Department of Civil Engineering

M@GAZINE

Volume - 1 **Issue 1** **Jul - Dec - 2023**

Every Day
Is an
Adventure
With a
Civil Engineer

CESA
2k23

Kongunadu College of Engineering and Technology
(Autonomous)
Department of Civil Engineering

College:

Vision:

"To become an Internationally Renowned Institution Education, Research and Development by Transforming the Students into Competent Professionals with Leadership Skills and Ethical Values".

Mission:

- Providing the Best Resource and Infrastructure.
- Creating Learner-Centric Environment and continuous Learning.
- Providing Effective Links with Intellectuals and Industries.
- Enriching Employability and Entrepreneurial Skills.
- Adapting to Changes for Sustainable Development.

Department:

Vision:

To strive to graduate, quality civil engineers with ethical values, contributing to society and community

Mission:

M1: Providing quality civil engineering education through best teaching-learning process with modern laboratory, equipment and tools.

M2: Endeavour the students to become an entrepreneur and employable through industrial interaction.

M3: Inculcating moral and ethical values to serve the society and focus on students' overall development.

"flard work performed in a disciplined manner will in most cases keep the worker fit and also prolong his life."

– Mokshagundam Visvesvaraya

Preface

This magazine represents the students of civil engineering and stars of the future. Writing is an art; everyone can't deliver the knowledge into words beautifully. The main motto of the magazine is to deliver precious information that are beneficial for civil engineering scholars and it makes the readers to understand the importance and greatness of civil engineering field. It is the complete effort of the students and teachers of the department of civil engineering.

We are grateful to all the article contributors and hope that your support to the "KNCET" will be never ending. We request our readers to inbox us their significance articles and recommendations which are glad to publish. This publications is just a beginning volume and would carry forward so on with developed versions and materialized quality with complete verified and analyzed contents of civil engineering departments.

Team CESA 2k23

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TECHNICAL PAPERS

Current Scenario and Trends on Green Concrete Technology

The current scenario in concrete technology reflects a dynamic shift toward sustainability, innovation, and performance enhancement, driven by global concerns over environmental impact and resource efficiency. Concrete, as the most widely used construction material, contributes significantly to carbon emissions, primarily through the production of cement, a major component. To address this, the industry is embracing green trends like the development of alternative binders, including geopolymers and alkali-activated materials, which significantly reduce or eliminate the need for traditional Portland cement. The use of supplementary cementitious materials (SCMs) such as fly ash, slag, and silica fume is also becoming widespread, enhancing durability and reducing the carbon footprint. Recycling is a critical trend, with recycled concrete aggregate (RCA) and industrial by-products being incorporated into new mixes, promoting a circular economy. Advances in self-healing concrete using bacteria or encapsulated agents are revolutionizing durability, reducing maintenance needs, and extending the lifespan of structures. 3D printing technology is also gaining traction, enabling complex designs, efficient material usage, and rapid construction with minimal waste. Additionally, nano-technology is being utilized to refine the microstructure of concrete for improved strength and durability. Green concrete innovations, such as carbon-cured concrete, actively sequester CO_2 during production, contributing to carbon-neutral goals. Smart concretes embedded with sensors are enhancing infrastructure monitoring and longevity by enabling real-time assessment of conditions like temperature, stress, and corrosion. Despite these advancements, challenges remain, including cost implications, technical expertise requirements, and regulatory frameworks. Nevertheless, with increased research, awareness, and policy support, green trends in concrete technology are paving the way for a more sustainable and resilient construction industry.

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Biomimicry in Civil Engineering - A Creative and innovative way of problems solving inspired by Nature

Biomimicry is as a new science that studies nature's models and imitates or derives inspiration from the natural designs and processes to help solving human problems and issues. It is an interdisciplinary field where technology, science, art, design and architecture influence each other and use biology for innovative solutions and products. In the field of civil engineering it is a creative and innovative way that inspired by the nature to solve the engineering problem and transform it into new invention. Biomimicry engineering is recognised to solve the multipart issues, create the green technology material, reduce the environmental impact and reduce the engineering cost. The biomimicry engineering includes mimic of shape, properties, method, principle and process. Biomimicry is an emerging and rapidly developing field, which focuses on alternative ways of implementing sustainable engineering solutions through, or inspired by, nature. For example, Bio-mineralization expert Brent Constants of Stanford University was inspired to make a new type of cement for buildings by the way corals build reefs. The process of making this cement actually removes carbon dioxide, a greenhouse gas, thought to cause global warming from the air. Waste CO2 gas from manufacturing units like power plants get dissolved into seawater to form carbonate, which mixes with calcium in the seawater and creates skeletons of corals.

The new materials are replaced and mimic the natural coarse aggregate in concrete. The material is waste paper sludge ash and rubberwood dust. Both materials are produced and pelletised to become aggregate that have same size and shape. Having analysed their compressive strength and compared with normal concrete mix, it was found that both material had a good potential to mimic the natural coarse aggregate in concrete. Besides that, the innovation workflow of problem and solving biomimicry engineering are produced. The workflow is compared with other biology and architecture area to produce clear biomimicry engineering steps and suit with civil engineering. The biomimicry engineering index is developed to class the percentage of mimic to nature. The workflow is proposed for the engineer to inspire nature to cater the engineering problem. Finally, the area of biomimicry engineering is extended in all civil engineering section especially in structure and material engineering.

