EDIFICE

Department of Civil Engineering

College of Engineering Trivandrum

CREATIVE CORNERS

GALLERIA

TECHNICAL ARTICLES

2018-19

We shape our buildings,

they shape us...

HAIL ALMA MATER!!!

EDIFICE

EDITORIAL

"If you have built castles in air, your work need not be lost, for that's where they should be. Now build the foundations under them'… **Henry David Thoreau**

Driven by the vibrant positivity in these words, we move on....

Low-cost housing concept may have given way to luxurious interiors and painted/stone-clad exteriors; well, that's what we call change... or, is it? Buildings are, at large, transforming from energy consumers to energy generators, or the sort of greens... aerodynamics is no longer connected with the dynamic.... notions are changing, so are looks and functions. Roads, are no exception too, turning dynamos as traffic ply on.... we are well on the track to sustainable living… spreading awareness and getting public get off the inertial rut is so daunting...

With the fast evolving info-tech no corner stays mysterious, nor do the conduits, bars and cracks.... building X-rays anyone? In the wake of disasters that shook the state recently, managing building information has got a key role to play...

Spanned by massive steel and concrete that fuse in to tunnels and ground level paths, yet space saving at large, Metros are printing rapid tracks for future transport... would that mean bye to traffic perturbations, stalled, roaring engines, and choked windpipes?

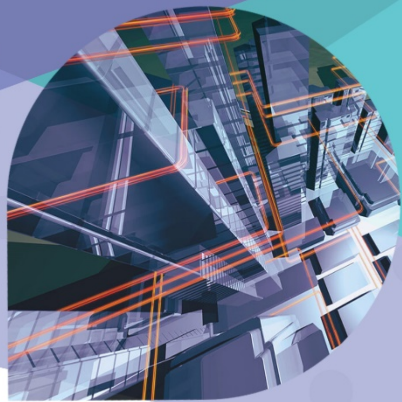
That's way too much in to the contents, no spoiled read....

Welcoming you to another issue of *Edifice*, the structure by words and photo-graffiti, blossoming through perception and creativity of budding and seasoned engineers.

-Editorial Team

Inside Edifice

Technical Articles



1

WELCOMING THE NEW ERA OF BIM

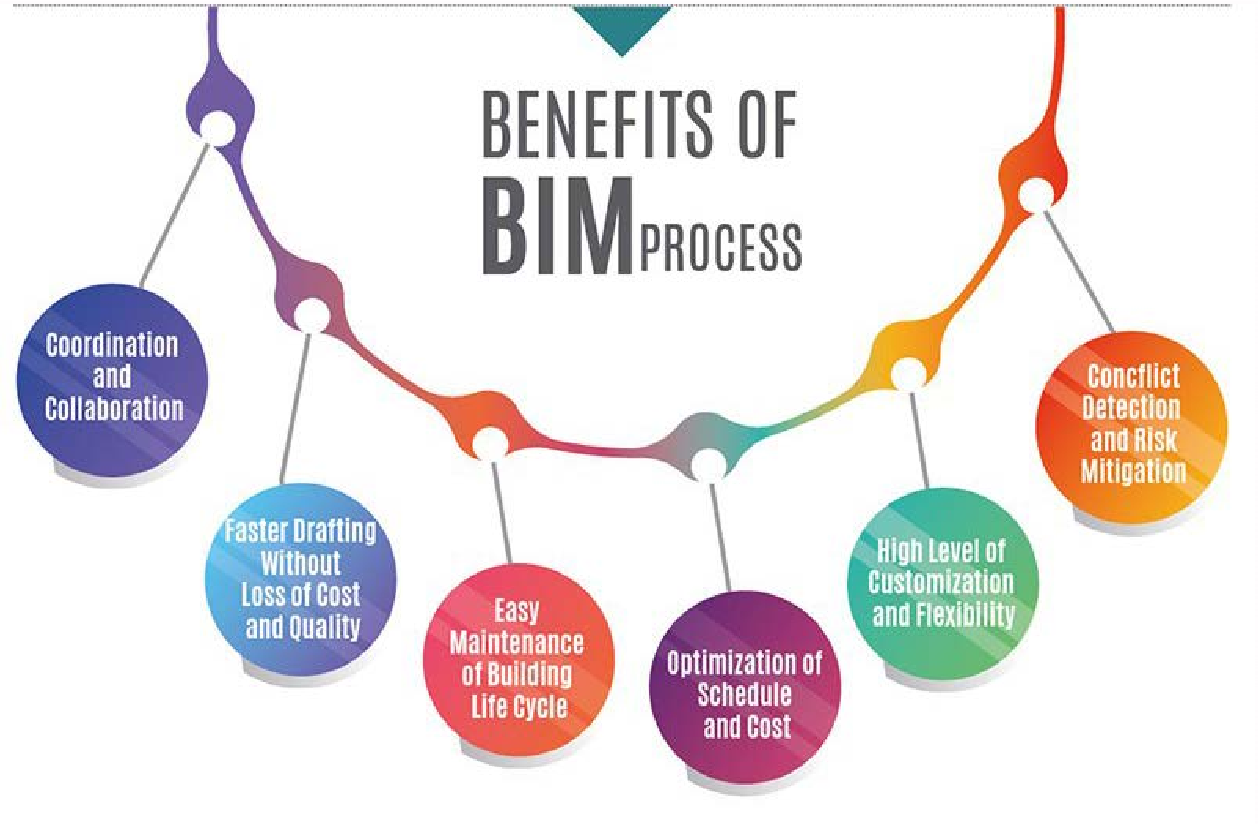
Building Information Modeling (BIM) is an intelligent model-based process that provides insight for creating and managing building projects faster, more economically, and with less environmental impact.The 3D process is aimed at achieving savings through collaboration and visualization of building components into an early design process that will dictate changes and modifications to the actual construction process.

Don Thomas
BTech, Fourth Year

The first time I heard about Building Information Modelling was during my 5th semester Btech. It was during that time I came to know that BIM overtopped most of the conventional design software and took their place quite easily. It was obvious that some concept like BIM could overthrow the scattered single elements in design industry.

