



INDIAN SOCIETY OF STRUCTURAL ENGINEERS (ISSE)

Cordially invites Faculty Members & Students

Student's Chapter at Sardar Patel College of Engineering, Mumbai

Welcome Address: Prof. Ankit M. Asher

Expert Lectures on
Substructures & Shoring Systems
by
Er. Gaurav Parab

Earthquake Engineering with Emphasis on IS 1893:2025
by
Dr. Pulkit D. Velani

Date: 26th February, 2026 Time: 02:30P.M. to 5:00 P.M.
Venue: Room No. 237, Sardar Patel College of Engineering, Mumbai

Er. Hemant Vadalkar Er. Madhav Chikodi Er. Ranganath Satam
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Report on Technical Lecture

Substructures, Shoring Systems by Er. Gaurav Parab

Earthquake Engineering by Dr. Pulkit Velani

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1. INTRODUCTION



Figure 1: Lecture session in progress

The Indian Society of Structural Engineers (ISSE) Student Chapter at Sardar Patel College of Engineering (SPCE), Mumbai, successfully organized a technical guest lecture session for faculty members and students. The event aimed to bridge the gap between academic knowledge and industrial practice by featuring expert lectures on two critical areas of structural engineering: geotechnical investigations for high-rise structures and the latest advancements in earthquake engineering.

The session was held on February 26, 2026, and witnessed an engaging exchange of ideas between the expert speakers and the attendees. Prof. Ankit M. Asher delivered the welcome address, setting the stage for the technical sessions.

2. EXPERT LECTURE I: SUBSTRUCTURES & SHORING SYSTEMS

Er. Gaurav Parab

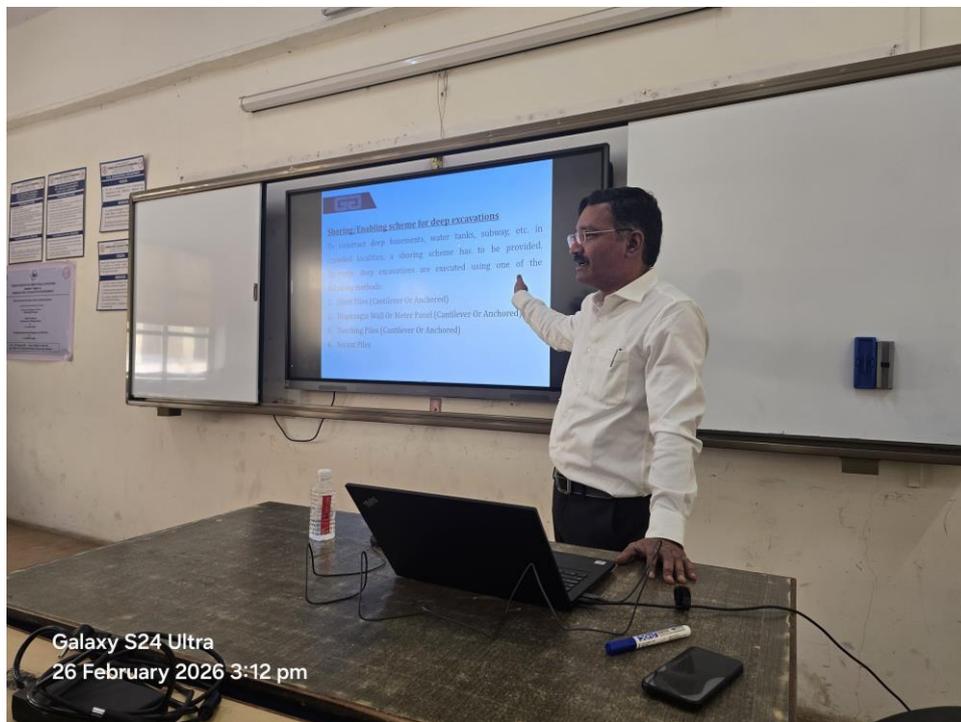


Figure 2: Er. Gaurav Parab delivering the expert lecture on Substructures and Shoring Systems