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Climate - resilient Infrastructure

Climate resilient infrastructure refers to the design, construction, and maintenance of infrastructure systems that are capable of withstanding and adapting to the impacts of climate change, such as rising temperatures, severe weather events, flooding, and sea-level rise. As climate change intensifies, the demand for resilient infrastructure becomes increasingly critical, particularly in regions vulnerable to extreme weather events like hurricanes, heatwaves, droughts, and flooding. Resilient infrastructure involves using materials and construction techniques that can endure harsher environmental conditions while minimizing environmental impact. For example, flood-resistant buildings and roads are constructed with permeable materials that allow water to pass through, reducing flood risk and soil erosion. In coastal areas, infrastructure is designed to withstand rising sea levels and storm surges, often incorporating seawalls, elevated buildings, and flood barriers. Renewable energy sources, such as solar panels and wind turbines, are integrated into infrastructure to reduce dependence on fossil fuels and ensure energy continuity during power outages caused by storms or other disruptions. The incorporation of green infrastructure—such as green roofs, rain gardens, and urban forests—helps manage stormwater, enhance biodiversity, and mitigate urban heat island effects. Additionally, smart infrastructure, equipped with sensors and real-time monitoring systems, enables quick responses to changing environmental conditions, ensuring that buildings, bridges, and roads remain functional even under extreme stress. Climate-resilient infrastructure also emphasizes the importance of sustainable urban planning by promoting the development of cities that are not only prepared for climate change but actively contribute to reducing its effects. This involves creating mixed-use communities, improving public transportation, and using energy-efficient buildings that reduce carbon emissions. Despite the initial costs of implementing resilient infrastructure, the long-term benefits—such as fewer repairs, reduced risk of disaster-related damages, and enhanced quality of life—outweigh the investment. In the face of climate change, prioritizing climate-resilient infrastructure is essential to safeguarding communities, economies, and ecosystems for future generations.

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NOISELESS BUILDINGS

Noiseless buildings represent a growing trend in architectural design focused on reducing sound pollution and creating peaceful, quiet environments for occupants. Noise pollution in urban areas has become a significant concern, affecting the health and well-being of individuals by contributing to stress, sleep disturbances, and hearing impairments. Noiseless buildings are designed with a focus on soundproofing and noise control, using advanced materials and construction techniques to minimize noise transmission between rooms, floors, and from external sources. Key strategies include the use of high-performance acoustic insulation in walls, ceilings, and floors, as well as double or triple-glazed windows that effectively block out external noise. The incorporation of soundproof doors, wall coverings, and carpets also helps to absorb sound within the building. Special attention is given to the layout of the building to reduce noise pathways, such as placing noisy areas like elevators or mechanical rooms away from quiet spaces like bedrooms and offices. Additionally, building systems such as heating, ventilation, and air conditioning (HVAC) are designed to operate quietly, with vibration-dampening features and low-noise fans. Green roofs and walls, as well as landscaping with trees and shrubs, can further reduce environmental noise by acting as natural sound barriers. Beyond materials and design, acoustics are carefully considered during the planning stage to ensure that sound flows harmoniously throughout the space. In office buildings, this may mean designing open workspaces with private pods or partitions, while in residential buildings, it might involve incorporating soundproof rooms for media centers or home theaters. Noiseless buildings not only improve the acoustic comfort of spaces but also contribute to enhanced productivity, better concentration, and overall well-being. As urbanization increases and noise pollution continues to be a problem, the demand for noiseless buildings will likely grow, leading to more widespread adoption of advanced noise-reducing technologies and sustainable design practices.

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GREEN BUILDING

Green Building is not building- but it is about people.

The building construction industry produces the second-largest amount of demolition waste and greenhouse gases (35-40%) the major consumption in a building is during construction of various amenities like lighting and air conditioner system they provide comfort to the occupants but consume an enormous amount of energy and add pollution. By switching to sustainable architecture not just for nature's sake but for ourselves we could not only save the environment but also reduce our total ownership costs. Green building is also known as green construction or sustainable building, these include efficient use of energy specifically renewable energy, such as solar energy, water, and other resources, pollution and waste reduction measures, enabling of re-use and recycling, good environmental air quality indoor, use of non-toxic and sustainable materials, the environment- friendly design construction and operation design that allows adaptation to a changing environment and most important consideration of the quality of life of occupants, it eliminates negative impact and creates a positive impact on climate and life. The construction materials used in green building are wool brick, sustainable concrete, solar tiles. Sustainable tools and technologies used in green construction are solar power, biodegradable materials, green insulation, cool roofs, and sustainable resource sourcing. Green building includes rainwater harvesting, solar energy, and produces less waste compared to conventional buildings. By promoting green buildings, the benefits are environmental, economic, and social. Environmental benefits include enhancing the ecosystem improving air and water quality, social benefits are enhanced occupants health and comfort whereas economic benefits include reducing operating costs and improving occupants' productivity. As of date, there are 5975 projects equivalent to 7.55 sq. feet of green building - Suzlon energy limited-Pune, ITC green centre-Gurgaon are some of the projects in India. With 'Americans spending nearly 90% of their time indoors,' it is not surprising that the WHO estimates 30% of all buildings will have IAQ concerns during the facilities occupancy. Environmental material used in green building or system assessment evolution has low toxicity, minimal emissions, low walk assembly, recycled content, resource-efficient. By implementing green construction, we can reduce.

