Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering & Technology, Baramati
2025-26

Department of Civil Engineering

Industrial visit report

Report on Industrial / site visit to 'Ferrocrete dome construction project in Nakshatra Garden in Baramati' on 04/03/2026

Name of Site for Visit:	Ferrocrete dome construction project
Location of Site visit	Site address: Nakshatra Garden in Baramati' 413133, District-Pune, Maharashtra, India.
Class and Semester	TY Civil, 2024 Pattern (Sem:VI)
No. of Participants:	47 (out of 74)
Date of Visit:	04/03/2026 **, Wednesday**
Time & duration	betn 12**:30 am to 1:30 pm (1.0 hours)**
Course (Subject)	Airport and Bridge Engineering: Programme Elective course, **CE23312c**
Industrial visit organized under	Center of excellence 'Town and Country Planning' and in association of IIIC
Industrial visit organized by	Department of Civil Engineering

Industrial visit coordinated by	Prof. D. G. Patil, Course Teacher
Link for report	https://www.vpkbiet.org/dept_Civil.php industrial visits
Objective of Visit	this additional visit was organized to provide students with specialized exposure to **Ferrocrete (Ferrocement) Technology**

Content of report:

1. Objective of visit
2. Details of visit
3. Photographs taken during visit
4. Outcomes of visit

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1. Executive Summary

The Department of Civil Engineering at VPKBIET Baramati organized a technical site visit for Third Year (TY) students to a Ferrocrete dome construction project. Organized under the Center of Excellence in Town and Country Planning and the Industry Institute Interaction Cell (IIIC), the visit aimed to expose students to innovative, formless construction technologies.

2. Technical Observations & Site Details

During the visit, students observed the following stages and components of ferrocrete technology:

- **Skeleton Framework:** Inspection of the structural MS/Tor steel cage used to define the dome's curvature without traditional heavy shuttering.
- **Mesh Reinforcement**: Detailed study of the multiple layers of fine wire mesh applied to the skeleton to provide tensile strength.
- **Mortar Application**: Observation of the specialized plastering process where rich cement-sand mortar is impregnated into the mesh matrix.
- **Structural Form**: The monolithic nature of the doubly-curved shell and its ability to handle loads through membrane stresses.

Industrial Visit Report: Advanced Ferrocrete Dome Technology

Type: Beyond Syllabus Activity for Enhanced Industrial Exposure **Department:** Civil Engineering **Academic Year:** 2025–26 **Date of Visit:** 04/03/2026

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1. Activity Objective (Beyond Syllabus)

This additional visit was organized to provide students with specialized exposure to **Ferrocrete (Ferrocement) Technology**. The objective was to bridge the gap between academic theory and modern industrial practices by studying "formless" construction methods that offer high structural efficiency and sustainability.

2. Specialized Technology Details

During the field visit, students observed the following advanced technical aspects of ferrocrete dome construction:

- **Formless Skeleton Framework:** Students examined how a structural cage is created using 6mm to 8mm MS bars to define the dome's geometry, eliminating the need for expensive timber or steel shuttering.
- **Integrated Mesh Reinforcement:** The application of multiple layers of fine wire mesh (chicken mesh and welded mesh) was studied, which acts as the primary tensile reinforcement for the thin-shell structure.
- **High-Rich Mortar Matrix:** The site demonstration showed the manual impregnation of a 1:2 or 1:3 cement-sand mortar into the mesh layers, ensuring a dense, monolithic composite without the use of coarse aggregates.
- **Structural Advantage:** The visit highlighted the ability of these 25mm–40mm thin shells to withstand significant loads through membrane stresses, making them ideal for earthquake-resistant and low-cost housing solutions.

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3. Mapping

Attribute	Mapping Level	Justification for Additional Exposure
PO3: Design/Development	**High (3)**	Students learned to develop innovative, lightweight structural solutions that are not covered in standard RCC design.
PO5: Modern Tool Usage	**High (3)**	Exposure to specialized materials (wire meshes) and application techniques specific to ferrocrete technology.
PO12: Life-long Learning	**High (3)**	Fostering interest in alternative, eco-friendly construction methods for future professional development.
PSO2: Industry Readiness	**High (3)**	Direct interaction with site experts provided practical insights into entrepreneurship in specialized civil engineering niches.

4. Industrial Learning Outcomes

- **Practical Correlation:** Students correlated the theoretical behavior of "thin-shell" structures with the physical assembly of mesh and mortar.
- **Sustainable Practices:** Observed how reducing the use of heavy materials contributes to **SDG 11 (Sustainable Cities)** and reduces the overall carbon footprint of construction.
- **Skill Enhancement:** Gained knowledge on quality control measures necessary for thin-walled structures, such as ensuring full mortar penetration and proper curing.

5. Conclusion

This visit successfully provided industrial exposure **beyond the prescribed syllabus**, equipping students with knowledge of cutting-edge, sustainable construction techniques. The experience emphasized the role of innovation in civil engineering, preparing students for real-world challenges in the infrastructure sector.

