ph.D., Engrs
Associate Professor
Department of EWCE, MIST

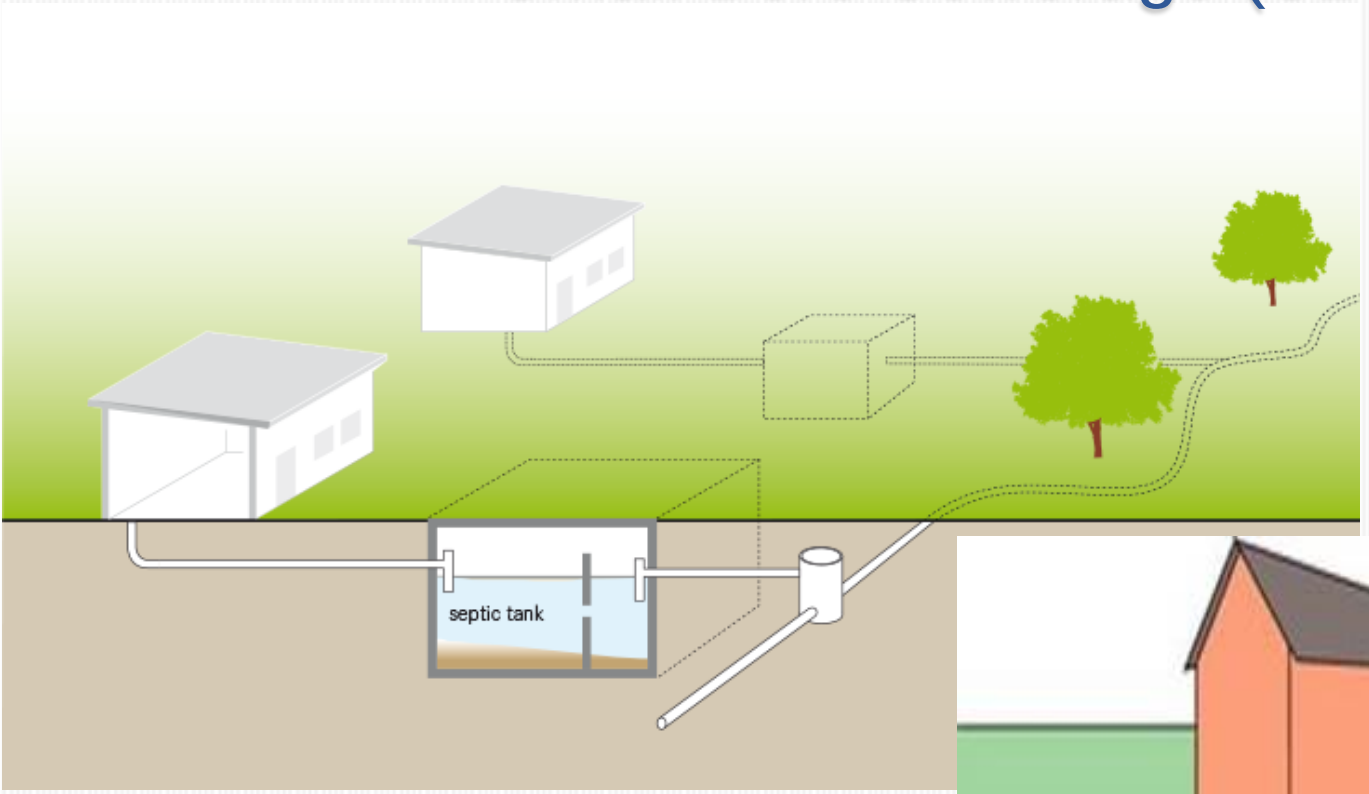
Lecture Outline

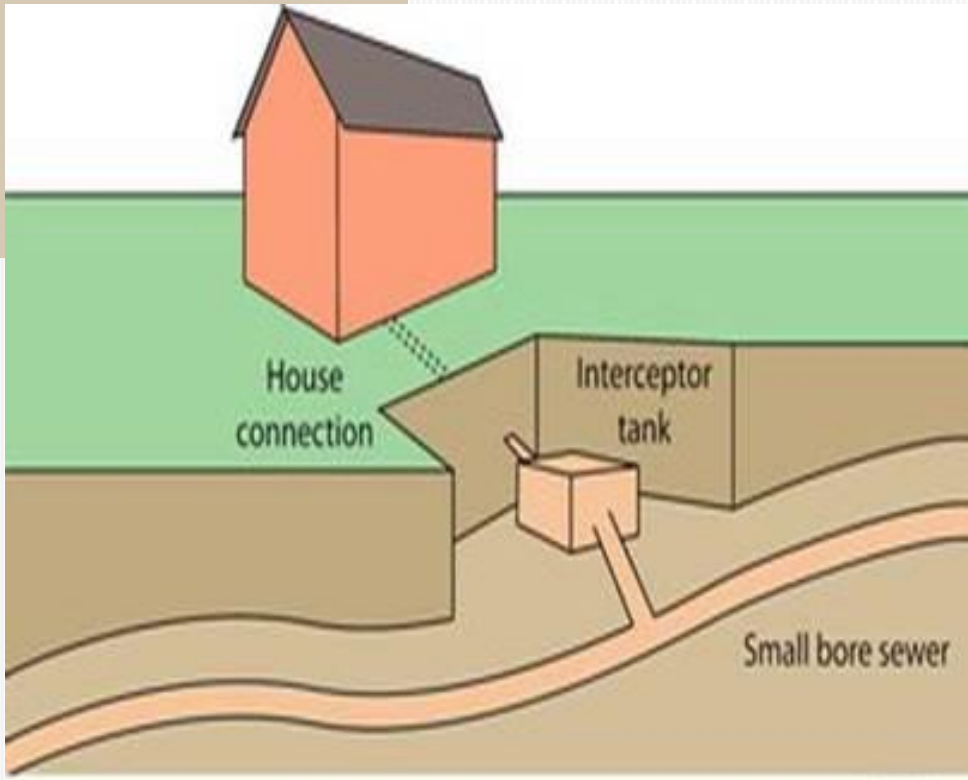
Topics	Reference
Small Bore Sewerage (SBS) system	Water Supply and Sanitation - Feroz Ahmed and Mujibur Rahman ITN -BUET

Small Bore Sewerage (SBS)

- High cost of traditional waterborne sewerage has stimulated interest in alternative low-cost proposals
- SBS is aimed to extend adequate sanitation services to medium and low-income communities.
- This system offers all the advantages of conventional waterborne sewerage systems but at a much lower cost than the conventional ones.

Small Bore Sewerage (SBS)