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CONSTRUCTION POLLUTION

According to a study done by the UK Green Building Council, the construction sector uses more than 400 tonnes of material per year. Construction contributes around 23 % to air pollution, 40 % to drinking water pollution, 50 % to climatic changes, and also 50 % to landfills to the environment. Water contaminated by pollutants produced by the construction industry poses a danger to the environment. Noise pollution is likely to be the type of pollution that's effects are experienced immediately. The equipment used is particularly loud, meaning it is often heard by members of the public who live nearby. As a result, this can cause residents to experience varying levels of stress, sleep disturbance, or high blood pressure. WRI attributes up to 71% of Mumbai air pollution was due to construction dust. The development of resorts on the sugarloaf hill caused heavy dust to fly all over the Rushikonda region in Visakhapatnam. In Delhi, 4000 tonnes of construction waste is generated every day which is about 40% of the total waste in the city. Construction works include land clearing, demolition, operation of diesel engines, and burning which releases carbon monoxide, hydrocarbons, PM10, and PM2.5. Experts and doctors said a person who is constantly exposed to dust particles ends up inhaling both visible as well as suspended particulate matter. About 22,000 to 52,000 persons per year are dying due to inhaling polluted air in the USA alone most of whom are construction workers. Delhi banned the construction works to mitigate air pollution. This leads to construction workers suffering due to lack of work. The construction industry has the second major workforce in the world, banning this leads to economic & habitat loss to the government and humans. We all need to have an awareness of the emissions our work activities create and take precautions to limit the harmful impact. Construction and a healthy atmosphere are equally important to humans.

Be a part of solution not a part of pollution

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SOIL CEMENT

Soil cement is a type of composite material made by mixing soil, water, and cement to create a durable and cost-effective construction material. This mixture is typically used for road pavements, foundations, and as a base for various types of construction due to its ability to improve soil strength and provide a stable foundation. The primary advantage of soil cement lies in its affordability and availability, as it makes use of locally sourced soil combined with a minimal amount of cement, making it an economical alternative to traditional concrete. The process of creating soil cement involves compacting the soil-cement mixture into place and allowing it to cure, resulting in a hardened, rock-like structure that is resistant to erosion, water damage, and weathering. One of the most common applications of soil cement is in the construction of roadways, where it is used as a base course or as the final paving layer, offering a strong, low-maintenance surface. Soil cement is also used in rural infrastructure projects, where high-quality materials may be scarce or expensive. Moreover, soil cement contributes to sustainability by reducing the need for transported aggregates and conserving natural resources. The construction of soil-cement surfaces also requires less energy compared to conventional asphalt or concrete paving, further enhancing its environmental appeal. The material's performance can be tailored by adjusting the cement content, moisture levels, and soil types used in the mixture. As a result, soil cement can be adapted to suit various climatic and environmental conditions. However, challenges such as ensuring adequate compaction and moisture control during the mixing and curing process need to be carefully managed to achieve optimal results. Despite these challenges, soil cement remains a versatile and effective solution for many construction projects, offering both economic and environmental benefits.

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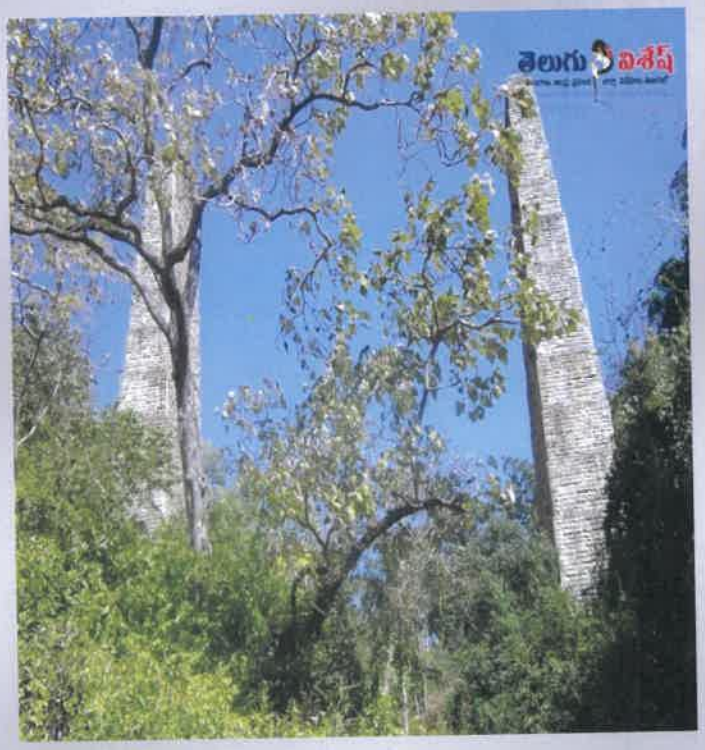
THE OLDEST METER-GAUGE RAILWAY LINE IN ANDHRA PRADESH

The Dorab avi viaduct is one of the oldest meter gauge lines in India. It is situated in the Nandyal - Giddalur Section. It is an old engineering monument in the South-Central Railway. This meter gauge line was developed by the British for trade purposes. It was laid to connect Goa in the west (from the Arabian sea) to Machilipatnam in the East (to the Bay of Bengal). It was operational until 1992 with a history of nearly 110 functional years from the date of its operation. The serene forest location of this bridge is on the Nallamala Hills of the Rayalaseema region of Andhra Pradesh adds its own exotic aura to make this a picnic spot. It was one of the tallest and most picturesque train routes.