Some photographs taken during visit at Ferrocrete dome construction project site:

Visit of Civil Engineering students to ‘Ferrocrete dome construction project in Nakshatra Garden in Baramati’ on 04/03/2026

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Feedback of Industrial visit

It was a great experience and exposure to students. They could see dome construction using ferrocrete technology. Students got bigger motivation and knowledge from this small nearby visit. Students wished to visit more such infrastructure projects for practical knowledge and opening doors of entrepreneurship in different areas.

Student Feedback Summary: Industrial Exposure to Ferrocrete Technology

The following feedback highlights the key learning outcomes and student perceptions recorded during the visit beyond the standard syllabus:

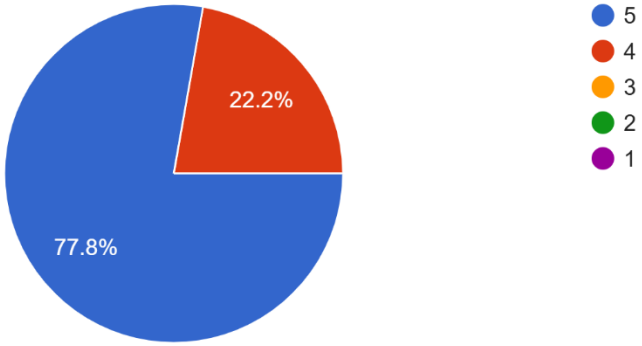
- **Technical Enlightenment**: Students expressed significant interest in the "formless" nature of ferrocrete, noting that seeing a structure built without traditional heavy shuttering was a transformative learning experience.
- **Practical Correlation**: Many students reported that they could finally correlate theoretical membrane stress concepts with the physical application of mortar onto the multi-layered mesh matrix.
- **Skill Awareness**: The demonstration by industry experts highlighted the precision required in mesh tightening and mortar impregnation, which students identified as a critical field skill not fully captured in textbooks.

- **Sustainability Mindset**: Students appreciated the low-material consumption of the 25mm thin shells, leading to discussions on how such technology can reduce the environmental impact of cement dust and RMC plants.
- **Career Motivation**: Several students mentioned that the visit opened doors to potential entrepreneurship opportunities in specialized, low-cost housing and innovative architectural structures.

47 students), 1 staff = 48 Total persons for visit

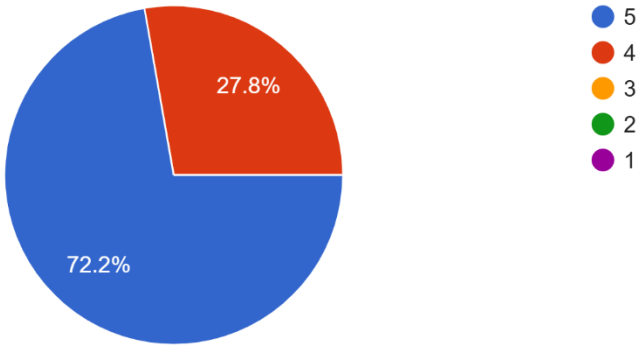
1. The field visit was timely and time available was used appropriately.

18 responses



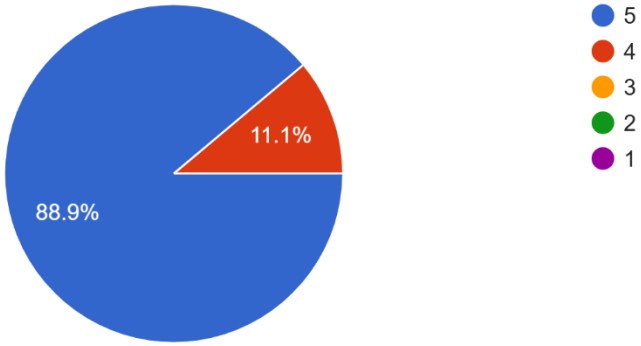
2. The visit was well organized and planned with all requirements and permissions.

18 responses



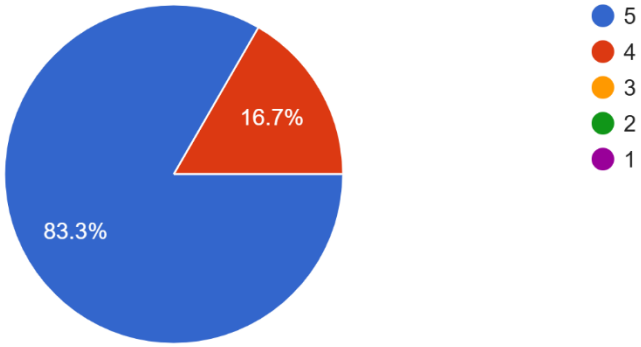
4. The visit was useful to strengthen knowledge gathered in lectures and considering practical applications, understanding career opportunities.

