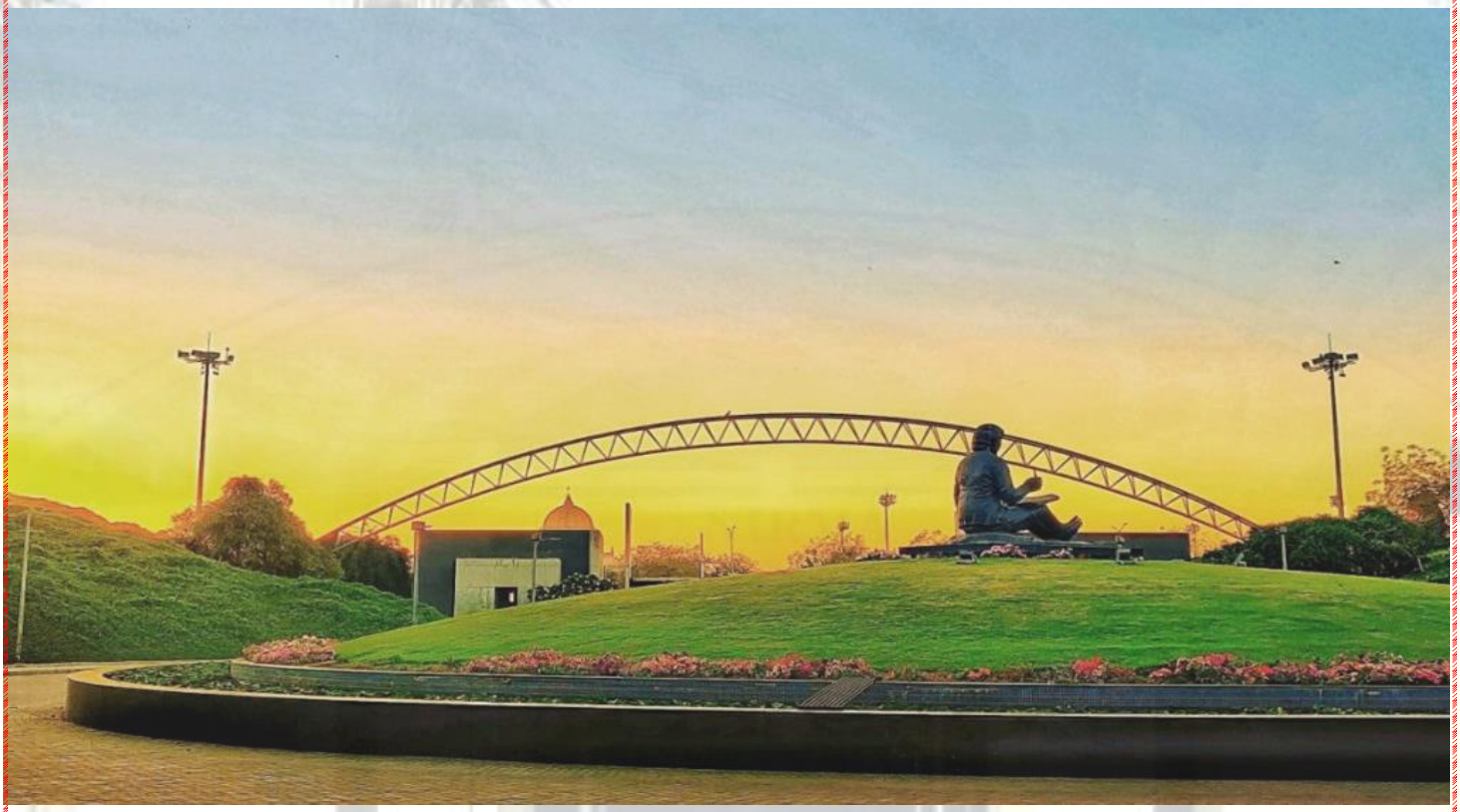
SANRACHNA

संरचना

Volume 4 (Issue 2): January-June 2024



Department of Civil Engineering

Institute of Technology, Nirma University

Ahmedabad – 382481

NIRMA UNIVERSITY

INSTITUTE OF TECHNOLOGY

NAAC ACCREDITED 'A+' GRADE

VISION OF THE DEPARTMENT

To be known as an internationally acclaimed centre in Civil Engineering for its excellence in education, technological and sustainable innovation and contribution for the betterment of the society.

MISSION OF THE DEPARTMENT

- ✓ To facilitate development of knowledgeable, responsible and ethical leaders in the field of Civil Engineering through the holistic and experiential learning process.
- ✓ To engage in research and innovation for the betterment of society.
- ✓ To emerge as a reliable knowledge resource for the industry, academia and society.

Contents

Preface

Dear Readers,

It is with great enthusiasm that I welcome you to the latest issue of '*Sanrachna*', the half-yearly newsletter of the Civil Engineering Department at the Institute of Technology, Nirma University. This publication is crafted to keep you abreast of the most recent developments, achievements, and events within our department, as well as to offer you a glimpse into the dynamic and ever-evolving field of civil engineering.

In this edition of '*Sanrachna*', we are excited to share the latest notable achievements of our faculty and students in this session. You will also find detailsa bout various on going research projects at the department.

Our aim is for this newsletter to serve as a valuable resource, reflecting the vibrant activities and groundbreaking work being carried out by the faculty, staff, and students of the Civil Engineering Department. I extend my heartfelt gratitude to everyone who contributed to this edition, and I eagerly anticipate your continued engagement and support in our future endeavors.