The primary reason for this replacement would be accredited to BIM's ability to collaborate every aspect under one roof.This ability also makes BIM more compact and user friendly. Before going in detail, I would like to introduce to you what is BIM

It is a 3D model-based process which helps professionals to plan, design, construct and manage buildings and infrastructure. BIM includes collection of software which gives a platform to work more efficiently and effectively. Traditional building software were largely reliant upon 2D drawings but BIM extends this beyond 3D with time as fourth dimension (4D) and cost as fifth dimension (5D). BIM therefore covers more than just geometry. It also covers light analysis, geographic information, and quantities and properties of building components (for example, manufacturers' details).



In this model-based design concept buildings will be built virtually before they get built out in the field. This virtual model will incorporate all relevant factors in the building lifecycle and also manages the information exchange between the AEC (Architects, Engineers, contractors) professionals, or strengthen the interaction between the design team.

To make ourselves more clear about the basic need of BIM we should analyze advantages of BIM over the conventional methods. The methods and processes that have traditionally been used for the construction projects have always had several handicaps that are currently being solved with the evolution of the BIM methodology.

2

CONSTRUCTION OF METRO STATIONS

A metro station or subway station is a railway station for a rapid transit system, which as a whole is usually called a "metro" or "subway". A station provides a means for passengers to purchase tickets, board trains, and evacuate the system in the case of an emergency. A number of different construction techniques are needed to successfully build a project as large and complex as the Metro stations.

Immanuvel Rajan
BTech, Second Year

U GIRDER

Sequence of casting of U-Girder:

- Fabrication of reinforced cage according to the provided design.
- Pre-fabricated reinforcement cage must be lifted from reinforcement jig and placed in the casting bay using gantry crane.
- Threading and installation of pre stressing tendons must be done.
- Primary stressing of tendons must be done for the removal of slack.
- Final stressing must then be done.
- Inner molds must be installed in position and then internal formwork shall be fixed.

A U-girder getting launched for Delhi Metro's Airport Express Line

- Laying, compaction and finishing of concrete must be done for u-girder.
- Release of inner molds after concrete has obtained sufficient strength.

- Curing must be done for 14 days from the day of casting using hessian cloth for the top slab and water sprinkling for the top surface of side walls, after removal of inner molds the walls must be draped with hessian clothes and be kept wet at all time during casting period.
- As soon as concrete reaches compressive strength of 35Mpa, stress shall be relieved from stressed tendons for transfer of stress to concrete.
- U-girder shall be lifted when the concrete achieves compressive strength of 35Mpa or after 72 hours of casting.
- U-girders must be lifted with the help of gantry crane and stacking must be done in the stacking area.

I-GIRDER

Sequence of casting of I-girder:

- Providing reinforcement as per drawing with proper cover on bottom and sides with lifting hooks.
- Laying and aligning of HDPE sheathing pipe.
- Assembly of shutters with proper supporting system.
- Concreting of I-girders with approved design mix.

Placing of I-Girders, Etihad Railways, Abu Dhabi (2012)

•De-shuttering of side shutters after final settling of concrete and curing by wrapping hessian cloth and sprinkling water on surface of I-girder for a period of minimum 14 days from the day of casting.

•First stage stressing of concrete shall be done after minimum 7 days of casting or achieving concrete strength of 44Mpa whichever is later in a hardened concrete cube of size 150mmx150mmx150mm. One end stressing must be done with multi jack. Cutting and trimming of stressed cables shall be done after stressing.

•Grouting of tendons shall be done for the first stage of stressed cables at the casting bed itself. Grouting of tendons shall be done as early as possible after stressing.

•Lifting of I-girder from casting bed and stacking in stacking yard must be done.

•Second stage stressing shall be done after 7 days from date of casting of cast in situ slab and cross girder or achieving concrete strength of 44 MPa, whichever is later.

•Grouting of tendons for second stage of stressed tendon must be done.

DEPOT

•This elevated depot site which we visited is constructed by GDCL (Gannon Dunkley & Company Limited (India).

•Raft foundation for 1.8 m is laid.

•Circular pier is used in viaduct, rectangular pier is used in stations.

•Parking facilities with ramp is given in first floor, ground floor, lifts, staircases and elevator.

•Compound walls are precast walls and curing compound is applied to prevent hydration.

ANCILLARY STRUCTURES

UG TANK

This UG Tank is made up of concrete wall.

Construction of sheet piles is done for excavation.

Aero concrete is used for water proofing.

Well point system process is done for Dewatering in the site. Dewatering is done up to 6m.

Construction of UG tank

WELL POINT SYSTEM

•A well point dewatering system consists of a series of shallow wells, known as well points, which are installed at a pre-determined depth and appropriate spacing around an excavation.

•The well points are connected to the surface, via a riser pipe, and in turn, connected to a common header main pipe through a flex bow.

•This flex bow incorporates an adjustable push fit valve which allows the control of air and water entering the system, known as trimming, to give a clear view of what is being pumped.

•The header main pipe is connected to a well point dewatering pump and then discharged to the designated point.

Construction of dewatering well

LAUNCHING GIRDER

A launching gantry (described also by other terms including beam launcher, girder launcher, bridge building crane and bridge-building machine is a special-purpose mobile gantry crane used in bridge construction. It is used to install precast box girders in highway and high-speed rail bridge construction projects.

Launching Grider

After pillars are in place and construction has been carried out up to a certain pillar, the machine advances over the gap to the next pillar and drops another into place, spanning the gap. The machine then collects another block, moves forward, and repeats the process

3

E-CONCRETE : THE KEY TO FUTURE

E concrete offers a suite of high performance environmentally sensitive concrete that enhance the biological and ecological value of urban, coastal, and marine infrastructure while increasing their strength and durability.

E concrete transforms the way our future coastlines look and function, by replacing barren "gray" urban coastlines and waterfronts, with high-performance, resilient, blue-green infrastructure, which foster highly productive thriving ecosystems.

