



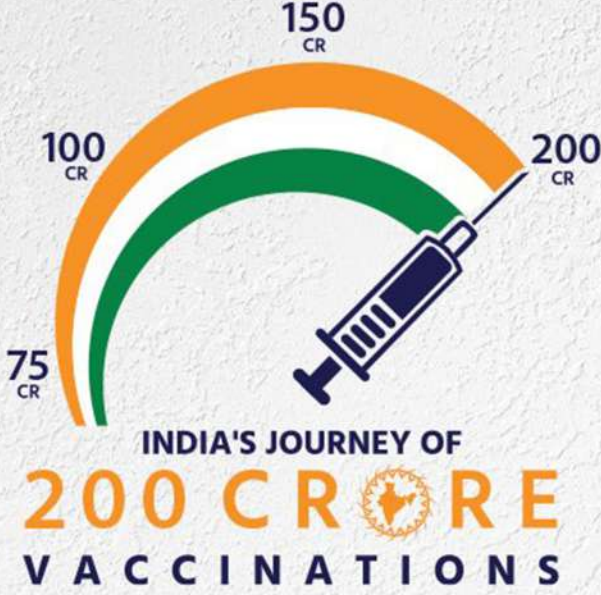
CE - ಸಮಯ



Annual magazine - 2022

Edition 2

my
GOV
मेरी सरकार



MAKE IN INDIA VACCINES

for The World

24 crore doses supplied
to over 100 countries under
Vaccine Maitri

Department of Civil Engineering
MIT Thandavapura

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MANAGEMENT, MET



Dr. S Murali
President



Dr. G Hemanth Kumar
Vice President



Dr. T Vasudev
Secretary



Dr. H K Chethan
Joint Secretary



Dr. D S Guru
Treasurer



Dr. B G Naresh Kumar
Trustee



Dr. Ananth R Koppar
Trustee



Dr. Y T Krishnegowda
Trustee

ABOUT THE COLLEGE



MITT is situated at a beautiful, enchanting and sprawling landscape. The institute is founded by a group of eminent people recognised for their eminence in the field of science and engineering technology. Many of them have served at the highest levels of AICTE and University.

The college is equipped with all modern learning aids to make teaching-learning process a pleasure. The highly qualified staff is its asset.

If you are interested in a quality, Maharaja Institute of Technology Thandavapura is the place for you. MIT Thandavapura is a career-focused college that will provide you with a comprehensive educational experience in a variety of growing areas of employment.

HIGHLIGHTS

- Built by renowned professors.
- IIT qualified Principal.
- ISO 9001:2015 & ISO 21001:2018
- Experienced & trained faculties.
- Day boarding system.
- Placement training from first year.
- Transport facility in and around Mysuru.
- 50% waiver of tuition fee for topper of the branch.
- Regular interaction with parents.
- State of the art laboratories.

Programs offered

B.E in CIVIL ENGINEERING

B.E in MECHANICAL ENGINEERING

B.E in COMPUTER SCIENCE & ENGINEERING

B.E in ARTIFICIAL INTELLIGENCE & DATA SCIENCE

B.E in ELECTRONICS & COMMUNICATION ENGINEERING

VISION

To be recognized as premiere institute in creating competent graduates driven towards socio-technical needs.

MISSION

- To exhibit quality in processes of teaching and learning evolved through continual feedback.
- To create an ecosystem of greater learning through research and innovation.
- To engage in self-learning through interaction with industry and alumni.
- To maintain professional and ethical approach in dealing with stakeholders.

DEPARTMENT OF CIVIL ENGINEERING

VISION

To be the pioneer in producing competent Civil engineering graduates with knowledge, skills and attitudes that best serves the society.

MISSION

- To impart Civil engineering knowledge relevant to current challenges through learner-centric teaching methodologies and industry interactions.
- To instill essence of entrepreneurial attitude through extension of greater learning drawn from research and consultancy.
- To enact standards, morals and ethics that potentiates positive development of the society.

PEOs

- Acquire startup position in industry and excel in the chosen area of employment.
- Engage in greater learning through research, higher studies or collaboration.
- Instigate entrepreneurial ventures and exhibit apt leadership for greater benefit of the society.

PRESIDENT'S DESK



Dear Readers,

I am happy to note that department of Civil Engineering of Maharaja Institute of Technology Thandavapura is coming out with the second edition of their department magazine called CE-Samaya. If you read straight away this it looks to me ಸಿಹಿ ಸಮಯ means sweet time.

Yes, time is so sweet during student age. We elders always feel best part of our life was college days and that is ಸಿಹಿ ಸಮಯ. Early to the college days, school days were also sweet but it is system driven by parents and school. Post college days are hectic and driven by many like organization you work, family, environment, society etc. The best time for any one could be these years of college.

There is great liberty for students to choose their career, choose right friends, right hobbies, right thinking etc hence this time is so sweet. Congratulations to all those students and staff who have contributed to make this magazine so sweet.

With best wishes,
Dr. S Murali

JOINT SECRETARY'S DESK

“You can boost happiness and positive emotions through the use of your talent, whether it can be singing, dancing or writing skills.”



I am pleased to know that the Department of Civil Engineering is coming out with the second edition of their department magazine by name “CE -Samaya”. I extend my greetings and blessings on this and congratulate the Editorial team.

The magazine reflects the holistic development of the department. Today the role of the department is not only to pursue academic excellence but also to motivate and empower its students to be lifelong learners, critical thinkers, and productive members of an ever-changing global society.

Each student is an inherent talent that needs to be honed over time to become more refined. The magazine provides a platform to students to share their hidden talents - their creativity, self-expression, and learning experience. The good thing about the magazine is, it is not limited to students but also extended to teaching fraternity who can share their overall achievements.

All contributors and students deserve an applauded and congratulations. I hope in future other students will also feel inspired and motivated to build up their writing and presenting skills.

I congratulate the staff and the students for the commendable achievements.

I wish you all Happy reading....

With best wishes,
Dr. Chethan H K

PRINCIPAL'S DESK

Dear Readers,

It brings me great joy to present the 2nd edition of annual magazine of Department of Civil Engineering, MIT Thandavapura, a window into the dynamic and enriching journey we have undertaken together over the past year. As the Principal of this esteemed institution, I am immensely proud of the collective achievements and unwavering spirit that define our college community.

Education is the cornerstone of progress, and at MIT Thandavapura, we have embraced this principle wholeheartedly. Our college stands as a cradle of knowledge, innovation, and transformative experiences, where students are encouraged to dream big, think critically, and explore their true potential.

Within the pages of this magazine, you will discover a tapestry of success stories, academic triumphs, and co-curricular accomplishments that showcase the outstanding talents of our students. As they strive for excellence, our dedicated faculty members have played an instrumental role in guiding and nurturing their growth. The enduring bonds between our faculty and students exemplify the essence of mentorship and the power of meaningful education.

We firmly believe in nurturing compassionate, responsible, and socially conscious individuals. Through various outreach programs, community engagement, and social initiatives, our students learn the value of empathy and the transformative potential of their actions. They are not only future professionals but also agents of positive change in society.

The success of our college is a collective endeavour, and we are deeply grateful for the unwavering support of our alumni, industry partners, and well-wishers. Their guidance, contributions, and belief in our vision have strengthened our resolve to create a nurturing ecosystem that fosters excellence in every domain.

As you flip through the pages of this magazine, I hope you are inspired by the achievements, camaraderie, and aspirations of our college community. Whether you are a student, a parent, a faculty member, an alumnus, or a friend, this magazine reflects the essence of [College Name] and the profound impact it has on shaping lives.

May this magazine serve as a catalyst for even greater aspirations and accomplishments, as we continue to march forward in our pursuit of knowledge, enlightenment, and societal progress.

With best wishes,
Dr. Y T Krishnegowda

Welcome to the Civil Engineering Department's annual magazine! It gives me great pleasure to present to you the Volume 2 of “CE-Samaya”, a compilation of the remarkable events, achievements and significant contributions made by our faculty, staff, and students over the past year.

The world of Civil Engineering is constantly evolving, driven by advancements in technology, emerging challenges, and the need for sustainable development. In this fast-paced environment, our department takes pride in nurturing young minds and preparing them to be future leaders and problem solvers in the field.

