UNIT I

GENERATION OF WASTES AND CONSQUENCES OF SOIL POLLUTION

1.4 Failures of foundation due to waste movement.

Problems of waste movement

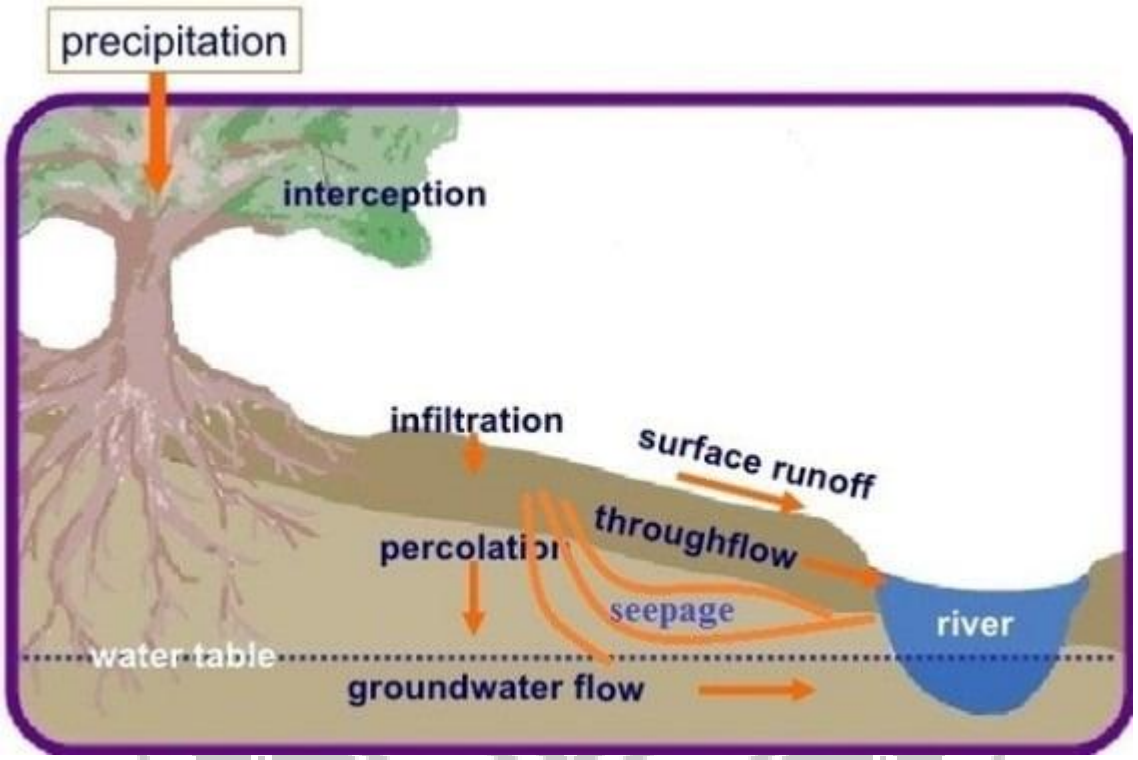
Failure of foundation – Reasons

Failure of foundation – Remedial measures

1.4 Failures of foundation due to waste movement.

Problems of waste movement

Water seepage and surface erosion are commonly cause problems in sandy soil. Internal erosion of soil occurs when groundwater seeps into the culvert or sanitary sewer system, which are damaged, and fine soil particles are carried along the movement of groundwater.



Failure of foundation

Reasons

Degradation of soluble components of industrial solid waste material due to water seepage is highly likely, and this lead to loss of soil beneath the foundation and eventually the structure might fail. Such undesired event may happen in mining subsidence areas. It is reported that water seepage has caused problems in areas where dry loose sand and loess soil.

Remedial measures

It is advised to compact such soil using heavy hammer in areas where the depth of such soil is less than 6m, and pile driving or blasting are advised for region where the depth of soil is greater than 6m.

With regard to surface erosion, it may occur due to the loss of material by flowing water or strong winds.

Fine sands, silts, and dry peats are types of soils which are susceptible to surface erosion caused by strong wind. This may undermine the foundation of the structure unless it is tackled properly by deepening the foundation to 0.3m and growing vegetation in the area or covering the surface using crushed stone, gravel, or clay soil.

As far as surface erosion caused by flowing water is concerned, this type of erosion can cause serious problem specifically in regions that are prone to heavy rainfalls. It is claimed that, ordinary depth of foundation, which is between 0.9 to 1.2m, is not sufficient to tackle such problem, so it is required to provide necessary drainage and paving or other surface protection technique. It is recommended to employ pile foundation in such cases to avoid foundation problems and subsequent failure of heavy structures.