

BGIET TechnoCrat



CIVIL ENGINEERING DEPARTMENT

We shape our buildings, thereafter they shape us.

-Winston Churchill



**BHAI GURDAS INSTITUTE OF ENGINEERING &
TECHNOLOGY, SANGRUR**

Message



From Chairman Desk

I am delighted to have the opportunity to release "TECHNOCRAT", the annual college magazine.

In this era of cut throat competition, apart of study. one needs to have the holistic development of personality & this is our prerogative to chisel your thinking & persona here. The

magazine will act as a platform for your creativity & writing aptitude & I intently believe that you would have an all round development of your personality during your sojourn in this temple of learning.

I congratulate the Director, staff & students for publishing "TECHNOCRAT. I hope this issue would be meaningful, enjoyable & memorable in achieving its objectives.

Dr. Gurinderjit Singh Jawandha
Chairman

Bhai Gurdas Group of Institutions

Message



(Prof) Dr. Tanuja Srivastava Director BGGI

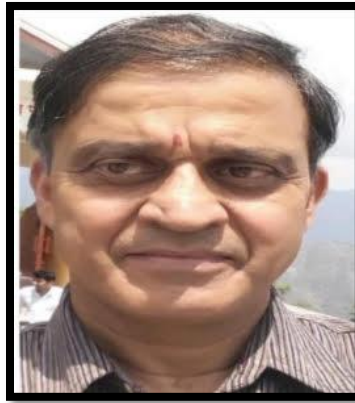
From Director's Desk

It is a matter of great pleasure for me to learn that Editorial Board is bringing out an issue of the College magazine 'TECHNOCRAT'. I would like to appreciate those who have contributed articles for the college magazine as this shows the hard work, and the hidden potential of the students.

I hereby congratulate those who contributed for the college magazine and welcome those

**(Prof) Dr. Tanuja Srivastava
Director, BGIET**

MESSAGE FROM HOD



Dr. Dinesh Kumar Sharma

The vision of the department is to facilitate the student community with high standards and value - oriented traditional teaching with the synergy of modern techniques. We aim towards making every student to be a true asset for the Nation and a noble human being for the world across nurtured with the technological versatility. Civil Engineering Department of BGIET aims at developing analytical and experimental skills in students to apply in various fields of Civil Engineering using National and International codes. The department also provides students the opportunity to improve communication and presentation skills, knowledge of software like Auto CAD, STAAD PRO etc. The student undergoes Industrial Training and visits live construction sites to gain practical knowledge and understanding of the field constraints. We take it as our moral and social responsibility to imbibe the state of art technological information to be forwarded to the student fraternity of Civil engineering. In the modern world of construction where we witness every day as a day of a new construction method, material and skill, it is very much important to forward the same to the students by means of latest teaching aids and by providing an equal and proper learning platform. Hence with a team of highly qualified and experienced faculty members we offer the most enjoyable and effective learning to all the students.

HOD

Civil Engineering Department

VISION OF THE DEPARTMENT:

To impart knowledge and excellence in Civil Engineering with a global perspective and to groom professionals with ethical values to meet the current and future challenges for nation building.

MISSION OF THE DEPARTMENT:

M1: To promote quality education, research & consultancy for Industrial and societal needs.

M2: To inculcate professionalism and moral values in budding Civil Engineers through sustainable engineering practices.

M3: To inspire the new generation of Civil Engineers with innovative ideas and creativity for lifelong learning, to meet the current and future challenges of nation in a global perspective.

Content Inside

- **Artificial Intelligence in Civil Engineering**
- **Green Buildings as a Sustainable Construction in Indian Scenario and Challenges around it**
- **Latest Trends in Civil Engineering**

Artificial Intelligence in Civil Engineering

Artificial Intelligence (AI) is a specialized system that can recognize intelligent entities, make decision-making easier, faster, and more efficient. Artificial intelligence is concerned with the roboticization of intelligent behavior that thinks and acts the same way people do.