Dr. Urmil Dave

Professor and Head,

Department of Civil Engineering,

Institute of Technology, Nirma University

Glimpses of the Department

List of Faculty Members

S. No.	Name	Designation	Area of Expertise
01.	Dr. Urmil Dave	Professor and Head	Experimental Investigations of Structures, Structural Engineering, Sustainable Materials
02.	Dr. Paresh V. Patel	Professor	Structural Engineering
03.	Dr. Parul R. Patel	Professor	Application of Geomatics, Construction Management
04.	Dr. Sharad P. Purohit	Professor	Structural Engineering
05.	Dr. B. S. Munjal	Professor	Structural Engineering
06.	Dr. V. M. Rana	Professor	Water Resources Engineering
07.	Dr. K. K. Tripathi	Associate Professor	Construction Management
08.	Dr. Sonal P. Thakkar	Assistant Professor	Structural Engineering
09.	Dr. Digesh D. Joshi	Assistant Professor	Structural Engineering
10.	Dr. Tejas M. Joshi	Assistant Professor	Structural Engineering
11.	Prof. J. M. Suthar	Assistant Professor	Structural Engineering
12.	Prof. Hemang A. Dalwadi	Assistant Professor	Transportation Engineering
13.	Prof. Utsav Koshti	Assistant Professor	Structural Engineering
14.	Dr. Hasan M. Rangwala	Assistant Professor	Geotechnical Engineering
15.	Prof. Sunil D. Raiyani	Assistant Professor	Experimental Investigation of Structures, Retrofitting of Structures, Computational Mechanics
16.	Prof. A. M. Shah	Assistant Professor	Geotechnical Engineering
17.	Prof. V. G. Kothari	Assistant Professor	Structural Engineering
18.	Prof. Anant D. Patel	Assistant Professor	Water Resource Management
19.	Prof. Arth Patel	Assistant Professor	Structural Engineering
20.	Prof. Keval Jodhani	Assistant Professor	Morphological Changes in Coastal Region, Water Resource Management
21.	Dr. Manish Dutta	Assistant Professor	Transportation Engineering
22.	Dr. Swati Sirsant	Assistant Professor	Water Resource Management
23.	Dr. Prachi Kushwaha	Assistant Professor	Transportation Engineering
24.	Dr. Naman Kantesaria	Assistant Professor	Geotechnical Engineering

25.	Dr. Nitesh Gupta	Assistant Professor	Remote Sensing and GIS
26.	Dr. Lukman Mansuri	Assistant Professor	Construction Technology and Management
27.	Dr. Vishal Lad	Assistant Professor	Construction Technology and Management
28.	Prof. Purvesh Raval	Assistant Professor	Construction Engineering and Project management
29.	Dr. Indrajeet Kumar	Assistant Professor	Environmental Engineering
30.	Dr. Akanksha Agarwal	Assistant Professor	Environmental Engineering
31.	Dr. Somya Patel	Assistant Professor	Environmental Engineering

List of Technical Staff Members

S. No.	Name	Designation
01.	Rajendra Shah	Laboratory Supervisor
02.	Prahlad Raval	Laboratory Supervisor
03.	Dhara Joshi	Laboratory Assistant
04.	Sunil Regar	Laboratory Assistant
05.	Satyaprakash Chauhan	Laboratory Assistant
06.	Hitesh Prajapati	Laboratory Assistant

List of Administrative Staff Members

S. No.	Name	Designation
01.	Hitendra Purohit	Assistant
02.	Mansi Pandya	Assistant

MoUs

- **CSRI - Central Building Research Institute, Roorkee**

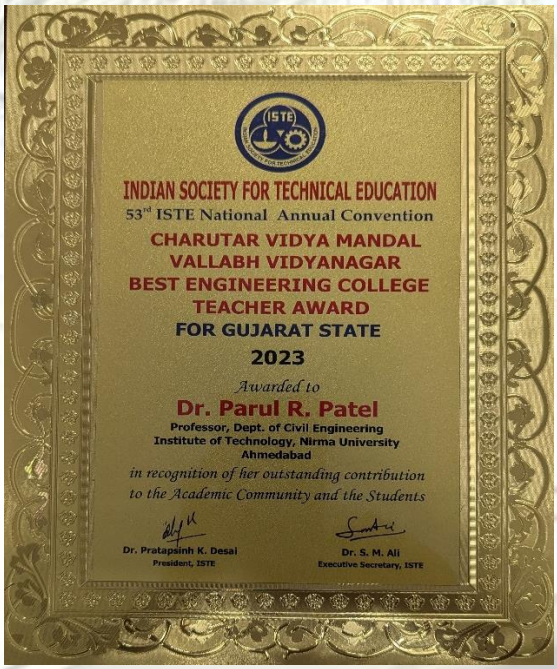
  Civil Engineering Department, Institute of Technology, Nirma University CSRI-CENTRAL BUILDING RESEARCH INSTITUTE, ROORKEE have signed MoU on March 29, 2024. The said MoU is executed for undertaking knowledge and skill up gradation for the benefit of construction professionals, consultants, architects, academicians and students.

Laboratory Facilities: Major Additions

Sr. No.	Name of Equipment
1.	Abrasion Resistance of Concrete
2.	Jar Test Apparatus
3.	Demolition Hammer Breaker
4.	Brookfield Viscometer
5.	PM10 and PM2.5 Combined Air Sampler
6.	Self compacting concrete apparatus test setup
7.	Mortar mixture and Cement mortar Vibrator
8.	Sieve Shaker
9.	Portable Fuel Gas Analyzer
10.	Electronics Extensometer
11.	Hydraulic Structure model demonstrator
12.	Vertical Planetary Ball Mill
13.	Block Vibration Test Set-up
14.	Digital Direct Shear Test Apparatus
15.	Jaw Crusher (Recycled Aggregate)
16.	Laser Optical Displacement Sensor (500 mm)
17.	Laser Optical Displacement Sensor (100 mm)
18.	Inclination Sensor
19.	Triaxial Accelerometer IEPE Type
20.	Compression Testing Frame