PICTURES OF DORABAVI VIADUCT What can be seen in these pictures of the old Dorabavi viaduct, are those abandoned pillars on which the Massive Metre Gauge Viaduct once stood majestically! TRAIN ON DORABAVI VIADUCT The below Pictures are pictures that were hastily captured from a cinema telecasted on television, which shows a train moving on the Old Dorabavi Viaduct. Now, this old engineering marvel is in Dismantled & disuse condition. This is due to the construction of an alternative route, as part of gauge conversion between Nandyal and Giddalur.



DORABAVI VIADUCT

TRAIN ON DORABAVI VIADUCT

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Sustainable Construction Waste Management In India

India is urbanising faster than its urban planners can handle. We are building roads, bridges, fly-overs, factories, commercial complexes and also building and renovating our homes and residential properties (sometimes to upgrade the buildings or to take advantage of higher FSI regulations now allowed in many cities).

But we do not pay sufficient heed to the construction and demolition (C&D) waste we generate, for example, bricks, concrete, stones, hard core subsoil, topsoil, timber, glass, gypsum, ceramics and also plastics. Neglecting this waste has consequences for public health as well as the environment.

There is no agreement on the volume of C&D waste. The Ministry of Environment, Forests and Climate Change in 2010, put the annual estimate of C&D waste at 10-12 million tonnes. The Central Pollution Control Board settled for 12 million tonnes in 2011, but its Guidelines Document of 2017 has upped the estimate to 25-30 million tonnes, based on information from the Ministry of Urban Development.

Other countries have faced similar challenges and have done something about it. Germany faced huge issues in disposing of the post-war bomb rubble. Stuttgart solved this problem by creating a mini-hillock outside the town which is now a recreational hand-gliding spot. While C&D waste was earlier typically sent to dump sites in many countries, in the past 20 years or so there has been a greater appreciation of the reuse and recycling possibilities of the waste into construction material (recycled aggregate concrete, manufactured sand, etc.) and its implication for the conservation of natural resources.

An EU study has calculated that an average of 28 per cent of all C&D waste was recycled in EU countries in the late 1990s. Since then, most EU members have set goals for recycling C&D waste that range from 50 per cent to 90 per cent of their C&D waste production. The UK's use of recycled aggregates (materials formed from a mass of fragments or particles loosely compacted together) is the highest in Europe and accounts for 25 per cent of all aggregates used in construction. This has created a vibrant recycling industry, which promotes innovation and new products and their uses, while the International Recycling Federation works to harmonise quality standards for recycled materials.

Even in the US which is known for its proliferation of landfills, California, the most progressive state, has promulgated an ordinance which requires 50 per cent recycling of C&D waste and 75 per cent diversion of inerts away from landfills.

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NON -TECHNICAL ARTICLES

SKYSCRAPERS

Although the cement and concrete industries important developments in the history of civilization. Ever since the dawn of creation, human beings have been constructing spaces to take shelter and live. This effort has realized itself in different forms and different stages. They have lived in caves, holes over cliffs, and tents—when appropriate. They have sometimes built adobe houses using egg white, lime mixture, and mud mixed with straw- depending on the method of construction of these structures. It is possible to mention two fundamental inventions, cement, and concrete, which have ensured major advances to have taken place throughout this process, which began in the caves of the primitive ages and has arrived at today's gigantic skyscrapers.

Cement is the main component to produce cement-based construction materials worldwide and it is used in most of many modern constructions. Cement is produced combusting the clay (mud) by limestone together in a kiln. However, until 1824, it was necessary to wait to kiln-dry two materials together and make the cement.

on the environment by improving the production techniques and product standards continuously, the measures that are currently being taken (CO_2 retention systems, etc.) may not be sufficient alone. Because it is not possible to stop cement and concrete production, it would be best to turn towards recycling industrial wastes, which is another environmental problem, as an alternative solution to the current problem. Slag from iron and steel plants (steel slags, blast furnace slag, etc.), storage of the ashes of burning coals (bottom ash, fly ash) at thermal power plants, and disposing them to environment with high costs causes major irreversible environmental problems. Important projects have been begun regarding sustainable building materials in the construction sector. As a result of these projects, several investigations have been done on steel slag, one of the most encouraging waste materials.

