

OFFICE OF THE VC.
 Inword No. 09
 Date 14/10/25
 Time 6:50 PM

Proposal for Industrial Visit

Department of Civil Engineering (SoET)

Visit to Engipress Industries Limited, Banmore, Gwalior

1. Introduction

The Departments of Civil Engineering (SoET) propose to organize an industrial visit to Engipress Industries Limited, Banmore, Gwalior, a reputed manufacturer of prestressed concrete (PSC) sleepers for railway tracks.

The visit aims to provide students with practical exposure to the manufacturing process, design principles, and quality control measures involved in the production of prestressed concrete sleepers, which are a vital component of railway infrastructure.

2. Details of the Visit

- **Industry Name:** Engipress Industries Limited
- **Location:** Banmor, Gwalior, Madhya Pradesh
- **Proposed Date:** 16 October 2025
- **Participating Branches:** B.Tech Civil Engineering & Mechanical Engineering
- **Year of Study:** II, III and IV Year
- **Number of Students:** 45 (approx.)
- **Faculty Coordinators:**
 - Farhan Ul Rahman
 - Shashank Gupta

3. Objectives of the Visit

1. To understand the manufacturing process and technology used in the production of prestressed concrete sleepers for different railway gauges.
2. To observe the mechanical systems, materials, and quality control procedures involved in the prestressing and casting process.
3. To relate theoretical knowledge of structural engineering to practical applications in the railway sleeper manufacturing industry.

4. Expected Outcomes

After completion of the visit, students will be able to:

1. Describe the step-by-step manufacturing process of prestressed concrete sleepers.
2. Explain the importance of prestressing in enhancing the performance and durability of sleepers.

Note ① One bus is required at 9:30 AM and come back till 2:30 PM
 ② Uploaded on Babarath (attached)

Submitted for kind approval
 Dean, Academics - I

Farhan
 14/10/2025

Hon'ble VC Sir

For approval pl.
 'A'

14/10/2025

APPROVED
 14/10/25

INDUSTRIAL VISIT REPORT ON
ENGI PRESS PRIVATE LIMITED
PRE-STRESSED CONCRETE SLEEPER FACTORY
AT MORENA



NIRMAN CLUB
DEPARTMENT OF CIVIL ENGINEERING



INDUSTRIAL VISIT REPORT ON PRE-STRESSED CONCRET SLEEPER FACTORY AT SHANICHARA,MORENA

DETAILS OF INDUSTRIAL VISIT:-

I.T.M UNIVERSITY has organized Industrial visit for B. Tech-Civil Students on 16/10/2025 to ENGI PRESS PRIVATE LIMITED(PRE-STRESSED CONCRETE FACTORY) at Shanichara, Morena.

The visit was organized by Mr. Farhan Ul Rahman and Mr. Shashank Gupta

COMPANY PROFILE:-

‘ENGIPRESS INDUSTRIES PRIVATE LIMITED’

Manufacturing Pre-Stressed Concrete Sleepers, Concrete Elements, Services for Government Contracts.

INDUSTRY:-

Railroad Equipment Manufacturing

COMPANY SIZE:-

Approximately 50 employees

OBSERVATIONS DURING VISIT:-

This Industrial visit is very helpful in our future practical, got practical knowledge about the advanced machines. Student observed & understood what is tendons in actual & its functions.

Tendons are group of steel wires bundled together as a unit. This wires develop stress in concrete (by means of pretension or post tensioning) before the concrete is subjected to service load. A tendon is basically a steel cable or wire used in Prestressed Concrete structural elements like beam, column etc.

Student observed that and learn that what is Pre -Tensioning Process of pre -stressed concrete Railway sleeper

PRE-TENSIONING:-Method of prestressing in which stresses induced before casting of concrete

SYSTEM OF PRE-TENSIONING

Hoyer's Method

Individual Method



Forms of Pre-Stressing Steel wires-single unit made of steel strands

Sleeper Pre-stressing

The display shows readings in kilo newtons, which is the standard unit of force or tension being applied.

Key Terms and Values

- Tension (Wider Base Jack/Turn Out Jack): This refers to the Tensioning Machine or Jack used to pull the steel tendons or wires. These components are critical for applying the force needed for pre-stressing.
- ACT.PRESSURE: The Actual Force/Pressure currently being exerted by the jack. The image shows a value of 433.0kN. This is the force applied to the steel tendons before the concrete sets.
- PEAK LOAD: The Maximum Force achieved during the tensioning operation. The display currently shows, suggesting the operation might be paused or reset.