Vishnu V
BTech, Second Year

Concrete, as we all know, is a construction material composed of cement, fine aggregates, and coarse aggregates, mix which hardens with time. Portland cement is one which is usually used for concrete. Due to its immense use and strength, it is the most consumed in the world after water. But there are two issues with it :

- HIGH CARBON FOOTPRINT

It is because of the materials used for the cement manufacture. First of all high temperatures are required for cement manufacture. For that fossil fuels are used which leads to high carbon dioxide emissions. The other emission process is calcination. It is the process by calcium oxide is formed from limestone by the decomposition process.

$$CaCO_3 \xrightarrow{heat} CaO + CO_2$$

In calcination, decarbonation of calcium carbonate takes place at 1 atm pressure and 894-degree celsius. When 1 tonne of cement is produced, it leads to emission of 780 kg of carbon dioxide of the total carbon footprint of humanity; 5-6% is because of the concrete industry

- LIFELESS NATURE

The region where oceanic terrain comes in contact with concrete structures, marine life vanishes. This is basically due to the concrete's lifeless nature. It doesn't provide the surface for life to thrive. And due to this intrusion into oceans diverse habitat, ocean bed is turning lifeless day by day.

E-CONCRETE offers a suite of high performance environmentally sensitive concrete solutions that enhance the biological and ecological value of urban, coastal and marine infrastructure while increasing their strength and durability. It has a low carbon footprint because it contains bio enhancing concrete admixtures, increased micro and macro roughness which act as biological hotspots for organisms. Moreover, it uses slag cement in an increased proportion. And hence 86% less carbon footprint compared to standard Portland cement.

Footprint reduction through biological processes takes place. Carbon is assimilated into skeletons of marine organisms like oysters, corals in a process called bio calcification. As an integral part of the growth of the organisms, it produces a calcitic skeleton.

CO_2 (g) ↔ CO_2 (aq)

CO_2 (aq) +H_2O ↔ H_2CO_3

H_2CO_3 ↔ HCO^{3-} +H^+

$2HCO^{3-}$ +Ca^{2+} ↔ $CaCO_3$ +H_2O+CO

Two carbon dioxide molecules are used for generating limestone, of which one is assimilated into the limestone molecule and other is released into the atmosphere but this molecule will be utilized by the marine flora.

As E-CONCRETE promotes the growth of marine flora, it absorbs carbon dioxide and converts it into oxygen. Hence increasing dissolved oxygen of water, and thereby leads to marine purification. As organisms living on this concrete releases pigments and other fluids, it makes the concrete much stronger. As of now, this method is implemented in "BROOKLYN BRIDGE PARK" in New York City. E-CONCRETE can be implemented as armoring unit, tide pools, marine mattresses, sea walls, bioactive walls, pile encapsulation and so on. E-CONCRETE is a collaboration of biology and engineering and leads to much more eco-friendly type of construction.

4

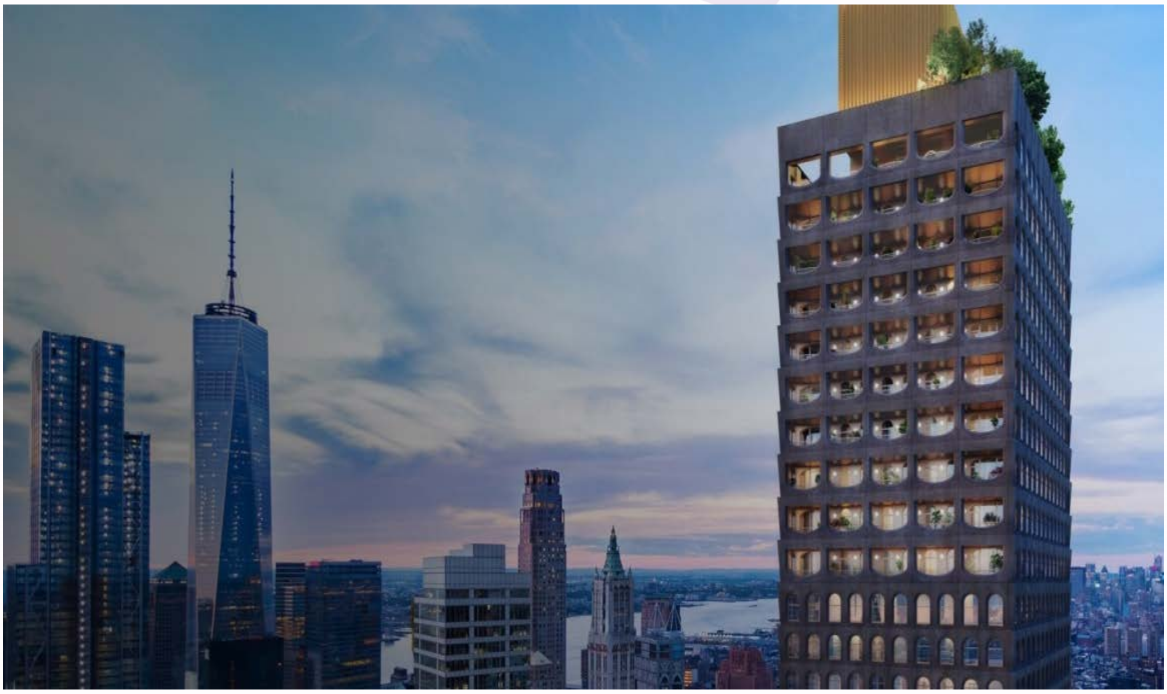
SELF-ENERGIZING HIGH RISE TOWERS

High-rise structures also called "vertical cities", have the potential to decongest urban sprawl.Tall buildings throughout the world are becoming more popular day by day. With the advent of modern day construction technology and computers, the basic aim has been to construct safer buildings keeping in view the overall economics of the project.

Nadiah Shajahan
BTech, Second Year

INTRODUCTION

In recognition of global warming and regional climate change, we are witnessing the remarkable speed of scientific, technological, and societal developments worldwide in reducing the rate of energy consumption per capita, increasing reliance on generating electricity from renewable natural resources in lieu of fossil fuels, attempting to reduce emissions of carbon dioxide (CO_2) and other greenhouse gases (GHG) globally, and accelerating the movement toward self-energizing high-rise towers



HIGH RISE BUILDINGS

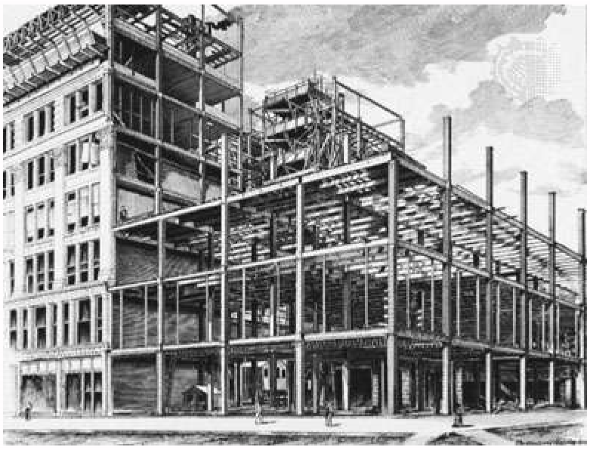
A high-rise building, as opposed to a low-rise building is a tall building defined differently in different jurisdictions. It may be residential, commercial or multiple-purpose according to the needs of the occupant. Residential high-rise buildings are popularly referred to as tower blocks or MDUs (Multi-Dwelling Units). A very tall high-rise building is referred to as a skyscraper.