At our department, we have created a vibrant learning ecosystem that fosters creativity, critical thinking, and practical skills. Our dedicated faculty members, with their extensive knowledge and experience, strive to deliver quality education, imparting both theoretical and practical knowledge to our students. We are committed to developing a strong foundation of engineering principles and encouraging a multidisciplinary approach to problem-solving.

One of the key highlights of our department is the state-of-the-art infrastructure and well-equipped laboratories that facilitate hands-on learning experiences. From structural analysis to geotechnical engineering, from transportation planning to environmental sustainability, our students are exposed to a wide array of specialized areas within the Civil engineering discipline. We believe in providing a comprehensive education that prepares our students to tackle the complex challenges of the real world.

In addition to academic pursuits, the Civil Engineering Department encourages active student participation in extracurricular activities, technical events, and professional societies. These activities provide a platform for students to showcase their talents, enhance their leadership skills, and develop a strong network within the industry.

As we reflect on the accomplishments of the past year, we are filled with pride and gratitude for the unwavering support of our students, faculty, staff, and alumni. Their collective efforts have propelled our department to new heights and strengthened our position as a centre of excellence in Civil engineering education.

I extend my heartfelt appreciation to the editorial team for their diligent efforts in bringing together this magazine, showcasing the remarkable achievements of our department. I hope this compilation inspires and motivates all our readers to pursue excellence in their chosen paths.

I invite you to delve into the pages of the first volume of our annual magazine and witness the ingenuity and passion that define the Civil Engineering Department. Together, let us continue to build a better future for our society through the transformative power of civil engineering.

Dr. B C Nagendra Prasad
Head of the department

EDITORIAL BOARD



Dr. Y T Krishnegowda
Principal / Editor-in-chief



Mr. Harshith M
Assistant Professor / Editor



Nitish M
Student



Harshitha M B
Student



Akash A S
Student



Sagar habalkar
Student



Raghavendra
Student

STAFF DETAILS



Dr. B C Nagendra Prasad
Professor & Head



Mr. Rohith Jain
Assistant Professor



Mr. Akshay N K
Assistant Professor



Mr. Manu S Gowda
Assistant Professor



Mr. Venu Prasad A
Assistant Professor



Mr. Mahadev Prasad N
Assistant Professor



Mr. Manjunath G S
Assistant Professor



Mr. Raghavendra A
Assistant Professor



Ms. Ganavi S
Assistant Professor



Mr. Chethan M B
Assistant Professor



Mr. Harshith M
Assistant Professor

Non teaching staff

1. Chandra S - Instructor
2. Puneeth Kumar - Lab Asst

3. Shivanna - Attender
4. Manu Y P - Attender
5. Naveen Kumar - Attender

TECHNICAL PUBLICATIONS

- Manjunatha M C and Basavarajappa H T, “Land Classification Analysis using Geospatial approach in Nanjangud taluk of Karnataka state, India”, International Advanced Research Journal in Science, Engineering and Technology, Vol 8, Issue 6, Pp 629-638, May 2022.
- Manjunatha M C and Basavarajappa H T and Krishne Gowda Y T, “Geospatial Technology in Land classification analysis for H.D Kote taluk of Karnataka State, India”, Wesleyan Journal of Research, Vol 14, No 2, Pp 57-71, May 2022.
- Manjunatha M C and Basavarajappa H T, “Flashflood impacts of Kapila river on Temple Town of Nanjangud, Karnataka, India.”, International Advanced Research Journal of Science, Engineering and Technology, Vol 9, Issue 7, Pp 359-368, Aug 2022.
- Manjunatha M C, Inchara C S, Prabhavathi M C and Basavarajappa H T, “Slow death of Lakes in the Heritage city of Mysuru, Karnataka State, India through Geospatial approach”, International Advanced Research Journal in Science, Engineering and Technology, Vol 9, Issue 11, Pp 19-26, Nov 2022.
- Venuprasad A and D Nagarajun, “Morphometric interpretation for sub basin management planning and practices in Hassan district, Karnataka using GIS and remote sensing”, Journal for Geo Science Research, Vol. 7, No 2, Pp. 227-234, July 2022.
- Manu S Gowda and Rajeeth T J, “Use of super absorbent polymer with GGBS in normal concrete”, Recent advances in materials, mechanics and structures, Vol. 269, Pp. 699-706, 2022.
- Rohith Jain, Md. Junaid, Kishore N, Yashwanth Gowda R, “Study on behaviour of Masonry Walls using different masonry unit and mortar combinations”, International Journal of Engineering Research and Technology, ISSN:2278-0181, Vol. 10, Issue 11, 2022.
- Rohith Jain, Nallaval Chinnaswamy Balaji, Chirdeep N R and G. S. Suresh, “Comparative study of Gabion wall using experimental and analytical methods”, International Conference on Civil Engineering Trends and Challenges for Sustainability, ISSN 2366-2557.

CONSULTANCY

The department of Civil Engineering, MIT Thandavapura has a consultancy wing wherein the faculty of the department conduct consultancy works around Karnataka. The department conducts soil testing, building material testing, water and sewage quality testing, surveying, structural stability checks, analysis and design of structures and much more.

The following projects are successfully conducted in the year 2022.

Sl. No.	Project type	Number of projects
1	Tests on aggregates, bricks, tiles etc.	2
2	Tests on cement, concrete etc.	8
3	Test on steel reinforcement	6
4	Soil testing	3
5	NDT	1
6	Structural design	1
7	Surveying	2

CAPTURED MOMENTS



Site visit to KRS dam



Industrial visit to ITC Ltd., Mysuru



Site visit to Canal near Srirangapatna

CAPTURED MOMENTS



Industrial visit to Mangla RMC plant



"Aakruthi" annual department event



Visit to "My build" construction industry exhibition

CAPTURED MOMENTS



Talk by Snake Shyam



Talk by Airport Director, Mysuru Airport



Seminar on "Stress management"

CAPTURED MOMENTS



Seminar on "Entrepreneurship by Mr. Sainath, Alumni



Site visit to Chamarajanagar mine



Talk on "Importance of Professional bodies"



BARUNI
Civil
Consultants

Internships
Site visits
Placements



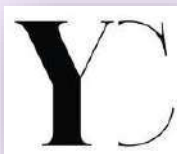
SHATHAYU
Constructions &
Consultants

Internships
Site visits
Placements
Consultancy



Inner Voice
CAD
Academy

Software
training



YASHASWI
Consultants

Internships
Site visits
Placements



AVISHKAR
Consultants &
Constructions

Internships
Site visits
Placements



ANIKA
Civil
Consultants

Internships
Site visits
Placements



CREATIVE
Constructions &
Consultants

Internships
Site visits
Placements

1. Students of 7th semester were exposed to modern tool usage through Introduction to "Applications of Primavera in Civil Engineering" by Prof. Chethan M B on 10/01/2022. The importance of applications of primavera in CPM was taught to students. The speaker highlighted the planning and scheduling of project, resource management, cost management, risk management and collaboration of stakeholders to students.
2. A lecture on Geopolymer concrete by Prof. Raghavendra A was arranged for students of 5th semester on 31/01/2022. The lecture focused on the raw materials used for production of geopolymer concrete, its chemical composition and mix proportioning. Also, the speaker highlighted the advantages of Geopolymer concrete over conventional one and its application in the various civil engineering fields.
3. Students of 4th, 6th & 8th semester visited KRS Dam as an industrial visit to gain knowledge on hydraulic structure on 11/06/2022. Mr. Charan Prakash, Junior Engineer, KRS Dam guided the students. The students were highlighted about the details of gates, spillway, outlet works, intake tower and powerhouse built on downstream side of the dam.
4. Students of 6th semester were made to visit the ongoing Bangalore-Mysuru expressway near Baburayana Koppal on 14/06/2022 along with all the faculty members. Mr. Murugan In-charge Engineer explained the significance of the project of total road length 119km which is being constructed in 2 phases. Students were taught about earthwork excavation and instruments used and about the retaining structures. Plan of bridge and reinforcement detailing drawing were shown to the students.
5. Students of 6th semester visited ITC food production unit on 10/03/2022. An event was organized for girl students, on account of women's day. Students were emphasized on women safety and ethical role of women in life by Ms. Inchara, In-charge H R Department. The students were also

