TEACHING LEARNING MATERIAL

GANDHI SCHOOL OF ENGINEERING, BHABANDHA

BRANCH- CIVIL ENGINEERING

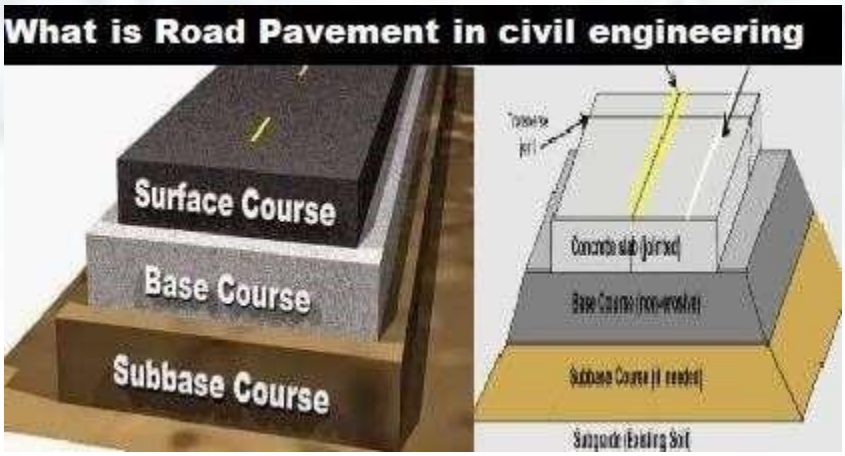
SUBJECT- HIGHWAY ENGINEERING

SEMESTER- 4TH

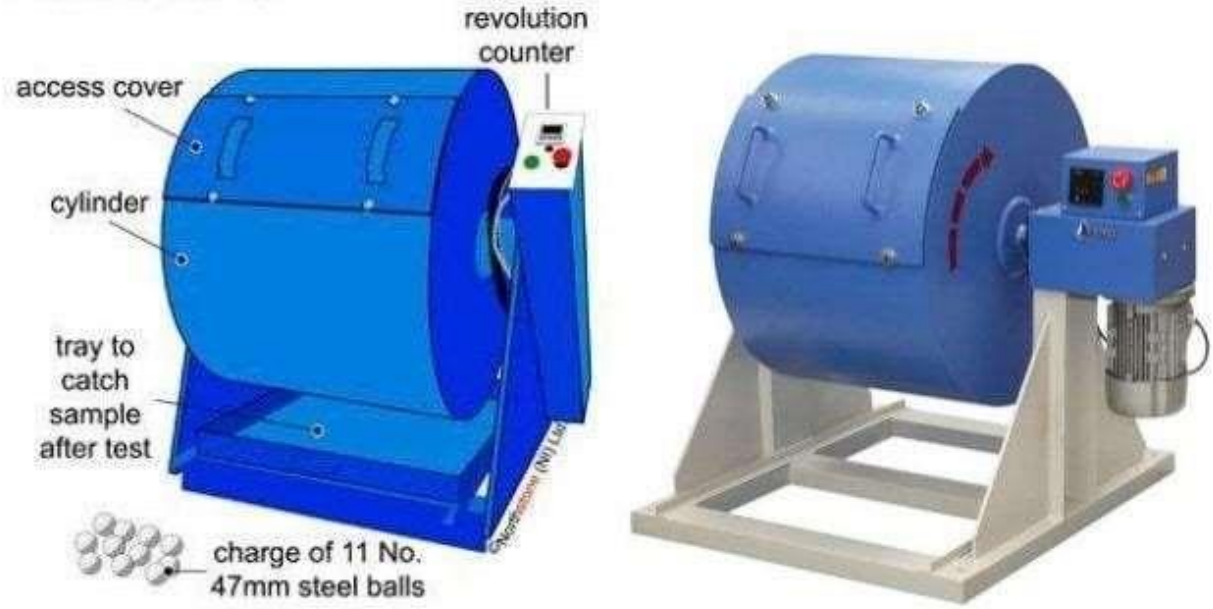
PREPARED BY- Er. SRIDHAR SAHU

Standards values of Road way width recommended by IRC (Indian Road Congress)

