



# **SNS COLLEGE OF TECHNOLOGY**

**Coimbatore-35**  
**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## **DEPARTMENT OF CIVIL ENGINEERING** **&**

## **CIVIL ENGINEERING PLANNING**

### **19CET 205 –HIGHWAY AND RAILWAY ENGINEERING**

**II YEAR– IV SEM**

**UNIT- IV - RAILWAY ENGINEERING - BASICS AND COMPONENTS**

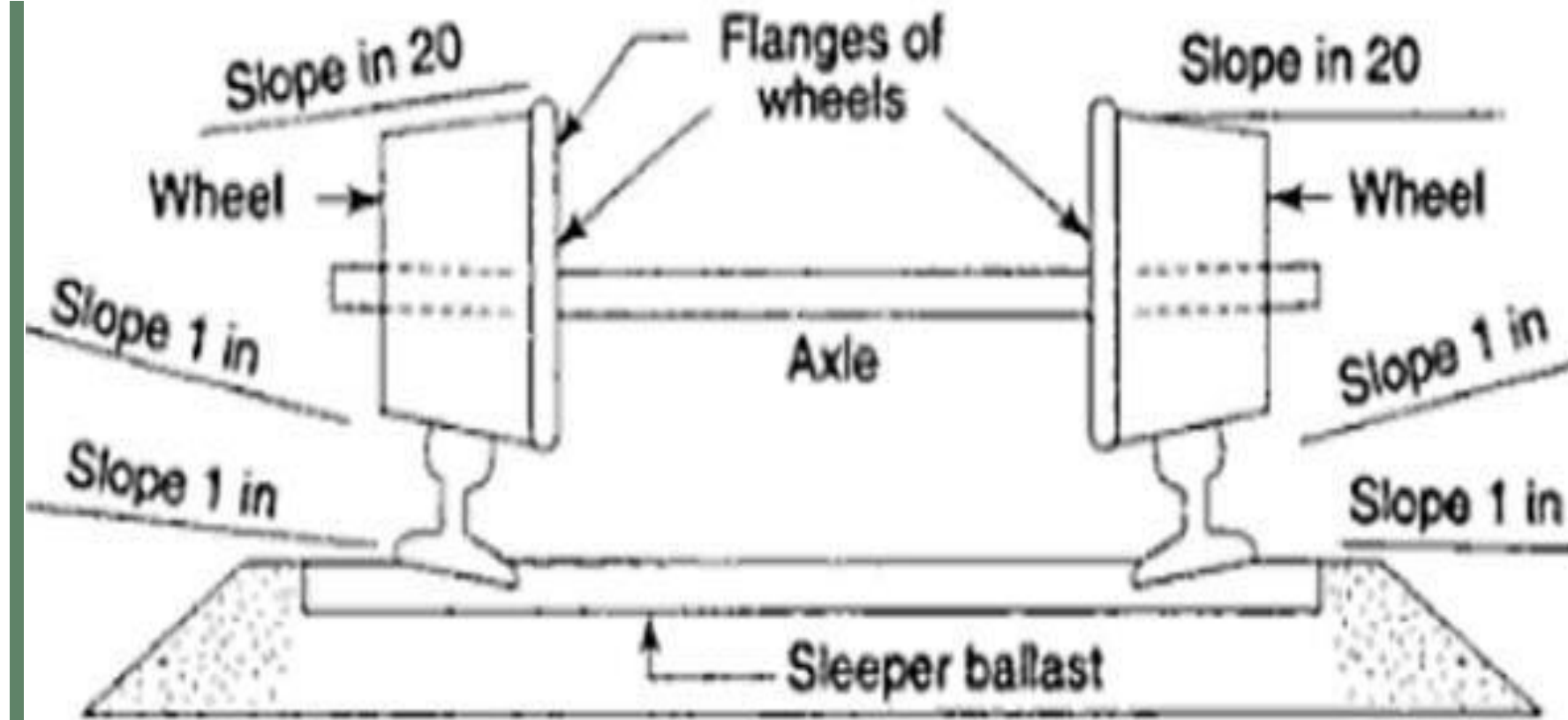
**TOPIC 3 : CONING OF WHEELS**





## CONING OF WHEELS

- ❖ The flanges of wheel is never made flat, but they are in the shape of cone with a slope of 1 in 20
- ❖ The coning of wheels is mainly done to maintain the vehicle in the central position with respect to the track