Faculty Achievements

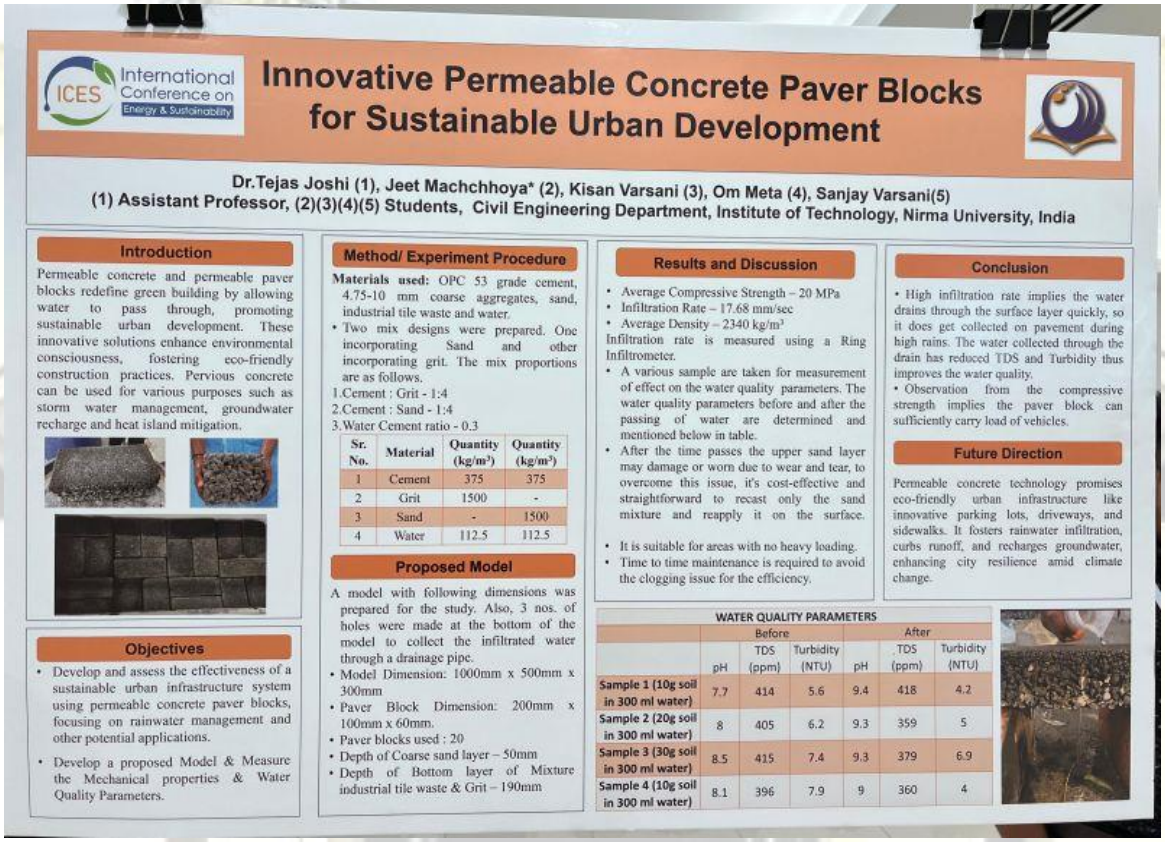
1. Dr. Parul R. Patel (Professor) of Civil Engineering Department received **Charutar Vidya Mandal Vallabh Vidyanagar Best Engineering College Teacher Award for Gujarat State - 2023** at **53rd ISTE National Annual Convention** held on 22nd June 2024 at Bhubaneswar.



2. Dr. Indrajeet Kumar (Assistant Professor) of the Civil Engineering Department received **Best Presentation Award** for his oral presentation entitled "Evaluation of coexisting ions on arsenic adsorption using CuO nanoparticles in aqueous solution" in the 3rd International Conference on Advances in Water Treatment and Management (ICAWTM-24) on March 02, 2024, organized by Pandit Deendayal Energy University (PDEU), Gandhinagar, Gujarat, India.

Student Achievements

1. Mr. Jeet Machohhya (21BCL065) from semester 6th has been selected to attend the International Conference on Energy and Sustainability (ICES 2024) in Oman from April 22 to 25, 2024. He will be presenting a poster on "Innovative Permeable Concrete Paver Block for Sustainable Urban Development". Mr. Machchhoya has applied for financial assistance from the institute to cover travel, visa, and accommodation expenses. The institute has approved a budget of Rs. 10,000 for this purpose.



ICES International Conference on Energy & Sustainability

Innovative Permeable Concrete Paver Blocks for Sustainable Urban Development

Dr.Tejas Joshi (1), Jeet Machchhoya* (2), Kisan Varsani (3), Om Meta (4), Sanjay Varsani(5)
(1) Assistant Professor, (2)(3)(4)(5) Students, Civil Engineering Department, Institute of Technology, Nirma University, India

Introduction

Permeable concrete and permeable paver blocks redefine green building by allowing water to pass through, promoting sustainable urban development. These innovative solutions enhance environmental consciousness, fostering eco-friendly construction practices. Pervious concrete can be used for various purposes such as storm water management, groundwater recharge and heat island mitigation.

Objectives

- Develop and assess the effectiveness of a sustainable urban infrastructure system using permeable concrete paver blocks, focusing on rainwater management and other potential applications.
- Develop a proposed Model & Measure the Mechanical properties & Water Quality Parameters.

Method/ Experiment Procedure

Materials used: OPC 53 grade cement, 4.75-10 mm coarse aggregates, sand, industrial tile waste and water.

- Two mix designs were prepared. One incorporating Sand and other incorporating grit. The mix proportions are as follows.

1.Cement : Grit - 1:4
2.Cement : Sand - 1:4
3.Water Cement ratio - 0.3

Sr. No.	Material	Quantity (kg/m^3)	Quantity (kg/m^3)
1	Cement	375	375
2	Grit	1500	-
3	Sand	-	1500
4	Water	112.5	112.5

Proposed Model

A model with following dimensions was prepared for the study. Also, 3 nos. of holes were made at the bottom of the model to collect the infiltrated water through a drainage pipe.

- Model Dimension: 1000mm x 500mm x 300mm
- Paver Block Dimension: 200mm x 100mm x 60mm.
- Paver blocks used : 20
- Depth of Coarse sand layer – 50mm
- Depth of Bottom layer of Mixture industrial tile waste & Grit – 190mm

Results and Discussion

- Average Compressive Strength – 20 MPa
- Infiltration Rate – 17.68 mm/sec
- Average Density – 2340 kg/m³

Infiltration rate is measured using a Ring Infiltrometer.

- A various sample are taken for measurement of effect on the water quality parameters. The water quality parameters before and after the passing of water are determined and mentioned below in table.
- After the time passes the upper sand layer may damage or worn due to wear and tear, to overcome this issue, it's cost-effective and straightforward to recast only the sand mixture and reapply it on the surface.
- It is suitable for areas with no heavy loading.
- Time to time maintenance is required to avoid the clogging issue for the efficiency.

WATER QUALITY PARAMETERS

	Before			After		
	pH	TDS (ppm)	Turbidity (NTU)	pH	TDS (ppm)	Turbidity (NTU)
Sample 1 (10g soil in 300 ml water)	7.7	414	5.6	9.4	418	4.2
Sample 2 (20g soil in 300 ml water)	8	405	6.2	9.3	359	5
Sample 3 (30g soil in 300 ml water)	8.5	415	7.4	9.3	379	6.9
Sample 4 (10g soil in 300 ml water)	8.1	396	7.9	9	360	4

Conclusion

- High infiltration rate implies the water drains through the surface layer quickly, so it does get collected on pavement during high rains. The water collected through the drain has reduced TDS and Turbidity thus improves the water quality.
- Observation from the compressive strength implies the paver block can sufficiently carry load of vehicles.

Future Direction

Permeable concrete technology promises eco-friendly urban infrastructure like innovative parking lots, driveways, and sidewalks. It fosters rainwater infiltration, curbs runoff, and recharges groundwater, enhancing city resilience amid climate change.

2. From civil engineering department B Tech Semester VI students Mr. Jeet Machohhya (21BCL065), Mr Om Mehta (21BCL070), Mr. Kishan Vasani (21BCL058), Mr. Vivek Brahmbhatt (22BCL011) have secured the 1st position at IIT Bombay's Conquer-IT (Aakar) event. Conquer-IT presented a unique challenge, focusing on the design and casting of porous concrete with exceptional compressive and flexural strength March 16, 2024.

