	VIDYAPRATISHTHAN'S KAMALNAYAN BAJAJ INSTITUTE OF ENGINEERING & TECHNOLOGY, BARAMATI 2019-20
	DEPARTMENT OF CIVIL ENGINEERING
	<b>VISIT REPORT</b>

<b>Name of Site:</b>	Baramati Railway Station
<b>Class:</b>	TE Civil
<b>No. of Participants:</b>	60
<b>Date of Visit:</b>	16 July 2019
<b>Subject</b>	Infrastructure Engineering
<b>Coordinator</b>	D. G. Patil





➤ **AIM:-** To study different aspects and components of Railway Engineering.

➤ **INTRODUCTION :-**

The Department of Civil Engineering of Vidya Pratishthan's KamalNayan Bajaj Institute of Engineering and Technology, Baramati organized educational visit to 'Baramati Railway Station, Dist.- Pune for T.E. Civil Engineering students to study different aspects of Railway Engineering. Visit was organized as per Pune University guidelines and recommendations regarding syllabus of IECT for T.E Civil Engineering.

Station Master sir kindly permitted us for Visit and guided very well during the visit by explaining and showing every Part and operation.

Students left the VPKBIET Campus for visit on 26 July 2019 at 1.30 pm. Students carefully studied and observed the different Parts of Railway Track, Rails, Sleepers, Ballast, Station and Points, Crossings, Turnouts with their operations.

Site visit is very successful. Students could study different components of Railway and could see different operations such as Changing of Track and applying brakes etc. It is very helpful to correlate theory and practical applications.

We are extremely thankful to our honourable Principal Dr. R. S. Bichkar for permitting us for this site visit and constant encouragement.

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### **Questionnaire:**

1. Explain with neat labeled diagram- Coning of wheels and Tilting of Rails.
2. Define Gauge and explain its types.
3. Explain functions of Rails, Sleepers & Ballast.
4. Explain types of sleepers.
5. Explain different rail fastenings.
6. Explain short and Long welded rails.
7. Define points and crossings. Draw neat labeled diagram of turnout.
8. What are the ill effects of Rail joints and their remedial measures?
9. What is track maintenance? Explain in brief concept of Directed Track Maintenance(DTM).
10. How the maximum permissible speed on Transition Curves is determined by Indian Railway Formula.
11. Explain Grade compensation on Curves.
12. Explain types of crossings and Turnouts.
13. Explain different methods to reduce wear of rails.
14. Explain the following terms.
  - a) Tongue Rail
  - b) Stock Rail
  - c) switch

### **References:**

1. <https://nptel.ac.in/courses/105107123/> NPTEL Course on Railway Engineering
2. <https://ircep.gov.in/>
3. <http://indianrailways.gov.in/>

### **Topics studied:**

#### **1. Turnout**



FIGURE NO. 1 RAILWAY CROSSING AT BARAMATI RAILWAY STATION

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A complete set of points and crossing along with a lead rail is known as turnout. If the train is diverted to the right hand side, it known as right hand turnout. On the other hand if the train is diverted to the left hand side, it is known as left hand side turnout.

Turn out At Baramati station, there are two turnouts. In which one is operated by physical method and other by electrically operated mechanism.

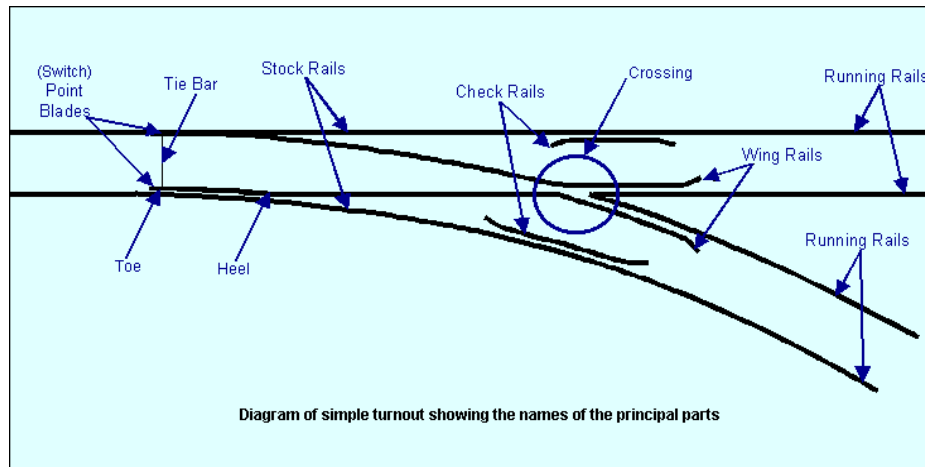


FIGURE NO. 2 SIMPLE RIGHT HAND TURN OUT SHOWING COMPONENTS

- **Component parts of turn out :**
- **Check Rail:** To prevent the tendency of wheel to climb over the crossing rail lengths are provided on opposite side of the crossing.
- **Tongue Rail:** These are tapered rails.
- **Lead Rail:** They are the rail which lead the track from heel of the tongue rail to the toe of the crossing.
- **Switch:** It consist of tongue rail and stock rails.

## 2. Permanent way.

- **Component parts of permanent way:**
- **Rail gauge:-** The clear horizontal distance between top of the inner faces of two rails on the railway track is called as "rail gauge".



FIGURE NO. 3 GAUGE DISTANCE OF PERMANENT WAY

The Common Gauges Used By Indian Railways:

- 1) Broad Gauge (B.G.) 1.676m
- 2) Meter Gauge (M.G.) 1m
- 3) Narrow Gauge (N.G.) 0.61 m

At Baramati station there is a use of Broad gauge having gauge distance of 1.676 m because it has capacity of carrying more people and more goods.

- **Rails:** The trains run on the vertical I-sections made up of steel and these sections are called as rails. The rails are fixed with each other by means of rail fastenings and are rested on sleepers which are laid in right angles to them. The rail section consists of three components viz. head, web, and foot.

Depending upon these three components of rail section, there are three types of rails.

- 1) Double Headed 2) Bull Headed 2) Flat Footed

**3) Rail fastenings:** Rail fastenings are the tools which are used to connect rails to sleepers, joining one rail to other rails.

Types Of Rail Fastenings

- Fish Plates • Spikes • Bolts • Chairs And Keys • Bearing Plates



FIGURE NO.4 RAILWAY FIXTURES AND FASTENING

- **Sleepers**

Railway sleeper is a rectangular support for the rails in railroad tracks. Generally laid perpendicular to the rails, ties transfer loads to the track ballast and sub grade, hold the rails upright, and keep them spaced to the correct gauge.

- 1) Cast iron sleepers
- 2) Concrete sleepers

In Baramati concrete sleepers are used because they are economical.

- **Ballast:** The material placed in-between the sleeper and the top of the formation is known as ballast. The load from wheels of train ultimately comes to ballast through rails and sleepers. it is a foundation of railway track and it is placed just below the sleepers.



FIGURE NO. 5 RAILWAY BALLAST AND SLEEPERS

- **Students Feedback-**

It is very important to study different aspects of civil engineering by visiting the sites hence our department arranged successful site visit to railway station.

In this visit we have studied and observed different components of railways and its technical importance. We learnt a lot from this visit about points and crossing, railway gauges and types of fixtures and fastenings.

We are extremely thankful to our Prof. D.G. Patil who kindly guided students and demonstrated all the operations.