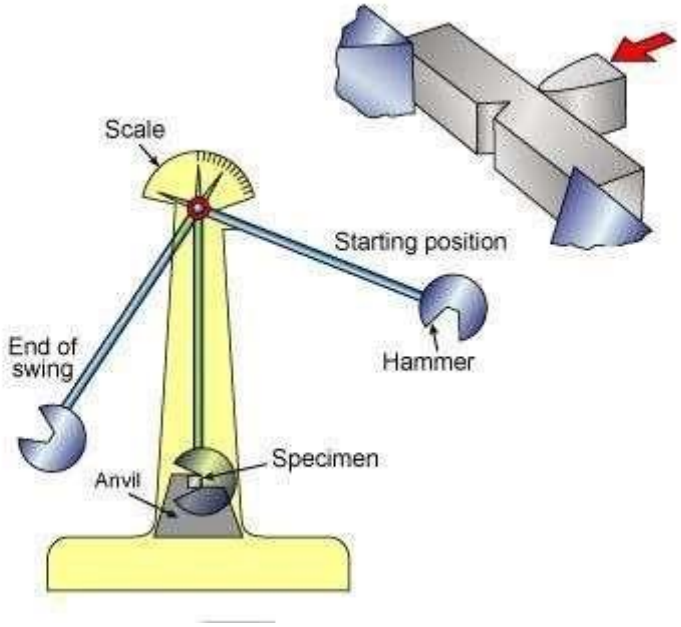
Sr no	Road classification	Plain & Rolling area	Mountainous & steep area
1	National highway & state highways i) Single lane ii) Two lane	 12.0m 12.0m	 6.25m 8.80m
2	Major district roads i) Single lane ii) Two lane	 9.0m 9.0m	 4.75m ----
3	Other district roads i) Single lane ii) Two lane	 7.5m 9.0m	 4.75m -----
4	Village roads – Single lane	7.5m	4.00m



