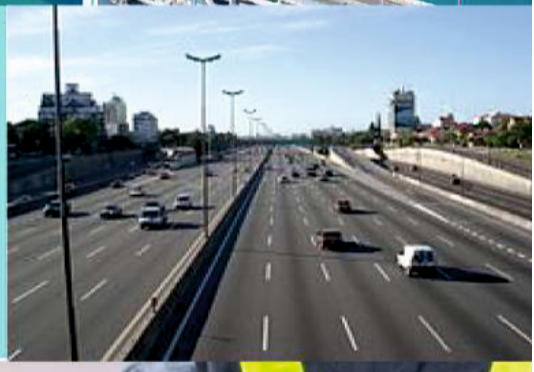
CONSTRUCTOR

RAAJDHANI ENGINEERING COLLEGE
BHUBANESWAR

ISSUE - I

2023-24

DEPARTMENT CIVIL ENGINEERING



RAAJDHANI ENGINEERING COLLEGE
REC
Bhubaneswar, Odisha
Creativity & Innovation

From the Desk of Chairman

Message

Hearty Greetings to you.

A College magazine THE CONSTRUCTOR is a record of all the activities that have taken place in the academic year and also a platform to display creative thoughts and literary talents. The editorial board deserves a special appreciation for their efforts in compiling this publication.

Our college, a home to students of different communities and diverse backgrounds, makes an ideal place for practical training in inculcating tolerance and learning to live with others.

Imbibing tolerance removes one's self-imposed barriers and allows one to think more broadly. One achieves

Greater inner peace and ultimately leads to less stress, greater happiness and harmony in the society.

There is a pressing need for educational institutions to foster such values among students. It can only be achieved by laying enough emphasis on programmes that strengthen and develop their spiritual and emotional quotient.

The ever dedicated band of talented staff helps our students to promote such life lessons directly or indirectly, through a plethora of activities such as value education sessions, outreach programmes, talent fests, association activities, interclass competitions, sports and games and educational tours.

Let us all wish and hope that the theme chosen for the magazine is ingrained in our minds and our students go out and strive to permeate this all important value in our society to create a better world for all of us.

CA. B. Ramprasad Rao

Founder Chairman

Raajdhani Engineering College, BBSR

From the Desk of Vice Chairman

Message

I am very pleased to note that the illustrations of THE CONSTRUCTOR brought out is appreciated very well. Heartily congratulations to the editorial team. The magazine, ELECTRICA, from the overall departments of RAAJDHANI ENGINEERING COLLEGE invites a wider readership in the Institute. The name and fame of an institute depends on the calibre and achievements of the students and teachers. The role of the teacher is to nurture the skills and talents of the students as a facilitator. This magazine is going to showcase the strength of our Institute. Let this be a forum to exhibit the potential of faculty and students with their literary skills and innovative ideas.

Dr. M. K. Palo
Vice Chairman
Raajdhani Engineering College, BBSR

From the Desk of Secretary

Message

It is a matter of great pride to pen down message for 'THE CONSTRUCTOR', the annual magazine of Raajdhani Engineering College. The Electrical Departmental magazine is a platform for the students to express their creative pursuit which develops in them, originality of thought and expression. The contents of the magazine reflect the creativity and imagination of our students. Academic excellence along with co-curricular and extra co-curricular activities completes the process of education. It also gives me great pleasure that REC is progressing in its endeavour towards overall personality development of the students. I take this opportunity to congratulate the Director, faculty members and students for their strong sense of commitment, service and responsibility that has facilitated in transforming this institution into an outstanding and significant temple of learning.

Dr. S. C. Panda

Secretary

Raajdhani Engineering College, BBSR

From the Desk of Director (Adm & fin.)

Message

I am glad to know that our Institution is bringing out its magazine CONSTRUCTOR to commemorate the achievements of the students, teachers as well as the faculty members.

We are proud of the achievements of our students and the rapid progress of our institution in all spheres. This institution has carried a name for itself in its pursuit of total and wholesome Education and its alumni have made their alma mater proud by becoming very responsible citizens and thorough professionals doing yeoman service to Society at large.

1 appreciate your devotion & dedication for nurturing future generation by fostering knowledge and social skills and your caring and concern for all round development of the students. I am sure it will help your students to develop wide mental horizon to be successful and will inspire your teachers & students to make greater efforts to achieve excellence and perfection in every field so that they may be a source of pride for their college and their country.

R. Choudhury
Director (Adm. & Fin.)
Raajdhani Engineering College, BBSR

From the Desk of Director (T & P)

Message

I am Immensely gratified to let "THE CONSTRUCTOR" take over the opportunity to manifest the talents as well as the standards which the entire team of Editorial , faculties as well as students efforts are put forth. Good health is prerequisite to human productivity and development process. A healthy community is the infrastructure upon which an economically viable society can be built. RAAJDHANI ENGINEERING COLLEGE is a blend of technology and Basic science and Humanities which proposes to produce ample amount of professionals who in turn will promote technology not only in our state as well as through our nation. Dreams will always strive for excellence and will set high standards in all sectors of education. I wish all the best to all the students for their career and academic pursuits".