High-rise buildings became possible with the invention of the elevator (lift) and less expensive, more abundant building materials. The materials used for the structural system of high-rise buildings are reinforced concrete and steel. Most North American style skyscrapers have a steel frame, while residential blocks are usually constructed of concrete. There is no clear difference between a tower block and a skyscraper, although a building with fifty or more stories is generally considered a skyscraper.

It was, the refinement of the Bessemer process, first used in the United States in the 1860s, that allowed for the major advance in skyscraper construction. As steel is stronger and lighter in weight than iron, the use of a steel frame made possible the construction of truly tall buildings.

William Le Baron Jenney's 10-story Home Insurance Company Building (1884–85) in Chicago was the first to use steel-girder construction. Jenney's skyscrapers also first

Home insurance company building designed by William Le Baron Jenney 1884-85



Structurally, skyscrapers consist of a substructure of piers beneath the ground, a superstructure of columns and girders above the ground, and a curtain wall hung on the girders.

As the population density of urban areas has increased, so has the need for buildings that rise rather than spread. The skyscraper, which was originally a form of commercial architecture, has increasingly been used for residential purposes as well. Another factor influencing skyscraper design and construction in the late 20th and early 21st centuries was the need for energy conservation. Earlier, sealed windows that made necessary continuous forced-air circulation or cooling, for instance, gave way in mid-rise buildings to operable windows and glass walls that were tinted to reflect the sun's rays. Also, perhaps in reaction to the austerity of the International Style, the 1980s saw the beginnings of a return to more classical ornamentation, such as that of Philip Johnson's AT&T Building (1984) in New York City.

However, there is a skyscraper being built in Jeddah, Saudi Arabia, that will be over 1,000 metres tall when it's finished. This will be the first building to ever rise over a kilometre high. It will also have 167 floors on top of each other.

We could probably build a tower over 2,000 metres tall, which would be like ten normal skyscrapers on top of each

This is probably not a very good idea though. Building such a mega-tall skyscraper would use a huge amount of concrete and steel. Using lots of these materials when we don't need to can be bad for the environment. It's usually much better for the environment if we build smaller skyscrapers, maybe up to 300 metres tall.

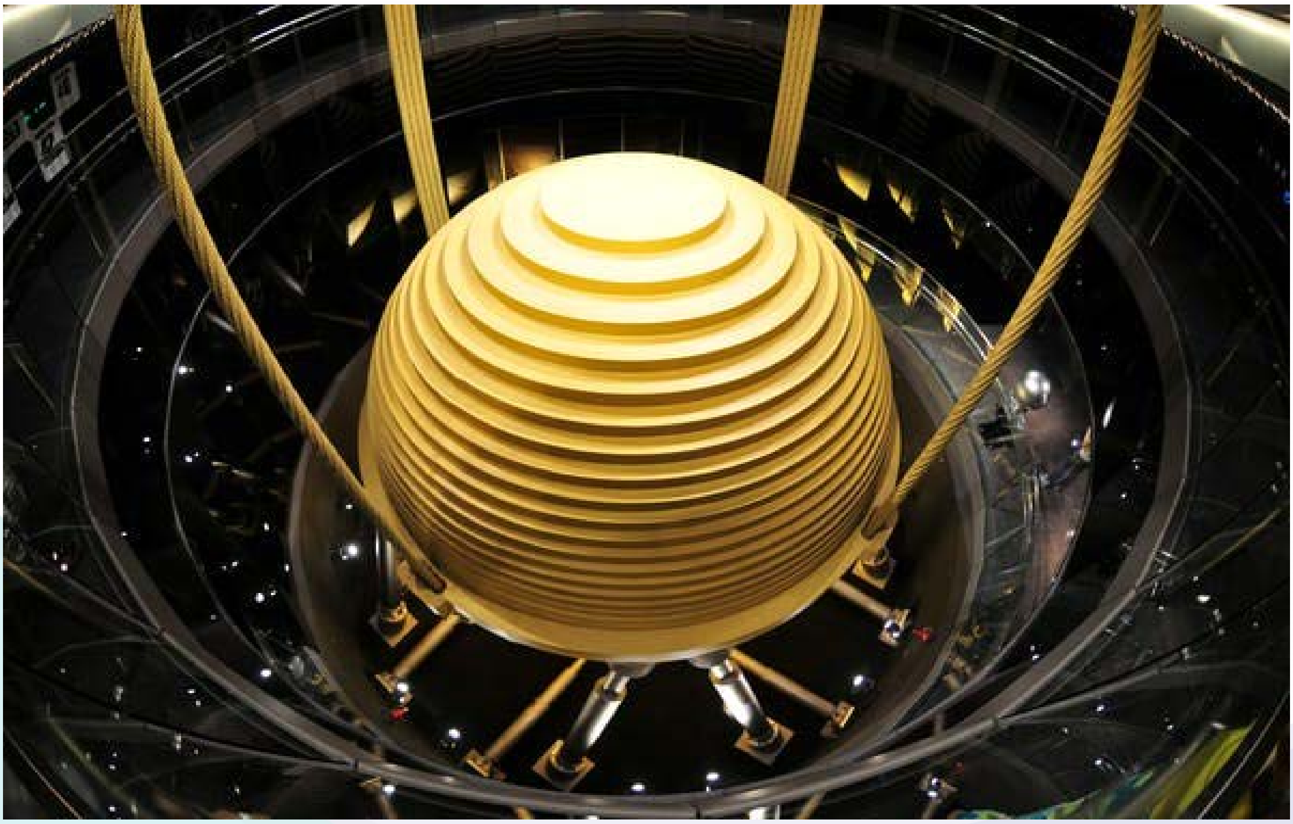
CHALLENGES TO THE DESIGN OF MEGA-TALL STRUCTURES

Wind

The biggest difficulty is the wind. It blows on a skyscraper and tries to push it over, so you need to design a structure that keeps the building stable. The wind can also make a tower sway from side to side, so that people at the very top can even feel seasick.

