YASHODA SHIKSHAN PRASARAK MANDAL'S

YASHODA TECHNICAL CAMPUS, SATARA

DEPARTMENT OF CIVIL ENGINEERING

CONSTROMATIX

DEPARTMENT OF CIVIL ENGINEERING

JULY - DECEMBER 2024

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PRESIDENT'S DESK

Founder,President

Hon. Prof. Dasharath B. Sagare

Welcome you to YSPM's Yashoda Technical Campus, Satara an Institution which inculcates true values while disseminating quality education for shaping the career of our students. All our institutes are approved by the concerned statutory bodies and fulfill all the norms and standards laid down by them. Our technical campus is located in a lush green, pollution free, picturesque environment. Our institutes have well qualified, experienced and student caring faculty members, well equipped laboratories, specious lecture hall and tutorial rooms, ICT tools enabled smart classrooms, Seminar halls, well maintained rich library, e-library, wi-fi enabled premises, computer center with internet facility, and a playground with sports facilities, separate gymnasium for Boys and Girls students. We emphasize on overall personality development of our students. Our faculty pays attention to each student to focus on their strength and to develop confidence. We provide students a platform to excel not only in academics but also in co-curricular and extracurricular activities. We encourage individual growth, team building, industry interaction and multi-disciplinary study culture. Amenities provided by our institutes include transport facility, hostel facility, reprographic facility, Cafeteria, STD/PCO, Medical Centre, Cooperative store etc. We are committed to impart value based quality education along with development of positive attitude, skills and abilities to apply knowledge in order to meet the challenge of future. I extend my best wishes for your bright and prosperous future.

PRINCIPAL'S DESK

Principal

Prof. Dr. Vikram S. Patil

GREETINGS TO ALL!

I am really honored and feel very privileged to function as the Principal of Yashoda Technical Campus (YTC), Satara. Let me take this opportunity to thank the Management, Yashoda Shikshan Prasarak Mandal (YSPM), Satara for giving me an opportunity to serve the community here in YSPM family. We believe that the existence, growth, survival and future of every Educational Institute will long lasting only if that Institute make and keep the students & parents and all the stakeholders of the Institute feel very happy and satisfied. The students & parents will be happy only if they get their expectations and dreams are fulfilled for which the student has taken an admission in the Institute. This can be achieved only if every entity in an Institute works with Academic Excellence, Research Excellence and Training & Placement Excellence, along with Overall Development of the student to serve the society thereby excelling and ensuring EXCELLENCE IN TECHNICAL EDUCATION with OUTCOME BASED EDUCATION. Our Institute Growth lies in Institute Motto that is "**PARENTS AND STUDENTS DREAMS ARE OUR INSTITUTE MISSIONS**". Therefore, I appeal everyone to join together in achieving the aim "**A HAPPY STUDENT, A HAPPY PARENT, AND A HAPPY & MOST PREFERABLE INSTITUTE**".

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HOD DESK

Head of Department

Prof. Dr. Abhijit M Zende

At YSPM's Civil Engineering Department through our rigorous academic programs, state-of-the-art, research initiatives, and hands-on experiential learning opportunities, we strive to provide our students with the knowledge, skills, and mindset necessary to excel in the dynamic field of civil engineering. Our esteemed faculty members, who are leaders in their respective areas of expertise, are dedicated to fostering an environment of innovation, critical thinking, and collaboration. Together, we aim to inspire creativity, drive excellence, and instill a strong sense of social responsibility in our students. As you navigate through our technical magazine, I encourage you to explore the myriad opportunities available to you, from cutting-edge research projects to industry partnerships and professional development resources. Whether you are a prospective student, a current student, alum, or a member of the broader engineering community, we are here to support you on your journey. I am immensely proud of the achievements of our students, faculty, and staff, and I am confident that together, we will continue to push the boundaries of what is possible in the field of civil engineering. Thank you for your interest in our department...!!

EDITORIAL DESK

Editor In Chief

Prof. Mr. Ajinkya S Shah

On behalf of the Editorial Board, it is with great pride and sincere privilege that I am writing this message to present **Constromatix**, a biannually published technical magazine. Launching this magazine would not have been possible without the great and much appreciated contributions from the technical team. Our team expects similar sort of sincere dedication from the writers in near future. Civil the oldest branch as traced in the history of engineering has a huge potential and a wide scope to work in. Constromatix focuses not only the trending topics on the civil field but also the achievements of students and staff which reflect the emerging talents of Civil Department. It has been and always will be a platform for the students to showcase their talent whether it be technical, cultural or sports field. Here students get the chance to post articles on their area of interest and also the trending topics in the field of Civil Engineering The only mission of Civil Department is to provide undergraduate students with quality technical knowledge in the field of civil engineering and build in them leadership and managerial skills along with social awareness and gratitude towards society.