G. S. Mishra
Director (T & P)
Raajdhani Engineering College, BBSR

From the Desk of Principal

Message

It gives me an immense pleasure as Raajdhani Engineering College is bringing out the annual magazine "THE CONSTRUCTOR" exclusively meant for the latent writing talents with invaluable potential. I congratulate all the contributors and editorial board for this revolutionary creation.

Raajdhani Engineering College has stood above the rest in its approach to technical education and in its pedagogies. Since its inception, we never hesitated to look into our deficiencies consistently and transform us to an efficient agent of social change. Many critics would confirm that our college has certainly gone a long way in enhancing quality of technical education.

We have plans and dreams in the years to come. The recent awards of "NBA Accredited Private Engineering Institute 3 program in Odisha" and "Excellent Upcoming Engineers in Odisha" are small reflections. I am sure, we inherited a strong foundation to march ahead and build a stronger and brighter Engineers.

This year, I wish the new edition of "ELECTRICA" will be a grand success.

Dr. Alok Kumar Mohapatra,
Principal
Raajdhani Engineering College, BBSR

'Creativity is seeing what others see and thinking what no one else ever thought.'

- Albert Einstein

Life is infested with many challenges. The best way to overcome these is to find innovative solutions. It is easier to blame the problem-ridden situation and languish in action. But it takes an inventive mind to overcome the difficulties.

The Annual magazine 'CONSTRUCTOR' of RAAJDHANI ENGINEERING COLLEGE present technical articles from faculty and students, providing an opportunity for students to share their technical knowledge.

It was an eye-opening chapter for the team as they realized the colors of life and created something entertaining, inspiring and memorable for readers.

No publication is the work of an individual. 1 am gratified to our Director Prof. R Choudhary, Principal, Dr. Alok Kumar Mohapatra, for their support and encouragement. I would like to thank all my committee members who are part of the Team 'CONSTRUCTOR'.

We hope you enjoy this edition. Happy reading!

Prof. Sanjay Kumar Behera
Editor in Chief

Editorial Board

Prof. Ramesh Choudhury
(Director (REC) Chief Adviser)
Dr. Alok Kumar Mohapatra
(Principal, Chief Initiator)
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(Editor-in-Chief)

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Prof. Geetanjali Mahanta
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Prof. Durga Prasanna Mohanty
(HoD, Electrical)
Prof. Dwipanita Mishra
(HoD, MBA)

Geetanjali Mahanta

"Education Breeds Confidence.
Confidence Breeds Hope.
Hope Breeds Peace."

This was a wonderful opportunity for me to work with the magazine committee. Each of the teams did their job perfectly and made it easy to compile all the stuff and ended up getting such a beautiful output. All of the committee members worked hard understanding their responsibilities and all the faculties involved understood our problems, solved them and always motivated us to get the best out of us.

(Departmental Editor)

Non Scholastic Activaties

Galvanic Achievers

Toppers in 2nd Sem. Examination

Prakash Pandav
Civil Engineering

Muni Tudu
Civil Engineering

Salman Digal
Civil Engineering

Ritesh Ghadei
Civil Engineering

Abinash Malik
Civil Engineering

Toppers in 4th Sem. Examination

Lambodar Kanhar
Civil Engineering

Premjit Malik
Civil Engineering

Priyanshu Dalai
Civil Engineering

Sitakanta Digal
Civil Engineering

Sasmita Naik
Civil Engineering

Toppers in 6th Sem. Examination

Laxmi Sethy
Civil Engineering

Fransish Kumar Nayak
Civil Engineering

Rasmita Malik
Civil Engineering

Jhunnu Kumar
Civil Engineering

Himanshu Digal
Civil Engineering

CONSTRUCTOR

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RAAJDHANI ENGINEERING COLLEGE

MANCHESWAR. BHUBANESWAR

"Determination is the power that sees us through all our frustrations and obstacles. It helps us in building our willpower which is the very basis of success."

- APJ Abdul Kalam

CONTENTS

Technical Section

English Section

हिन्दी बिभाग

Technical Section

ADVERSE EFFECTS OF AIR POLLUTION

Mr. Sanjay Kumar. Behera
Civil Department

Introduction : Air pollution occurs when the air contains gases, dust, fumes or odour in harmful amounts. Aerosols are a subset of air pollution that refers to the tiny particles suspended everywhere in our atmosphere. These particles can be both solid and liquid and are collectively referred to as 'atmospheric aerosol' particles. Most are produced by natural processes such as erupting volcanoes, and some are from human industrial and agricultural activities. However, the contribution from these natural processes is within tolerable limits.