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Physics and Civil Engineering

They are intricately connected, as the principles of physics serve as the foundation for designing, constructing, and maintaining structures in the field of civil engineering. Civil engineering involves the creation of infrastructures like buildings, bridges, dams, roads, and tunnels, all of which require a deep understanding of various physical concepts such as mechanics, thermodynamics, fluid dynamics, and materials science. The concept of forces and stress plays a critical role in ensuring that structures are capable of withstanding external loads without failure. Structural engineers apply the laws of physics to calculate how forces like tension, compression, and shear act on different materials used in construction, from steel to concrete. The ability to predict the behavior of these forces is essential to ensuring the stability and safety of buildings and infrastructure. Statics and dynamics, two fundamental branches of mechanics, are especially important in civil engineering. Statics is concerned with objects at rest and helps engineers design stable structures by balancing all forces acting on them. Dynamics, on the other hand, deals with objects in motion, crucial for understanding how moving loads, such as vehicles on a bridge or wind on a building, affect the structure. Another significant area where physics meets civil engineering is in the study of fluid dynamics, particularly in the design of hydraulic structures like dams, canals, and sewage systems. The flow of water through pipes, spillways, or across natural landscapes requires precise calculations to prevent flooding, erosion, and other forms of water damage. Engineers use the Bernoulli Principle and Continuity Equation to calculate fluid flow and pressure changes, ensuring that water management systems function efficiently. Thermodynamics also plays a key role, especially in the design of sustainable buildings. Understanding heat transfer, energy efficiency, and temperature regulation helps civil engineers design structures that maintain comfortable internal environments while minimizing energy consumption. Insulation materials, heating, ventilation, and air-conditioning (HVAC) systems are all designed based on thermodynamic principles to improve energy efficiency in buildings. Materials science, a sub-discipline closely related to physics, is another area where the understanding of physical properties like elasticity, plasticity, and thermal expansion is vital. Engineers must consider the material's strength, durability, and behavior under various environmental conditions to select the right materials for construction. For instance, concrete's ability to resist compressive forces and steel's ability to handle tension are exploited to create balanced, robust structures. Additionally, civil engineers utilize vibration theory and the principles of resonance to ensure that structures are resistant to forces from natural phenomena such as earthquakes or high winds. The study of wave motion and vibrations enables engineers to design buildings and bridges that can absorb and dissipate energy from seismic activity without collapsing. As civil engineering projects become increasingly complex and ambitious, computational physics and finite element analysis (FEA) have become integral tools for modeling and simulating the behavior of structures under various conditions. These computer simulations are based on the principles of physics, allowing engineers to predict how a structure will respond to different forces and environmental factors before construction begins. Additionally, geotechnical engineering, which deals with the behavior of soil and rock beneath structures, relies on understanding physical properties such as friction, cohesion, and permeability to ensure the foundation can support the intended loads.

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BURJ KHALIFA

Building information modelling (BIM) is one of the most promising recent developments in the architecture, engineering, and construction (ACE) industry. With BIM technology, an accurate virtual model of a building is digitally constructed. This model, known as a building information model, can be used for the planning, design, construction, and operation of the facility. It helps architects, engineers, and constructors visualize what is to be built in a simulated environment to identify any potential design, construction, or operational issues. BIM reThe city of Dubai in the United Arab Emirates is known as extravagant newly built landmarks like Burj Khalifa, The Palm Jumeriah, and the Dubai Mall. In just over two decades, the city has transformed from a desert backwater port to a thriving metropolis with the third- most skyscrapers in the world.

It's a multi-use building that has Hotels, Restaurants, office spaces, Residential Apartments and is the greatest tourist attraction with Observation Decks. The concept of the building is inspired by a flower

structure with three architecture firms namely skid more, Owings and Merrill, and a structural Engineer to make the output as strong as possible with Bill Baker. The building comprises 828m, 820.8m till the tip and consists of 154 floors and 9 maintenance. It features 57 elevators and escalators to meet the needs of residents and visitors. The elevators are so fast that can cover 10m per second. A huge number of workers built this massive masterpiece almost 7,500 skilled workers were employed at the construction site.

"HYMENOCALLIS". This flower has thin white elegantly tapering outwards from a central core. The foundation was laid based on this concept using pile foundation. Construction began in January 2004, and completed the exterior of the structure on 1st Octoberthem one by one, finally, the building has reached 2009, officially opened on January 4th, 2010. The its final height of 28m. The efforts, skill, and primary structure is reinforced concrete. Three tower greatest brains made the superstructure withstand cranes were used during the construction of the so strong and unbeatable for over 10 years. The uppermost levels, each capable of lifting 25 tonnes loado.nly person who can make such unbelievable work The remaining structure above was constructed of lighteorn Planet Earth that surprised everyone. steel.

In addition to concrete and steel, other major materials used are glass silicon, and aluminum, which makes up the outside façade of the tower. The glass would light but reflects heat. The Project Burj Khalifa took six years to build, foundational excavation work commenced in January 2004, and the tower was by Emaar Properties, CEO of Burj Khalifa is Mohammed Ali Alabbar. The project cost a budget of around the US $1.5billion.

Adrian Smith is the architect behind the spectacular

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SUSTAINABLE DEVELOPMENT

"Sustainable development is the peace policy of the future."

"Sustainable development could be a development that meets the wants of the present, while not compromising the flexibility of future generations to satisfy their own needs." – Gro Harlem Brundtland

Sustainable development is the overarching paradigm of the United Nations. The idea of sustainable development changed into defined with the aid of using the 1987 Brundtland Commission Report as "improvement that meets the wishes of the existing without compromising the cap potential of destiny generations to satisfy their very own wishes."