Artificial intelligence is a broad concept that has become firmly ingrained in our daily lives. It is built on the collaboration of numerous fields, including computer science, cybernetics, information theory, psychology, and neurophysiology, among others



As a result, artificial intelligence is a discipline of science concerned with the study, design, and implementation of time-saving technologies. AI is concerned with machines that carry out tasks.

Artificial Intelligence is mostly used in civil engineering applications like construction management, building materials, hydraulic optimization, geotechnical and transportation engineering, and is also useful in developing robots and automated systems

AI is a Branch of Science:

AI can be utilized in the far most regions with the way things are a part of science and they tend to be utilized to do research and plan applications to accomplish time-productive tasks.

Computerized reasoning is a brilliant opportunity for structural architects as it covers regions like Design, Construction, and choices to settle the obstacle route.

It will be useful in regions like Data Assortment and Data Analysis to expand usefulness and diminish the expense and make the interaction more powerful and effective

Applications:

AI in Civil Engineering:

AI models in civil engineering can be used for accurate, cheaper, and less disruptive construction projects. In modern structures, artificial intelligence is being utilised to plan the routing of electrical and plumbing systems.

Artificial intelligence (AI) is being used to track real-time interactions between personnel, machinery, and items on the job site and supervisors for potential safety hazards, construction errors, and productivity concerns. Simulated intelligence makes it simpler for those who engage with the development business by making it more sensible. It gives more open doors in a structural design by making it an appealing field of work.

AI Techniques:

Risk Identification and Mitigation

Getting Rid of Cost/Schedule Overruns

AI drives Smarter Construction Methods

Green Buildings as a Sustainable Construction in Indian Scenario and Challenges Around It

I. INTRODUCTION

As the population of India, China & Brazil shows the incremental trends at the faster rate (Fig-1) which also leads to the needs of food, energy and housing sector along with rapid urbanization and industrialization. In view of that scenario the building construction sector also enhance in the rapid rate (near about 70%) as compared with the residential building sector to the commercial building sector (Fig-2). On the other hand the annual growth of energy requirement in India about 6.5% annually in 2010-2011 which leads to India becomes 2nd larger greenhouse

gases emitter (beyond China).

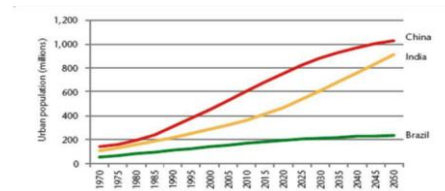


Fig -1 Urban Population Growth in China, India & Brazil.

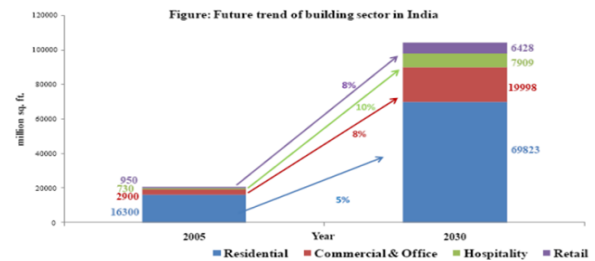


Figure 2:- Future Trend of Construction Sector in India.

II. ENERGY EFFICIENT CONSTRUCTION :- GREEN BUILDING CONCEPT

Green Building: - It is a concept of the building or construction of structures which relates itself as per the sustainable and eco friendly aspects. In this regards the

buildings under which the features of that building withstand its whole life cycle along with maintain the quality standards with environmental aspect of view.

- a. CII Sorabji Godrej GBC at Hyderabad.
- b. ITC Green Center at Gurgaon
- c. Wipro at Gurgaon
- d. Technopolis at Kolkata
- e. Spectral Services Consultants Office at Noida
- f. Grundfos Pump at Chennai.



CII Sorabji Godrej GBC at Hyderabad.



Grundfos Pump at Chennai.

The following some examples of the green buildings already existed in India:-

III. GREEN BUILDING CONSTRUCTION TECHNIQUES.

The various environmental friendly techniques are to be assigned as 4'R' principles.