- guided about food processing and packing of ready-mix food products prepared in their production unit.
6. Mr. Raja K, Plant Manager, Sarala Industries delivered a seminar on “Advances in construction materials” on 25/05/2022 to 4th semester students. The speaker enlightened about the Columbia vibration technology for block production adopted in their industry. The speaker emphasized curing technique like vaporization method and wrapping method. Also presented about the High-Performance Concrete, Self-healing materials and cross laminated timber used in tall buildings.
 7. Students of 4th semester visited a canal near Srirangapatna as a part of site visit with faculty in charge Prof. Rohith Jain on 24/05/2022 to gain practical knowledge of hydraulic structure. Students were explained about canal, criteria adopted for selecting a site for canal, the components of canal and hydraulic structures such as canal regulators, outlets, notches, cross drainage works etc.
 8. A seminar on “Project presentation, professional writing and paper publishing” was conducted by Prof. Akshay N K, Assistant Professor on 04/04/2022 to the students of 8th semester. The aim of the seminar is to improve the professional skills of students in writing and presentation and to encourage students to publish their project work.
 9. A site visit to Mangala RMC was arranged to students of 8th semester on 06/04/2022. Mr. Mahantesh, Plant Manager, guided the students. During the visit, students learnt about the procurement of raw material, equipments and their functioning and control system unit used for mix proportioning. Students also gained knowledge in preliminary tests carried out on raw materials and quality checking.
 10. Seminar on “flooring materials and selection” was conducted to 3rd semester students on 20/12/2022 in association with Builders Association of India to enhance the knowledge of students on flooring materials. The

speaker Mr. Subramanya, Partner, Shathayu Civil Consultants presented students about different flooring materials available in the market and their versatility. He enlightened about ceramic tiles, flooring laminates, vinyl flooring wood laminated floorings and about the selection of different materials for different spaces.

11. Students of 5th and 7th semester visited “My Build 2022” a construction industry expo on 10/12/2022 organized by Builders Association of India. Students benefited from the knowledge of construction materials, interiors, equipment and technologies in the construction industry. Expo showcased many national and international company’ s ideas and technologies in construction sector. Also, students witnessed other aspects of civil engineering like roofing materials, rainwater harvesting, elevators, kitchen cabinets, building acoustics etc.
12. Mr. Snake Shyam, Former corporator & animal activist presented an expert Talk on “Effect of human intervention in Biodiversity of Karnataka” for students of 3rd, 5th & 7th semester. The speaker emphasized on biodiversity, deforestation, habitat loss, endangered species, awareness campaigns, ecological balance, natural habitats, environmental impact, climate change conservation, wildlife protection and human-wildlife conflict to create social awareness about human intervention on biodiversity.
13. Mr. Manjunath, Airport Director, Mysuru presented an expert talk on “Current development trend in Airport systems” for students of 7th semester. Expert emphasized basic components of airport layout, current Airplane schedules from Mysore city and technology used in monitoring the functioning of the airport system. Also enlightened students about future outgrowth of the airport due to outer ring road provision and other establishments through smart city in and around region. Speaker also depicted the job opportunity for Civil Engineers in the Airport Authority of India.

14. Students of 5th and 7th semester participated in the presentation done by Dr. Bindya J, MBBS, MD Psychiatry, Lady Medical Officer, MIMS, Mandya on 23-11-2022. The session focused on understanding student Psychology, causes of stress in students, coping mechanisms for students, and how to create a supportive environment.
15. A seminar on “Special concrete and its applications” by Mr. Sanjay, Partner, Anika Civil Consultants was conducted on 23/11/2022 for the students of 5th semester. The expert expressed about special concrete, its applications, advancement and challenges and considerations of using special concrete to students.
16. A seminar was conducted to students of 3rd and 5th semester on 08/11/2022 with a motto of enhancing the knowledge of students on formwork and scaffolding. The presenter was Mr. Jai Praveen, Partner, Creative Construction & Consultants. The presenter emphasized students about different formwork and scaffolding materials available and their usage in construction industry.
17. Mr. Sainath Habalkar presented a talk on “Entrepreneurship qualities” for students of 7th semester on 21-11-2022. The motto of the talk was to make students aware of entrepreneurial knowledge and skills. The speaker enlightened students about the visionary, passionate, risk - taker, creativeness, and resilience, adaptation, and leadership, resourceful and persistent qualities of entrepreneur.
18. Communication skill development training by The Hindu Group was arranged to students of 5th semester for spa of 15 days from 17/10/2022 to 10/11/2022. The training helped students to gain knowledge related to skills such as active listening, non-verbal communication, assertiveness, empathy, effective speaking, building rapport, collaboration etc.
19. Students of 3rd, 5th and 7th visited SVG Exports Pvt. Ltd at Chamarajanagar on 07/11/2022. Mr. Raghu, In-charge Engineer of the company guided

students about the site condition, blasting technique and mining equipment used in their quarry. Also, students visited the production unit and were exposed to procedure of cleaning, cutting, finishing and packing of Dolerite dyke granite production.

20. Mr. Ramesh, Marketing In-charge, Institute of Engineers, India (Mysore Chapter) presented an expert talk on “Exposure to importance of Professional body membership” for students of odd semester of Civil Engineering Department. Expert focused on the events organized under the professional bodies and how it helps to develop the relation with industrial experts which benefits individuals to showcase their skill to the society. The procedure for enrolling to Institute of Engineers under student category was emphasized.
21. A site visit to MPro RMC was arranged for students of 3rd and 5th semester on 21/10/2022. Mr. Arun P, Incharge Engineer, MPro RMC plant guided the students. During the visit, students learnt about the various components used in RMC unit, preliminary test conducted on raw materials, different grades of concrete produced and the mechanism of proportioning the materials in control room.
22. Mr. Kumar and Mrs. Rashmi presented a technical talk on “Introduction to steel Detailing using Tekla Structures” as modern tool usage for students of 7th semester. Experts delivered on the basic ideas of steel detailing and enlightened students on Tekla software. The speaker discussed on basic toolbars, knowledge on importing the drawings to Tekla software, advance level BIM environment, 3D models and connections for various structure and idea on types of connections and their properties with respect to steel structure.
23. A lecture on Structural steel material for students of 7th semester was arranged on 20/09/2022. The lecture focused on structural steel material, types commonly used in the construction industry and manufacturing

process. The manufacturing process such as preparation of raw materials by removing impurities, iron making, steel making, casting and finishing of steel products was also highlighted.

- 24. The annual technical event was conducted on 23rd and 24th June 2022. More than 150 students from Engineering colleges in Karnataka participated in the technical & non-technical events. Technical events included “Do U follow code” , “It’ s a Windy day” , “Quirky Surveyor” , “Strongest cube” , “Super draftsman” and “Treasure Hunt” . Non-technical event comprised of a short over cricket tournament called “Dr. Puneeth Rajkumar Cup” in which 14 teams participated.**

ACADEMIC ACHIEVERS

ODD SEMESTER 2021-22

7 th semester		
Topper	Punya S L	9.55 SGPA
2nd topper	Yashika C V	9.45 SGPA
3rd topper	Anitha D N	9.40 SGPA
5 th semester		
Topper	Ishwarya B	9.68 SGPA
2nd topper	Suhas R	9.60 SGPA
3rd topper	Abhishek S	9.56 SGPA
3 rd semester		
Topper	Rekha S	9.44 SGPA
2nd topper	Chandana K	9.20 SGPA
3rd topper	Chitra N	9.08 SGPA

EVEN SEMESTER 2021-22

8 th semester		
Topper	Bhoomika K	9.83 SGPA
2nd topper	Charanprakash	9.83 SGPA
3rd topper	Siri R	9.83 SGPA
6 th semester		
Topper	Suhas R	9.71 SGPA
2nd topper	Ishwarya B	9.37 SGPA
3rd topper	Yashaswi K P	9.29 SGPA
4 th semester		
Topper	Rekha S	9.17 SGPA
2nd topper	Madhura B	8.92 SGPA
3rd topper	Chethana V	8.50 SGPA

KOLKATA FLYOVER COLLAPSE- APRIL 2016



Background

Kolkata is the capital city of West Bengal state within the Indian Union. It covers an area of approximately 185sq. km and current population around 5 million. It is situated on the banks of the river Ganges (GANGA) and is one of the most densely populated cities in the country. To overcome the traffic congestion on the major roads in the business districts, the Govt has undertaken construction of several flyovers which has eased the traffic flow in certain localities. One of the recent ones is a 2.5km stretch in Central Kolkata, having 2 serviceable roads with

provision for expansion to 4 lanes in future as traffic flow grows. The location of the flyover is shown in the above map of the city. Construction of the flyover started in 2007 and target completion was scheduled in 2009 to cater to the needs for uninterrupted construction. But due to various constraints specially in getting regulatory clearances as work site situation changed and also due to fund constraint, the contractor had financial difficulties in progressing as per schedule. There was change of govt in between so that the new target was set at 2014.