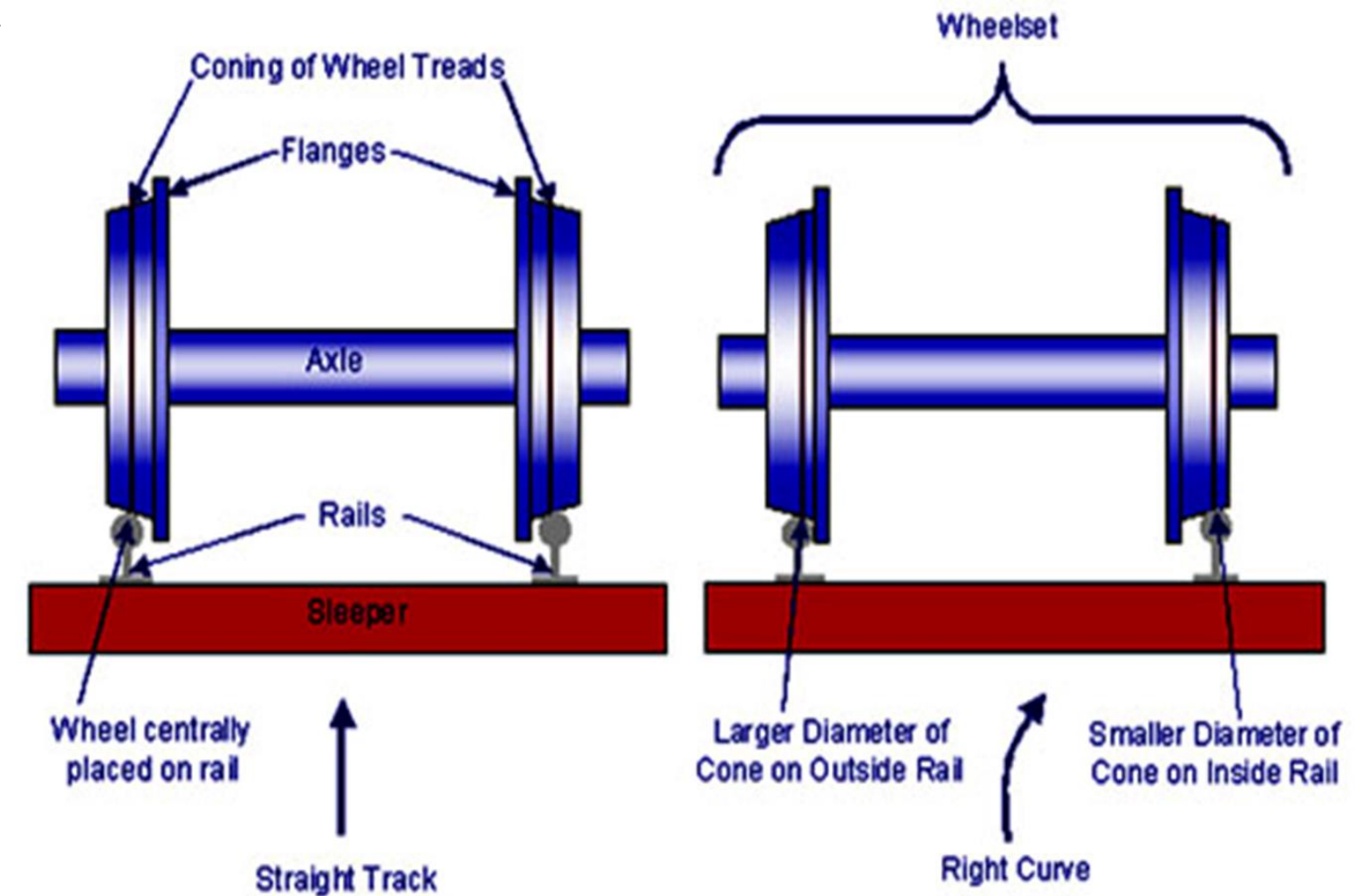




# ADVANTAGES OF CONING THE WHEELS

## DOUBLE HEADED RAILS

- ❖ To reduce wear & tear of the wheel flanges and rails, which is due to rubbing action of flanges with inside face of the rail head
- ❖ To provide a possibility of lateral movement of the axle with its wheels
- ❖ To prevent the wheels from slipping to some extent





## BEHAVIOUR OF CONED WHEEL

### At level surface

- ❖ Flanges of wheels have equal circumference
- ❖ Equal diameters on both rail
- ❖ Equal pressure on both rail

### At curves

- ❖ Outer rails has to cover great distance than inner rail
- ❖ Vehicle has tendency to move sideways towards outer rail
- ❖ Circumference of flange of outer wheel will be greater than that of inner wheel
- ❖ Helps the outer wheel to cover longer distance than inner rail