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OVERVIEW OF DEPARTMENT

Welcome to the Department of Civil Engineering at YSPM's Yashoda Technical Campus, Satara. The department has been immensely successfully working from 2011 in the field of Professional Knowledge and advanced technical world. The department offers 4 years Bachelor of Technology in Civil Engineering.. The department undergoes several curricular and extra-curricular activities throughout the year. The department is having mixture of well experienced and young, enthusiastic faculty members who are involved in industry institute interaction besides their day to day teaching activities. The Department of Civil Engineering at Yashoda Technical Campus (YTC) delivers latest knowledge in Civil Engineering . It prepares students for careers in industry, academia, and also create young entrepreneurs.

STRENGTH OF DEPARTMENT

- Well Qualified, Experienced staff.
- Good infrastructure.
- Well-equipped laboratories.
- Excellent academic performance.
- Departmental Library facility for students.

Vision of the Department

To become a center of excellence by producing Civil engineers having research and development activity, sound technical knowledge, professional skills and social awareness to serve society.

Mission of the Department

M1: To impart quality technical education through interactive teaching learning methods.
M2: To promote research and development activity by encouraging creativity and exposure to real world problems.
M3: To mentor students for innovative thinking with relevance to entrepreneurship.
M4: To develop social awareness in graduates to serve society.

Program Educational Objectives (PEOs)

PEO1: Demonstrate technical expertise, leadership and ethical qualities to design & execute Civil Engineering Projects.
PEO2: Exhibit qualities of teamwork with effective communication, lifelong learning to address real world civil engineering problems.
PEO3: Develop sensitivity towards environment and society for sustainable development including disaster management.

Program Specific Outcomes (PSOs)

PSO-1: The graduates will analyze and mitigate the natural disasters for the effective disaster management.
PSO-2: The graduates will be able to acquire sound technical knowledge to analyze and work on critical civil engineering issues
PSO-3: The graduates will be enhancing professional abilities to meet industrial need.