3. From civil engineering department B Tech Semester VI students Mr. Kashyap Karmur (21BCL051), Mr. Keerthana K. (21BCL053), Mr. Jeet Machohhya (21BCL065), Mr. Mallick J. (21BCL066), Mr. Hana Makwana (22MCLT05) have secured second place in CEA fest 2024 at IIT Madras during March 29 to 31, 2024.

4. Team of eight students (Dev Shah (22BCL019), Kshitij Parashar (22BCL048), Khitab Patel (22BCL044), Akshat Khakhi (22BCL006), Jay Thakkar (22BCL035), Fiyanshu Motwani (22BCL024), Jaydev Rajpara (22BCL036), Udit Dhorajiya (22BCL108)) students from the Civil Engineering Department actively participated in several events, including the challenging "Bridge It" competition achieving 2nd Runners up Position at Punjab Engineering College hosted ASCE fest 2024.

5. M.Tech CTM Semester III students, Shreya Singh (23MLT018), Mudra Bhatt (23MLT011), successfully participated in the 12th Professional Development Conference organized by the American Society of Safety Professionals (ASSP) held at the Indian Institute of Technology Madras (IIT Madras) on June 8-9, 2024. Shreya and Mudra presented their research through a poster presentation, which was well-received by experts in the field. Their outstanding work garnered an invitation to collaborate with IIT Madras professors, and they were also honoured with a Recognition Shield from the conference organizers at IIT Madras.

Research Contributions

Journal Paper Publications

1. Jodhani, K.H., Patel, D., Madhavan, N. et al. Channel planform dynamics using earth observations across Rel river, western India: A synergetic approach. Spat. Inf. Res. (2024). https://doi.org/10.1007/s41324-024-00573-1 (IF:2.4)
2. Jodhani, K. H., Gupta, N., Parmar, A. D., Bhavsar, J. D., Patel, H., Patel, D., Singh, S. K., Mishra, U., and Omar, P. jee. (2024). Synergizing google earth engine and earth observations for potential impact of land use land cover on air quality. In Results in Engineering (p. 102039). Elsevier BV. https://doi.org/10.1016/j.rineng.2024.102039 (IF:5.0)
3. Jodhani, K. H., Patel, H., Soni, U., Patel, R., Valodara, B., Gupta, N., Patel, A., and Omar, P. jee. (2024). Assessment of forest fire severity and land surface temperature using Google Earth Engine: a case study of Gujarat State, India. In Fire Ecology (Vol. 20, Issue 1). Springer Science and Business Media LLC. https://doi.org/10.1186/s42408-024-00254-2 (IF:5.1)
4. Joshi, T., Dave, U., Kadiya, S., Ghelani, D., and Jain, A. (2024). “Material development and construction of lightweight geopolymer concrete canoe”, The Indian Concrete Journal, Vol. 98, No. 1, pp. 43-52
5. Gandhi, A. B., Lad, V. H., Patel, D. J., and Patel, D. A. (2024). Feasibility Study of Recycled Paver Block for Circular Economics Using System Dynamics Model. Journal of Legal Affairs and Dispute Resolution in Engineering and Construction, 16(2), 04523063.
6. Patel, P., Patel, D. V., Lad, V. H., Patel, K. A., and Patel, D. A. (2024). “Predicting Construction Crew Productivity for Concrete-Pouring Operations.” Journal of Legal Affairs and Dispute Resolution in Engineering and Construction, 16 (2), 04524001.
7. Patel, D.A., Dharampalan, V., Mansuri, L.E. (2024), "Pioneering Safety and Health in Construction: Emerging Trends and Strategies", Journal of Engineering, Project, and Production Management, Vol. 14 No. 2, pp. 1. doi:. 10.32738/JEPPM-2024-0012
8. Suthar, J., and Purohit, S. (2024). Fundamental period equations for plan irregular moment-resisting frame buildings. In Advances in Civil and Architectural Engineering (Vol. 15, Issue 28, pp. 15–32). Faculty of Civil Engineering and Architecture Osijek. https://doi.org/10.13167/2024.28.2
9. Patel, A., Vyas, D., Chaudhari, N. S., Patel, R., Patel, K. D., and Mehta, D. (2024). Novel approach for the LULC change detection using GIS andamp; Google Earth Engine through spatiotemporal analysis to evaluate the urbanization growth of Ahmedabad city. Results in

Engineering. https://doi.org/10.1016/j.rineng.2024.101788

10. Patel, R., and Patel, A. (2024). “Evaluating the impact of climate change on drought risk in semi-arid region using GIS technique.” Results in Engineering. https://doi.org/10.1016/j.rineng.2024.101957
11. Patel, A., and Yadav, S. M. (2024). Performance evaluation and verification of post-processing methods for TIGGE ensemble data using machine learning approaches. Journal of Water and Climate Change. https://doi.org/10.2166/wcc.2024.563
12. Advani, N., Danak, H., Dutta, M. and Jena, S. (2024). Spherical Cap Studs: A Novel Speed Bump Alternative to Reduce Discomfort with Effective Speed Reduction. Traffic Injury Prevention, 25(2), 228-236. https://doi.org/10.1080/15389588.2023.2278415
13. Hinge, G., Sirsant, S., Kumar, A., Gupta, R., and Hamouda, M. A. (2024). Enhancing flood prediction in Southern West Bengal, India using ensemble machine learning models optimized with symbiotic organisms search algorithm. Stochastic Environmental Research and Risk Assessment, 1-17.https://doi.org/10.1007/s00477-024-02712-4
14. Jodhani, K. H., Gupta, N., Parmar, A. D., Bhavsar, J. D., Patel, D., Singh, S. K., Mishra, U., Omar, P. J., and Omar, G. J. (2024). Unveiling Seasonal Fluctuations in Air Quality Using Google Earth Engine: A Case Study for Gujarat, India. In Topics in Catalysis. Springer Science and Business Media LLC. https://doi.org/10.1007/s11244-024-01957-1.
15. Sharma, Shweta; Tripathi, Saurabh; Sowkhya, B.; Arora, Pragya; Tyagi, Shivani; Sanid, C.; Agrawal, Ritesh; Babu, K. N.; Mehra, Raghav; Ramanujam, V. M.; Jayasri, P. V.; Kesarkar, Ameya A.; Gupta, Maneesha; Borsadiya, Kalpesh Kumar; Bhandari, Vimalkumar; Agrawal, Puneet K.; Rai, Raksha; Nandy, Partha Sarathi; Putrevu, Deepak; Ryali, Usha S.; Doshi, Ghanshyam; Patel, Parul R. (2024). "Assessment of EOS-04 (RISAT-1A) data calibration". doi: 10.18520/cs/v126/i9/1033-1040.
16. Kumar, I. and Verma, A., (2024). Effective removal of nitrate and phosphate using graphene nanosheets synthesized from waste plastics. Journal of Environmental Management, 358, p.120950.
17. Paresh Patel, Digesh Joshi and Rinkesh Makawana, "Application of stainless-steel wire mesh (SSWM) for strengthening reinforced concrete beam-column junction", The Indian Concrete Journal, Vol. 98, No. 6, pp. 44-59, June 2024.
18. Paresh V. Patel, Digesh D. Joshi and Rinkesh V. Makawana, "Experimental assessment of stainless-steel wire mesh (SSWM) strengthened wet precast beam-column connections", Results in Engineering, Vol. 22, Article No. 102325, pp. 1-15, May 2024. doi: https://doi.org/10.1016/j.rineng.2024.102325.