Architects and engineers have lots of technologies to help stop this. Some of the tallest skyscrapers in the world have a giant pendulum at the top, inside the building, called a “tuned mass damper”.

Imagine a ball of steel,the size of a house hanging from ropes inside a skyscraper. When the wind blows, the pendulum swings back and forth, absorbing the energy of the wind, to stop the building swaying.



Here’s the tuned mass damper inside a very tall building in Taiwan called the Taipei 101 building

The Burj Khalifa building in Dubai is thin at the top and wide at the bottom, with giant steps down the side

Other buildings have pools of water at the top. When the wind blows it makes the water slosh around. Giant paddles in the pool absorb the water's movement, which stops the building from swaying.

Another way to stop the wind is to use a clever skyscraper shape. When the wind blows on a skyscraper it creates swirls of air called vortices – like whirlpools in the sky.

If these happen regularly, it can make the building sway back and forth. The Burj Khalifa building in Dubai is thin at the top and wide at the bottom, with giant steps down the side. The steps make the vortices happen at different heights to help stop the building from swaying in the wind.

Commuting between floors

Another big challenge is how do you get to the top of a building that is one kilometre tall? Walking up the stairs isn't an option as there would be more than 3,000 steps.

Taking the lift would be a good idea, but you'd need a very fast lift. Otherwise it would take ages to get up or down the building.Some of theses lifts can travel at 70km/h, the speed of cars on a highway. At that speed you would go past five floors every second and soon be at the top.

You would also need lots of lifts in a kilometre-high skyscraper. The Jeddah Tower will have 59 of them! They will have super-strong carbon fibre ropes to carry the lift, as normal ropes just aren't strong enough.

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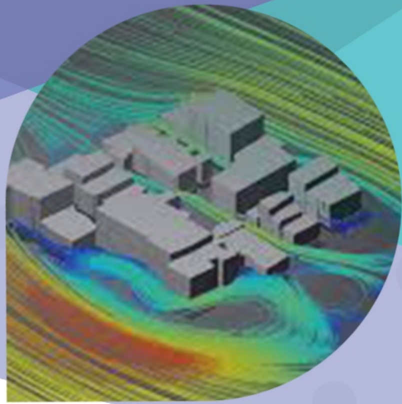

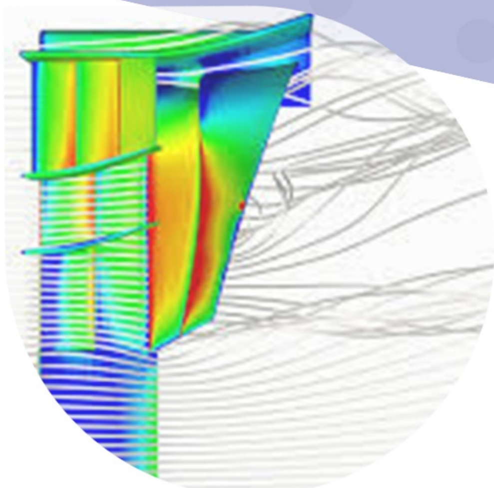

AERODYNAMIC OPTIMISATION OF BUILDING SHAPES

Wind-induced loads and vibrations are major aspects in the design of tall buildings. Thewind-structure interaction induced responses are affected by several factors including theupcoming wind, surrounding conditions, structural properties of the building and its outershape. Precise selection of the outer shape details of a building can result in a significantreduction in forces and motions caused by wind. Improving the aerodynamicperformance of a tall building can be achieved by local and global shape mitigations.

Suraj Uday
BTech, Third Year

The development of high strength concrete, higher grade steel, new construction techniques, and advanced computational techniques has resulted in the emergence of a new generation of tall structures that are flexible, low in damping, slender, light in weight and are sensitive to dynamic wind loads. They are susceptible to wind excitations, particularly to vortex-induced oscillations.

The behaviour of wind response is largely determined by building shapes. Considerations regarding aerodynamic optimization of building shapes in early architectural design stage have proved to be the most efficient way to achieve a wind-resistant design. Wind-resistant design and aerodynamic optimization are modern topics in building design community. However, its practice and successful example can be traced back to a long time ago.

In ancient China, tall buildings appear to be those of traditional pagodas. Some of them even meet the modern definition of slenderness for super-tall structures. The three pagodas located in Chong Sheng Temple, Dali, Yunnan Province, were built 1180 years ago (824–859 AD). The tallest one is 69.13m in height with a square base of 9.9m in width, the slenderness (height/width ratio) being 7. The two identical shorter pagodas have a height of 42.19m. After the completion of these pagodas, a monastery was built. Over the long period of extreme climates and natural disasters, the original monastery was destroyed by natural forces but the pagodas have miraculously survived.

A structure which is immersed in a given flow field is subjected to aerodynamic forces which include drag (along-wind) forces, lift (across-wind) forces and torsional moments (for a typical tall building considered).

The along-wind forces act in the direction of the mean flow and result from pressure fluctuations on the windward and leeward faces. The across-wind forces act perpendicular to the direction of mean wind flow. The common source of across-wind motion is associated with 'vortex shedding'. The torsional motion is developed due to an imbalance in the instantaneous pressure distribution on each face of the building. In other words, if the distance between the elastic centre of the structure and aerodynamic centre is large, the structure is subjected to torsional moments that may significantly affect the structural design.

In other words, if the distance between the elastic centre of the structure and aerodynamic centre is large, the structure is subjected to torsional moments that may significantly affect the structural design. For the wind-resistant design of buildings, it is important to identify the type of wind response that governs the design. For most super-tall buildings, it is often found that across-wind dynamic response dominates the design wind loads and sometimes causes excessive motions in terms of building's serviceability criterion.