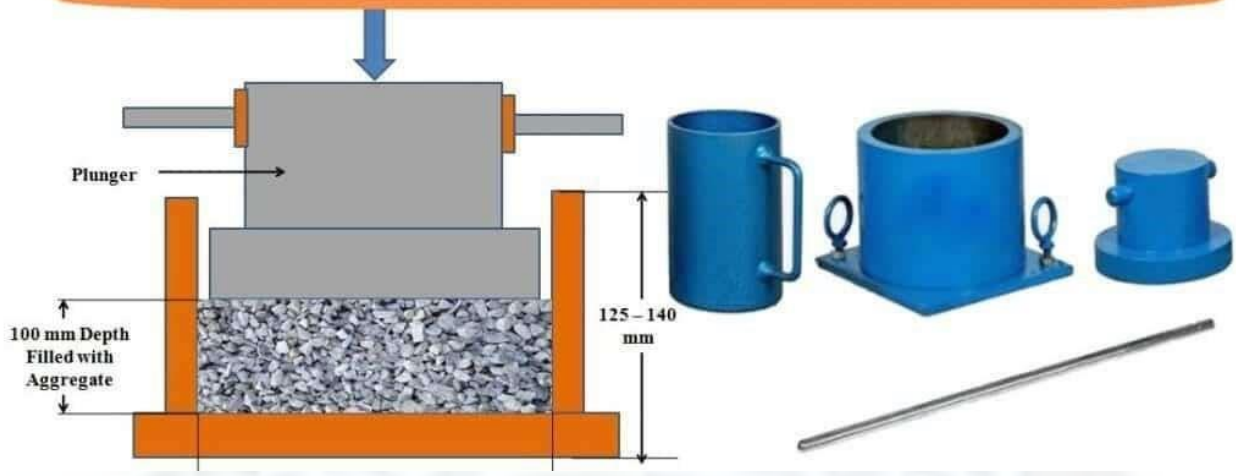
Los Angeles machine

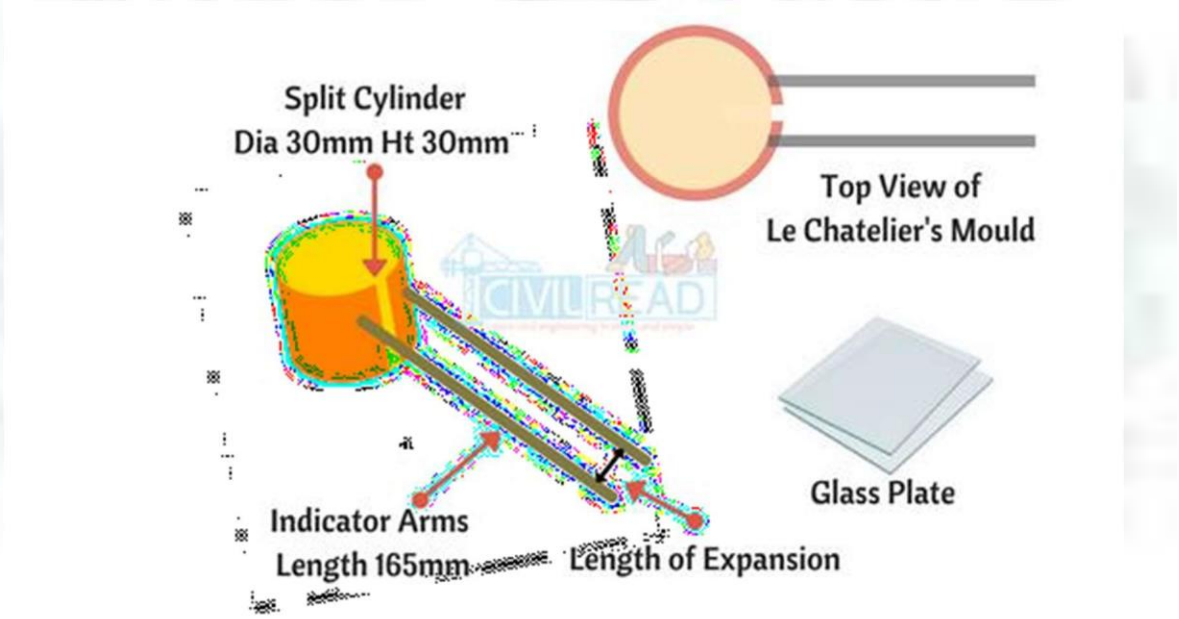


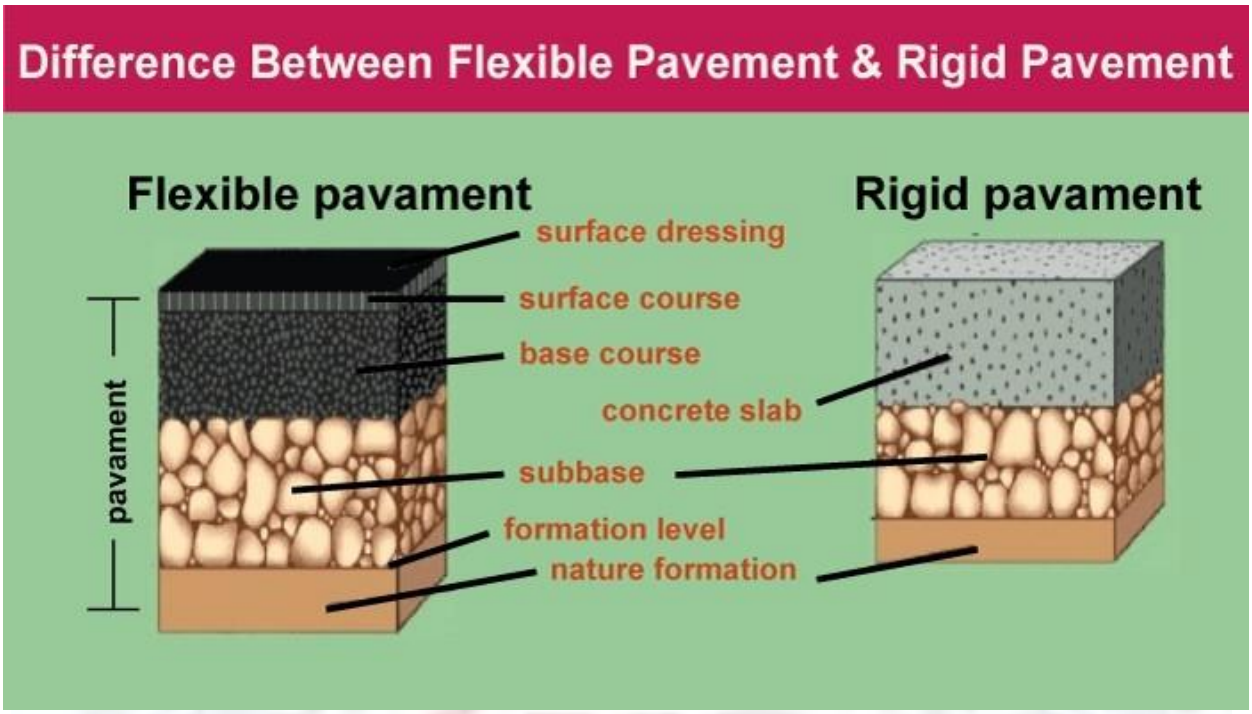
Los Angeles abrasion test setup



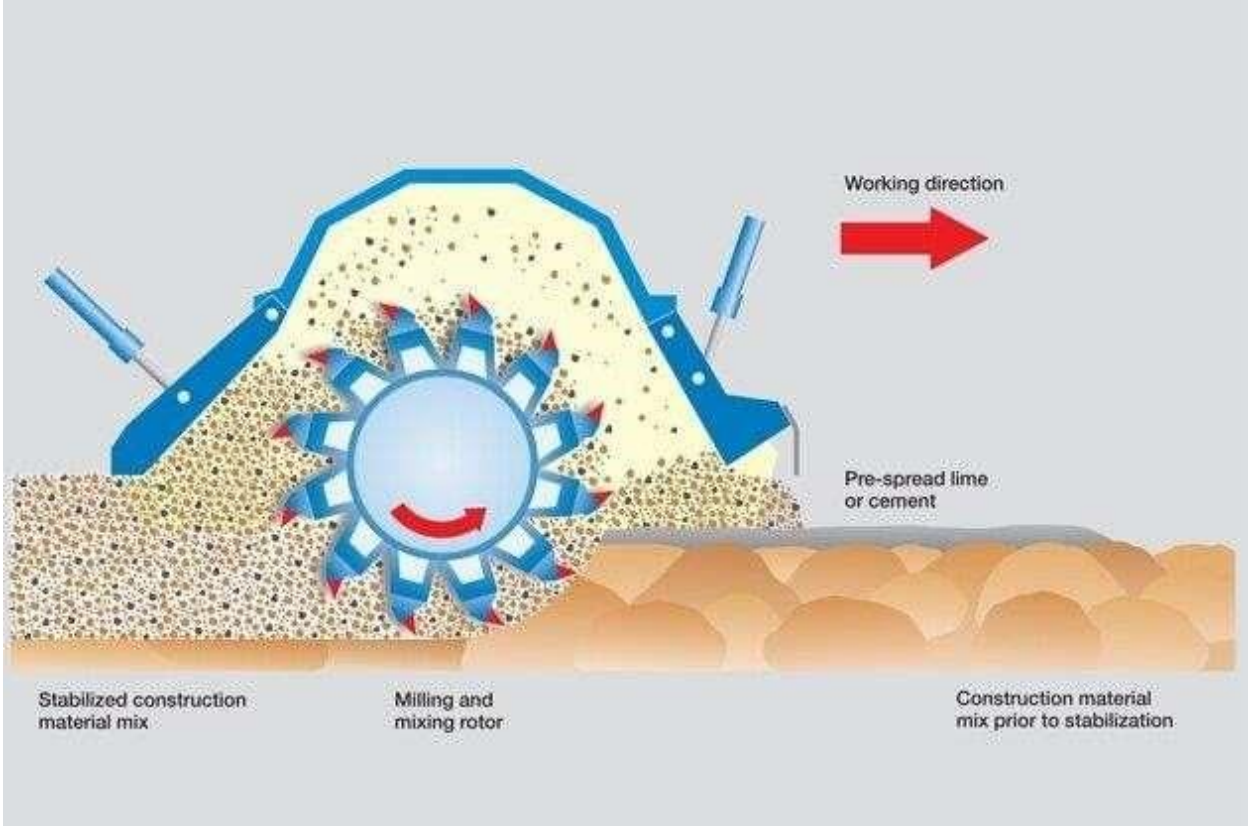
Aggregate Crushing Value Test Procedure






Difference Between Flexible Pavement & Rigid Pavement
Flexible pavament
Rigid pavament
surface dressing
surface course
base course
concrete slab
subbase
formation level
nature formation
pavament