About 75% of the work was completed and it was expected that the facilities will be commissioned in 2016. Unfortunately, on March 26, 2016, part of the flyover structure collapsed causing loss of lives and damage to properties. The magnitude of the accident was so severe that Army had to be called in and it took over 6 days to clear the debris and rescue dead bodies trapped under the debris. It was a heart rendering scene.

Construction

The flyover has to be constructed on a very busy stretch of the city road network. Therefore, the construction must not create hurdles to the traffic flow. Moreover, the area is highly congested so the project must be completed within very tight time schedule. Keeping all these factors in mind it was decided to adopt structural steel structures for the superstructure.

Box girders were chosen for columns and beams forming rigid portal frames on RCC foundations supported on bored cast in pipes driven to 45m below the ground level. The soil is predominantly sandy clay with mix of gangetic alluvium having bearing capacity around 8 T/m². This required the piles to be on a bed of compact sand stone at average 45m depth. Schematics of the construction shown below.

To expedite the project completion and reduce site work, the super structure was designed using structural steel portal of box sections erected over RCC foundations supported on bored cast in situ piles driven 45m under the GL where a layer of compact sandstone exists. On top of the steel super structure a cast in situ RCC slab 200mm thick was designed topped by a 100mm PC wearing course and finally 50mm thick mastic asphalt surfacing was laid. The live load was as per guideline of various codes and Ministry of Surface Transport, Govt of India. However, as the bridge was not commissioned at the time of accident, the live load was absent.



Application of forensic engineering in root cause failure analysis (RCFA)

In the absence of adequate design data, and restrictions on site visits. Forensic engineering principles have been applied to ascertain the Root Cause Failure Analysis. It is to be noted that failure has occurred when the bridge was not subjected to any live load from moving vehicles.

Thus, it can be inferred that there was some basic design deficiency. The longitudinal beams spanning between the portal hammer head frames had no bracings on the compression flanges to prevent lateral buckling. Such buckling imposed additional horizontal loads on the portal frame box girders. At the portal frame hammer heads, the horizontal box girder beams should have extra depth at the knee joint to withstand additional moments resulting from moment redistribution according to stiffness of each member at the joint. The box girders should have internal ribs to withstand torsion forces resulting from torsion and buckling of the girders. The various stages for failure of the portal frame girders are shown below. Thus, it can be concluded that there were inherent design deficiencies from the beginning. The other contributory factors for failure can be attributed to inadequate QA/QC measures at shop and site during fabrication and site erection of the portal frames. Normal practice for acceptance of structural steel is to depend on mill test certificates. In such girders it is advisable to carry out USG tests and Pulse echo testing of steel plates to ascertain that they are free from internal defects. From the failure pattern of the top flange plates of the portal frame box girders, it is clear that there were internal defects inside the plates causing rupture and eventual failure of the top flange.

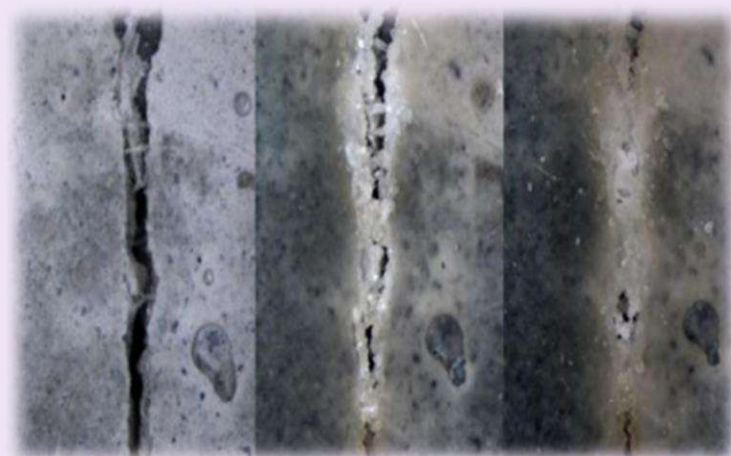
By,
Ishwarya B

LATEST TECHNOLOGIES IN CIVIL ENGINEERING

New materials and energy, design approaches, as well as advances in digital technology and big data, are creating a wave of innovation within the construction industry. Here are the most exciting developments.

- Self-healing concrete
- Thermal bridging
- Kinetic roads

SELF HEALING CONCRETE: - Self-healing concrete is a type of concrete that can heal self autogenously fill up the cracks without any intervention from external sources. Most of the research indicates that the addition of bacteria with or without nutrients affects the mechanical properties of concrete negatively. Various methods of producing self-healing concrete are available in previous research but using bacterial as self -healing agent enables the concrete to be environmentally friendly. Most of the studies by WANG JIANYUN employs *Bacillus sphaericus* LMG 22557 as the bacteria of the self-healing agent while JONKER ET AL (2010) used *Bacillus pseudoformalis* DSM 8715 and B. Self-healing concrete is used in the construction of bridges and all road constructions as they often experience small-sized cracks due to heavy loads and constantly need maintenance. However, self-healing concrete is still being perfected. While it may be hard to get your hands on some self-healing concrete at moment, you can expect it to dominate the industry within the next few years.



TECHNICAL ARTICLES

KINETIC FOOTFALL: - Another technology is **KINETIC ENERGY** which is under development that is pavement provides a technology that enables the flooring to harness the energy of footsteps. It may be utilized indoors or outdoors in high traffic areas and generates electricity from pedestrian footfall using an electromagnetic induction process and flywheel energy storage. The Kinetic footfall is the most efficient transport hub where a large flow of people will pass over it. The company development has been done so far on a football pitch in Rio de Janeiro to help power the floodlights around the pitch.



KINETIC ROADS: - The utility of Kinetic energy potential in roadways is exploring by Italian start-up underground power. The company has to developed roadways a technology called **LYBRA**, a tire-like rubber paving that converts the Kinetic energy produced by moving vehicles into electrical energy. The technology is developed in collaboration with the Polytechnic University of Milan, Lybra operates on the principle that a braking car dissipates Kinetic energy. This new cutting-edge technology is able to collect, convert Kinetic energy into electricity and pass it on to the electricity grid also for improving road safety, the device upgrades and promotes sustainability of road innovation in construction.

Thermal bridging is used in reference to a building's thermal envelope, which is a layer of the building enclosure system that resists heat flow between the interior conditioned environment and the exterior unconditioned environment. Heat will transfer through a building's thermal envelope at different rates depending on the materials present throughout the envelope. Heat transfer will be greater at thermal bridge locations than where insulation exists because there is less thermal resistance. In the winter, when exterior temperature is typically lower than interior temperature, heat flows outward and will flow at greater rates through thermal bridges. At a thermal bridge location, the surface temperature on the inside of the building envelope will be lower than the surrounding area. In the summer, when the exterior temperature is typically higher than the interior temperature, heat flows inward, and at greater rates through thermal bridges. This causes winter heat losses and summer heat gains for conditioned spaces in buildings.