19. Raiyani, S. D., Patel, P. V., and Prakash, S. S. (2024). Effectiveness of Partial Wrapping of Stainless-Steel Wire Mesh on Compression Behavior of Concrete Cylinders. Frattura Ed Integrità Strutturale (Fracture and Structural Integrity, Vo. 18 (69), PP. 71–88. https://doi.org/10.3221/IGF-ESIS.69.06.
20. Kumar V., Sharma V.K., Kedam N., Patel A., Kate T. R., Rathnayake U.,(2024) A comprehensive review on smart and sustainable agriculture using IoT technologies, Smart Agricultural Technology, Volume 8, https://doi.org/10.1016/j.atech.2024.100487.

Conference Paper Presentations

1. U. V. Dave, D Bholonath, J Ruparelia presented a paper on “Studies to produce steel from waste: Sustainable approach toward circular economy” in International conference on green technologies for sustainable development (GTSD-2024), DDU, Nadiad March 01. 2024.
2. Anant Patel, S.M. Yadav (2024) “Enhancing Flood Prediction Model Accuracy via Integrating Ensemble Precipitation TIGGE data of ECMWF, NCEP, IMD and NCMRWF” Roorkee Water Conclave 2024, IIT Roorkee, 3-6 March, 2024.
3. Sirsant S., Singh H. (2024). “Identification of Flood Afflicted Road Blockages using Satellite Imaging, Topographical Data and Elevation Clustering” International Water Conference for Sustainable Development Goals (IWCSDG-2024), MANIT Bhopal, 22-23 March, 2024.
4. Om Patel and Jahanvi Suthar presented paper on “ Effect of diaphragm on seismic response of building” in 16th International Civil Engineering Symposium, Aakaar, IIT Bombay, Mumbai, Maharashtra, March 2024.
5. Yug Ratanpara and Jahanvi Suthar presented paper on “Seismic Response Study of Buildings with Combined Irregularities” in 16th International Civil Engineering Symposium, Aakaar, IIT Bombay, Mumbai, Maharashtra, March 2024.
6. Patel, A., Yadav, S., Panchal, A., and Yadav, R.: “Application of Ensemble approach for Stream flow forecasting for Indian River basin”, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-18944, https://doi.org/10.5194/egusphere-egu24-18944.

National Conferences:

1. Dhruv Buch, Paresh V. Patel, “Comparison of wind loading for high rise building estimated using IS:875 and TPU Database", 10th National Conference on Wind Engineering held at Vellore Institute of Technology, (VIT), Chennai, on 15-16 March, 2024, Organized by the Mechanical Engineering Department, VIT Chennai in association with Indian Society of Wind Engineering (ISWE).

Book Chapters

Sr. No.	Name of Authors	Title of Book chapter	Title of Book, ISBN and Details of Publisher
1	Karan Patel, Sonal Thakkar	Effect of Incorporation of Nano Silica on Mechanical Properties of Mortar and Cement	Lecture Notes in Civil Engineering (LNCE 364), Springer Nature, ISSN 2366-2557.
2	Bhavya Patel, Sonal Thakkar, Urmil Dave	Mechanical and Durability Properties of Alkali Activated Concrete incoprorting recycled aggregates	Lecture Notes in Civil Engineering (LNCE 359), Springer Nature, ISBN 978-3-031-34026-0.
3	Parag Gohel, Rajat Dabral, V. H. Lad, K. A. Patel, D. A. Patel	A comprehensive review on application of artificial intelligence in construction management using a science mapping approach	Artificial Intelligence Application for Sustainable Construction, ISBN: 978-0-443-12-1391-2, Woodhead Publishing. DOI: https://doi.org/10.1016/C2022-0-01961-9

Research Projects

Completed Major Research Projects funded by Nirma University:

Sr.No.	Title of the Project	Project Investigator/s	Funding Agency	Grant (in Lacs Rs)
1	Strengthening Precast Beam Column Connections using Stainless Steel Wire Mesh (SSWM) - Experimental and Numerical Study	Dr Paresh Patel, Dr Digesh Joshi	Nirma University	28.4

Completed Major Research Projects funded by External Funding Agencies:

Sr.No.	Title of the Project	Project Investigator/s	Funding Agency	Grant (in Lacs Rs)
1	Use of recycled CandD waste, fly ash, dredged marine waste and gypsum for construction of sustainable salt pan beds for enhancement of salt productivity through prevention of brine percolation	Prof. S. P. Thakkar, Nirma University (PI), Dr. U. V. Dave (Co-PI) and Dr. Bhoomi R. Andharia, CSIR – CSMCRI	DST	9.0

Ongoing Major Research Projects funded by External Funding Agencies

Sr. No.	Title of the Project	Project Investigator/s	Funding Agency	Grant (in Lacs Rs)
1	Calibration and Validation of RISAT-1 SAR Sensor	Dr. P. R. Patel	SAC, ISRO	55
2	Torsional Behavior of Reinforced Concrete Elements Strengthened with Stainless Steel Wire Mesh	Prof. Sunil Raiyani (PI) Dr. Paresh Patel (Mentor at IT - NU) Dr. S. Suriya Prakash (Mentor at IIT Hyderabad)	SERB – TARE	18.3