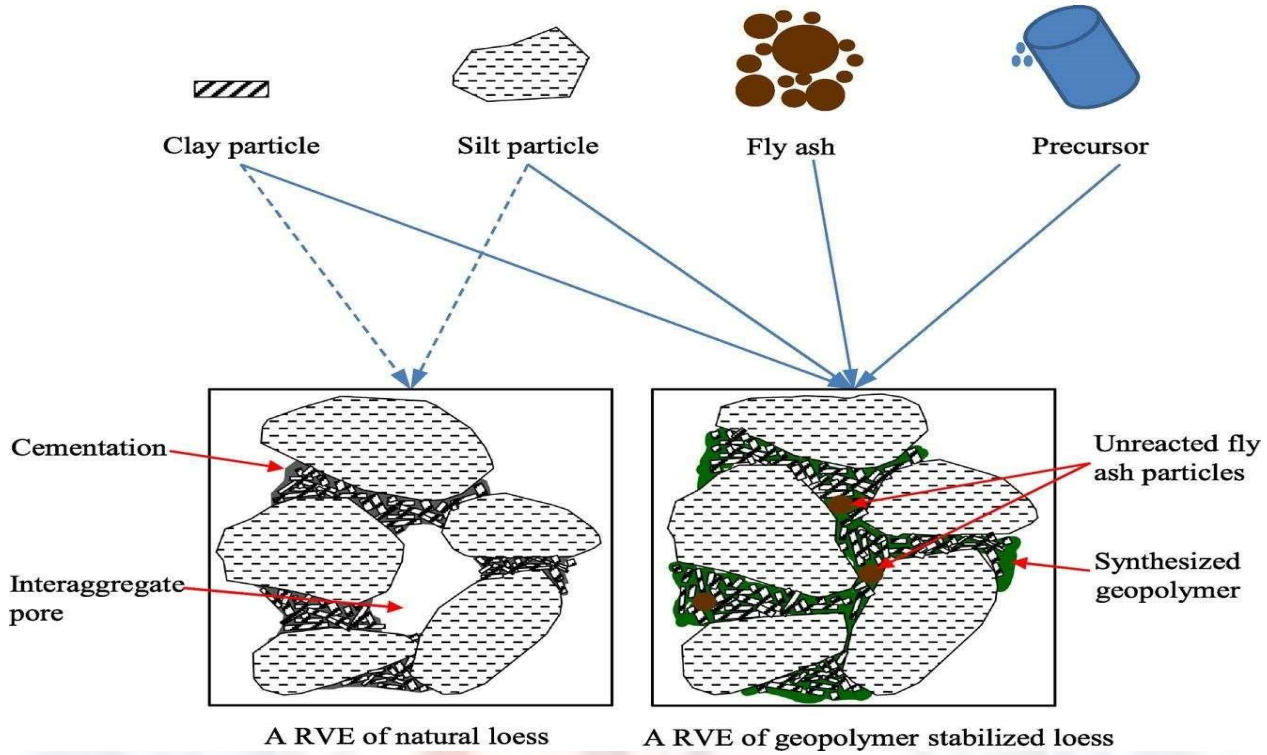

Mechanical Stabilization
Tensar
Geogrid interlocks with granular material and confines the particles at the base of the layer.
As more stone is placed and compacted, this confinement continues through the stone, resulting in a stiffer ballast layer with less particle movement.