Thermal bridges can occur at several locations within a building envelope; most commonly, they occur at junctions between two or more building elements. Common locations include:

- Floor-to-wall or balcony-to-wall junctions, including slab-on-grade and concrete balconies or outdoor patios that extend the floor slab through the building envelope.
- Roof/Ceiling-to-wall junctions, especially where full ceiling insulation depths may not be achieved.
- Window-to-wall junctions
- Door-to-wall junctions
- Wall-to-wall junctions
- Wood, steel or concrete members, such as studs and joists, incorporated in exterior wall, ceiling, or roof construction.
- Windows and doors, especially frames components
- Areas with gaps in or poorly installed insulation
- Metal ties in masonry cavity walls

By,
Spoorthi C

LOW-COST HOUSING



Low-Cost Housing is a new concept which deals with effective budgeting and following of techniques which help in reducing the cost construction using locally available materials along with improved skills and technology without sacrificing the strength, performance and life of the structure. There is huge misconception that low-cost housing is suitable for only substandard works, and they are constructed by utilizing cheap building materials of low quality. The fact is that Low-cost housing is done by proper management of resources. Economy is also achieved by postponing finishing works or implementing them in phases.

Building Cost

The building construction cost can be divided into two parts namely:

- Building material cost: 65 to 70 %
- Labour cost: 65 to 70 %

Now in low-cost housing, building material cost is less because we make use of the locally available materials, and the labour cost can be reduced by properly making the time schedule of our work. Cost reduction is achieved through the selection of more efficient material or by an improved design.

Properties of Low-Costing housing

- Plinth: It is suggested to adopt 1 ft. height above ground level for the plinth and may be constructed with a cement mortar of 1:6. The plinth slab of 4 to 6" which is normally adopted can be avoided and in its place brick on edge can be used for reducing the cost. By adopting this procedure, the cost of plinth foundation can be reduced by about 35 to 50%. It is necessary to take precaution of providing impervious blanket like concrete slabs or stone slabs all-round the building to enable to reduce erosion of soil and thereby avoiding exposure of foundation surface and crack formation.
- Walling: Wall thickness of 6 to 9" is recommended for adoption in the construction of walls all-round the building and 4 1/2" for inside walls. It is suggested to use burnt bricks which are immersed in water for 24 hours and then should be used for the walls.
- Rat - trap bond wall: It is a cavity wall construction with the added advantage of thermal comfort and reduction in the quantity of bricks required for masonry work. By adopting this method of bonding of brick masonry compared to traditional English or Flemish bond masonry, it is possible to reduce in the material cost of bricks by 25% and about 10 to 15% in the masonry cost. By adopting the rat-trap bond method one can create aesthetically pleasing wall surface and plastering can be avoided.

- Concrete block walling: In view of high energy consumption by burnt brick it is suggested to use concrete block (block hollow and solid) which consumes about only 1/3 of the energy of the burnt bricks in its production. By using concrete block masonry, the wall thickness can be reduced from 20 cms to 15 Cms. Concrete block masonry saves mortar consumption, speedy construction of wall resulting in higher output of labour, plastering can be avoided thereby an overall saving of 10 to 25% can be achieved.
- Soil cement block technology: It is an alternative method of construction of walls using soil cement blocks in place of burnt bricks masonry. It is an energy efficient method of construction where soil is mixed with 5% and above cement and pressed in a hand operated machine and cured well and then used in masonry. This masonry doesn't require plastering on both sides of the wall. The overall economy that could be achieved with the soil cement technology is about 15 to 20% compared to conventional method of construction.
- Doors and windows: It is suggested not to use wood for doors and windows and in its place concrete or steel section frames shall be used for achieving saving in cost up to 30 to 40%. Similarly for shutters commercially available block boards, fibre or wooden practical boards etc., shall be used for reducing the cost by about 25%. By adopting brick jelly work and precast components effective ventilation could be provided to the building and also the construction cost could be saved up to 50% over the window components.
- Lintals and Chajjas: The traditional R.C.C. lintels which are costly can be replaced by brick arches for small spans and save construction costs up to 30 to 40% over the traditional method of construction. By adopting arches of different shapes, a ...
- Roofing: Normally 5" (12.5 cms) thick R.C.C. slabs are used for roofing of residential buildings. By adopting rationally designed insitu construction practices like filler slab and precast elements the construction cost of roofing can be reduced by about 20 to 25%.
- Filler slabs: They are normal RCC slabs where bottom half (tension) concrete portions are replaced by filler materials such as bricks, tiles, cellular concrete blocks, etc. These filler materials are so placed as not to compromise structural strength, result in replacing

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unwanted and nonfunctional tension concrete, thus resulting in economy. These are safe, sound and provide aesthetically pleasing pattern ceilings and need no plaster.

- Jack arch roof/floor: They are easy to construct, save on cement and steel, and are more appropriate in hot climates. These can be constructed using compressed earth blocks also as alternative to bricks for further economy.
- Ferrocement channel/shell unit: Provide an economic solution to RCC slab by providing 30 to 40% cost reduction on floor/roof unit over RCC slabs without compromising the strength. These being precast, construction is speedy, economical due to avoidance of shuttering and facilitate quality control.
- Finishing Work: The cost of finishing items like sanitary, electricity, painting etc., varies depending upon the type and quality of products used in the building and its cost reduction is left to the individual choice and liking.



By,
Yashika C V

OFFSHORE WIND POWER



Offshore wind power or offshore wind energy is the energy taken from the force of the winds out at sea, transformed into electricity and supplied into the electricity network onshore. It is the generation of electricity through wind farms in bodies of water, usually at sea. Offshore farms are in shallow waters (up to 60 meters deep) and away from the coast, marine traffic routes.

There are higher wind speeds offshore than on land, so offshore farms generate more electricity. Offshore wind farms are also less controversial than those on land, as they have less impact on people and the landscape. This is a type of renewable energy, there are numerous benefits because it does not pollute. The cost of offshore has historically been higher than the onshore. Offshore wind generation grew at over 30 percent per year in the 2010s. As of 2020, offshore wind power had become a significant part of northern Europe power generation. 30GW of offshore wind projects by 2030 is the target of offshore wind in India. The global installed offshore wind capacity is expected to reach 630 gigawatts (GW) by 2050. First offshore wind farm

- Vindeby on July 15, 1991. It is operating for 26 years. India's largest offshore is Muppandal wind.

Globally offshore wind is about two decades old history with the first offshore wind turbine in Denmark in 1991 which has been decommissioned in 2017. As of now, offshore wind energy projects of more than 57 GW are installed in 18 different countries, of which leading countries are UK, China, Germany, Denmark and The Netherlands

Advantage of Offshore Wind Power

- Distance from local populations, therefore cancelling worries about noise from the rotation of the wind turbine blades and reducing the impact on local environments.
- Space to dramatically increase the number of wind farms and therefore clean energy to homes and businesses.
- Job creation - the government estimates that a step rise to 40 gigawatts (GW) of offshore wind in the same period will support up to 60,000 new jobs. Our own analysis in the Job That Can't Wait report shows that the country needs to fill 400,000 jobs in the energy sector in the next three decades to deliver net zero by 2050.
- On top of being clean and green, offshore wind power is cost-efficient so electricity bills will be reduced.

Disadvantages of Offshore Wind Power

- Worries about the effect on birds and marine life. Here, the effect unchecked climate change poses to wildlife needs to be balanced with ongoing research into habitat loss, disturbance and collision. The Royal Society for the Protection of Birds (RSPB) acknowledges the bigger picture, saying: "Switching to renewable energy now, rather than in 10 or 20 years, is essential if we are to stabilize greenhouse gases in the atmosphere at safe levels." Wind farm developers work closely with local environmental groups, through a consultation process on the siting and scale of wind farms.

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- Some potential disruption during infrastructure creation, although the integration of interconnectors means less disruption than multi projects.

Challenges to increasing offshore wind generation.

Minimizing the impact on local communities and creating positive relations, while creating the infrastructure to transport extra electricity from the coast to cities cost-effectively, all while creating local jobs, are some of the challenges.

We welcome ambition and believe that, while challenging, it's achievable. The scale of projects in the pipeline is unprecedented. And it's a stretching target that will need the right regulatory, planning and policy framework to support the requisite investment, both on and offshore, without losing the good will of communities.



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The windiest parts of most countries are offshore, out at sea, so putting windfarms out there is the perfect source of renewable energy for us. Find out more about the advances being made in offshore energy and how we'll be using it to generate much more clean energy for a net zero future.

India is blessed with a coastline of about 7600 km surrounded by water on three sides and has good prospects of harnessing offshore wind energy. Offshore wind power is a constantly renewable and infinite energy source, and the conversion of wind into power creates no harmful greenhouse gas emissions. As we work to tackle climate change and reduce greenhouse gases, offshore wind power will play an essential role in our future electricity generation.