3	Studies and Prototype Development for Recycle and Reuse of Waste Streams from Stainless Steel Industries	Dr. Jayesh Ruparelia, Chemical Engineering Dept., IT-NU (PI) Dr. Urmil Dave (Co-PI) Mr. Dipak Bholanda (Co-PI)	GUJCOST	22.33
4	Deployment of Sustainable Concrete for Reducing Brine Water Losses in Earthen Salt Pans: An Experimental Investigation at CSIR-CSMCRI, Bhavnagar	Dr. Bhoomi R. Andharia, CSMCRI (PI), Dr. Sonal Thakkar (PI), Dr. Urmil Dave, Dr. Arvind Kumar, CSMCRI	GUJCOST	32.51
5	Feasibility study of use of Polyurethane Foam Water in Paver Block	Dr Tejas Joshi (PI) Dr Urmil Dave (Co-PI)	Q-BO Technologies Pvt. Ltd	10
6	Experimental investigation on the use of Kaolinite Mining waste as a replacement for natural fine aggregate in concrete	Dr Sonal Thakkar (PI) Dr Urmil Dave (Co-PI)	Q-BO Technologies Pvt Ltd.	10
7	Towards a circular economy: exploring nanotechnology, plastics, and additive manufacturing for development of sustainable concrete	Dr. Kaustuv Sarkar, IIT Mandi (PI), Dr. Kashyap Patel, SVNIT Surat (Co-PI), Dr. Lukman Mansuri, Nirma University (Co-PI)	SPARC (Government of India) and UKIERI (British Council)	97.23

Completed Minor Research Project Funded by Nirma University

Sr. No.	Title of the Project	Project Investigator/s	Grant (in Rs)
1.	Sustainable Technique of Desiccation Crack Mitigation in Expansive Soil using Natural Fibres	Dr. Naman Kantesaria (PI), Dr. Hasan Rangwala (Co-PI)	1

2.	Estimating risk involved in evasive action of vehicles at unsignalized intersections and miniroundabouts	Dr. Manish Dutta (PI), Prof. Hemang Dalwadi (Co-PI), Dr. B. S. Munjal (Mentor)	1
3.	Evaluating the effectiveness of different warm mix additives on binder properties and studying moisture susceptibility of mixes modified with warm mix additives	Dr. Prachi Kushwaha (PI), Prof. Hemang Dalwadi (Co-PI), Dr. B. S. Munjal (Mentor)	0.97
4.	Enhanced Flood Inundation Mapping using Near Real-time Satellite Imagery and Real-Time Geo-Tags	Dr. Swati Sirsant (PI), Prof. Anant Patel (Co-PI), Dr. V. M. Rana (Mentor)	1
5.	Experimental Study on Particle Damper for the Model Building	Prof. Utsav Koshti (PI), Dr. Sharad Purohit (Mentor)	1
6.	Identification of Flood Prone Areas using HECRAS: A Case Study of Sukal River, Gujarat	Dr. Nitesh Gupta (PI), Prof. Anant Patel (Co-PI), Dr. V. M. Rana (Mentor)	1

Ongoing Minor Research Projects funded by Nirma University

Sr. No.	**Title of the Project**	**Project Investigator/s**	**Grant (in Rs)**
1	Preparation of silica-hydrochar nanocomposites for water and wastewater treatment	Dr. Indrajeet Kumar (PI) Dr. H. M. Rangwala (Co-PI) and Dr. Hardik Bhatt (Mentor), Associate Professor, Institute of Pharmacy, NU	Nirma University
2	Performance of SSWM strengthened interior precast beam-column connections under cyclic Loading	Dr. D. D. Joshi (PI), Dr. P. V. Patel (Mentor)	Nirma University
3	Identification of Flood-Afflicted Roads using Remote Sensing and Social Media Data	Dr. Swati Sirsant (PI), Prof. Anant Patel (Co-PI)	Nirma University

Consultancy

Sr. No.	Principal Coordinator	Details of Consultancy work	Status	Agency	Amount (Rs.)
1	Prof. Anant Patel	Water testing	completed	Maheshwari Engineers	1,000/-
2	Prof. Anant Patel	Environment Audit	completed	Alembic Limited	1,70,110/-
3	Prof. Anant Patel	Environment Audit	completed	Torrent Pharmaceuticals Ltd.	4,04,780/-
4	Prof. Anant Patel	Environment Audit	completed	Willowood Industries Pvt Ltd.	1,67,860/-
5	Prof. Anant Patel	Environment Audit	completed	Sun Pharmaceutical Industries Ltd.	2,73,050/-
6	Dr. P. V. Patel	Proof checking	completed	Ahmedabad Municipal Corporation	2,62,500/

Departmental Activities

1. The Civil Engineering Department at Nirma University actively participated in the Vibrant Gujarat Event held at Mahatma Mandir, Gandhinagar, on January 12, 2024. Accompanied by five B.Tech 8th semester students, the delegation engaged in a thought-provoking seminar titled "Towards Net Zero Decarbonisation of Economy and Carbon Trading" at Seminar Hall 1. This event served as a convergence point for global and national experts, fostering discussions on Net Zero from both scientific and policy perspectives. The primary focus was to encourage active participation from the industry sector, aiming to collaboratively explore solutions for decarbonizing the economy and delve into the prospects of Carbon Trading.

2. Ministry of Textiles under the National Technical Textiles mission organized the hackathon on **"Fostering Innovations in Technical Textiles - Hackathon for unleashing creativity in technical textiles" under "BHARAT TEX 2024"**. 7 Students from the civil engineering department, ITNU participated in the event on February 21, 2024.

Workshop / STTP / FDP / Training

1. **Three-day workshop on Building Information Modelling (BIM) for Construction Project Management** was held at Nirma University on March 2nd, 16th and 30th, 2024. The workshop was jointly organized by the Civil Engineering Department, Institute of Technology, and the Institute of Architecture and Planning under the auspices of the Center for Continuing Education (CCE) at Nirma University. 85 students from both institutes participated, gaining valuable insights into this emerging technology.

2. Civil engineering department organized a session on **"How to prepare for the civil services examination"**. The session was conducted by Ms. Neepa Manocha IPS , CSE 2022 on January 24, 2024. The session described valuable insights and guidance to enhance students' civil examination preparation strategy.

Expert Lectures / Webinars

1. Dr. M. Hastak Dernlan, Professor of Construction Engineering and Management, Civil Engineering, Purdue University, and President CIB, International Council for Research and Innovation in Building and Construction delivered expert lecture on “Innovation to Achieve Excellence in Construction Technology and Management” to B Tech semester VI and M Tech semester II and IV (CTM) on February 27, 2024.