Types of Air Pollutants : On the basis of particle size, there are three major categories of air pollutants; gaseous pollutants, particulate pollutants and aerosols.

1. Gaseous pollutants consist of atoms, molecules and include harmful gases, which can freely mix with air without settling down. Some examples of gaseous pollutants of air are carbon monoxide, carbon dioxide, sulphur dioxide, hydrogen sulphide, nitrogen oxides and hydrocarbons.
2. Particulate pollutants include finely divided solids as well as liquids having particle size from 10-4 to 10-3 cm. Particulates are harmful to the living as well as the non-living things. The examples of particulate pollutants in the air are: dust, smoke, clouds, fumes, mist, spray and smog.
3. Aerosols are suspensions of fine particulate matter in the air. Aerosols have particle size smaller than particulates. Their particle size ranges from 10-7 cm to 10-4 cm. Aerosols can be either liquid or solid particles. They are small enough to remain suspended in the atmosphere for long periods of time. Smoke, fine dust, fog, clouds are examples of aerosols.

Particulates and aerosols serve as collectors of chemically active sulphur oxides, nitrogen oxides, ozone, hydrocarbons and other pollutants and are serious health hazards.

Air pollution affects men, animals, plants, forests, materials and also has a profound adverse effect on atmosphere.

Aerosol particles and climate change Although we are familiar with local particulate 'air pollution' due to human activities, the fact that atmospheric particles of both natural and human origin have substantial influence on our climate. The particles can play important climatic roles both outside and inside clouds.

When water vapour clings to water soluble particles in the same size range (~0.1 to 1 micron) it creates cloud droplets in the lower troposphere. At lower temperatures certain aerosol particles facilitate the formation of cloud ice. In and near urban areas, where the concentration of aerosol particles is high, the concentration of droplets can be as high as several thousand per centimetre cube. The increased number of little drops causes the reflectivity of clouds to increase, so that, seen from above, clouds near polluted areas are often brighter than those above cleaner regions. Water droplets and ice particles are basically white, so they reflect solar radiation; on the other hand, the condensed water also traps and emits long wave radiation, producing heat. Thus clouds can have either cooling or warming effects on a local area, due to reflecting or trapping of solar radiation.

Aerosols and Global warming

Aerosol particles of human origin both reflect and absorb solar energy as the solar beam travels down through the atmosphere, these particles can diminish the energy that arrives at the Earth's surface as heat and results in 'Global warming'. Global warming is primarily caused by emissions of too much carbon dioxide (CO2) and other heat-trapping gases into the atmosphere when we burn fossil fuels to generate electricity, drive our cars, and power our lives. These heat-trapping gases spread worldwide and remain in the atmosphere for centuries.

Monitoring of global warming

Particles containing little carbon are effectively 'white.' They reflect solar radiation, making the air and

Earth surface below them a bit cooler. Because global warming is such a serious threat, some scientists and engineers have explored the idea of harnessing the reflective power of some aerosol particles on temporarily combat global warming while non fossil fuel energy sources are being more fully developed. The idea is to artificially increase the concentrations of 'white' atmospheric aerosol particles above the surface of the ocean and/or in the lower stratosphere in order to reflect more of the sun's energy away from Earth. The field of climate engineering (so-called 'geoengineering'), still in its infancy, has the potential to maintain relatively slow warming rates.

The effects of Air Pollution and its consequences are main concern to the highly populated country like India which has the major people depend on agriculture. India contains 72% of agriculture people, but now the percentage is reduced to 69% due to increase in urbanization and effects of Air Pollution on climate.

SAVE WATER AND SAVE LIFE

Mr. Achintya Sahoo
Civil Department

Water covers 70% of earth's surface. But in that only 3% of water is clean and suitable for human consumption. Water has a very important role to play in our daily life. According to a survey, the average family of four members, uses 450 litre of water per day, 1,64,000 litres of water per year. If it is continued in future we are going to face water wars. To avoid this we have to save water for the coming generations.

Some Important Tips to Save Water at Home :

- Turn off the tap when you brush your teeth which can save 6 litres of water per minute.
- Place a cistern displacement device in your toilet cistern to reduce the volume of water used in each flush.
- Take a shorter shower. Shower can use any thing between 6 and 45 litres per minute.
- Fix a dripping tap. A dripping tap can save 15 litres of water a day or 5,500 litres of water a year.
- Install a water butt to your drain pipe and use the water collected to water your plants, wash your windows or cars.
- Water your garden with a watering can rather than a hose pipe. A hosepipe uses 1,000 litres of water an hour. Watering the plants in the early morning and late afternoon will reduce evaporation and also save water.
- Repair dripping faucets by replacing washers. If your faucet is dripping at the rate of one drop per second, you can expect to waste 2,700 gallons per year which will add to the cost of water and sewer.
- Invest in water-efficient goods when you need to replace household products. You can now buy water – efficient shower heads, taps, toilets, washing machines, dish washers and many other water saving products.
- Verify that your home is leak-free, because many homes have hidden water leaks. Read your meter before and after a two-hour period when no water is being used. If the meter does not read exactly the same, there is a leak.
- When adjusting water temperature, instead of turning water flow up, try turning it down. If the water is too hot or cold, turn the offender down rather that increasing water flow to balance the temperatures.