By,
Yashaswi K P

PILE CAP CONSTRUCTION



A pile cap is a mass concrete structure contains more piles embeds in it. A group of piles drives into clay, soft, and loose soils to provide a strong, stable and suitable foundation.

The pile is designed by considering the punching shear around the heads of the piles and column base. It also designed for bending moment due to the transmission of loads from columns to the individual piles.

Pile cap Necessity

Pile is necessary when the bearing capacity of soil below the structure is insufficient for a spread footing. It transfers the load to deeper, firmer strata. Piles used where the soil particularly affects by seasonal changes, to transfer the load below the level of such influence.



The load support exceeds the bearing capacity of a single pile, a group of piles is used.

The group capped by a spread footing or a cap to distribute load to all piles in the group. Where there are a large number of closely spaced piles, provide individual caps. It is more economical to provide just one large cap, forming a piled raft.

SHAPES

The shape and plan dimensions of the pile cap depend on two factors.

1. Number of piles in the group and
2. The spacing between each pile.

The most common shapes are

1. Number of piles in the group

A group of piles accommodates in a pile cap.



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In two pile cap, two piles are embedding in one pile cap. The picture shows two and one pile cap PCC arrangements for pile cap.



The shapes of the pile caps minimize the plan area for symmetrical pile arrangement about the load.

It is overhand the outer piles by at least 150mm and not excessive. And not more than the diameter of the pile diameter.

There are different shapes of pile caps according to the number of piles.



DEPTH

The overall depth provides sufficient bond length for the pile reinforcement and the column reinforcement.

The depth decides by the following criteria.

1. Punching shear.
2. Pile anchorage.
3. Shrinkage and swelling of the soil.
4. Frost attack.
5. Groundwater table.

The most important thing is a shear capacity of the pile which affects the selection of the pile depth.

SECONDARY REINFORCEMENT:

The secondary reinforcement provides to prevent the piles from splaying outwards from the pile cap.

1. This reinforcement provided at the bottom of the pile cap running around the longitudinal reinforcement. Projecting from the piles into the pile cap.
2. The direction of the secondary reinforcement is changing at the head of each pile.

The amount of secondary reinforcement changing its direction at the head of each pile. And is not less than 20% of the main tensile reinforcement and well bond.

By,
Rekha S

POLLUTION ABSORBING BRICKS



Pollution absorbing bricks work on the principle of air filtration. They filter the air from the outside and provide filtered air to the inside of the structure. Due to the rise in population, the world is facing critical issues such as climate change, scarcity of food and water, and pollution. To overcome these issues, researchers have come up with various solutions. Sustainability is one of the factors that hold the highest significance in the construction sector. Thanks to the advancement in technology, we have innovated various sustainable materials and one of these inventions is pollution absorbing bricks.

In this article we can see everything regarding pollution absorbing bricks, including their composition and function.

What is Pollution Absorbing Bricks?

Regarding climate change, one of the growing concerns is air pollution. Its severe effects on human health cannot be denied. The excess carbon in the air that emits from artificial resources entraps heat on the surface of the earth, which has caused global temperatures to rise. To cater to these prevalent issues, designers and architects have taken measures to reduce the carbon footprint in the environment, so that its dangerous effects on the atmosphere can be

minimized. Pollution absorbing bricks were invented to tackle the issue of air pollution. They are an amazing alternative to traditional bricks. They are also known as “breath bricks.”

Concept Behind Pollution Absorbing Bricks.

Pollution absorbing bricks works on the principle of air filtration. They filter the air from the outside and provide filtered air to the inside of the structure. These bricks separate dust particles and other pollutants from the air, leaving it clean, and safe for breathing. The bricks are a work of genius inspired by the concept of “cyclone filtration” that one sees in vacuum cleaners. **Material and components of Pollution Absorbing Bricks.** Pollution blocking bricks come in the form of poriferous concrete blocks. Their shape and design are devised particularly in a faceted manner to let the airflow inside them with ease. To reinforce the structure, shafts are supplied. A coupler rod made of reused plastic is located between two bricks, also, a hopper is attached at the bottom part which collects dirt particles.

The function of Pollution Absorbing Bricks.

Breath bricks act as a passive filtration setup fixed in the walls of the structure. It possesses an cavity wall which is a two-layered structure built on the exterior with pollution-absorbing bricks which block pollutants and an internal wall that insulates the inner atmosphere of the structure.

Inside the breath brick, a cyclone filtration filter is attached. The filter lets the air from the surroundings pass through the brick, like a cyclone, where it separates the pollutants and dust and lets the clean air enter the internal structure. After that, a brick coupler – an essential part of the system, directs the filtered air. It is made up of recycled plastic and is more of an outlet for filtered air. Furthermore, it directs the filtered particles to the hopper.

As all the dust particles get collected in the hopper, the user needs to empty and clean it regularly. However, they don’t need to clean it daily due to its immense size. The brick coupler positions the bricks by putting out structural reinforcement through one of its shafts. Once the filtration is done, the air passes through the chamber and into the opening. Besides, if there is a functioning outlet or window in the structure, then the air directly enters the interiors through it. In case there is no functioning opening, the air passes through the HVAC system.

Advantages of Pollution Absorbing Bricks

A test was carried out to determine the capacity of pollution-absorbing bricks. The results show that the bricks filter up to 30% of dust particles of about 2.5 microns diameter or smaller. This is equal to the effects of smoke or haze. It blocks 100% of rough particles that have a diameter of more than or equal to 10 microns.

- **Eco-friendly System:** This system is more eco-friendly as it does not utilize any mechanical components. Moreover, pollution-absorbing bricks are an innovative approach to sustainable construction materials.
- **Cost-Effectiveness:** Besides being more environmentally friendly, it is more economic compared to the air filtration technology used on a large scale. Moreover, no special skilled laborers are required to install the system, making it even more cost-effective.

Disadvantages of Pollution Absorbing Bricks

In addition to advantages, there are some disadvantages of pollution absorbing bricks as well, which are as follows.

- **Takes Up More Space:** This pollution-absorbing brick wall takes twice the space as regular walls. It certainly can result in a reduction of space inside the structure.

Low Capacity to Bear Loads: These bricks have less capacity to bear the load of the total structure of the building, hence you can only build two-storey structures with these walls.



By,
Akshay Kumar

REPAIRING CONCRETE COLUMN CRACKS AND DAMAGES



Repairing concrete column cracks and damages is essential. The column concrete damages are becoming critical in mass structures like shopping malls, commercial buildings. To carry out the column repair identify the axial dead load, live load, and horizontal load.

Repairing concrete columns are two category.

- Surface or cosmetic - covers local deterioration.
- structural repair - strengthens the affected columns.

Repairing Concrete Methods for cracks and damages

1. Unloading Columns

unloading the column is necessary. Entire cross-section of the repair column is capable of carrying the reintroduce design load. Without unloading, new repair does not carry any load. Drying shrinkage of new material reduces the share of the load.

2. Redistribution of the Load

In corrosion of reinforcement and concrete deterioration, Redistribute a load of column concrete with alternative supports for repair.

3. Supplemental Reinforcing Steel

The supplemental vertical bar to fix outside the original cage with extra ties. Provide adequate cover and Place Apartment's bars outside the tie bars to increase column dimensions. Use Hairpin ties, of stainless steel laterally to support the supplemental bars. Column ties cannot disturb at the repair of the longitudinal bars as it causes buckling.

4. Concrete Removal

Remove concrete within a column cage and unload the column. If not, the longitudinal bars are buckle and compression failure of column take place.

5. Corroded Reinforcing Steel

It's not necessary to remove the corrode reinforcing bar with the reduce cross-sectional area if the loss is supplement with additional reinforcing bars. The partially corrode reinforcing bars are thoroughly clean by sandblasting to obtain the bare metal. The bars with excessive corrosion is replacing with fresh reinforcement having full laps on both sides.

6. Corroded Ties

Replace the corrode ties by adding stainless steel hairpin ties that are anchor into the concrete. It is often necessary to deposit extra material around columns to provide an adequate cover over the supplemental ties.