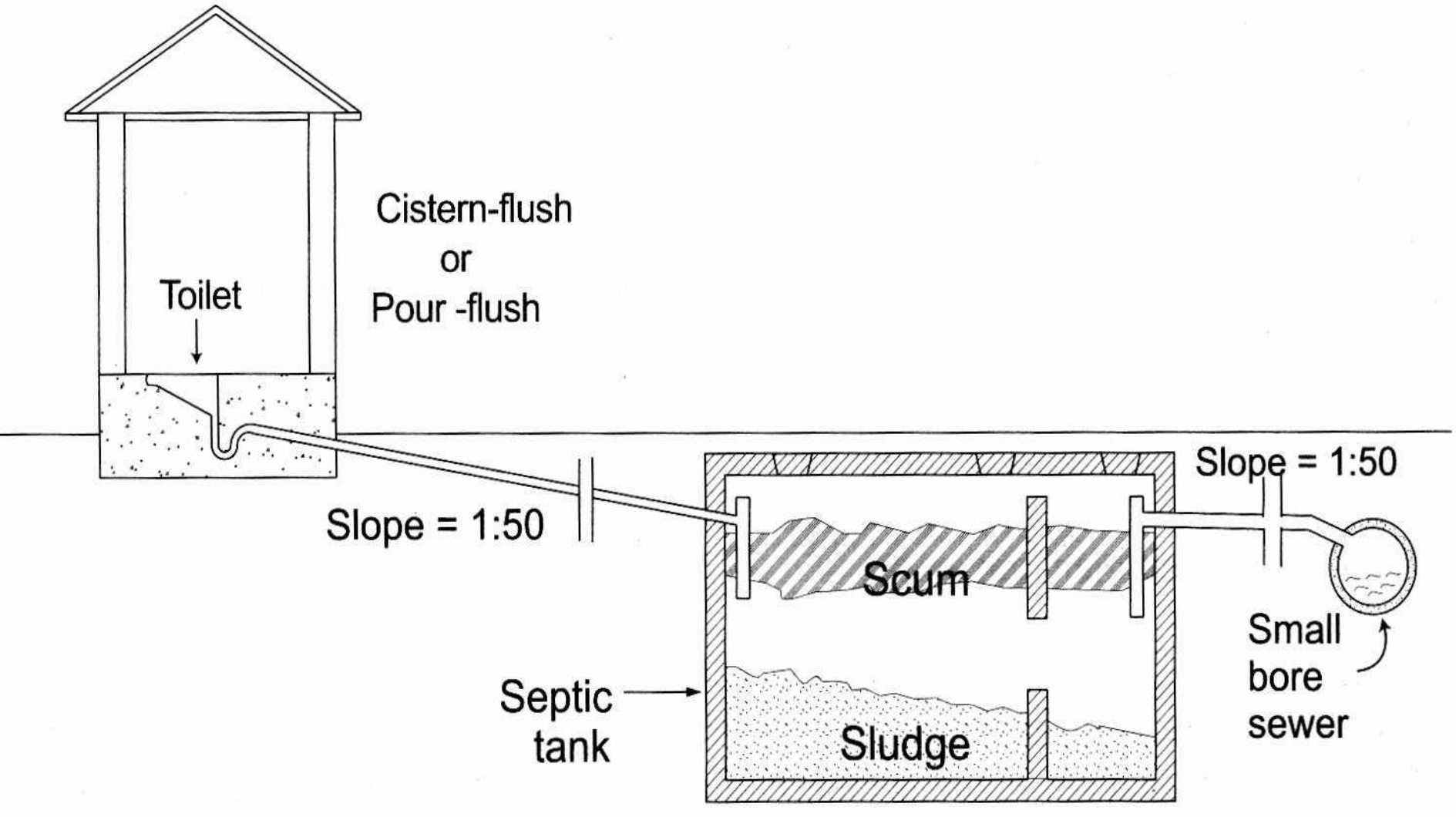




Elements of SBS

- septic tank
- small bore sewer network
- treatment plant

Small Bore Sewerage (SBS) Elements



SBS and Conventional Sewerage

Basic differences:

- Incorporation of septic tanks within the individual premises as part of the SBS system.

- The wastewater collected in the septic tank is then transported under gravity through a network of sewers to a treatment plant comprising a series of stabilization lagoons.

- In the case of an existing septic tank system the sewer installation commences immediately downstream of the existing septic tank and new developments must install septic tanks to be able to connect to the SBS system.

Technical Advantages of SBS

Compared to Conventional Sewerage:

- Sewer sizes can be reduced due to attenuation of flow in the septic tank

- Since the wastewater contains minimum solids, self-cleansing velocities are not necessary and hence sewer grades can be substantially reduced.

- Sewer blockages are minimal as septic tanks retain most of the solids content.

Technical Advantages of SBS

Compared to Conventional Sewerage:

- Volume of excavation is considerable reduced because of smaller sewers and lower sewer grades.