2. Dr. Ajay Chaurasia, Chief Scientist at CSIR - Central Building Research Institute (CBRI),

Roorkee, captivated the audience in the C Auditorium with his expert lecture on research opportunities in Civil Engineering on March 29, 2024. Through a comprehensive overview of CBRI diverse research domains and collaborative ventures, Dr. Chaurasia underscored the institute's commitment to addressing contemporary challenges in the field. Emphasizing the importance of interdisciplinary collaboration and sustainability, he highlighted emerging research areas such as disaster mitigation, seismic- resistant design, and innovative construction technologies. His engaging delivery and practical insights left attendees inspired and eager to embark on impactful research endeavours, bridging the gap between academia and industry while contributing to the advancement of Civil Engineering.

3. Dr. Rita Li Associate Professor, Department of Economics and Finance, Director, Sustainable Real Estate Research Center Hong Kong Shue Yan University delivered an expert lecture on "Use of AI in Construction Safety Management" to B Tech semester VI and M Tech semester II and IV (CTM) on March 03, 2024.

4. Dr. Deepak Sharma, Associate professor, California State University, USA delivered an expert lecture on "Risk Management" to B Tech semester VI and M Tech semester II and IV (CTM) on March 19, 2024.

5. Dr. Albert Thomas, Associate Professor, Civil Engineering, IIT Bombay delivered an expert lecture on "Sustainable Infrastructure Management" to B Tech semester VI and M Tech semester II and IV (CTM) on March 22, 2024.

6. Dr. Cheng Lin, Associate Professor, Civil Engineering Department, University of Victoria, Canada delivered an expert lecture on "Erosion Control using Geosynthetic" and "Introduction of Mechanically Stabilized Earth Walls" to B Tech semester IV on March 22 and 29, 2024.

7. Dr. Khaled Sobhan, Professor of Civil, Environmental, and Geomatics Engineering at Florida Atlantic University, USA, delivered an expert lecture series on "Introduction to ground improvement with geosynthetics" during April 15, 17, 19, 22, 24 and 26, 2024 sessions. Delving into the essential need and objectives, Dr. Sobhan illuminated the future potential of geosynthetics in revolutionizing infrastructure. Exploring the properties of geosynthetics and their varied applications in designs, the lecture emphasized their crucial role in modern engineering.

Summary of Expert lectures by International and Indian Dignitaries during the year 2023-24:

Name of the Dignitary	Designation and Organisation	Purpose	Date
Ms. Neepa Manocha	IPS	B Tech Sem VI ,How to prepare for the civil services examination	January 24, 2024
Mr K L Maheshwari	HVAC Consultant, MEP Consultant; Owner, Maheshwari Consultants, Navrangpura, Ahmedabad	B Tech Sem VI ,Effective Plumbing System Design	January 29, 2024
Mr Prakash Siyani	Owner of P-CUBE Consultants, Ahmedabad	M Tech CASAD II ,Modelling, Analysis and Design of Tall Building	February 06, 2024
Mr. Bhargav Akhani	Director , MBCON Consulting Engineers Pvt. Ltd., Mumb	M Tech CASAD II ,Analysis and Design of Industrial Structures	February 09, 2024
Dr. S K Varshney	Scientist G at the Department of Science and Technology, Government of India	B Tech Sem VI , Unlock the Potential of Research	February 17, 2024
Mr. Himanshu Kotak	Founder, C-phi Consult Pvt. Ltd, Ahmedabad	B Tech Sem IV ,“Geosynthetics and Practical Applications”	February 21, 2024
Dr. M Hastak	Professor, Purdue University	B Tech Sem VI, M Tech CTM Sem II and IV ,“Innovation to Achieve Excellence in Construction Technology and Management”	February 26, 2024
Prof. Jaydeep Bhagat	Institute of Architecture and Planning, Nirma University, Ahmedabad	M Tech CASAD II ,Planning and Design aspects of Tall Buildings"	February 29, 2024
Dr. Bhoomi Andharia	Senior Scientist, CSIR - Central Salt and Marine Chemicals Research Institute	B Tech Sem VI ,R and D activities in the area of Civil Engineering aspects at CSIR-CSMCRI	March , 1,2024
Dr. Rita Li	Associate Professor, Department of Economics and FinanceDirector, Sustainable Real Estate Research Center Hong Kong Shue Yan University	M Tech CTM Sem II and IV, Use of AI in Construction Safety Management	March , 04,2024

Mr. Hemanth Kamplimath	Transaction Advisor to Transport and Road Safety Department, Govt. of Karnataka	B Tech Sem IV ,Road Safety and Management in Bengaluru	March , 11,2024
Mr. Tapas Basu	Management Education IIMB - LandT, Former General Manager and Chief Project Manager-TATA Projects and Deputy General Manager and Project Manager-LandT Construction	M Tech CTM Sem II and IV B Tech VI ,PPP Models for Infrastructure Projects	March , 14,2024
Dr. Deepak Sharma	Associate professor, California State University, USA	M Tech CTM Sem II and IV B Tech VI, Risk Management	March , 19,2024
Dr. Deepak Sharma	Associate professor, California State University, USA	M Tech CTM Sem II and IV B Tech VI ,Research Approach and opportunities	March , 19,2024
Shri Hareshkumar Lakhani	Structural Engineer, Retired Executive Engineer and Under Secretary, R and B Department, Sachivalaya, Gandhinagar	B Tech IV structural analysis	March , 21,2024
Ms Megha Vyas	Principal Associates - Electra Techno Consultant and Associates- MEPF Consultant	B Tech VI Basic understanding on Electric systems used in Building Design	March 22,2024
Dr. Cheng Lin	Associate Professor, Civil Engineering Department, University of Victoria, Canada	B Tech IV, Testing of Geotextiles for Infrastructure Applications	March , 22,2024
Dr. Cheng Lin	Associate Professor, Civil Engineering Department, University of Victoria, Canada.	B Tech IV Erosion Control using Geosynthetic,Current Practices and Technological advancement of slope stability and erosion contro ,Introduction of Mechanically Stabilized Earth Wall, Design aspects of Mechanically Stabilized Earth Walls	March , 29,2024
Dr. Ajay Chourasia,	Chief Scientist, CSIR - Central Building Research Institute, Roorkee	M Tech CTM Sem II and IV B Tech VI ,Research opportunities in Civil Engineering at CSIR-CBRI, Roorkee	March , 29,2024