So please.....save water and save life.

And save water, secure your future.

IF SCIENCE MATTERS THEN EVOLUTION DOES MATTER

Ms. Monalika Mohanty
Civil Department

Science is growing day by day in an enormous way. Most of the puzzles which are believed to be unsolved and are the acts of god are now solved through science. The tools of science (molecular biology, genetic engineering) are gaining critical insights these days. Fate of medicine and agriculture are going to be changed completely by understanding and using the tools of molecular biology that are discovered and yet to be discovered. Science made human life easy and comfortable. It is a belief, in fact it is a fact that all living organisms are developed from their earlier forms during the history of the earth. Nature from the beginning (when there were no human beings) led the organisms to best fit into it. Through the journey of millions of years transforming life from one form to another, the most intelligent and skillful animal has evolved (HUMAN BEING). Unlike other living creatures, the human did not stop there. He started manipulating Nature for the benefit of human welfare. In course of time, he created a new path to manipulate the things in Nature and he named it SCIENCE. Man started exploring Nature and recording the data he explored which is beneficial to the upcoming generations. Through this data another branch of science called EVOLUTION has been framed. For example, the corn which we are using today is not in its actual form. We have transformed it to a completely different fashion from its real form. The problem is that we have changed corn so much that it now looks very different from any wild grasses.

But understanding that corn has evolved, has allowed agricultural researchers to find its wild cousin. Now, using the science of genetics, genes can be borrowed from that relative to improve corn. It has made more resistant to disease and insects, and more tolerant of salt and drought. We studied Lamarcks evolution theory with the example of bug which evolves to best fit into nature to protect itself from the predators. Now let's bring our knowledge of evolution to the present era. If we want to see evolution in action we need to look for the organisms which have very short life period. For example insects and bugs. They have very short time between generations so they evolve very fast. You may rise a doubt , so what ? looking from the farmers point of view pests in his field are evolved in such a way that they gained resistance towards pesticides. Using too much and too fast we ourselves forcing pests to evolve and increase resistance towards pesticides…. This is not just a theory, this is fact. In this process scientists have accidentally "created," by using too many antibiotics, new breeds of super-germs that have evolved resistance to antibiotics. It's now a race: can we find new antibiotics fast enough to keep up with the mutation-and-naturalselection rates of killers like resistant staphylococcus? And if we do find something that kills it, do we run the risk of forcing it to just evolve again into an even more unstoppable forms? So evolution always does matter to understand the things that have gone wrong and discover the things that correct them.

BAMBOO-A BUILDING SYSTEM

Mr Saruk Mallick
Civil Department

This manual describes a building system in which bamboo fulfils the main structural role. Round bamboo columns and trussed rafters act as the main loadbearing elements, while composite bamboo grid/cement mortar infill panels act shear walls to resist wind and seismic forces.

The system comprises:

- Foundations: individual column footings
- Columns: bamboo culms set in (or on) concrete footing
- Floor: raised by two or three brick courses, filled with rubble and screeded
- Wall infill: a grid of split bamboo covered in wire mesh and cement mortar 6
- Roof structure: bamboo rafters or trusses supporting bamboo purlins
- Roof covering: corrugated bamboo mat board
- Doors and windows: frames of sawn plantation timber with bamboo mat board shutters.

Advantages of Using Bamboo Structures.

- Sustainable and renewable: Fast-growing bamboo can be harvested yearly without harming the plant. Therefore, it can ease the strain on forests and other non-renewable resources because it is a sustainable and renewable resource.
- Strong and durable: Bamboo is a strong, flexible material that can support enormous weights and withstand natural calamities like earthquakes. With proper care, it can last for decades and has a higher tensile strength than steel.
- Lightweight and versatile: Bamboo is lightweight, transportable, and simple to deal with the material. Its numerous uses exist, including furniture, walls, roofing, and flooring.
- Low cost: Compared to other building materials like steel, concrete, and wood, bamboo is an affordable option. It can be locally supplied and is generally accessible in many regions of the world, which lowers the cost of shipping.
- Environmentally friendly: Since bamboo is a natural product, processing it does not involve using dangerous chemicals or procedures. Additionally, it is compostable and biodegradable at the end of its useful life.
- Aesthetic appeal: Because of its distinctive appearance, bamboo can give a building's architecture a more organic, natural feel. It is a popular option for both interior and exterior design since it can be utilized to produce a range of textures and patterns.