Compared to the along-wind response, the across-wind response is more sensitive to wind speed. At lower wind speeds, the along-wind loads normally dominate but with an increase of wind speed the across-wind loads take over.

The various aerodynamic modifications applied to the tall buildings to mitigate the wind excitations may be classified into two groups-

1. Minor modifications: Aerodynamic modifications having almost negligible effects on the structural and architectural concept, E.g.: corner modifications like the fitting of fins, fitting of vented fins, slotted corners, chamfered corners, corner recession, the roundness of corners and orientation of building concerning the most frequent strong wind direction, etc.

2. Major modifications: Aerodynamic modifications having considerable effects on the structural and architectural concept, E.g.: setbacks along with the height, tapering effects, opening at the top, sculptured building tops, varying the shape of buildings, twisting of building, etc.

The main challenges in building aerodynamic optimization are to compromise aerodynamic solutions with other architectural design aspects and to compromise between benefits and costs. Therefore, it is important to have a reasonable assessment of the effectiveness of various aerodynamic options in the early design stage so that the potential pros and cons can be evaluated in the decision-making process.

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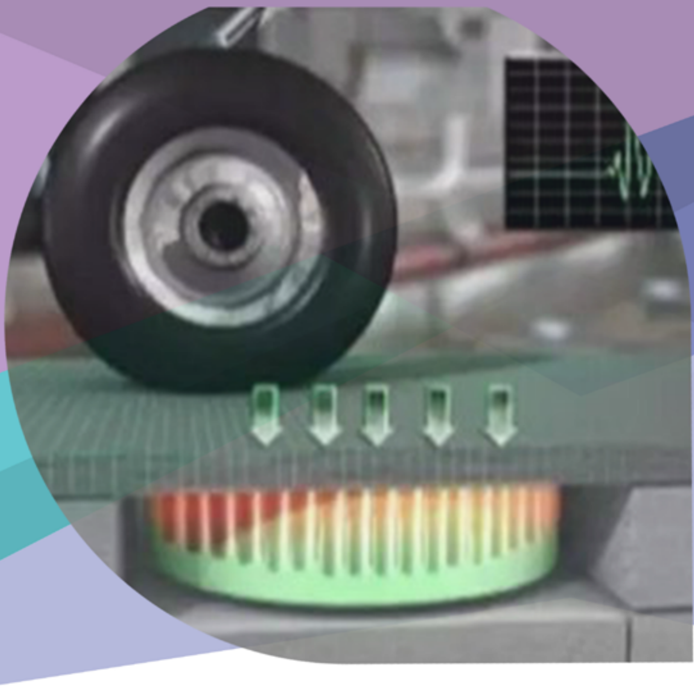
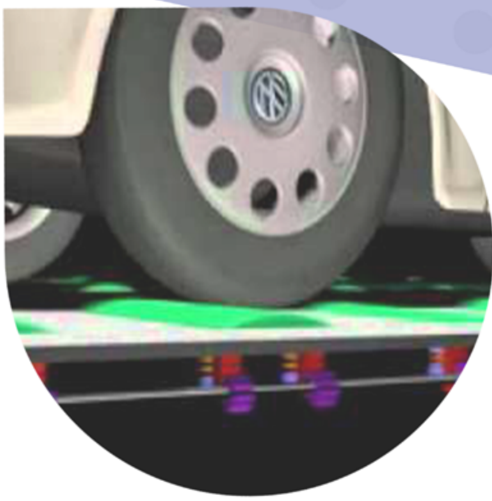




PIEZOELECTRIC ROADS

Electricity has become a lifeline of present day civilization and thus its demand is enormous and is growing steadily. since the demand for fossil fuel is enormously increasing over time, the future of generating power using non-renewable energy will come to a halt. The overconsumption and risks associated is pressuring the environment and economy as well. In 2004, the global energy consumption level of non-renewable energy has risen to 80% and will remain increasing in the next 20-30 years due to population growth as a main factor.

Syjith Rajan
BTech, Second Year

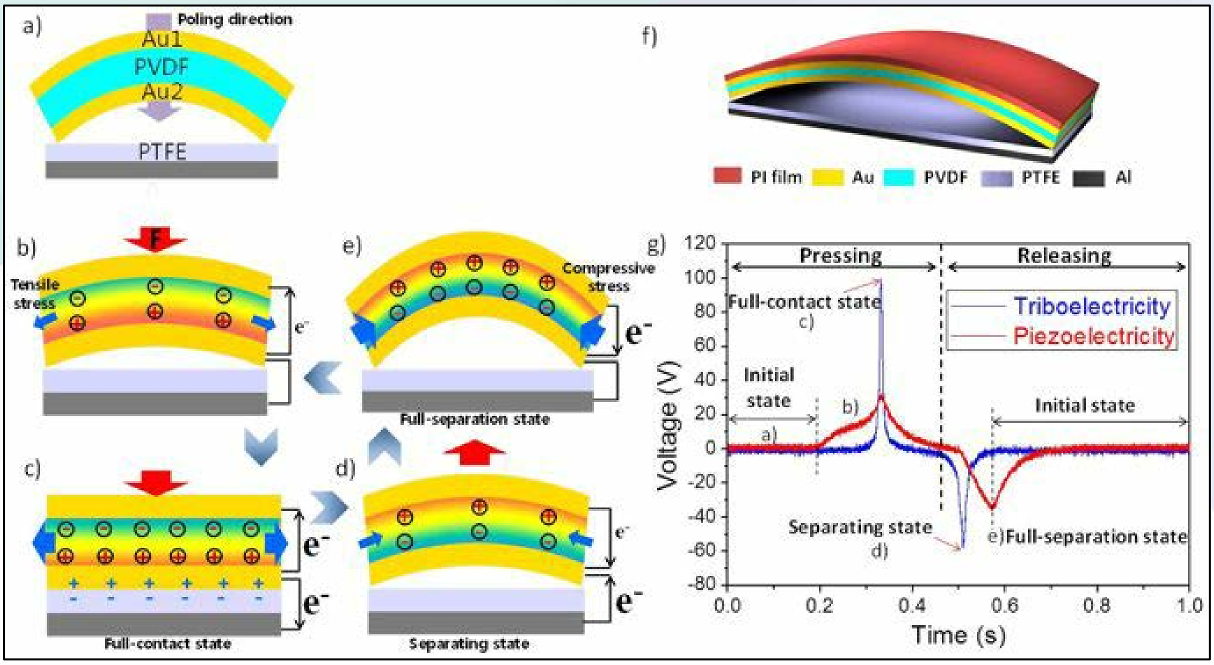
This level results in a drastic amount of CO emissions and greenhouse gasses being pumped into the air raising concerns on rising sea levels, increasing average temperature and extreme weathering conditions.