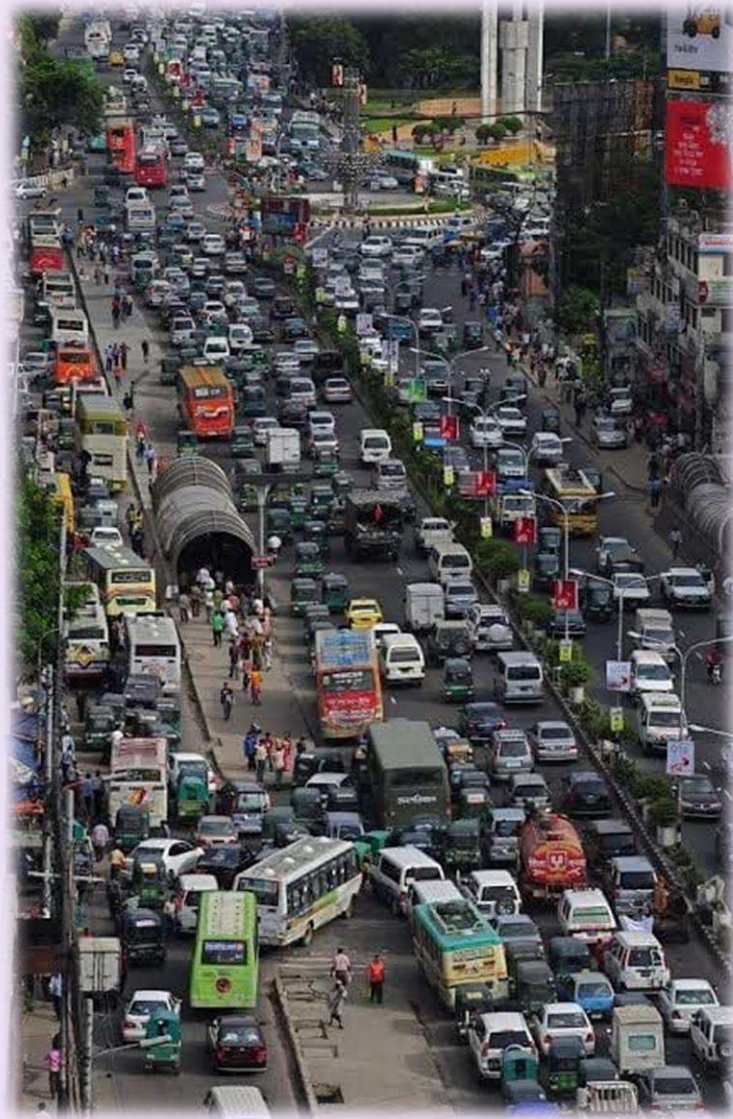
7. Low-strength Concrete

Where the concrete strength is low, resulting in insufficient load-carrying capacity, several alternatives are available:

- Shore the column and remove and replace the in-place concrete.
- Shore column and increase the size of the column to reduce bending stresses and increase confinement on placed weak concrete.
- Wrap the column with carbon- or glass-reinforced plastic.
- Install a supplemental column.

By,
Akash A S

TRAFFIC CONTROL PLAN



Traffic Control Plan means a specific plan that includes but is not limited to signing; application and removal of pavement markings; construction sequencing and scheduling; methods and devices for delineation and channelization; placement and maintenance of devices; traffic regulation; and inspection. The basic objective of each traffic control plan (TCP) is to permit the contractor to work within the public right of way efficiently and effectively, while maintaining a safe, uniform flow of traffic. Both construction work and the public must be given equal consideration when developing a traffic control plan. In addition, when considering the

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public, attention must be given to all aspects of travel through the work zone: i.e., vehicular, bicycle, and pedestrian.

Checklist and guidelines for traffic control plans

It is the goal of the Traffic Control Plan (TCP) to achieve balance between providing a safe working environment within the right-of-way, and providing motorists, bicyclists, and pedestrians with a safe and efficient means to travel through the work area.

The following checklist is provided to assist Developers and Contractors in establishing uniformity in the development of TCP's. This checklist should be used as a guide to ensure that all the basic elements are covered and will help speed up the plan review process.

- Show all existing traffic signals and traffic control signs.
- Show existing striping, pavement markings, painted crosswalks and bike lanes. Include total roadway widths, individual lane widths, bike lane widths, median dimensions, etc.
- Show existing curbs, gutters, sidewalks, driveways and intersections in the construction work zone including areas affected by taper transition.
- Indicate posted speed limits. TCP shall be legible, using either ink or computer-generated graphics.
- Indicate contractors name, address and telephone number. Include the name and telephone number of the 24-hour contact person representing the contractor.
- Indicate the north arrow and scale or NOT TO SCALE (N.T.S.).
- Show all streets in the work zone vicinity to ensure proper orientation.
- Show location and dimensions of the construction work zone.
- Show staging area and materials storage area, as appropriate.
- Label all taper lengths and widths, delineator spacing and sign spacing. All taper lengths shall be per Local standards.

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- Use a legend to define all symbols and designate them with Local nomenclature.
- Show all parking restriction zones and signs, as appropriate.
- Road closures will require approval from the Deputy Director of Public Works for Transportation or his/her designs. Any road closure also requires notification to be provided to the Local Fire Department, as well as the Local Police Department.
- Signs and barricades will be required to direct pedestrians through or around the construction work zone and shall be shown on the TCP.

Indicate the duration of the construction work and subsequent traffic control on the plan.



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- Guidelines for Traffic control Plan
- All traffic control devices shall conform to the latest edition of Traffic Manual of Traffic Control Devices for Construction and Maintenance Work Zones and the Standard Specifications for Public Works Construction.
- The City, through its designated employees, reserves the right to initiate field changes to assure public safety.
- If a road closure is approved for a specific duration, the contractor shall submit a bond for a penalty drawn in favor of the corresponding city of the state. If the road is not reopened on the approved date, the amount prescribed by the state per day shall be deducted from the bond as liquidated damages.
- All traffic control devices shall be removed from view when not in use.
- Work hours shall be restricted to between 8:00 a.m. to 4:00 p.m. unless approved otherwise or according to the customs of the area.
- Trenches must be back filled or plated during non-working hours.
- Pedestrian controls shall be provided as shown on the plans.
- Temporary "NO PARKING" signs shall be posted 24 hours prior to commencing work.
- Access to driveways will always be maintained unless other arrangements are made.
- The contractor shall make immediate temporary repairs to any streetlight/traffic signal conduit damaged during construction. Permanent repairs must be made within five (5 say) working days.
- All striping removed or damaged will be replaced by the contractor with like material within 24 hours (or replaced with temporary tape, though the contractor is still responsible for the full replacement as mentioned above).

By,
Preethu Manjunath

URBAN DESIGN



Urban design in civil engineering refers to the process of planning and shaping the physical layout and organization of cities and urban areas. It involves considering various factors such as functionality, aesthetics, sustainability, and the needs of the community to create well-designed, livable, and efficient urban spaces. Civil engineers play a crucial role in urban design by providing technical expertise and knowledge in the planning and development of urban areas. They collaborate with architects, urban planners, and other professionals to design and construct infrastructure systems that support urban life.

Civil engineering is an essential component of urban design, as it provides the technical expertise needed to implement complex infrastructure projects. Civil engineers design and build structures that support urban life, including roads, bridges, tunnels, water supply systems, and sewage treatment plants. Together, urban design and civil engineering can shape cities that are not only functional and efficient, but also enjoyable and attractive places to live. By integrating sustainable design principles into their work, urban designers and civil engineers can help to create cities that are resilient to the challenges of climate change and other environmental threats. In recent years, there has been growing recognition of the importance of urban design and civil engineering in creating livable and sustainable urban environments. Many cities around the world have launched ambitious initiatives aimed at improving their urban infrastructure and enhancing the quality of life for their residents.

Importance of Urban design

Urban design is versatile and so urban designers can produce ideas and work that is indicative or specific, strategic or detailed, and this is reflected in the types of drawings, reports and ways of working commonly used:

- Urban design is visionary creating a ‘vision’ to show the economic, social and environmental benefits of investment or changes at a strategic scale over a wide area and over a long period of time. This is usually conveyed through a vision statement, projecting forward 20-25 years’ time to explain the future characteristics of an area and how people will use it. This can then be complemented by a development framework, outlining the key physical features that will deliver the vision.
- Urban design is fact-finding urban designers gather data and evidence about places to identify future options and test the feasibility and viability of change or development in context, for example transport and infrastructure capacity, development character and density, environmental capacity issues (such as flooding), plus local community needs and values. Feasibility studies usually include options and a recommendation on the ‘best fit’ scenario.