ECO BRICKS

Ms. Abhipsa Mohanty
Civil Department

The ECO Bricks are packing of plastic into bottles to make building blocks is a technique that has popped up organically around the world. The technique builds upon borders the bottle building techniques of German architect Andreas Froese (using sand-filled PET bottles) in South America in 2000. Later on Alvaro Molina began packing plastic into bottles on the island of Ometepe in 2003.

Construction

An Eco brick is made of a plastic bottle or container of some sort (including paper/laminate milk cartons) which has random plastic waste compressed inside it.

Criticism

- It is un-decomposable and un-destructible
- On melting it releasesa compound gas which is very harmful to the health and environment
- It weakens the ozone layer Applications
- It is Economical than normal bricks used for construction
- The huge waste plastics can be used as construction material
- Protection of O-Zone

FIBER REINFORCED POLYMER USED IN CONSTRUCTION

Ms. Geetanjali Mahanta
Civil Department

Fiber reinforced polymer used in construction Fiber reinforced polymer is composed of a protective polymer reinforced with high-strength fiberglass. Together, these materials create a premium composite with many potential construction applications. Fiber reinforced polymer outperforms wood and concrete for bridges, pedestrian pathways and other structures, while holding up to decades of wear and tear.

Fiber reinforced polymer can be used for repair and strengthening of existing structures. Externally bonded reinforcements can be used to reinforce concrete, timber, steel and masonry structures.

At just 10–20% the weight of reinforced concrete decking, FRP panels are lightweight yet strong enough to withstand high foot traffic, motor traffic and high static loads. Ease of installation. The lightweight nature of FRP also facilitates construction.

It is used in high-performance hybrid structures. Fiber reinforced polymer bars are used as internal reinforcement for concrete structures. FRP bars, sheets, and strips are used for strengthening of various structures constructed from concrete, masonry, timber, and even steel.

Fiber reinforced polymer (FRP) systems used to reinforce and strengthen concrete, masonry, steel and timber structures including aramid (AFRP), basalt (BFRP), carbon (CFRP), and glass (GFRP) fibers.

RAPID-HARDENING CEMENT

Prof. Abhipsa Mohanty
Civil Department

Rapid Hardening Portland Cement (RHPC) is special purpose cement used in concrete to achieve a higher rate of early strength development, compared to using Normal Cement. The improved early performance of RHPC is achieved principally through increased product fineness.

Advantages:

- Lower drying shrinkage rate than other cement types
- Fast hardening
- High durability
- Requires minimal adjustment
- Time-saving
- Environmental conservation
- Savings
- Used in areas like road pavements, precast slabs, posts, electric poles, and concreting in cold countries

Disadvantages:

- Expensive compared to OPC
- Reduces workability compared to ordinary portland cement
- Initial setting time of 30 minutes
- Final setting time of 600 minutes
- Specific surface greater than 3250 cm2/gm
- Lighter than OPC
- Less curing period

Sulphate-Resistant Cement

Mr.MD ARAS ANSARI
Civil Department

Sulphate-resistant cement is a blended cement that's designed to improve the performance of concrete in environments where there's a risk of sulfate attack.

It's made by finely grinding Portland cement clinker, gypsum, and blast furnace slag.

The amount of tricalcium aluminate (C3A) is restricted to less than 5%, and the amount of (2C 3A +C4AF) is restricted to less than 25%.

This reduces the formation of sulphate salts, which lowers the possibility of sulphate attack on the concrete.

Sulphate-resistant cement is used in construction projects where the concrete is in contact with soils or groundwater that have more than 0.2% or 0.3% g/l sulphate salts. It's recommended for use in:

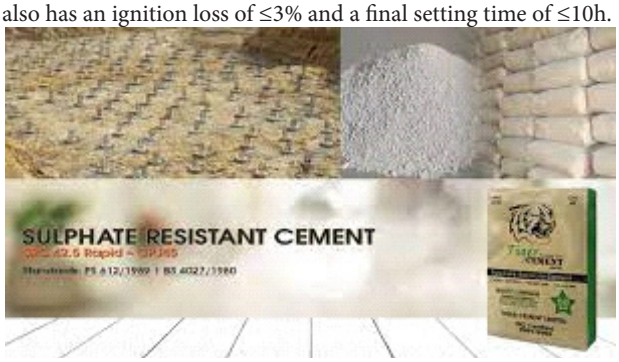
- Pile foundations
- Basement structures
- Construction in coastal areas within a 50 km radius of the sea
- Sewage and water treatment plants
- Sea walls, dams, and reservoirs
- Petrochemical and food processing factories
- Slabs on the ground, pipes, and concrete posts

Sulphate-resistant cement is recommended in places where the concrete is exposed to attack from excessive amounts of sulphates, which can damage the structure.