There are 4 dimensions to sustainable improvement – society, surroundings, culture and economy – which can be intertwined, now no longer separate. Sustainability is a paradigm for considering the destiny wherein environmental, societal and financial issues are balanced withinside the pursuit of an improved excellent of life. For example, a wealthy society is predicated on healthful surroundings to offer meals and resources, safe drinking water and easy air for its citizens.

One might ask, what's the distinction between sustainable improvement and sustainability? Sustainability is often thought of as a long-time period goal (i.e., a greater sustainable world), even as sustainabl improvement refers to the various e and pathways to acquire it procedurTehse construct of property development is often understood in many various ways, however at its core, it's an associate approach to development that appears to balance different and sometimes competing, needs against the restrictions we regularly face as a society. Living at intervals with our environmental reach is one of the central principles of sustainable development. However, the main focus isn't simply about the environment. It conjointly includes declarative a healthy commonwealth which suggests meeting the various desires of all people in existing and future communities. A sustainable improvement technique can deliver many advantages withinside the quick to medium term, for example:

- Savings - As an end result of SDC scrutiny, authorities have stored over £60m through enhancing performance throughout its estate.
- Health & Transport - Instead of driving, switching to on foot or biking for quick trips will prevent money, enhance your fitness and is regularly simply as brief and convenient.

The manner we technique improvement influences everyone but not a single community or a group. The effects of our choices as a society have very actual effects on people's lives. Poor making plans of communities, for example, reduce the pleasant of ethxeismte.nce those who stay in Sustainable improvement affords a technique to create higher choices at the troubles that have an effect on all of our lives. By incorporating fitness plans into the making plans of the latest communities, for instance, we will make sure that citizens have clean get admission to healthcare and entertainment facilities. The Sustainable Development Goals are the blueprint to acquire a higher and greater sustainable destiny for all. They deal with the worldwide demanding situations we face, together with poverty, inequality, degradation and justice.

On the seventy-fifth anniversary of the United Nations and the fifth anniversary of the adoption of the Sustainable Development Goals – withinside the midst of a virus noticeably reworking our economies and societies – a 30-minute movie turned into a shot and this tells the tale of the sector because it is, because it became, and as it may be. This movie was directed by renowned film-maker Richard Curtis and produced by the documentary film company 72 Films. "Nations United" provides the facts, data, and possibilities we've got as a human own circle of relatives to reimagine and reshape the future. The movie has been broadcast on several tv channels, radio stations and streaming offerings around the sector.

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Latest Technologies in Civil

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
- Asset mapping

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 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 spherics LMG 22557 as the bacteria of the self-healing agent while JONKER ET AL (2010) used Bacillus pseudoformal 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.

KINETIC FOOFFALL: - 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 p upot ential in roadways is exploring by Italian start-underground developed to 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 tocan collect, convert Kinetic energy into electricity a road safety, the device upgrades and promotes sustainability of road innovation in construction.

ASSET MAPPING: - This technique focuses on operational equipment, including heating and air conditioning, lighting, and security systems, collecting data from serial numbers, firmware, engineering notes of when it was installed and by whom, combines the data in one place. it shows engineers in real-time on a map where the equipment needs to be installed and, once the assets are connected to the real-time system using the internet.

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Brief History: The statue has been built as an ode to the Iron Man of India, Sardar Vallabhbhai Patel, the first home minister of independent India. He was responsible for uniting all 562 princely states of the country to build the Republic of India.

About Place: October 31st, 2018, marked the inauguration of the world's tallest statue – the Statue of Unity, against the backdrop of the dramatic Satpura and Vindhyachal hills in Kevadia, Gujarat. The 182-metre (600 feet aprox.) statue is dedicated to Sardar Vallabhbhai Patel, the architect of independent India. The colossal monument towers over River Narmada, a tribute to India 'from the people of Gujarat' to the leader who placed people's welfare first. The Statue of Unity overlooks the vast surrounds and the river basin of the Narmada River and the sprawling Sardar Sarovar dam. It stands on the Sadhu Bet hillock, connected by a 300-metre bridge, which offers access from the mainland to the statue.

As a part of an outreach programme for the project, the state government had asked Indian farmers to donate their used farming equipment to collect iron needed for the statue of Sardar Patel. Eventually, about 5000 tonnes of iron is believed to be collected. Details of the construction and history of the leader can be seen in an in-house museum, inside the statue.

Laser Light and Sound Show: A Light and Sound show using laser technology projected on the Statue of Unity takes place every evening except Monday. The colourful laser lighting system is accompanied by an excellent narration of the history and life of Sardar Patel, his contribution to the Independence Movement and the unification of India as one nation.

Tour of Valley of Flowers: The Valley of Flowers (also known as Bharat Van), is spread across 24 acres of land and is a haven for colorful flowering plants along the bank of river Narmada. The Valley of Flower began with 48,000 plants in 2016 and has now reached up to 22,00,000 plants. Besides the parks, several photo booths and selfie points have been developed to take back fond memories of the visit. The spot resembles a rainbow of flowers setup on earth.