Er. Gaurav Parab delivered a comprehensive lecture focusing on the critical role of geotechnical engineering in the design and construction of tall buildings. The key points discussed during his session are summarized below:

2.1 Shoring/Enabling Scheme for Deep Excavations

Er. Parab explained that to construct deep basements, water tanks, subways, etc. in crowded localities, a shoring scheme has to be provided. He highlighted that currently, deep excavations are executed using one of the following methods:

- Sheet Piles (Cantilever or Anchored)
- Diaphragm Wall or Meter Panel (Cantilever or Anchored)
- Touching Piles (Cantilever or Anchored)
- Secant Piles

2.2 Geotechnical Investigation for Tall Buildings (TBS)

Er. Parab emphasized that for tall or slender structures, a standard investigation is insufficient. He introduced the attendees to advanced investigation techniques, referencing relevant standards and code provisions for investigation methodology. The focus was on understanding subsurface conditions at great depths to assess the bearing capacity and settlement behavior under immense loads.

2.3 Core Drilling and Rock Quality Designation (RQD)

The importance of core drilling to extract intact rock samples was highlighted. Er. Parab explained the concept of **Rock Quality Designation (RQD)**, a crucial index for determining the quality of rock mass. He discussed how RQD values directly influence the selection of foundation types, especially for high-rise buildings that often require anchoring into bedrock.

2.4 Seismic Crosshole Test

A significant portion of the lecture was dedicated to dynamic testing. Er. Parab elaborated on the **Seismic Crosshole Test**, explaining its purpose in determining the in-situ shear wave velocity of different soil and rock layers. He stressed that this parameter is fundamental for site characterization and is a direct input for seismic site classification as per the new codes, which in turn dictates the design seismic forces.

2.5 Components of a Soil Investigation Report

Er. Parab provided a practical walkthrough of a standard geotechnical investigation report. He explained how to interpret various components, including:

- Borehole logs
- Soil/rock stratification
- Laboratory test results (index and engineering properties)
- **Applicability to High-rise Structures:** He demonstrated how geotechnical parameters are used to calculate settlement, estimate pile capacities, and check for phenomena like liquefaction, which are paramount for the safety of high-rise structures.

2.6 In-Situ Tests for Safe Bearing Capacity (SBC)

The lecture covered field tests used to verify design assumptions:

- **Plate Load Test:** Er. Parab explained the procedure for conducting plate load tests to determine the allowable bearing pressure and settlement characteristics of the soil at the foundation level.
- **Pile Load Test:** He detailed both the vertical and lateral load tests on piles, explaining their significance in proving the designed pile capacity and ensuring the structural integrity of the pile foundation under actual loading conditions.

2.7 Shoring Systems

Concluding his session, Er. Parab discussed various types of **shoring systems** used for excavations in congested urban areas. He explained the selection criteria for shoring, considering factors like depth of excavation, soil type, and adjacent structures, ensuring stability during the construction phase.