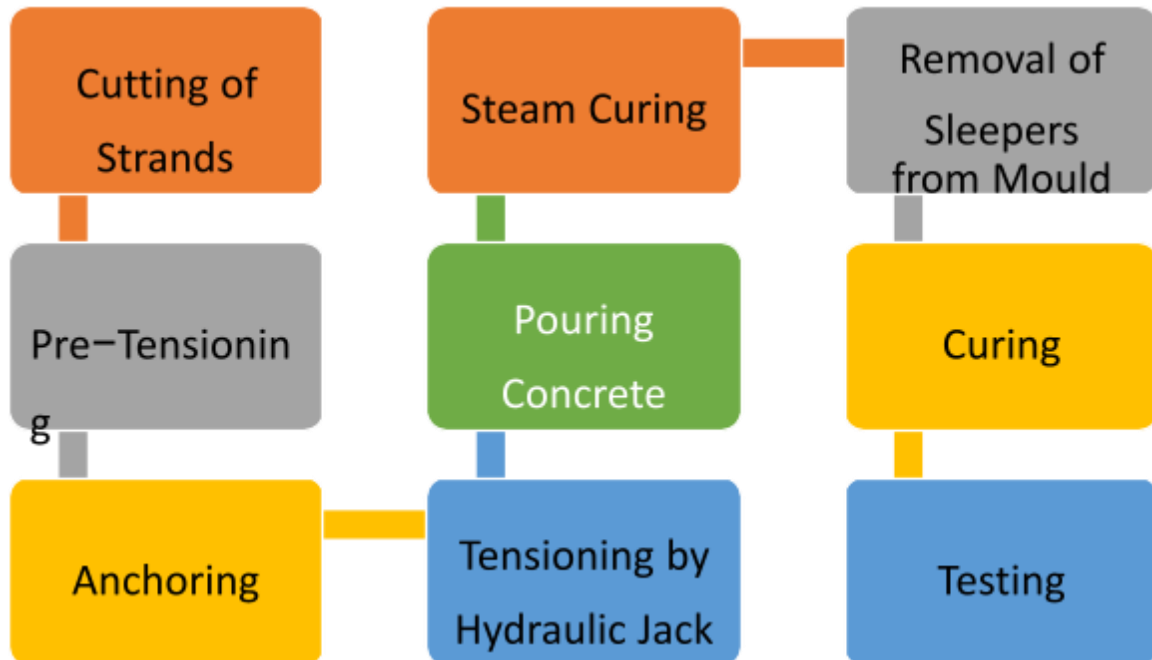
Purpose of Tensioning

1. **Introduce Compressive Stress:** The steel tendons are pulled to a high force (like 433.0kN) and held while the concrete cures. When the tension is released, the steel tries to shorten and is bonded to the concrete.
2. **Counteract Track Loads:** This action imparts a permanent compressive force into the concrete sleeper. This pre-compression is necessary to prevent the concrete from cracking when the sleeper is subjected to the large tensile forces generated by railway wheel loads (train traffic) and track bending once in service



3. **Durability:** The pre-stressing force ensures the sleeper remains strong and durable throughout its service life by eliminating tension cracks under normal operating conditions.

PROCESS & CASTING OF PRE-STRESS RAILWAY SLEEPER BY M60 GRADE OF CONCRETE & MAX PRE-STRESSING FORCE IS ABOUT 260 KN.



❖The steps involved in the manufacturing of concrete sleepers are as follow:

1. Preparing Moulds:

The initial stage of production of sleepers is to make ready moulds. For manufacturing sleepers for the first time it is necessary to make the moulds into required shapes and sizes. First clean and ready moulds that are used for the casting of concrete.

Lubrication is done on the inner sides of moulds, so this reduces or avoids sticky action of concrete towards moulds.

2. Pre-tensioning of strands:-

After cleaning and lubrication of moulds, strands or cables are cut into the required shape and inserted into the moulds. These strands are fixed at both ends using anchors. Now, these strands are tensioned using a hydraulic jack, then anchors are tightened until the required stress is attained.