Sulphate-resistant cement has a compressive strength of:

- 10Mpa at 3 days
- 16Mpa at 7 days
- 33Mpa at 28 days

It also has an ignition loss of ≤3% and a final setting time of ≤10h.



Water Resources Engineering in Civil

OMM Prakash Maharana
Civil Department

What is water resources engineering ?

Water resources engineering is the study and management of equipment, facilities and techniques that are used to manage and preserve life's most plentiful resource. In addition to assessing how and the best ways in which to control water as it pertains to water-related activities – such as irrigation, waste disposal and canal development – water resource engineers are also frequently involved in water management to ensure that it's safe to drink both for humans, plants and animal usage.

Water resource engineers may be tasked with the awesome responsibility of ensuring that the planning and management of available water supply are adequately leveraged and remain safe to use for as long as possible. They may also be involved in water treatment so that the quality of water is improved upon for various end uses, whether that's recreationally, commercially or industrially.

Why is water resources engineering important?

Resources, by their very nature, are finite. There are only a small handful that are naturally renewable – such as wind, solar, hydro and biomass. While water may be renewable in terms of the many different ways it can be used and reused, it's not as abundant as it once was, which many earth scientists and climatologists point to as a function of climate change.

Water resource engineers may be charged with developing new systems or processes for private or government entities that can preserve freshwater sources and find new ones. This may require the assistance of civil engineers involved as well, designing water purification methods through desalination or creating new equipment for contaminant transport when water is used for irrigation purposes. Understanding what works and what doesn't when it comes to water resource management is often a combined effort and may involve a number of different analyses, including hydrologic, which is the study of the water cycle and directions in which it flows, which may be influenced by weather and other environmental forces.

Structural Design in Civil Engineering

Rajendra Das
Civil Department

What is Structural Design in Civil Engineering?

Civil engineering is considered the second-oldest engineering discipline, with military engineering considered the oldest. Civil engineering is a professional discipline that deals with the design, construction and maintenance of the physically and naturally built environment, especially public sector works such as roads, bridges, dams, highways, airports, pipelines, sewage and drainage systems, railways, ports and all the rest.

The professional discipline of civil engineering offers many opportunities for specialization. Coastal engineers specialize in building coastal structures like ports, harbors, levies and storm surge barriers that protect populated areas from flooding and erosion. Environmental engineers specialize in the design and construction of structures and facilities that treat chemical, biological or thermal wastes.

There are even geotechnical engineers that analyze the composition of soil to ensure the safety and reliability of building foundations and retaining walls.

In this blog post, we're focusing in on one particular aspect of civil engineering: structural engineering.

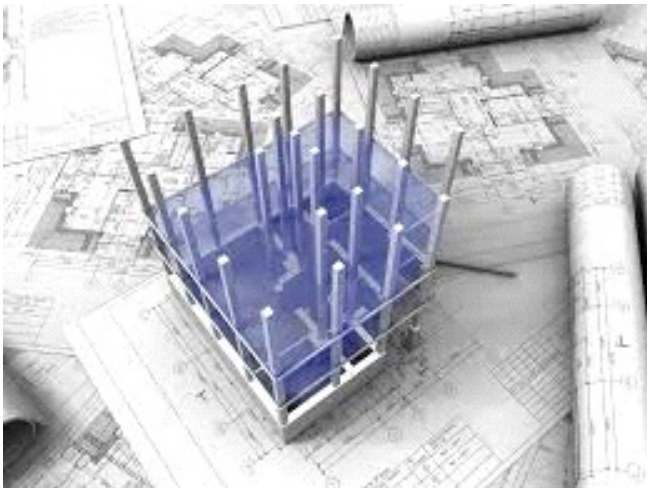
Structural engineering deals with the design and structural analysis of buildings, bridges, towers, lighthouses, tunnels, and even off-shore structures like oil rigs. Structural engineers may use some creativity to design a structure with visual appeal, but they must also ensure that the structure is safe and stable for its intended use. Keep reading to learn more about structural design in civil engineering.

Basic Principles of Structural Design

Structural engineers combine the core principles of structural design with a sound background in physics and materials science to ensure that structures are built to withstand the loads and forces that they will encounter during their usage.

Civil engineers that design structure for construction projects must be excellent problem solvers. The decisions that structural engineers make during the structural design phase of the project will affect everything from the project cost and duration to the ultimate safety and viability of the structure.

Below, we highlight some of the most important factors that structural engineers must consider when designing a building.



SOIL MECHANICS

Santoshi Pradhan
Civil Department

The term Soil Mechanics was coined by Karl Terzaghi in 1925. He is popularly known as the father of Soil Mechanics. Soil Mechanics is the study of soil, its behaviour, and its use as a material for engineering, which is the focus of the civil engineering subject.