Mr Jaldhi Anjaria	(Chief Consultant, HVAC and Building Automation, Founder Anjaria Associates | IGBC-AP)	B Tech VI Basic understanding on HVAC	March , 29,2024
Mr. Harishchandra Jakhmola	Asst. Vice President, Kalpataru Projects International Limited, Gandhinagar, Gujarat.	Modern Practices in Construction Industry for M Tech Sem II (CTM)	April 1 ,2024
Dr. Khaled Sobhan	Professor of Civil, Environmental and Geomatics Engineering at Florida Atlantic University, USA.	Introduction to ground improvement with geosynthetics Need and objective for Semester-IV B.Tech.	April 15 , 2024
Dr. Khaled Sobhan	Professor of Civil, Environmental and Geomatics Engineering at Florida Atlantic University, USA.	Future of geosynthetics and its use in infrastructure Properties of geosynthetics fo Semester-IV B.Tech	April 17 , 2024
Dr. Khaled Sobhan	Professor of Civil, Environmental and Geomatics Engineering at Florida Atlantic University, USA.	Various properties of use and its use in designs For Semester-IV B.Tech	April 19 , 2024
Mr Yug Shrivastava	Hilti	Post Installed Connections for M. Tech. (CASAD), Semester-II ,CTM	April 20 , 2024
Dr. Khaled Sobhan	Professor of Civil, Environmental and Geomatics Engineering at Florida Atlantic University, USA.	Laboratory evaluation of geosynthetic Use of Geosynthetics in pavements For Semester-IV B.Tech.	April 22 , 2024
Mr. Shaurya Shah	Project Manager, Jacobs India	Integration of Engineering and Project Management for M. Tech. (CASAD), Semester-II ,CTM	April 23 , 2024
Mr. Ashim Karmar	Marine (Off-Shore) Construction	B.Tech, Sem-VI	April 25, 2024
Dr Paresh Kariya	Director- West at PAPL Corp	Vertical Transportation (Lift Design) for B Tech VI	April 26 , 2024

Site Visits:

S. No.	Name of Site/Industry Visited	Date	Name of Faculty member(s) accompanied	For Whom
5	Construction of Multi level parking building, Ahmedabad Municipal Corporation, at Danapit	February 07, 2024	Prof. S. P. Purohit, Prof. P. V. Patel	M. Tech. (CASAD) Sem. II and IV
6	GIFT City" and "Widening of rail project near Gandhinagar"	February 10, 2024	Prof. Purvesh Rawal and Dr. Vishal Lad	M. Tech. (CTM), Semester-II
7	National High Speed Rail Corporation Ltd	March 06, 2024	Prof. Purvesh Rawal and Dr. Vishal Lad	M. Tech. (CTM), Semester-II
8	Sports complex inside the Nirma University campus.	March 18 -22, 2024	Prof. Keval Jodhani, Dr. Indrajeet Kumar, Dr. Vishal Lad	B Tech Sem IV
9	Construction of pre engineered steel industrial building of M/S PEP foods at Pilvai, Vijapur.	March 27, 2024	Prof. P. V. Patel	M. Tech. (CASAD) Sem. II,
10	Sabarmati River Railway Bridge, Ahmedabad	April 12 and 20, 2024	Dr. Naman Kantesaria, Dr. Hasan Rangwala, Dr. Manish Dutta, Dr. Prachi Kushwaha	Semester -IV
11	Dharoi Dam	April 20, 2024	Prof. Anant Patel, Dr. Swati Sirsant, Dr. Nitesh Gupta	B.Tech (Civil) Semester VI
12	Metro Casting Yard near Indroda Circle, Gandhinagar,	April 26, 2024	Prof Sunil Raiyani	B.Tech (Civil) Semester VI

Student Club Activities

1. The **IGBC Student Chapter** and Department of Civil Engineering arranged an expert lecture on **"Effective Plumbing System Design"** on January 29, 2024 for B Tech semester VI students. The session was conducted by Mr K L Maheshwari, HVAC Consultant, MEP Consultant; Owner, Maheshwari Consultants, Navrangpura, Ahmedabad. The discussion covers key elements such as appropriate pipe sizing, fixture selection, and innovative water supply and waste disposal solutions. It also included topics selection of drainage fixture, and strategies for preventing odour, waterlogging and erosion.

2. On March 27, 2024, the **ConCretQ - Video Quiz Challenge** kicked off at 4:15 pm in room N205, drawing the participation of 40 students from both the B.Tech and M.Tech programs in civil engineering. Hosted by the **ICI student chapter** of the Civil Engineering Department at Nirma University, the event was designed to cultivate a healthy competitive atmosphere while providing a platform for attendees to hone their critical thinking and problem-solving skills within technical domains. Structured into three rounds consisting of a Video Quiz, Group Discussion, and Buzzer Quiz, the competition not only promoted learning and knowledge acquisition but also encouraged the development of a competitive spirit among participants

3. In collaboration with Bureau of Indian Standards (BIS) a standards club orientation programme and standard writing competition was planned where participants from various engineering disciplines participated.

Alumni Activities

24th Alumni Get Together was arranged on 06/01/2024 at the Insitute of Technology, Nirma University. From Civil Engineering, 94 alumni have visited the campus. Alumni have rejoiced and cherished their memories with Faculty and Staff members of the department.

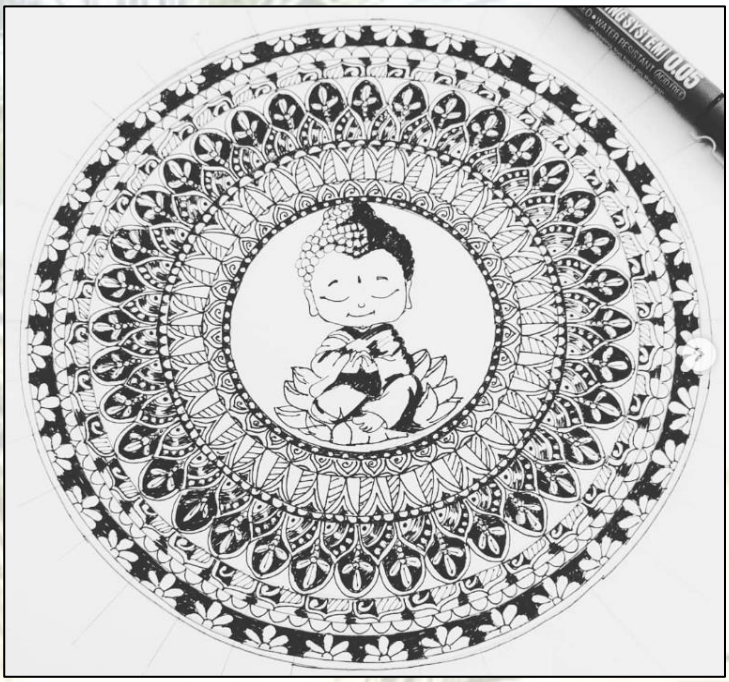
Bidding Farewell to our students !

Farewell of B.Tech Civil Engineering batch of 2020-2024.

Farewell of M.Tech CASAD batch of 2022-2024

Farewell of M.Tech CTM batch of 2022-2024

Creative Corner



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