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CONTRIBUTORS

Prof. Alfaj Shaikh

Prof. Prashant G. Borate

Mr. Abhishek S. Pawar

Mr. Sahil B Shevate

Yashoda Shikshan Prasarak Mandal's
Yashoda Technical Campus, Satara
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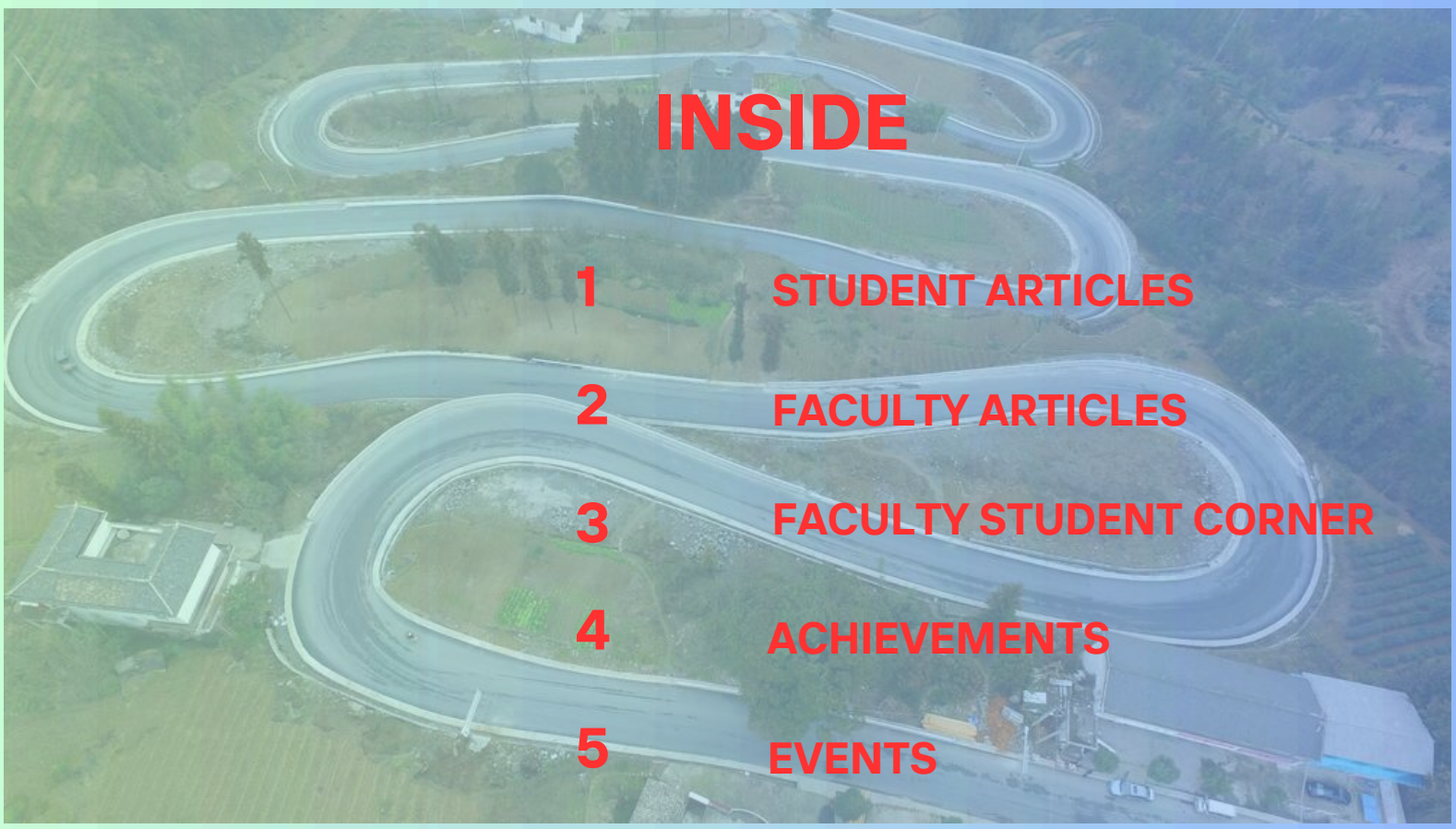

INSIDE

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SAMRUDDHI MAHAMARG

Samruddhi Mahamarg, officially named *Hindu Hrudaysamrat Balasaheb Thackeray Maharashtra Samruddhi Mahamarg, is a high-speed expressway in Maharashtra, India. It connects **Nagpur* in eastern Maharashtra to *Mumbai*, the state capital in the west. The project is a flagship infrastructure initiative by the Maharashtra State Road Development Corporation (MSRDC).

1 Length: Approximately 701 kilometers, making it one of India's longest expressways.

2. Route: The expressway passes through 10 districts, including Nagpur, Wardha, Amravati, Washim, Buldhana, Aurangabad, Nashik, Ahmednagar, Thane, and Mumbai.

3. Design: Lanes: 6-lane access-controlled (expandable to 8 lanes) with Speed Limit upto 150 km/h.

4. Features:
- Intelligent Traffic Management System (ITMS).
- Overpasses, tunnels, and bypasses to ensure smooth travel.

5. Purpose:
- To reduce travel time between Nagpur and Mumbai to around 8 hours
- To boost industrial and economic development in Maharashtra.

Development and Status:
- The project was initiated in 2019 and is being completed in phases.
- The first phase (Nagpur to Shirdi) was inaugurated on 11 December 2022, and remaining stretches are expected to be operational by 2024-2025.

Importance:
- It serves as a major economic corridor, facilitating the transport of goods and passengers.
- It aims to enhance connectivity between eastern and western Maharashtra, promoting industrial hubs.

Mr. Abhishek S Pawar (Final Year Civil)