In engineering problems involving sediments and other unconsolidated accumulations of solid particles that are produced by the mechanical and chemical disintegration of rocks, regardless of whether they contain an admixture of organic components or not, soil mechanics is the application of laws of mechanics and hydraulics.

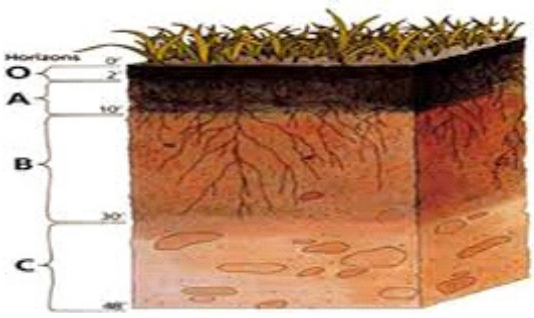
Importance of Soil Mechanics

1. Soil mechanics ensures safe and stable foundation design for structures.
2. It analyzes slope stability and prevents landslides and slope failures.
3. Soil mechanics guides the design of retaining structures.
4. It facilitates the selection and implementation of soil improvement techniques.
5. It assesses and mitigates geotechnical hazards.
6. Soil mechanics is crucial for designing underground structures.

Application of Soil Mechanics

The applications of soil mechanics are wide-ranging and include:

- Foundation engineering and design.
- Slope stability analysis and landslide mitigation.
- Retaining wall design and construction.
- Earthworks and embankment design.
- Geotechnical investigation and site characterization.
- Soil improvement techniques and ground modification.
- Underground structure design, such as tunnels and deep foundations.
- Pavement design and analysis.
- Evaluation of soil liquefaction potential.



PAVEMENT DESIGN

Subhama Biswal
Civil Department

A layered structure supported by soil subgrade to form the carriageway of a road is called road pavement.

It is of two types

(1) Flexible pavement or bituminous pavement or black top pavement

(2) Rigid pavement or cement concrete pavement or white surface pavement

Purpose of road pavement

- To carry heavy loads of vehicular traffic and to distribute the same over the larger area underlying subgrade soil.
- To prevent the subgrade soil from bad effect of weathering agencies.
- To provide a smooth riding surface

Types of road Pavement

- Flexible pavement • Rigid pavement

Flexible pavement: The road pavements which can change their shape to some extent without any rupture are known as flexible pavements. Any change of shape occurring in the subgrade and subsequent layers over its reflected on the top

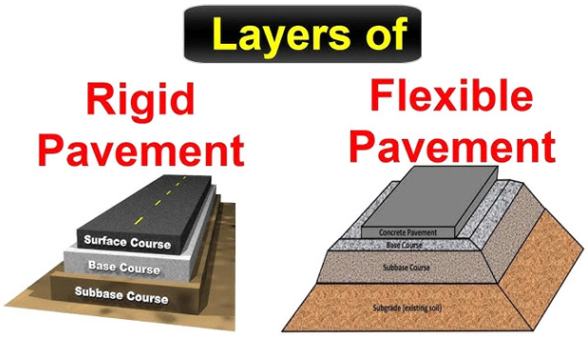
surface of the pavement.

Examples: All bituminous roads, gravel roads, water bound macadam roads, wet mix macadam roads etc.

Rigid pavement: The road pavement which can not change their shape without rupture are known as rigid pavements.

• Any change of shape occurring in the subgrade is not reflected by the surface of these pavements.

Examples; Cement Concrete pavements, Reinforced Cement Concrete pavements etc.



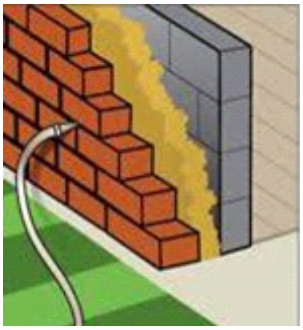
CAVITY WALL INSULATION

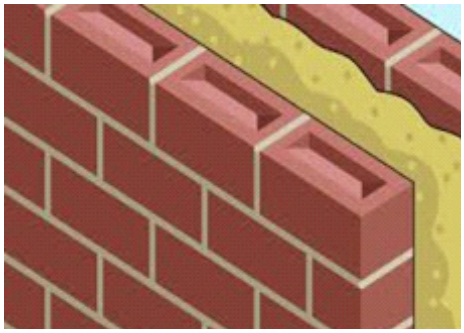
Bikash Kumar
Civil Department

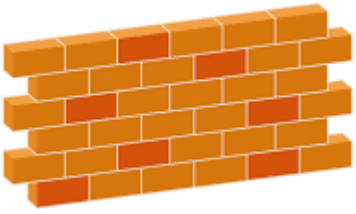
The cavity walls of the Visitor Centre have been filled with insulation which reduces the amount of heat lost through the walls. The installation was a straight forward process and involved the installer drilling small holes (22mm across – slightly smaller than the size of a 10p piece) at around 1m intervals into the outside walls. The insulation was then blown into the cavity.

