

# Civil Engineering Notes Sewerage System and Sewage Disposal

It is the system and infrastructure of collecting, treating and disposal of sewage. There are three types of sewerage systems.

1. Separate System
2. Partially Separated System
3. Combined System

## 1. Separate Sewerage System

In this system the sanitary sewage and storm water are carried separately in two sets of sewers. The sewage is conveyed to waste water treatment plant (WWTP) and the storm water is discharged into rivers without treatment. The separated system is suitable when separate outlet for storm water is available and the topography is such that storm water can be disposed of in natural drains.

### Advantages of Separate System

- The load on treatment plant is less as only sewage is carried to the plant.
- The size of sewer is small, thus economical
- When pumping is required, the system proves to be economical.
- Natural/storm water is not unnecessarily polluted by sewage.

### Disadvantages of Separate System

- Cleaning of sewer is difficult due to their small size.
- The self cleansing velocity is not easily obtained.
- The storm sewers come in operation in rainy season only. They may be choked in dry season by garbage.
- Maintenance cost is high
- Sewage sewers are provided below storm sewer which causes greater depth and pumping at waste water treatment plant (WWTP).

## 2. Partially Separate Sewerage System

This system is the compromise between separate and combined system taking the advantages of both systems. In this system the sewage and storm water of buildings are carried by one set of sewers while the storm water from roads, streets, pavements etc are carried by other system of sewers usually open drains.

### Advantages of Partially Separate Sewerage System

- It combines the good features of both systems.
- The silting is avoided due to entry of storm water.
- The storm water from houses is easily disposed off.
- The sewers are of reasonable size.

### Disadvantages of Partially Separate Sewerage System

A very small fraction of bad features of combined system are there in partially separated system.

### 3. Combined Sewerage System

In this system the sewage and storm water are carried combine in only one set of sewers to the waste water treatment. Plant (WWTP) before disposal.

#### Advantages of Combined Sewerage System

- Easy cleaning because of larger diameter
- Reasonable maintenance cost
- Strength of sewage is reduced due to dilution of sewage by storm water
- This system requires only one set of sewer making it economical

#### Disadvantages of Combined Sewerage System

- In storm season sewer may overflow and the sewer may damage causing serious health risks
- The combine sewer gets silted and becomes foul in dry days
- Load on treatment plant is more because storm water is also carried there
- The storm water gets polluted unnecessarily
- The system becomes uneconomical when pumping is needed