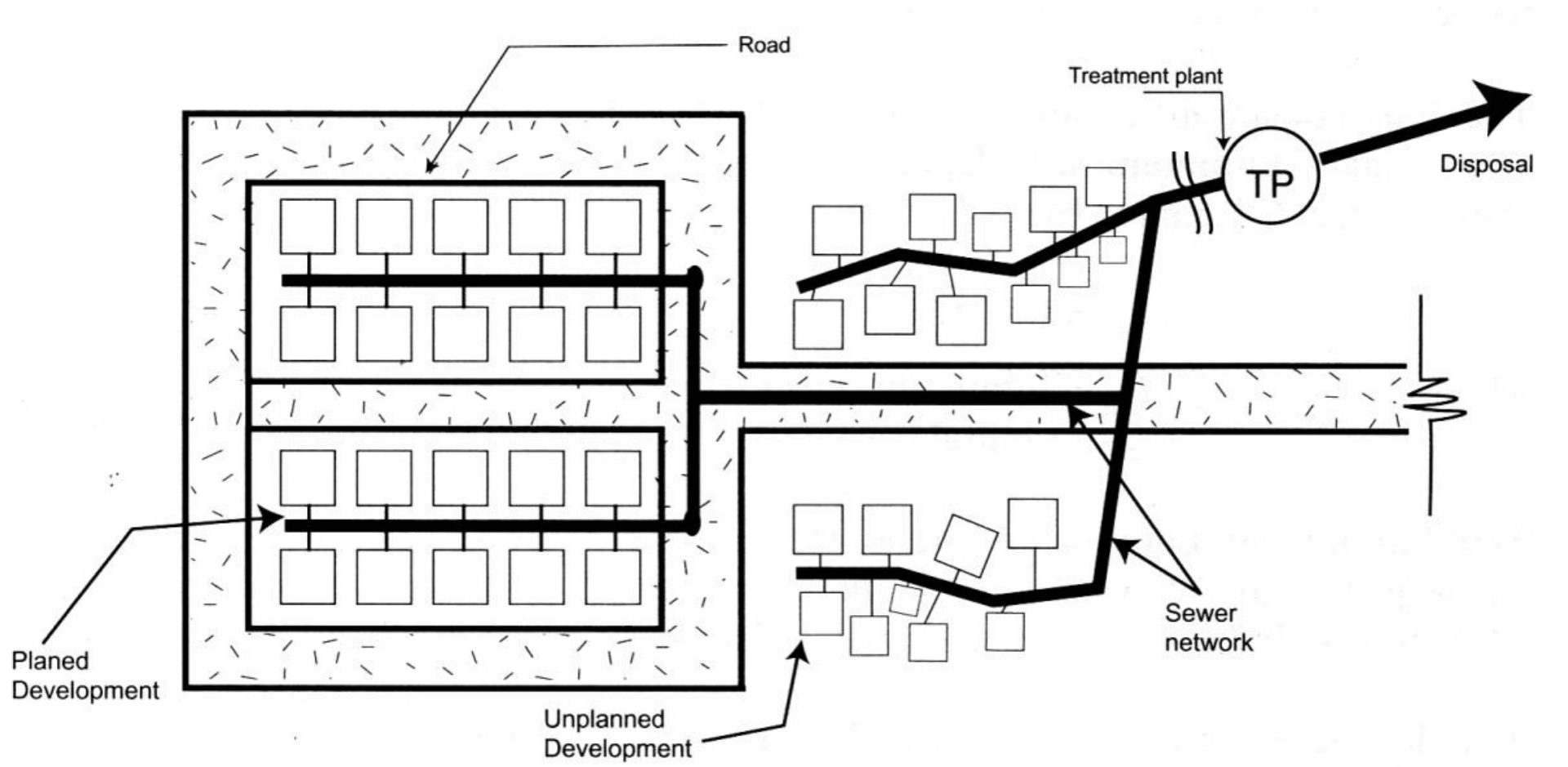
- Solid handling at the secondary treatment site is minimum.

- Rapid construction is possible because of lesser volume of excavation and fewer numbers of manholes to be constructed as requiring minimal inspection.

Simplified Sewerage (SS)

- Also called shallow sewerage
- Low-cost sanitation technology particularly suited to high-density, low-income urban areas in developing countries.
- Receives all household wastewater without settlement in solids interceptor tanks or septic tanks
- Similar to conventional sewerage, but without any of the latter's conservative design features

Simplified Sewerage (SS)



Design Standards of Simplified Sewerage

Changes in design standards for Simplified Sewerage System compared to the conventional sewerage system are in terms of –

- Minimum diameters,
- Minimum slopes,
- Minimum depths, and
- Spacing and location of manholes.
- Shorter design period

Design Standards of Simplified Sewerage

The changes were based on –

- findings of research in hydraulics
- satisfactory experience and redundancy
- development of a lower-cost sewerage system with smaller, flatter and shallower sewers with fewer and simpler manholes.