There seems no end to the different ways one can generate pollution free electricity. At one hand, rising concern about the gap between demand and supply of electricity for masses has highlighted the exploration of alternate sources of energy and its sustainable use. On the other hand, traffic on the road all over the world is increasing day by day thus; congestion on road is becoming inevitable with the fancy of masses towards personal transportation system for their growing mobility.

Energy demand and heavy traffic correlation motivate to dream about the road that would harvest energy from the vehicles driving over it. For this, piezoelectric material embedded beneath a road, the piezo-smart road, can provide the magic of converting pressure exerted by the moving vehicles into electric current.

As stated in IISD Report the G7 countries, a group of finance ministers and central bank governors, agreed to phase out the usage of oil, gas and coal at the end of 2100. This form of agreement seeking for sustainable solutions made by leading countries offers a green light to great investments opportunities around the globe. Sustainability is simply a shortcut to a long-term profit earnings and an incentive towards harnessing the "greenies" to expand and produce clean-energy products.

The roads which produce electricity by application of mechanical energy when vehicle moves over the road are called as piezoelectric roads. These roads are having a piezoelectric sensor within them to produce electricity. This kind of construction is built in Israel, California and we are trying to construct it here in India.



The energy consumed by the vehicle (sourced in the fuel combustion) is utilized for a variety of applications; one of them is to overcome rolling resistance. A typical asphalt road can be described as a visco-elastro-plastic material, with elasticity being its dominant material characteristic. When a vehicle passes over a road, the road deflects vertically. This deflection is released as thermal energy. For a road with embedded piezoelectric generators, part of the energy the vehicle expands on roads deformation is transformed into electric energy (via direct piezoelectric effect) instead of being wasted as thermal energy (heat).

The various steps in the construction of piezo –electric roads are shown below

1. The first layer is laid with fine gravel and sand content.

2. Then a thin layer of asphalt is laid which acts like a strong base for the generators.

3. Piezoelectric generators are placed in quick drying concrete as per design and left for 30 min.

4. all the generators are wired in series to get collective output.

5. A bitumen sheet is used to cover all the generators to provide better adhesion of concrete to asphalt.

6. Finally a thick layer of asphalt is laid which finishes the construction.

(When applied on roads, the piezoelectric technology could produce up to 44 megawatts of electricity per year from one kilometer stretch of the road and meet the energy demand of about 30,800 households.)

The generators are embedded between the superstructure layers, and usually covered with an asphalt layer. When a car drives over the box, it takes the vertical force and compresses the piezoelectric material, thereby generating electricity. The energy-80 kilowatt-hours per kilometer of road for car traffic can be stored in a nearby battery or super capacitor, depending on the application, or sent directly to streetlights and other roadside devices. The layer of piezoelectric material is stiffer than the road material it replaces, so it even saves a tiny amount of cost.

At the time when governments are finding it hard to make land available for new power plants, extracting energy while using the vast spread of highways all over the world seems no less lucrative proposition. However, this idea has not yet gained enough ground among the policy makers even though researchers have shown that energy could be extracted from highways by fitting them with piezoelectric devices. The energy generating road designs could become a starting point for a self-sustaining future.

We thus conclude that this thought will be a revolution in power production and curb down the energy costs thereby improving our country's economy. This energy is produced by consumers' participation without requiring any kind of input energy.

Creative Corner

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WORKS OF NAVANEETH P...


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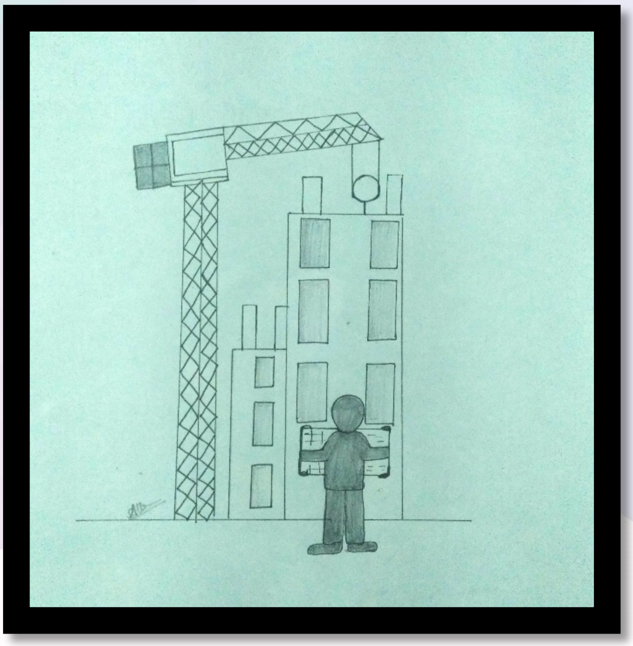
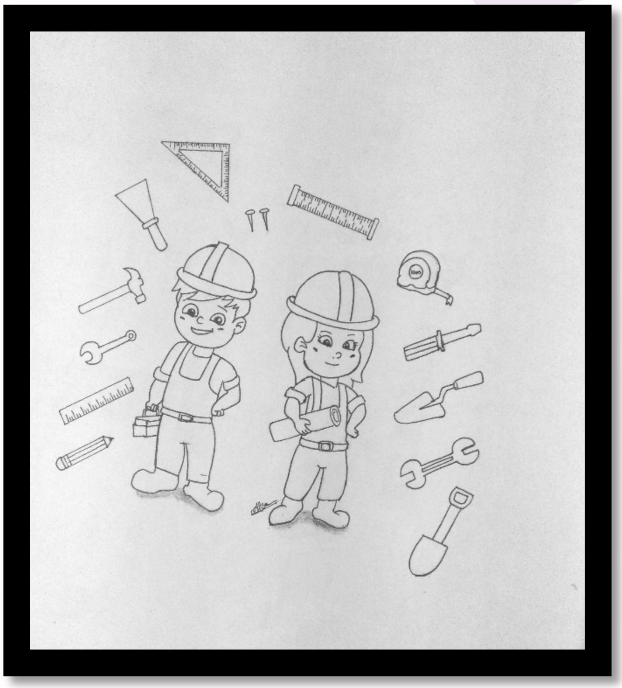
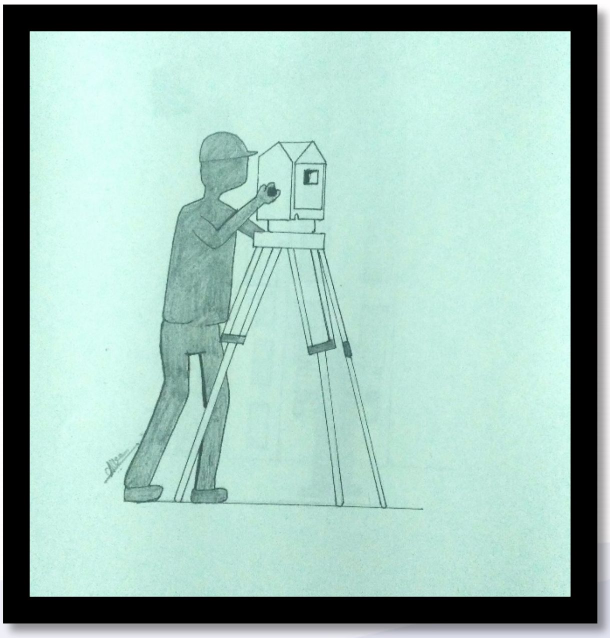
WORKS OF ALKA RAMESH...