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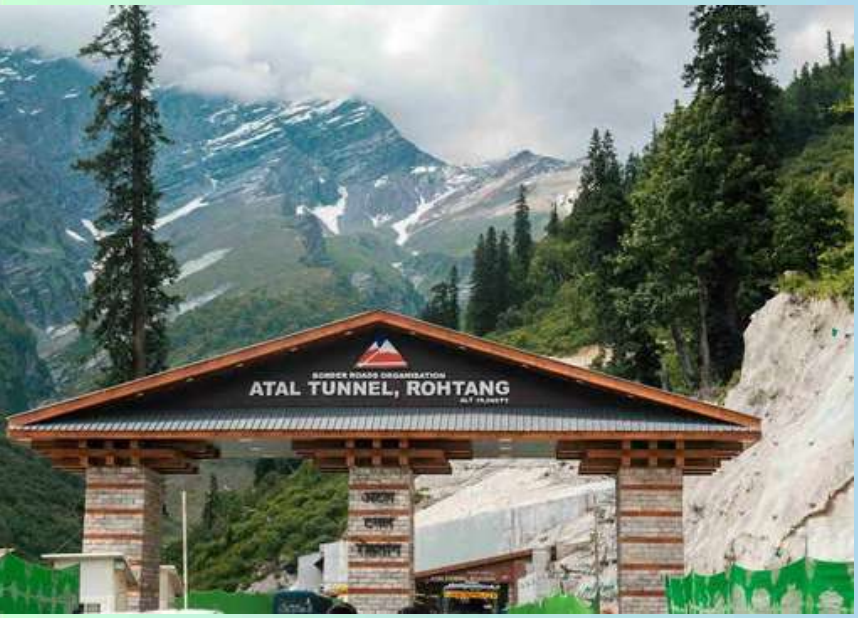
ATAL TUNNEL, ROHTANG



The Atal Tunnel is a strategic and engineering marvel in India, connecting Manali to the Lahaul-Spiti Valley in Himachal Pradesh. Named after former Prime Minister Atal Bihari Vajpayee, it was inaugurated on October 3, 2020, by Prime Minister Narendra Modi.

Some key points about the Atal Tunnel:

1. Location and Connectivity -Length: 9.02 kilometers, making it the longest highway tunnel in the world above 10,000 feet. It passes through the Pir Panjal range of the Himalayas. Connects Solang Valley near Manali to Sissu in the Lahaul Valley.
2. Strategic Importance - The tunnel provides year-round connectivity to the Lahaul-Spiti Valley, which was earlier cut off during winter due to heavy snowfall. It reduces the travel distance between Manali and Leh by 46 kilometers, saving about 4-5 hours of travel time. It enhances India's defense preparedness by ensuring faster troop movement to border areas.
3. Engineering Feats - Built at an altitude of 3,000 meters (10,171 feet). The tunnel is a horseshoe-shaped, single-tube, two-lane tunnel with modern facilities. Equipped with an advanced ventilation system, CCTV cameras, and emergency exits every 150 meters.
4. Environmental Impact -The tunnel reduces fuel consumption and environmental damage caused by vehicles traversing longer routes.
5. Tourist Attraction - The Atal Tunnel has become a major tourist attraction due to its stunning surroundings and the engineering brilliance it showcases.

Mr. Sahil B. Shevate (Final Year Civil)

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The Arc at Green School (Bali, Indonesia)

Bali-based design and architecture firm Ibuku has built more than 100 unique bamboo structures in Indonesia and abroad. One of its most recognizable projects is the Arc, a wellness space and gymnasium created for Green School in 2021. The engineering marvel features a series of bamboo arches spanning more than 62 feet. While most buildings of this size require trusses to function, the Arc uses anticlastic gridshells that derive strength by curving in different directions, allowing the team to achieve an unprecedented lightness of form. "Bamboo lets us reach for bounty in a world where we're often aspiring to luxuries considered precious because they are rare or scarce,"

"It's a material that's abundant and available and by adding layers of human ingenuity, design, engineering, skill, and craftsmanship, we can create value out of it. Bamboo has become a go-to material for sustainable architecture. Lightweight, durable, and abundant, bamboo is one of the greenest building materials on earth, making bamboo buildings among the most sustainable. The fibrous grass rivals steel when it comes to tensile strength, but perhaps its greatest asset is how fast it grows, allowing it to quickly regenerate after harvesting and absorb more carbon than most trees.

Though there's been a long tradition in Asia of using bamboo to build temporary structures like scaffolding and event spaces, a new generation of architects and designers is exploring the renewable material's potential to create schools, hotels, homes, restaurants, and other long-lasting buildings that are just as sustainable as they are stunning. Using various techniques, such as sustainably harvesting mature bamboo culms, treating them with borax/boric acid to ward off insects, and innovating on existing gridshell methodologies, architectural firms are showcasing the vast capacities of what is often considered a basic material. The resulting buildings are biophilic masterpieces that inspire a feeling of being one with nature.