## DISADVANTAGES OF CONING

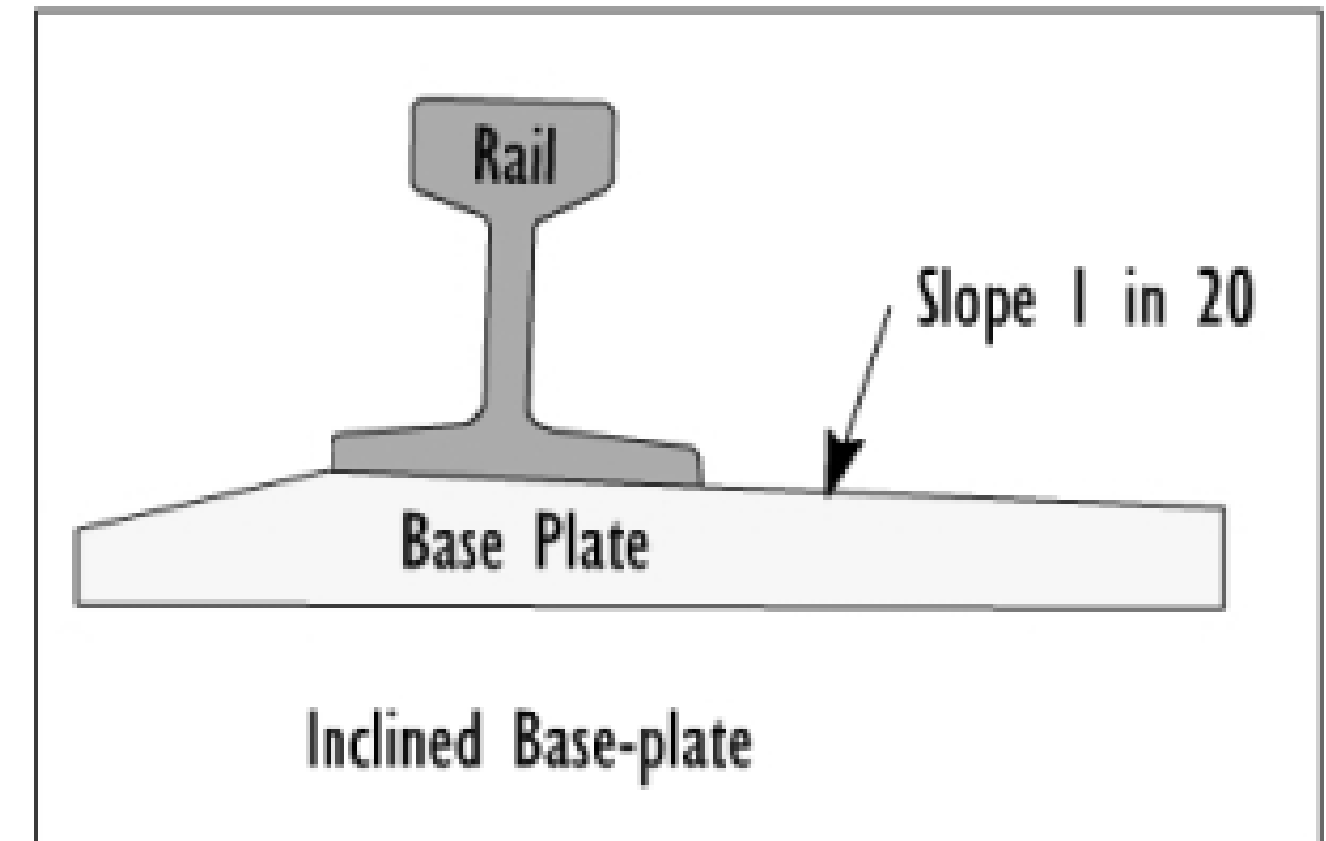
- ❖ Smooth riding is produced by coning of wheels. But the pressure of the horizontal component near the inner edge of the rail has a tendency to wear the rail quickly
- ❖ The horizontal component tends to turn the rail outwardly and hence the gauge is widened sometimes
- ❖ If no base plate are provided, the sleepers under the outer edge of the rail are damaged



## TILTING OF RAIL

### Advantages of flat footed rails:

- ❖ To minimize the disadvantages of coning
- ❖ Rails are tilted inwards
- ❖ Inclined base plates are used
- ❖ Slope of base plate is 1 in 20
- ❖ Advantages
- ❖ Maintains gauge properly
- ❖ Wear of the head of rail is uniform due to tilting of rails
- ❖ Increase life of sleepers as well as rails