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INTRODUCTION TO BIM

Building information modelling (BIM) is one of the most promising recent developments in the architecture, engineering, and construction (ACE) industry. With BIM technology, an accurate virtual model of a building is digitally constructed. This model, known as a building information model, can be used for planning, design, construction, and operation of the facility. It helps architects, engineers, and constructors visualize what is to build in a simulated environment to identify any potential design, construction, or operational issues. BIM represents a new paradigm within ACE, one that encourages integration of the roles of all stakeholders on a project. In this paper, current trends, benefits, possible risks, and future challenges of BIM for the ACE industry are discussed. The findings of this study provide useful information for ACE industry practitioners considering implementing BIM technology in their projects.

MPORTANCE OF BUILDING INFORMATION MODELING

How important would you dream a single piece of Information source where all your ideas, design documents, functional characteristics, operational details, etc., of a construction project are kept intact, without spilling out or even creating any redundant data or information? That will be definitely important and make life easier; and that's exactly what building information modelling or BIM does.

HOW DOES BUILDING INFORMATION MANAGEMENT HELPS?

IMPROVES PRODUCTIVITY AND REDUCES COST:-

Building information management being a single point of reference improves communication and operational efficiency. It heavily cuts down the cross referencing and approval time during the projects construction phase leading to greater improvements in productivity and quality of work increased productivity in turn directly reduces the overall project construction time and costs.

DUanEdcCleRaEr ASiEnSfo RrmEaWtioOnR KSbe:-t we executioners, or lack of updates or changes in design information may lead to minor or major reworks which may heavily burn the company's finances. As BIM is centralized, any updates or changes made are instantly reflected leading to uniformity or information and work leads to zero construction errors.

PROVIDES RELATED DOCUMENTS: -

Though infrastructural designs are substantiated with scores of design document like 2D or 3D drawings; they lack other important information like contract agreemen details, bids, bills of purchase, building and government specifications, schedules, etc. this is where BIM services come in, and fill up all the information holes to bring an overall coordination. BIM also significantly improves over 2D drafting giving an all angle view of the building and elevation, which helps in rectifying errors beforehand.

APPLICATIONS OF BUILDING INFORMATION MODELING

A building information model can be used for the following

purpose:-

Visualization: 3D renderings can be easily generated in house with little additional effort.

Fabrication/shop drawings: it is easy to generate shop drawings for various building systems. For example, the sheet metal ductwork shop drawings can be quickly produced once the model is complete.

Code reviews: fire departments and other officials may use these models for the review of building projects.

Cost estimating: BIM software has built-in cost estimating features. Material quantities are automatically extracted and updated when any changes are made in the model.

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ENGINEERING WONDERS

Advanced technology makes Vijayawada's Kanaka Durga flyover one of its kind in India. Vijayawada, the most happening and prominent city of Andhra Pradesh, is all set to take a big leap forward as far as its road infrastructure is concerned with the inauguration of the "Kanaka Durga flyover". The 2.6-km long six-lane flyover was constructed for Rs 502 Crores in 900 workdays. The R&B officials described the flyover as an "engineering wonder" as the structure used withstand up to 686 tons of load, the officials said. The part of the flyover vibrates while a vehicle moves and gets back to its original position, thus avoiding any impact each time.

Built off the side of an enormous cliff in Zhangjiajie National Forest Park in China, The Bailong Elevator is the highest and heaviest outdoor elevator in the world. It is 1,070 feet high and consists of three double-story glass elevators. Also known as "Hundred Dragons Elevator," the sight-seeing elevator, which takes two minutes to ride from the base to the top, can carry 50 people in one trip with a total of 18,000 people daily. Construction of the elevator began in October 1999 and was finished in 2002 for public use.

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THE WHITE HOUSE

Structures & Its construction:

It was designed by the Irish architect James Hoban in the 1790s. Many proposals were made in the late 19th century to expand the house or to rebuild the structure. However, a major renovation was executed by President Theodore Roosevelt in 1902, which included the relocation of the president's offices from the second boor lo the constructed temporary Executive Office Building which is called the West Wing.

The total cost of construction of this building was 232372 dollars. Its floor area is 55,000 sq ft. The design of this building was inspired by the Italian architect Andrea Palladio s styles. There are 132 rooms in this building 6-floor levels, and 35 bathrooms. Moreover, looking at the detailed aspects, there are 147 windows,

al

dare 8 staircase 2 elevators and 28 fireplaces inside the building. The foundation of the house was built by enslaved and free African-American laborers alone With Employed Europeans.

The White House is a historical landmark in the world and it is the official residence, the work area and a place of important status for the President of the United States of America. This is located in Washington, DC at 1600 Pennsylvania Avenue NW. Till now it has been the residence and workplace for the Presidents of the United States of America. It was President Theodore Roosevelt who gave the name of this building as the White House in 1901.