Prof. Prashant G Borate

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3D Printing: Revolutionizing the Construction Landscape

3D printing technology is transforming the construction industry by offering innovative solutions to long-standing challenges. Traditional construction methods often involve significant labor, material waste, and time delays, but 3D printing allows for the creation of structures with precision and efficiency. Using computer-aided design (CAD) software, 3D printers can fabricate complex building components layer by layer, reducing the need for manual labor and minimizing material waste. This technology also makes it possible to use alternative, sustainable materials, such as recycled plastics and bio-based composites, further promoting eco-friendly building practices. The potential for faster, cost-effective, and more customized construction is revolutionizing how homes, offices, and even bridges are designed and built.

Applications of 3D Printing in Construction

The applications of 3D printing in construction are diverse and constantly evolving:

- **Prefabrication of Components:** 3D printing excels in creating complex and customized components, such as architectural elements, intricate facades, and intricate support structures. This prefabrication approach reduces on-site labor, minimizes disruptions, and ensures precision and quality control.
- **Construction of Entire Structures:** While still in its early stages, 3D printing is being used to construct entire buildings, including residential units, commercial spaces, and even bridges. This approach offers significant advantages in terms of speed, cost-effectiveness, and design flexibility.
- **Repair and Maintenance:** 3D printing can be used to repair damaged structures, create custom replacement parts, and conduct on-site maintenance efficiently. This reduces downtime and minimizes the need for costly replacements.
- **Emergency Shelter and Humanitarian Aid:** 3D printing offers a rapid and efficient solution for constructing temporary shelters and emergency housing in disaster-stricken areas or remote locations.

Prof. Alfaj N. Shaikh

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STUDENT ACHIEVEMENTS

Ms. Shweta B Kadam
Felicitation of TY Topper by Builder's Association of India, Satara Chapter on 14/09/2024 on the occasion of Engineer's Day

Ms. Rutuja N Phadatare
Felicitation of Final Year Topper by Builder's Association of India, Satara Chapter on 14/09/2024 on the occasion of Engineer's Day

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FACULTY ACHIEVEMENT

Prof. A N Shaikh
SPOC for Swayam NPTEL Local Chapter

Prof. A N Shaikh
ATAL FDP on
21st Century Material:
Advancements in Material Science and Technology

Prof. P G Borate
Elite NPTEL Certification for Geotechnical Engineering Laboratory

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DEPARTMENTAL ACTIVITY

Sr. No.	Activity Name	Date	Coordinator	Remark
1	Engineer's Day Celebration	13/09/2024	Mrs. V. P. Pawar	All students of Civil Engg. department
2	Alumni Interaction	24/9/2024	Mr. P. G. Borate	All students of the department
3	Celebrates Mahatma Gandhi Jayanti with Swachh Bharat Abhiyan	02/10/2024	All Faculty	-
4	Poster presentation competition on emerging trends in civil engineering	15/10/2024	Ms. A. V. Salve	All students of the department
5	Industrial Visit for Steel Structures at Rajesh Motors Bharatgaon, Satara	16/10/2024	Mr. A. S. Shah	Class: TY
6	Guest lecture on Mastering Civil Engineering from Tendering to Real Life Construction Projects	16/10/2024	Mr. V. S. Kashyap	Class: Final Year
7	Industrial Visit for Under Construction Concrete (Rigid) Road and Construction equipment, Satara	22/10/2024	Mrs. V. P. Pawar Mr. A. S. Shah	Class: SY, Final Year
8	Industrial Visit at Constrotrait Material Testing Laboratory, Wai. Satara	23/10/2024	Mr. A. N. Shaikh Mr. V. B. Kashyap	Class: TY
9	Guest lecture on Innovative Building Materials In Construction Industry	25/10/2024	Ms. A. V. Salve, Mr. A. S. Shah	Class: SY
10	Industrial Visit to Bamboo Plantation at Wadhe Satara	8/11/2024	Mr. P. G. Borate	Class: Final Year
11	Industrial Visit for Steel Structures at Satara Railway Station, Satara".	11/11/2024	Mr. A. S. Shah. Mr. A. N. Shaikh	Class: TY, Final Year
12	Guest lecture on Software Application in Civil Engineering	12/11/2024	Ms. A. V. Salve	Class: TY

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STUDENT FACULTY CORNER

Celebration of Engineer's Day

Alumni Interaction
Alumni - Ms. Sayali S Desai

Swachh Bharat Abhiyan

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STUDENT FACULTY CORNER

Events, Guest Lectures organized at Department

Poster Presentation

Guest lecture on Tendes

Guest lecture on Software Application

Guest lecture on Innovative Building Materials

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INDUSTRIAL VISIT ORGANIZED BY DEPARTMENT