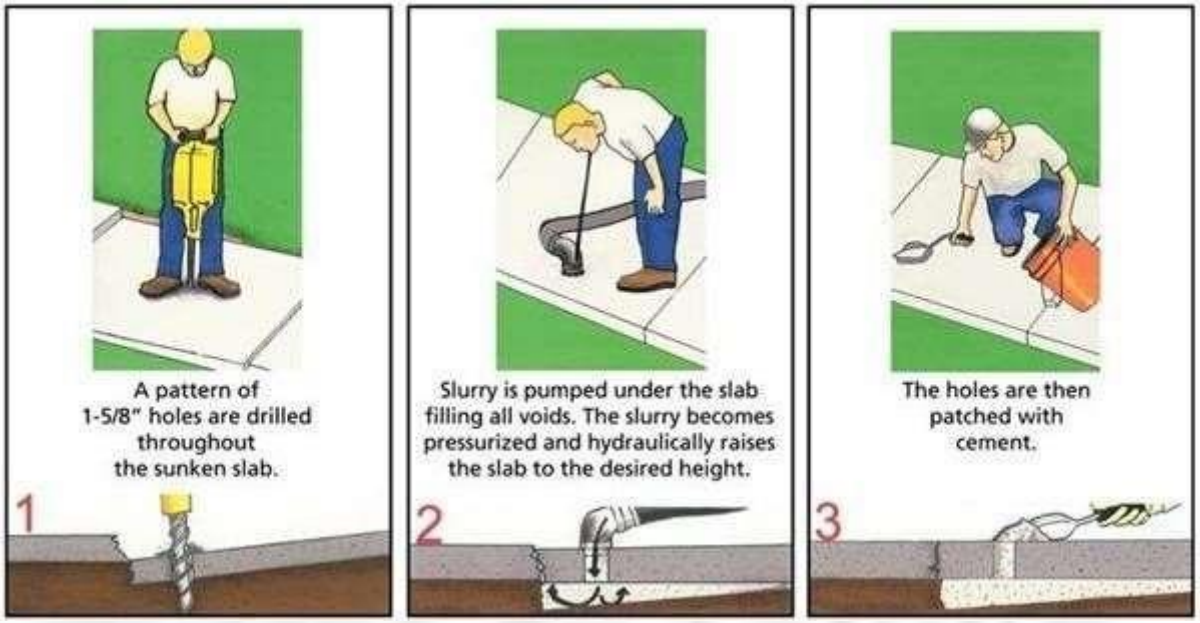
Lime stabilization

Cement Stabilization process

1.Excavation and spreading of material to the required layer thickness for stabilizing
2.Lime or cement spreading, with regular checks to control dosage
3.Mixing, to a depth depending on the soil and on the design requirements
4.Sealing the material, preventing carbonization of the lime while it reacts with the moisture in the soil. This involves trimming of the treated layer using bulldozers and passing over by a smooth roller
5.Allowing (or maturation) period - to allow time for the exothermic chemical reaction to take place between the lime and clay
6.Compacting the treated layer with a roller until required compaction is achieved.
7. Curing For 7 days minimum



Bituminous concrete



Grouting concrete

BREAST WALL

- Breast wall to is a structure stand off to protect freshly cut or old surface.
- Breast wall is provided to the uo side of the road in hilly area.
- Height of breast wall should not exceed 3m.