Present Scenario:

In February of the last year, the northwest section of the White House fence was completed by the United States Secret Service (USSS). The current tall fence of the White House which is 6 feet and 6 inches, will be replaced by a taller fence of around 13 feet that includes technologies like anti- climb and intruder detection. There are eleven bays in the White House and the ground floor is concealed by a carriage ramp and parapet. A floral festoon is sculpted above the entrance. All these amazing details make it a landmark in Civil Engineering and till today it holds a special place for its prestigious status and beautiful building design. Every detail in the White House reflects something about the earlier Presidents and all their remarkable journeys during their tenure. The continuous construction process is going on to maintain the structure of this building and in the future, many upgrades in the security can be expected as the world is waking into the modern era of technologies.

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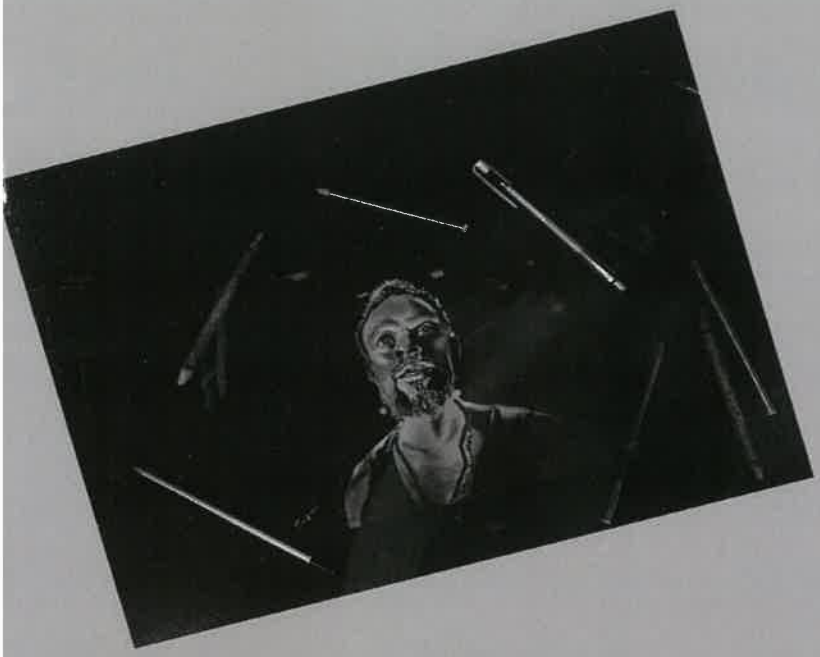
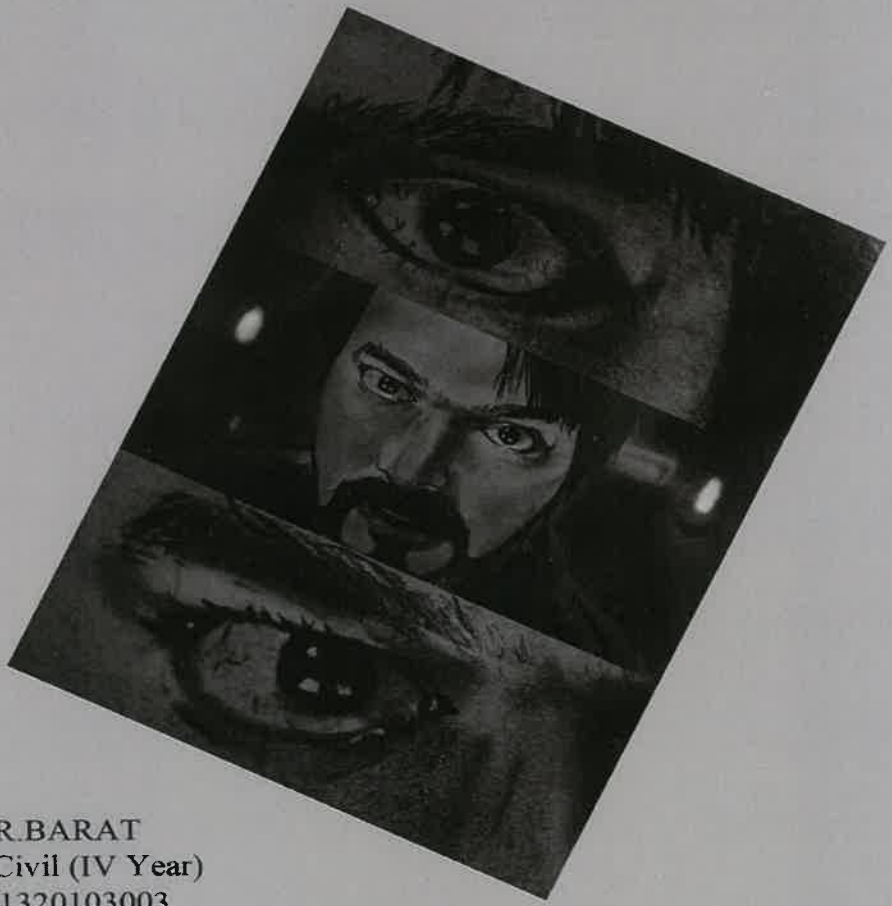
VISUAL TREAT





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MISSION

Providing the best Resource and Infrastructure Creating Learner - Centric Environment and continuous Learning Providing effective link with Intellectuals and Industries Enriching Employability and Entrepreneurial skills Adapting to changesfor sustainableDevelopment

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To interact with industries and address issues related to infrastructure, public health and environmental protection for sustainable development..