CONSTRUCTION & MAINTENANCE OF TRACK

CONSTRUCTION TRACK

- **a. Land acquisition**

a. Land acquisition

✓Area required for single line considering future expansion.

✓Width of the formation & side slope (2:1)

✓Cost of the land

✓Land for station yard, level crossing, bridge approaches and related facilities

✓Land acquisition is done with the help of state government based on land acquisition act by giving a notice and paying compensation.

b. Earthwork

✓Depending on the contour of the formation.

✓The height of the highest flood level of the area with free board is fixed as height of formation.

The minimum widths of formation recommended for different gauges are shown in table

Gauge	Minimum width of embankment in cm		Minimum width of cutting in cm		Remarks
	Single	Double	Single	Double	
Broad Gauge (B.G)	610	1082	549	1021	122 cm extra width is to be provided in case of the formation in cutting for the side drains.
Metre Gauge (M.G)	488	884	427	827	
Narrow Gauge (N.G)	370	732	335	701	

c. construction of bridges or culverts





c. construction of bridges or culverts

- ✓Depending on type of crossing, topography and number of lines a culvert or bridge is decided.
- ✓Bridges should be constructed to accommodate double line traffic.

d. *Construction of station building*

✓Location of a station building should be on a straight path.

✓All the facilities for station building should be made available.

e. Construction of staff quarters & other amenities

✓High priority is given.

✓Passenger amenities such as toilets, waiting hall & retiring room are to be provided.

✓Ancillary facilities like water, drainage, telephone line and electricity should be made available.

f. Plate Laying

✓The process of laying and connecting up of the rails and sleepers on the prepared formation is called plate laying.

✓The point from where the laying is commenced is called base.

✓The point up to which new track has been laid is known as rail head.

✓The progress of day's work is the distance between rail head and base.

Methods of plate laying

i. Tram line or side method

ii. Telescopic method

iii. American method

i. Tram line or side method

✓In this method, a temporary line known as a tram line is laid by the side of the proposed track for transporting track material to the site.

✓This method can be useful in flat terrains.

✓A modification of the above method, called side method, is also in practice, where track and bridge material such as steel girders and RCC slabs is carried to the site in trucks on a service road that runs parallel to the track.

✓These materials are then unloaded near the work site.

✓This method is used only in cases where the terrain is comparatively flat.

ii. Telescopic method

✓This method is widely used on Indian Railways. In this method, the rails, sleepers, and other fittings are taken to the base depot and unloaded.

✓The track material is then taken to the rail head and the track is linked and packed.

This method has three main operations

- ❑Unloading and preparation of materials
- ❑Linking of track
- ❑Packing of track

iii. American method

✓In this method, rails and sleepers are first assembled in the base depot, and the preassembled track panels are then conveyed to the site along with the necessary cranes, etc.

✓The track panels are then unloaded at the site of work either manually or with the help of cranes and laid in their final position.

✓This procedure is used in many developed countries, particularly where concrete sleepers are laid, which are quite heavy and not very easy to handle manually.

MAINTENANCE OF TRACK

Necessity of track maintenance.

The railway track should be maintained properly in order to enable trains to run safely at the highest permissible speeds and to provide passengers a reasonable level of comfort during the ride.

Track maintenance becomes a necessity due to following reasons.

- ✓Due to the constant movement of heavy and high-speed trains, the packing under the sleepers becomes loose and track geometry gets disturbed.
- ✓Due to the vibrations and impact of high-speed trains, the fittings of the track come heavy wear and tear of the track and its components.
- ✓The track and its components get worn out as a result of the weathering effect of rain, sun, and sand.

Railway tracks can be maintained either conventionally by manual labour or by the application of modern methods of track maintenance such as mechanical tamping or measured shovel packing.

Conventional methods:

As per the timetable or calendar, the 12-month cycle of maintenance consists of the following operations.

(a) Through packing
(b) Systematic overhauling
(c) Picking up slacks

(a) Through packing

Process in through packing

- ✓Opening of road
- ✓Examining of rails, sleepers and fastenings
- ✓Examining Squaring of sleepers
- ✓Check for alignment
- ✓Check for the gauge of the track
- ✓Tolerance for gauge error was 6mm for straight tracks

(b) Systematic Overhauling

✓The systematic overhauling of the track should normally commence after the completion of one cycle of through packing.

It involves the following operations in sequence.

✓Shallow screening and making up of ballast section

✓ Replacement of damaged or broken fittings

✓All items included in through packing

✓Lubrication of rail joints