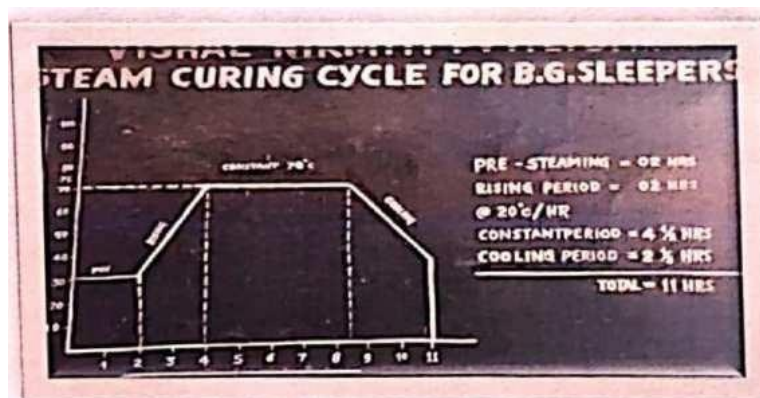
3. Concreting:-

Concrete is premixed and poured into the moulds, and then table vibrators are used for proper compaction of concrete and to fill the required shape with even distribution of mix.

4. Steam curing:-

The molds with the concrete are to be cured in steam for at least 11-12 hours.

This technique allows concrete to gain early strength and consistency.