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- Urban design can be illustrative using masterplans, artists' impressions, photomontages, 3D models and photographs of other successful places, urban designers can bring to life how a development could look. This includes highlighting important local characteristics, landmarks and public spaces. Illustrative masterplans often show just one way in which design guidelines can be built out.
- Urban design setting specifications site-specific masterplans set out precise proposals for which planning consent is being sought, and the use, size, form and location of buildings, roads and open spaces, which are fixed. A local planning authority may prepare a site-specific development brief, which sets out the main characteristics required, and it allows developers to draw up a proposed scheme in response. Masterplans and design codes bring together plot-specific requirements for a site, which development proposals will need to comply with to be approved.

A local planning authority can also identify district-wide character design policies, which set out a combination of broad-brush design ideas - relating to materials and roof styles, for example - and specific requirements, such as minimum back-to-back distances for residential developments.



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Urban design is about a great variety of places: whether town and city centers, residential neighborhoods and suburbs, grassy fields on the edge of villages, down-at-heel industrial estates, or unloved and overlooked areas around train stations, rivers and canals. Urban design defines the nature of buildings and the spaces between them, and how the design itself should be worked out: design processes and outcomes. Urban design inspires, illustrates and defines how a place could be improved or protected to bring benefits to investors, developers and wider society.

By,
Sagar H S

SIR M VISVESVARAYA



India has seen brilliant engineers and Sir M Visvesvaraya was one of the most prominent builders of India. Engineers are massively important in developing the future of our society and progeny, Sir M Visvesvaraya's contribution to the nation is extremely valuable which will always remain in the history of the mankind. He is the most popular figure in the South Indian State of Karnataka, also called as "the maker of Modern Mysore". In this article we will go through the life and achievements of this great personality.

His life Earlier

Sir Mokshagundam Visvesvaraya, regarded in India as one of the foremost civil engineers. He was born on 15th of September 1861. His birthday is celebrated as Engineer's Day in India, Sri Lanka and Tanzania. Sir M Visvesvaraya worked as a civil engineer for the government of British India and later as Prime Minister of the Kingdom of Mysore. Visvesvaraya received his primary education in Bangalore and earned a Bachelor of Science (BSc) degree from the University of Madras. He later studied at the College of Engineering, Pune (then College of Science at the University of Bombay) and graduated as an engineer, receiving Diploma

in Civil Engineering (DCE). It was here that he became a member of the Deccan Club and was its first secretary; he would therefore have been well-acquainted with the progressives in Pune. He served as civil engineer as well as Dewan of Mysore, building and creating new environment for the upcoming generation and making history. Sir M Visvesvaraya took his last breath on 12th of April 1962, he lived for a century making the engineering community and all the Indians proud of him.

Engineering Career

Sir M Visvesvaraya worked as a civil engineer for the government of British India. Visvesvaraya became an assistant engineer in 1885 at the Public Works Department, Bombay, in Bombay Presidency.

In 1899, Visvesvaraya was invited to join the Indian Irrigation Commission where he implemented an intricate system of irrigation in the Deccan Plateau and designed and patented a system of automatic weir water floodgates that were first installed in 1903 at Khadakvasla Dam near Pune. These gates raised the storage level in the reservoir to the highest level likely to be attained without causing any damage to the dam. Based on the success of these gates, the same system was installed at Tigris Dam in Gwalior and later at the KRS Dam at Mysore, Karnataka. He later became the chief engineer of the Laxmi Talav Dam near Kolhapur.

In around 1906/1907, the Government of British India sent Visvesvaraya to the British Colony of Aden (present-day Yemen), to study water supply and drainage systems. The project prepared by him was successfully implemented in Aden.

After opting for voluntary retirement in 1908, Visvesvaraya took a foreign tour to study industrialised nations. Then, for a short period, he worked for Nizam Osman Ali Khan. He was one of the chief engineers of the flood protection system for the city of Hyderabad who suggested flood relief measures for the city, which was under constant threat by the Musi river. He achieved celebrity status when he designed a flood protection system for the city. He was instrumental in developing a system to protect Visakhapatnam port from sea erosion. This dam created the biggest reservoir in Asia at the time of its construction.

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In November 1909, at the invitation of Dewan Sir V.P. Madhava Rao, Visvesvaraya joined as a chief engineer of Mysore State. He was the Chief Engineer of the KRS Dam at Mysore. He was also later the chairman of the board of engineers for the Tungabhadra Dam in Hospet, Karnataka.

Honours

Visvesvaraya was appointed a Companion of the Order of the Indian Empire (CIE) in 1911 by King Edward VII. In 1915, while he was Dewan of Mysore, Visvesvaraya was knighted as a Knight Commander of the Order of the Indian Empire (KCIE) by King George V for his contributions to the public good.

After India attained independence, Visvesvaraya received the Bharat Ratna, India's highest civilian honor, in 1955. He received an honorary membership from the Institution of Civil Engineers, London, a fellowship from the Indian Institute of Science, Bangalore, and several honorary degrees including D.Sc., LL.D., D.Litt. from eight universities in India. He was the president of the 1923 session of the Indian Science Congress.

There have been many inspiring people all over the world and every personality convey the message of overcoming any kind of hardship and achieving whatever they dreamed of and Sir M Visvesvaraya has said through his work that it is better to work out than rust out. His quotes are inspiring as his work does. Remembering his works and contribution to this world we are amazed and inspired by his work. He was the greatest engineer India saw and this will always be an influence to young engineers like us.

By,
Chandan M

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Make in India vaccines for the world: 24 crores doses supplied to over 100 countries under ‘Vaccine Maitri’

Vaccine Maitri ("Vaccine Friendship") is a humanitarian initiative undertaken by the Indian government to provide COVID-19 vaccines to countries around the world. The government started providing vaccines from 20 January 2021.

The "Make in India" initiative launched by the Government of India has been instrumental in promoting domestic manufacturing and production across various sectors, including pharmaceuticals. As part of this initiative, India has been actively involved in producing COVID-19 vaccines and supplying them to countries around the world under the "Vaccine Maitri" (vaccine friendship) program.

As per information up to September 2021, India had supplied more than 24 crore (240 million) doses of COVID-19 vaccines to over 100 countries through the Vaccine Maitri program. These vaccines were primarily manufactured by two Indian vaccine manufacturers, Serum Institute of India (SII) and Bharat Biotech. The vaccines supplied included Covishield (the Oxford-AstraZeneca vaccine manufactured by SII) and Covaxin (an indigenous vaccine developed by Bharat Biotech).

Supply and Export: India has supplied vaccines to numerous countries under the Vaccine Maitri program. Bhutan and Maldives were the first countries to receive vaccines as a grant by India. This was quickly followed by shipments to Nepal,

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Bangladesh, Myanmar and Seychelles. By mid-March 2021, India was also supplying vaccines on a commercial basis to countries including Canada, the UK, and Saudi Arabia.

The countries that received vaccines from India through this initiative include:

a. **Neighbouring Countries:** India has prioritized the supply of vaccines to its neighbouring countries, including Bangladesh, Nepal, Bhutan, Maldives, Sri Lanka, and Myanmar.

b. **African Nations:** Several African countries have received vaccines through the Vaccine Maitri initiative, such as South Africa, Nigeria, Ghana, Kenya, and Ethiopia.

c. **Middle Eastern Countries:** Countries in the Middle East, including the United Arab Emirates, Saudi Arabia, Bahrain, and Kuwait, have also received vaccine supplies from India.

d. **Other Countries:** India has exported vaccines to countries around the world, including Brazil, Mexico, Argentina, Peru, Morocco, Egypt, and many others.

The Indian government's efforts to share vaccines through Vaccine Maitri aimed to support global vaccination efforts and help countries facing vaccine shortages. This initiative highlighted India's commitment to global health and solidarity during the ongoing COVID-19 pandemic.

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ENGINEERING WITHOUT ART IS CALCULATING***

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