CARTOON CORNER...







ALKA RAMESH

PHOTOGRAPGHY CORNER...

SHAMJAS IBRAHIM

AKHIL THOMAS

CIVIL WALL THROUGH YEARS...

A Civil Engineer's Life

JIJU MATHEW THARAKAN

(ALUMNI)

Early 2000's saw an IT boom in which lot of job offers were coming from the IT companies. Being a final year student in 2001, I was on the cross roads; whether to join any IT firm on to remain in my core field is civil engineering. After so much after thought, I came to the decision that civil engineering is my field.

My first job was at Koodunkulam Nuclear Power Plant, which is the biggest nuclear power plant in India. It is a 2x1000 MW project which was done in consultation with International collaboration, ie Russian engineer F.S.U under NPCIL project. My role there was as site engineer. I learned the basics of execution of work from there. Being a site engineer, my role was from checking of levels to final finishing of the work.

As a civil engineering graduate, my profile as site engineer gave me ample opportunity to apply whatever i learned in class room and the initial job satisfaction was immense. Also, I get to understand the concept more clearly and also on how to apply it to industry standards.

From the site of Nuclear Power Plant, I moved further to the land of construction-Dubai, where in the several civil engineering subjects which we learned from the books are segmented to individual/ department responsibilities. The entire engineering subjects are subdivided to several departments like Tendering, Procurement, Technical/Engineering (Structural & Architectural), Planning, Quantity Surveying (QS), Operations/Execution all of which cater to world class standards.

I was amazed by the work culture and planning and thought process which goes behind each department. A civil engineering construction is not just a single wing, in fact, it is further subdivided to Commercial/ Residential Building, Industrial, Infrastructure etc. A civil engineer who has the attitude to learn the subject has got sufficient opportunity here. Here, I am assigned to the part QS and Contracts wing of Building sector which handles the commercial and contractual aspects of several projects. The experience I gained here is innumerable. Each project gave me a new opportunity to add new knowledge to my basket and enhance it.

In fact, if you think from the perspective of a civil engineer who is in this field for the last 17 years , one thing is sure, civil engineering is not just a mere subject but when it is applied to its practical part, it is such a vast area, with ample opportunity to enhance your knowledge and also to see the dream come true -from the design till turnkey of a project

Our Department

No story about CET would be complete without the department of civil engineering. Established in 1939 along with the college, the department is one of the oldest of its kind in India. Over the years, the department has garnered a reputation for consistently setting the benchmarks for engineering excellence in the state. This would be in part because of its stellar infrastructure, but more so because of a team of outstanding faculty who have consistently proven their worth, as is visible from the quality of research and education.

Presently the department offers an undergraduate program in civil engineering with an intake of 120 students, alongside master's programs in structural engineering, geotechnical engineering, hydraulics engineering, geo informatics, traffic and transportation engineering and environmental engineering civil engineering with a total intake of 108 students, each certified by the APJ Abdul Kalam Kerala Technological University.

As CET is a QIP centre under the AICTE, the department provides doctoral programs as well. Currently, the department hosts 38 research scholars who are pursuing their PhD in various areas of Civil Engineering.

Galleria


HRX


RAVE ON
CIVIL NIGHT
RAVE ON

Helping hands...

Civil Engineering Through History…

Hail to the oldest the engineering field known to man… Without civil engineering man would still be wandering around like nomads. With its wide range of disciplines, civil engineering is one of the major core fields that aided the exponential development of human kind. Since civil engineering is a wide-ranging profession, its history is linked to knowledge of structures material science, geography, geology, environment and other fields.

One of the earliest examples of a scientific approach to physical and mathematical problems applicable to civil engineering is the work of Archimedes in the third century BC.

The earliest practices of civil engineering is assumed to have commenced between 4000 and 200 BC in Ancient Egypt and Mesopotamia (Ancient Iraq). Imhotep, the first documented engineer, built the famous stepped pyramid for King Djoser located at Saqqara Necropolis. With Simple tools and mathematics, he created a monument that stands to this day.

Some other historic civil constructions include the Qanat water management system (the oldest, older than 3000 years and longer than 71 km), the Parthenon by Intinos in Ancient Greece (477-438), the Great Wall of China by General Meng T'ien under orders from Ch'in Emperor Shih Huang Ti (c.220 BC).

Such historical significances and feats of Civil Engineering are many and will be continued in the coming issues….

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Together We Stand…

-Batch Photos

EDIFICE

First Years

Second Years

Third Years

Fourth Years


DEPT. OF CIVIL ENGINEERING
NAVANEETH P