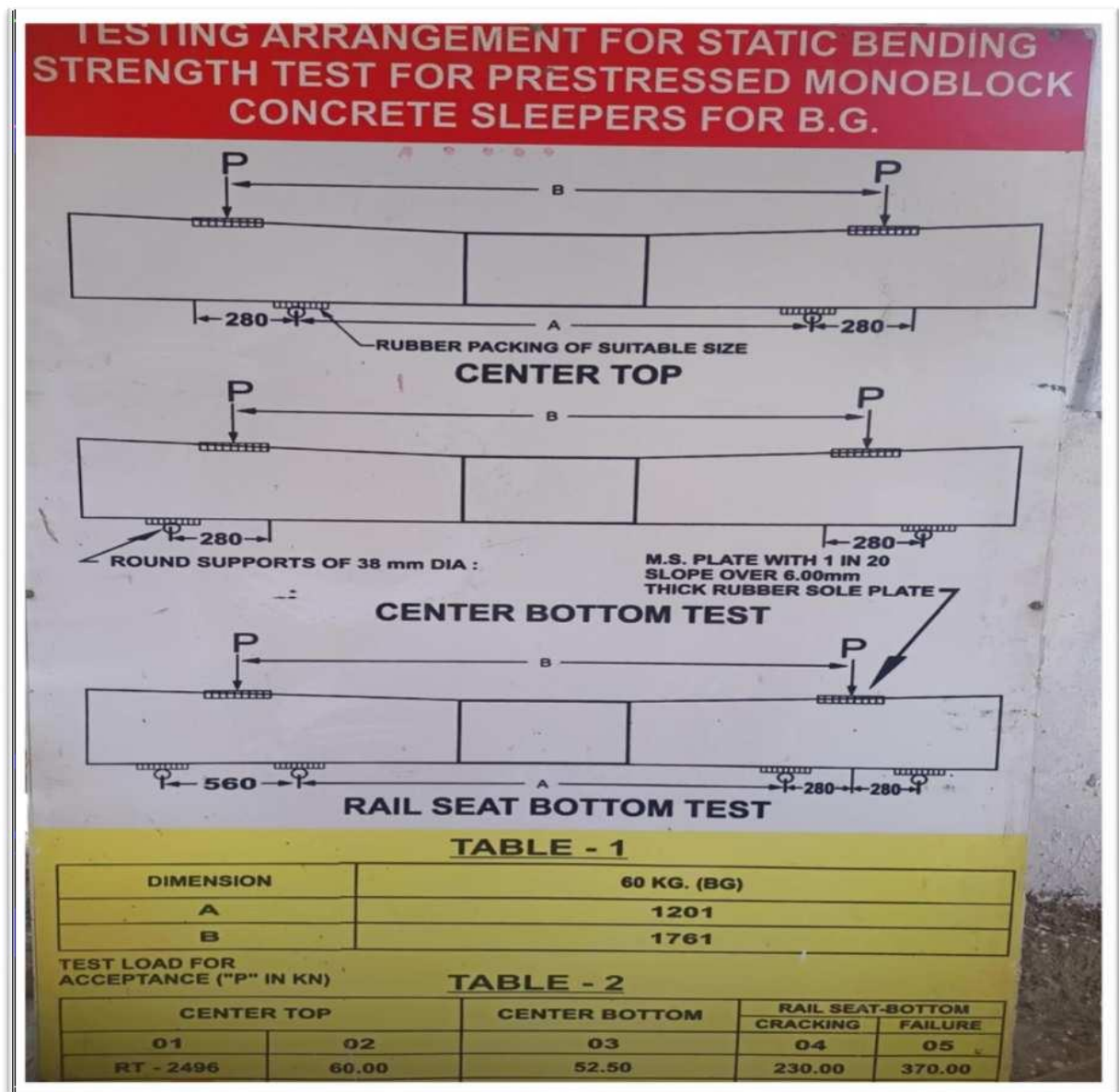
5. Wet Curing:-

This curing technique is adopted for hydration process and gaining strength of concrete. After removing moulds sleepers are shifted to curing tanks which contains water. Now, these are kept for a minimum of 14 to 15 days period for the overall gaining of strength and durability of concrete.

6. Testing and transportation:-

These sleepers are tested for dimensions and moment of failure. After testing the sleepers, finishing have to be done by putting numbers and paint on the side surfaces. Also according to gauge length plates are fixed on sleepers. They are transported to the site and laid.

TESTING ARRANGEMENT FOR STATIC BENDING STRENGTH TEST



INDUSTRIAL PHOTOGRAPH



❖ OUTCOMES OF INDUSTRIAL VISIT

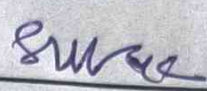
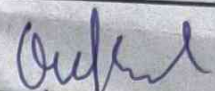
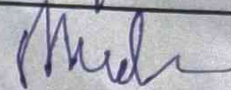
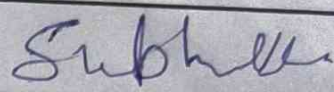
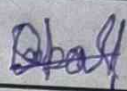
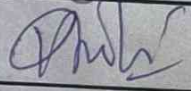
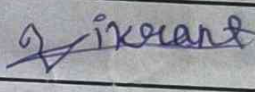
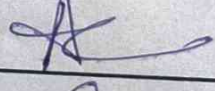
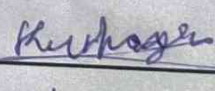
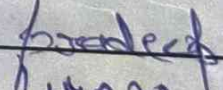
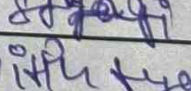
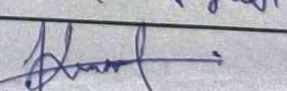
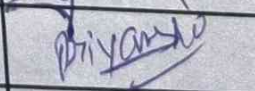
From above Visit Student Understand Actual process of Pre-Tensioning as follow:

- 1 .Student observed various types of tendons.
2. Student understand Hoyer's Anchoring system for Pre-Tensioning concrete.
3. Student Understand Steam curing Process.
4. Student Understand Testing of Pre-Stressed Sleepers.

Attendance of Industrial Visit to Engipress Industries Pvt. Lmt.

Date: 16 Oct 2025

Department of Civil Engineering

S. No.	Roll Number	Name of Student	Signature
1	BETNICE23004	Abdoul Marouf	
2	BETNICE24009	Vikram	
2	BETNICE24009	Vikram	
3	BETNICE25002	Mukul Sharma	
4	BETNICE25001	Subhankar Sharma	
5	BETNICE24002	Debabanghu	
6	BETNICE24007	Omkar	
7	BETNICE23004	Khuski	
8	BETNICE24012	Vikrant Rajput	
9	BETNICE24006	Ajay Singh	
10	BETNICE24001	Asihutosh Panchal	
11	BETNICE23004	Akash Rather	
12	BETNICE23005	Tinkal Dhakad	
13	BETNICE24010	Kushagra Verma	
14	BETNICE24005	Pooja Deshpande	
15	BETNICE24008	Sowmya Tyagi	
16	BETNICE24004	Wishu Tyagi	
17	BETNICE24013	Kunal Katore	
18	BETNICE24011	Prishanku Yadav	