Beside that the following construction techniques also used from civil engineering point of view:

- a. Insulated Wall Panels
- b. Green Cement
- c. Fly Ash Bricks
- d. Transparent Roof
- e. Green Roofs.

IV. GREEN BUILDING RATING SYSTEMS

The Ministry of New and Renewable Energy, India along with The Energy Resource Institute (TERI) jointly introduced a system of rating to the green buildings in India. Following two systems of rating to green building in India considered as referred by the TERI and GOI:-

- c.) Indian Green Building Council (IGBC)
- d.) Green rating for Integrated Habitat Assessment (GRIHA)
- e.) Leadership in Energy and Environmental Design Rating System (LEED), INDIA.

- a.) Indian Green Building Council (IGBC)
- b.) Green rating for Integrated Habitat Assessment (GRIHA)
- f.) Leadership in Energy and Environmental Design Rating System (LEED), INDIA
- g.) BEE: Star Rating

IV. GREEN BUILDING BENEFITS

Environmental benefits

1. Enhancement in project & biodiversity environment.
2. Improvement in Air & Water Quality.
3. Reduction in scrap wastage.
4. Conservation and restoration natural resources.

Economic & Social Benefits

1. Reduce Energy Bills.
2. Optimize life cycle performances.
3. Enhance Marketability.
4. Heighten aesthetic qualities.

V. CHALLENGES IN GREEN BUILDING

The following challenges are work as an obstruction under green building concept.

1. Lack of information of Green Building Concept and hence also lack in its professionals working.
2. Regular support from government required for this as an incentives.

3. Awareness and professional

approach in Real estate market.

LATEST TRENDS IN CIVIL ENGINEERING

Assigned By: SHAHENA PRABIN

Civil Engineering is a branch of engineering that deals with the Design construction and maintenance. Civil Engineers play a vital role in designing, constructing infrastructure that support our daily lives such as buildings, roads and bridges. They ensure these structures are

safe, function and durable. Civil Engineering has developed a lot because of this it is of great benefit to our society and country.



Some latest trends in Civil Engineering are listed below:

- **Green Infrastructure:** *With a growing focus on sustainability, civil engineers are increasingly incorporating green infrastructure elements such as roof, permeable pavements and rain gardens into their designs to manage storm water reduce urban heat island effects and enhance biodiversity.*

- **Advance Materials:** *The development and utilization of advance materials like high performance concrete, self healing concrete and carbon fiber reinforced polymers are revolutionizing construction particles, leading to structures that are more durable, resilient and sustainable.*

- **Robotics and Automation:** *The integration of robotics and automation technology is streamlining construction process, increasing productivity and improving safety on construction sites. Application includes autonomous construction vehicles, drones for site surveying and monitoring and robotic bricklaying system.*

LATEST TRENDS IN CIVIL ENGINEERING

Assigned By: Md. Mohtab Alam

Civil Engineering is a fascinating field that involves designing and constructing various structures like buildings, bridges and roads. Civil engineers play a crucial role in shaping our physical environment.



Some latest trends in Civil Engineering are listed below:

- **Digital Twin Technology**: *Civil engineers are adopting digital twin technology to create virtual replicas of physical infrastructure. This enables real time monitoring, predictive maintenance, and performance optimization, ultimately improving efficiency and reducing costs over the lifecycle of the infrastructure.*
- **Building Information Modeling (BIM)**: *BIM continues to transform the way civil engineering projects are planned, designed and constructed. It facilitates collaboration among various stakeholders improves decision making processes and enhances project efficiency by providing a comprehensive digital representation of the infrastructure.*
- **Resilient Infrastructure Design**: *With the increasing frequency and intensity of natural disasters, there is a growing emphasis on designing infrastructure that is resilient to extreme events such as floods, earthquakes and hurricanes. This includes implementing innovative design techniques, incorporating redundancy and flexibility and considering climate change projections in planning processes.*

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Editor

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(Assistant Professor, CE Dept.)

Student Editors

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