3. EXPERT LECTURE II: EARTHQUAKE ENGINEERING

Dr. Pulkit D. Velani

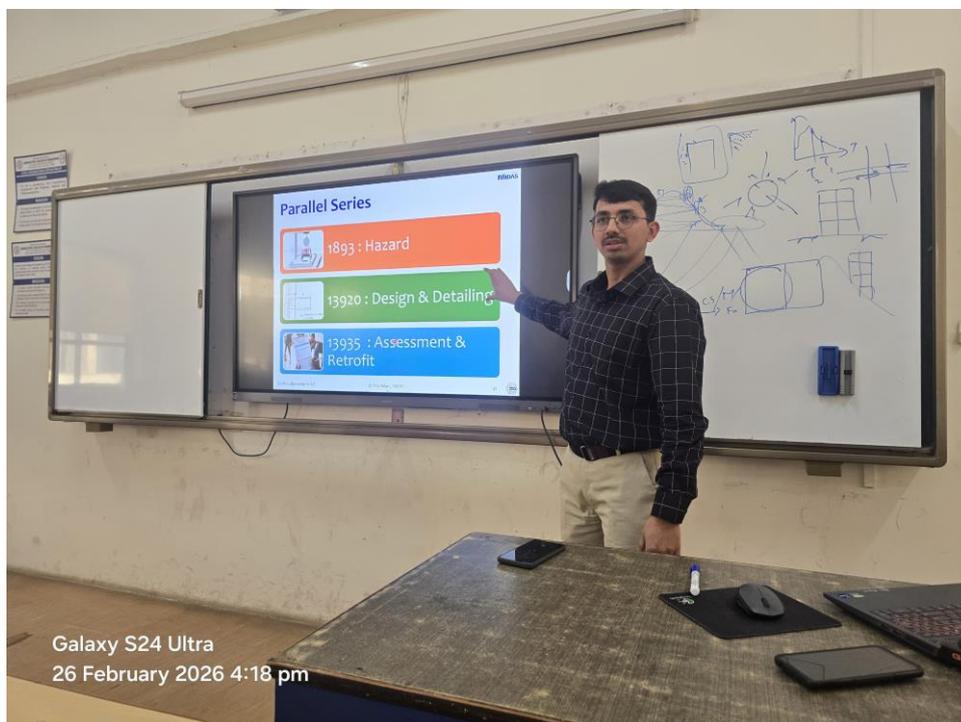


Figure 3: Dr. Pulkit D. Velani presenting on Earthquake Engineering and IS 1893:2025

Dr. Pulkit D. Velani's session was aimed at reinforcing the fundamentals of earthquake engineering while introducing the audience to the latest updates in the Indian seismic code, **IS 1893:2025**.

3.1 IS Code Series for Earthquake Engineering

Dr. Velani explained the comprehensive framework of Indian Standards for earthquake-resistant design:

- **IS 1893:** Criteria for Earthquake Resistant Design of Structures (Hazard assessment)
- **IS 13920:** Ductile Design and Detailing of Reinforced Concrete Structures subjected to Seismic Forces
- **IS 13935:** Seismic Evaluation, Repair and Strengthening of Masonry Buildings (Assessment & Retrofit)

3.2 Basics of Earthquake Engineering

Dr. Velani started with a lucid explanation of the fundamental concepts of engineering seismology. He covered:

- Causes of earthquakes and plate tectonics
- Types of seismic waves (Primary and Secondary waves)
- Wave propagation through different media
- Key terminology: magnitude vs. intensity
- Response of different types of structures to ground motion
- Fundamental concepts of time period and resonance

3.3 Information on the New IS 1893:2025 Code

The highlight of his lecture was the detailed overview of the significant changes introduced in the draft of IS 1893:2025 (the code for “Criteria for Earthquake Resistant Design of Structures”). He highlighted:

- Revisions in seismic zone factors based on updated hazard assessment
- Modified importance factors for different structure categories
- Introduction of new response spectra
- Updated seismic hazard assessments of the country
- Provisions for irregular structures

3.4 Basis of Implication of Codes

Dr. Velani concluded with a philosophical yet practical discussion on “Why we design buildings as per codes.” He explained that codes like IS 1893 are not just regulatory documents but are based on lessons learned from past earthquake damage and failures, Scientific understanding of seismic behavior, International best practices adapted to Indian conditions.

He emphasized that these codes provide a minimum standard of safety to ensure life protection and, in some cases, functional continuity of structures during a seismic event. He motivated the students to understand the “spirit of the code” rather than just following its provisions mechanically.

4. FELICITATION CEREMONY



Figure 4: Felicitating of Er. Gaurav Parab by Dr.A.A.Bage



Figure 5: Felicitating of Dr. Pulkit D. Velani by ISSE and SPCE dignitaries

The expert lectures were followed by a felicitation ceremony where the distinguished speakers were honored by SPCE faculty. Dr. Tanuja Bandivadekar and Dr. Abhinandan A. Bage presented mementos to the speakers as a token of appreciation for their valuable contribution to the academic community.

5. CONCLUDING SESSION

The session concluded with a vote of thanks by Prof. Ankit Asher, acknowledging the contributions of:

- The expert speakers: Er. Gaurav Parab and Dr. Pulkit D. Velani
- ISSE committee members and office bearers
- SPCE management and faculty



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