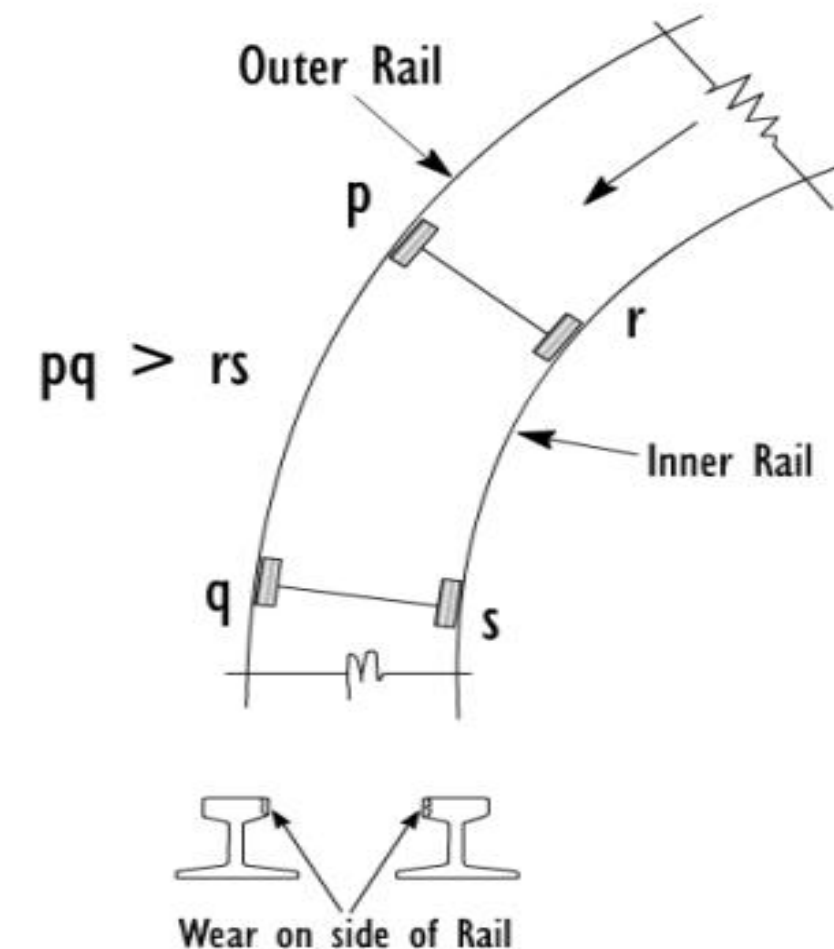
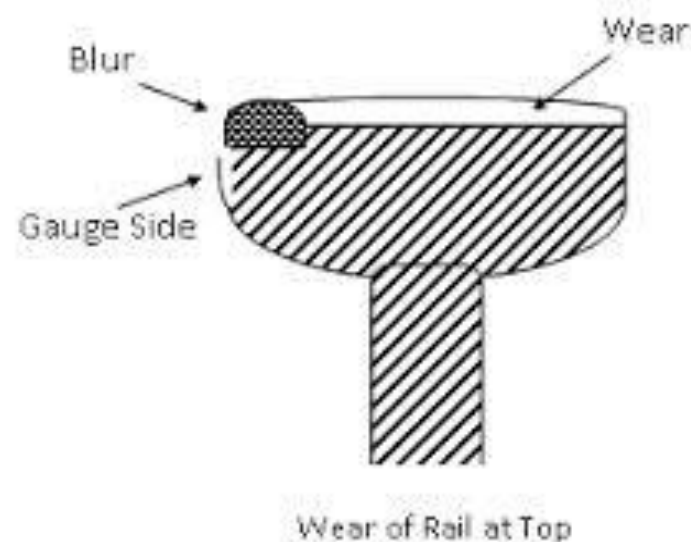
# RAILS: FUNCTIONS, TYPES OF RAIL SECTIONS, LENGTH OF RAILS



## WEAR ON RAILS

The moving of number of wheels of train on rail cause wear on rails  
Depending on location wear of rail can be:

- ❖ Wear of rails on top or head of rail
- ❖ Wear of rails at ends of rail
- ❖ Wear of rail on the sides of head of rail





## References



- <https://nptel.ac.in/courses/105/101/105101006/>
- <https://nptel.ac.in/courses/105/106/105106151/>

*Thank You*