



Unit-I



Vehicle frame and suspension

Loads in frame members

- * Vertical bending
- * Longitudinal torsion
- * Lateral bending
- * Horizontal loading

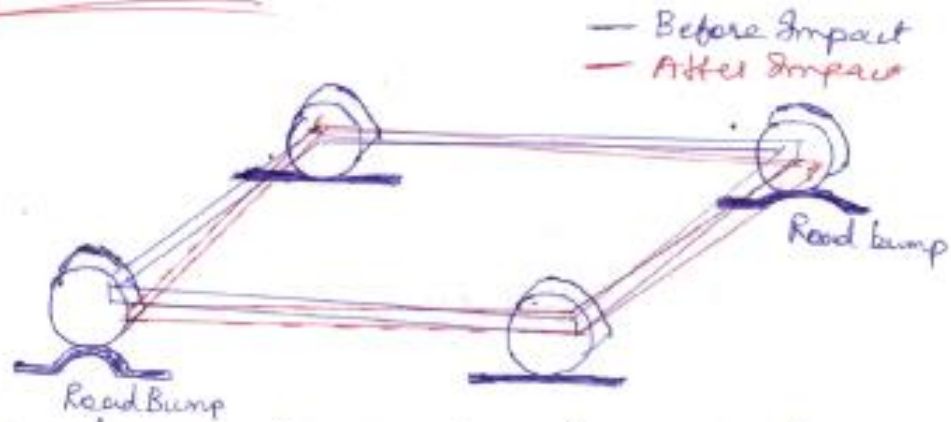
Vertical bending

* Considering a chassis frame is supported at its ends by the wheel axles and * Weight equivalent to the vehicle's equipment, passengers and ~~luggage~~ luggage is concentrated around the middle of its wheelbase.

* Then the side members are subjected to vertical bending causing them to sag in the central region.

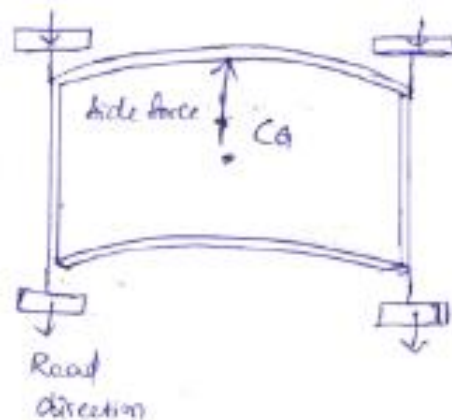


Longitudinal torsion



When diagonally opposite front and rear road wheel over bumps simultaneously, the two ends of the chassis are twisted in opposite directions, so that both the side and the cross members are subjected to longitudinal torsion which distorts the chassis.

Lateral bending





① → ②



* The chassis is exposed to lateral force that may be due to the camber of the road, side wind, centrifugal force while taking a corner, or collision with some object.

* The adhesion reaction of the road-wheel tyres opposes these lateral forces.

* As a net result a bending moment acts on the chassis side members so that the chassis frame tends to bow in the direction of the force.

Horizontal Laying

* A chassis frame if driven forward or backward is continuously subjected to wheel impact with road obstacles such as pot-holes, road joints, surface bumps and curbs while other wheel produces propelling thrust.





* These conditions cause the rectangular chassis frame to distort to a parallelogram shape known as lozenging

