



ACE

Engineering College

An Autonomous Institution

Ankushapur (V), Ghatkesar (M), Medchal (Dist.), Hyderabad - 501301.

Approved by AICTE & Affiliated to JNTUH

NBA ACCREDITED B.TECH COURSES: EEE, ECE, CSE, CIVIL & MECH, ACCORDED NAAC A GRADE
WITH 3.20 CGPA

Dt: 23-09-2025

DEPARTMENT OF CIVIL ENGINEERING

SITE VISIT REPORT

Location:Powergrid, Maheswaram

Topic: Pre-Engineered Building (PEB) Structures

Date: 23-09-2025

Accompanied by:Final Year Civil Engineering Students

Faculty Coordinators:Ms. G. Alekhya, Dr. M. Naveen Naidu

Introduction

A site visit was organized for final-year Civil Engineering students to **Powergrid, Maheswaram**, to understand the **Pre-Engineered Building (PEB) system**. The visit aimed to provide practical exposure to modern construction practices and highlight the differences between conventional steel structures and PEB systems.

The officials and site engineers at Powergrid explained the **step-by-step process of PEB construction**, including design, fabrication, transportation, and on-site erection. They also addressed every query with patience and provided valuable insights into real-world engineering applications.

Purpose of the Visit

- To understand the **step-by-step process** of construction of a PEB structure.
- To study the **foundation activities, erection system, and main components** of PEB.
- To gain exposure to **design loads, structural design loop, and guidelines of PEB design**.
- To compare **PEB structures vs. conventional steel buildings**.
- To learn the **applications and merits** of PEB.
- To observe an **on-going PEB building under construction**.

Highlights of the Visit

1. Design and Planning

- Buildings are designed based on **client requirements** and actual design calculations.

- Use of **tapered sections** for optimized structural efficiency.
- Combination of **built-up sections, hot-rolled sections, cold-formed elements, and profiled sheets**.
- Design load considerations include **dead load, live load, wind load, and seismic load**.

2. Main Components of PEB

- Primary frames (columns, rafters).
- Secondary members (purlins, girts).
- Roof and wall panels.
- Bracing systems for lateral stability.
- Fasteners and bolted connections.

3. Foundation Activities

- Casting and alignment completed in the factory and transferred to the site.
- Anchor bolts placed accurately to receive steel columns.
- Inspection and quality checks before erection.

4. Erection Process

- Components transported to site and assembled using cranes.
- Columns and rafters were seen being erected in sequence.
- Bolted connections ensured quick installation.
- The **erection system analysis** was explained for stability at each stage.

5. PEB vs Conventional Steel Building

Aspect	PEB	Conventional Steel
Speed	Faster construction	Time-consuming
Cost	Economical	Costly
Flexibility	Easy expansion	Limited flexibility
Fabrication	Factory-made, precise	Site fabrication
Quality	Controlled	Varies with workmanship

6. Applications of PEB

- Industrial sheds
- Warehouses
- Commercial buildings
- Showrooms and offices
- Educational institutions
- Indoor & outdoor stadiums
- Metro stations, bus terminals, parking lots

Merits of PEB

- Reduced construction time.
- Cost-effective and sustainable.
- Flexible in expansion and modification.
- Lightweight compared to conventional systems.
- High quality due to factory fabrication.
- Easy to dismantle and relocate.

Students' Learning Outcomes

- Understood the **structural design process** of PEB.
- Observed **erection fixing of main members** (columns and rafters).
- Learned about **foundation alignment and bolt placement**.
- Gained insights into **design guidelines and load considerations**.
- Realized the **advantages of PEB over conventional systems**.
- Witnessed a **live PEB building under construction**, which enhanced their practical knowledge.

Conclusion

The site visit to **Powergrid, Maheswaram** was highly informative and provided practical knowledge of **Pre-Engineered Building structures**. Students gained exposure to the construction process, structural components, erection system, and comparative advantages of PEB. The officials and site engineers guided the students thoroughly, explained each concept with patience, and encouraged interactive learning.

This experience significantly enriched the students' understanding of **modern construction techniques** and bridged the gap between **theoretical knowledge and real-world application**.