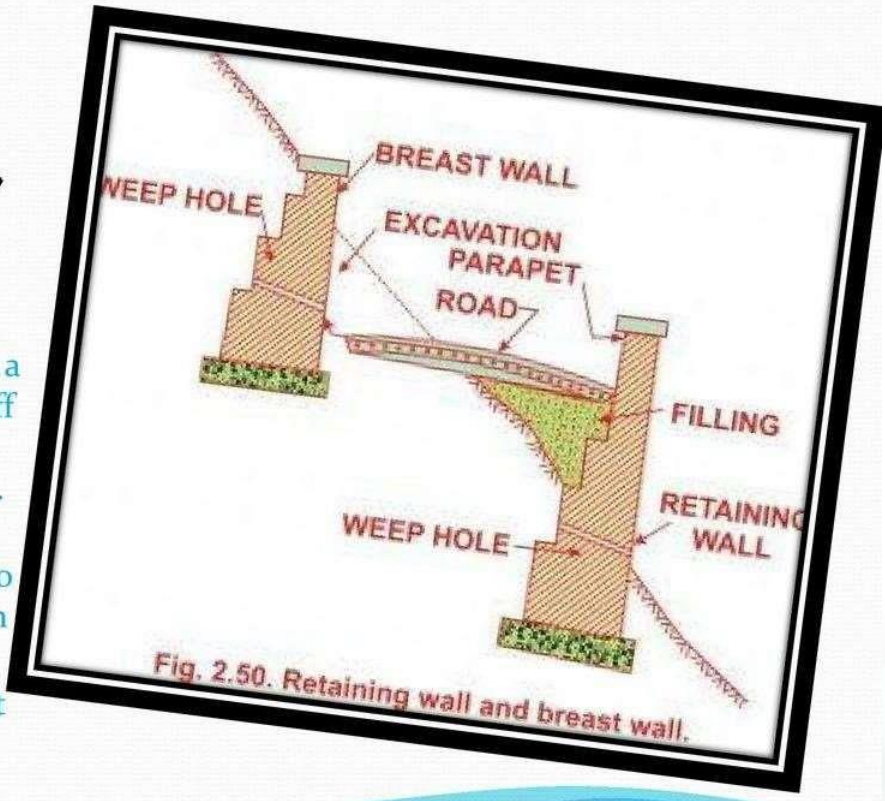
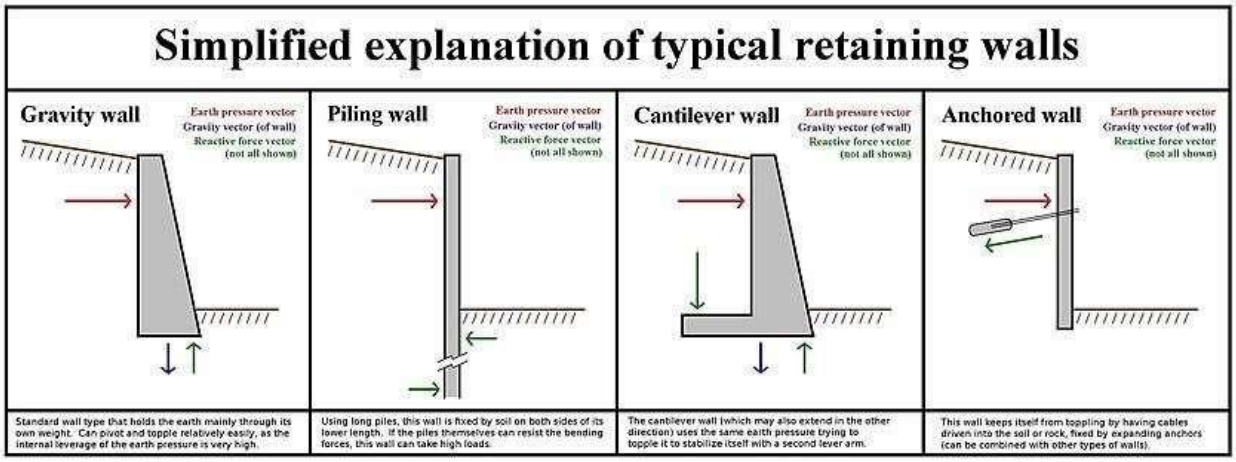
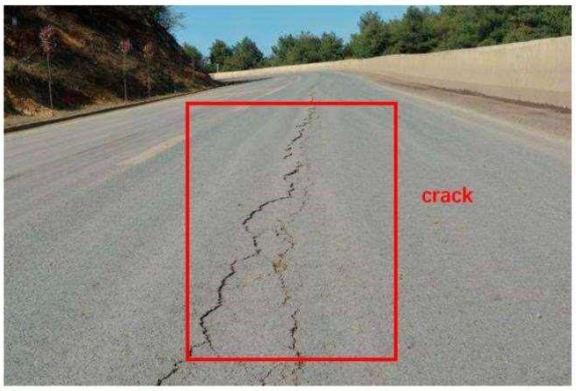


Fig. 2.50. Retaining wall and breast wall.

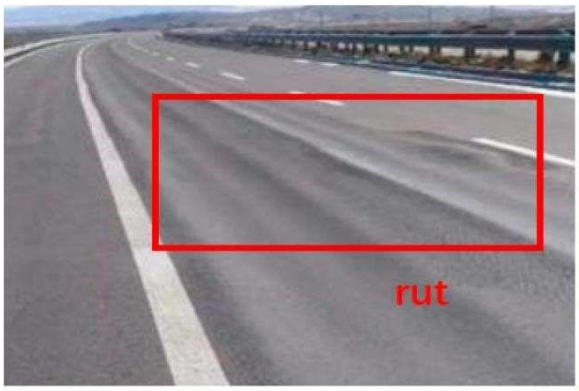


Hill roads

Road drainage



(a)



(b)

(c)

(d)

Common types of road failures