18 responses



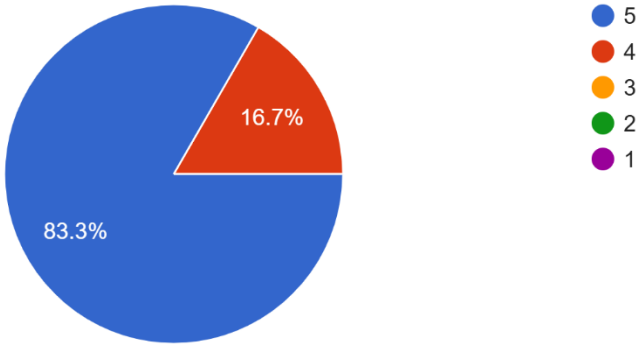
5. Aims and objectives, instructions for the visit were explained at the beginning and proper care was taken during visit considering safety of students at site

18 responses



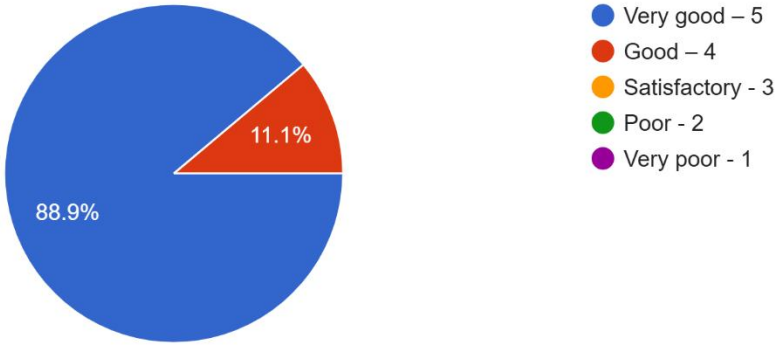
7. The Teacher and officers on site explained working , operations on site by giving sufficient time.

18 responses



11. The overall grading of the Visit: Very good – 5 Good – 4 Satisfactory - 3 Poor - 2 Very poor - 1

18 responses



List of Visitors :

SN	RN	Name	SN	RN	Name
1	EN23105004	BANDGAR VISHVAJIT MARUTI	25	EN23105038	NARALE TRUPTI TANAJI
2	EN23105005	BARGE SRUSHTI JITENDRA	26	EN23105043	PAWAR SHRINIWAS UTTAMRAO
3	EN23105007	BHOSALE NUPUR SUNIL	27	EN23105046	POL RAHUL SAMBHAJI
4	EN23105008	CHAUGULE SOHAM SANTOSH	28	EN23105048	RASAL PRATIK RAJENDRA
5	EN23105010	CHIKHALIKAR KSHITIJA R	29	EN23105049	RAUT MANTHAN VISHNU
6	EN23105011	CHOUDHAR HARSHWARDHAN S	30	EN23105053	THAWARE SWARAJ PANDURANG
7	EN23105012	DADHE SAMRUDDHI SUJIT	31	EN23105056	WANAVE PRIYANKA VISHNU
8	EN23105015	DHEKALE SAKSHI MAHESH	32	EN23105057	YADAV PRANJALI PARSHURAM
9	EN23105016	DHEKALE SHRUTI SANTOSH	33	EN22105058	SHINDE ANKITA AJAY
10	EN23105017	FULARI AKASH SANDIP	34	EN22105081	SHITOLE SHRAVANI BALASO
11	EN23105019	GALINDE JATIN KISHOR	35	EN22105082	SOMASE UTKARASHA M
12	EN23105022	JAGTAP PRITAM SANTOSH	36	EN24205069	ANDHALKAR ROHAN JITENDRA
13	EN23105023	JAGTAP SARTHAK MANOHAR	37	EN24205070	CHAVAN AMRUTA BALIRAM
14	EN23105024	JANKAR SAMARTH SANTOSH	38	EN24205072	DABHADE NIKHIL PRAKASH
15	EN22105059	SOMVANSHI PRACHI PRAMOD	39	EN24205074	JAGDALE DNYANESHWAR P
16	EN23105027	KALE TUSHAR RAVINDRA	40	EN24205075	GHOLAP PRATHMESH R
17	EN23105028	KAMBLE VIJAY SANTOSH	41	EN24205078	KADAM PANKAJ ZUMBAR
18	EN23105029	KARE SUHANI JAGAN	42	EN24205079	MASKAR SURAJ SANTOSH
19	EN23105031	KHADE ANAND NETAJI	43	EN24205082	NARUTE DIVYA ANANTRAO
20	EN23105033	KHUTWAD CHAITANYA B	44	EN24205085	SAKAT SAMEEKSHA SHASHIKANT
21	EN23105034	KSHIRSAGAR ABHISHEK NANDU	45	EN24205086	SATHE SANKET SATISH
22	EN23105035	MANERI AMAN BASHIR	46	EN24205088	SHINDE ISHWARI MARUTI
23	EN23105036	MOHITE PREM PARSHURAM	47	EN24205089	SHINGADE SHUBHAM MAHADEV
24	EN23105037	MORE TRUPTI SHARAD			