How it Works

Heat loss occurs because heat naturally flows from hot objects or areas to colder ones. During winter, when a building is warmer than the air outside, heat will flow out of the building through poorly insulated solid surfaces such as walls, roofs and windows. Cavity wall insulation creates a barrier between the inside and outside of the building which reduces the amount of heat being lost through the walls. This helps to save money on heating bills as the heating system won't have to keep switching on to replace the heat escaping through the walls.







For Your Home

If your home was built after 1930, it is likely to have cavity walls. Cavity walls are made of two layers of brick with a small gap or 'cavity' between them which can often be filled with insulation which can be made from mineral wool, beads, granules or foam. Installing cavity wall insulation can save around 20% on your fuel bill. If your home has cavity walls but was built after 1995, the walls might already be insulated. An installer can check if you have un-insulated cavity walls and whether your home is suitable for insulation. If your home has solid walls (pre 1930), they can still be insulated – from the inside by fitting rigid insulation boards to the wall, or by building a stud wall filled in with mineral wool fibre or externally by fixing a layer of insulation material to the wall, then covering it with a special type of render (plasterwork) or cladding. The finish can be smooth, textured, painted, tiled, panelled, pebble-dashed, or finished with brick slips. Solid wall insulation could save you around 60% on your fuel bills.

COPPER SLAG AS A SUBSTITUTE IN CEMENT AND CONCRETE

Tapan Panda
Civil Department

Copper slag is a by-product of the copper ore purification process that is produced at various stages. Copper slag is widely utilized as an abrasive, as well as a construction ingredient in the manufacturing of concrete and paving materials. Despite, the giant quantities of waste copper slag results in land filling issues. Land filling of waste copper slag convert the land into unfertile soil and as result creates environmental problems. Therefore, the waste copper slag may be used as an alternative material in producing sustainable construction materials that lead to both economical and environmental benefits. Most of the studies observed that up to 15% by using the weight of copper slag as Portland cement replacement improves in stress due to declining capillary porosity related to hydrated lime and 40–50% and 40–60% (by weight of sand) of copper slag can be used as a substitute for fine aggregates and coarse combination concrete is improvement in strength. This paper summarizes the use of waste copper slag in producing concrete as aggregate and as a partial replacement to cement. Furthermore, the effect of waste copper slag on the mechanical, durability and the effect of elevated temperatures on the properties of concrete are presented.

Copper slag can be used in concrete in the following ways:

- Fine aggregate in cement mortars
- Coarse aggregates in high strength concrete
- Raw materials for clinker, cement replacement, coarse and fine aggregates

Copper slag can be used up to 60% without any harmful impact on the mechanical strength of concrete. However, copper slag has lower water absorption and creates higher slump which causes bleeding in concrete.

CSIBRIDGE: AN INTEGRATED BRIDGE DESIGN TECHNOLOGY

Supriya Ray
Civil Department

CSiBridge has been developed as the ultimate, easy-to-use, integrated software program for modelling, analysis, and design of bridge structures. The ease with which all of these critical tasks can be accomplished makes CSiBridge the most versatile and productive bridge design package in the industry. Welcome to the new world of CSiBridge!
A bridge can be analysed in CSiBridge by generating a model, to determine the response of bridge structures to the weight of vehicle live loads which it will carry to fulfil its objective. Considerable power and flexibility are provided for determining the maximum and minimum displacements, forces, and stresses from multiple lane loads on complex structures, such as highway interchanges. The effects of vehicle live loads can be combined

with static and dynamic loads, and envelopes of the response can be computed.

The bridge model to be analysed can be created using easy to use templates accessed through the File > New command or a general F.E.M. model can be built manually using frame, shell, solid and link elements. Alternatively, a mixed approach can be used wherein part of bridge model can be generated using templates and remaining model can be completed manually by adding frame or finite element objects. The superstructure can be represented by a simple "spine" (or "spline") model using frame elements or it can be modelled in full 3D detail using shell or solid elements. A spine model is the simplest model as it gives the complete response of a bridge structure quickly to get a "feel" of the problem at hand.

Lanes are defined that represent a zone on the bridge where the live loads can move on the superstructure. Lanes may have width and can follow any straight or curved path. Multiple lanes need not be parallel or of the same length so that complex traffic patterns may be considered. The program automatically determines how the lanes load the superstructure, even if they are eccentric to a spine model. Conventional influence lines and surfaces for loading of each lane can be displayed for any response quantity. Vehicle live loads can be selected from a set of standard highways and railway vehicles or users can specify their own vehicle live loads. Vehicles are grouped in vehicle classes, such that the most severe loading of each class governs. Wheel loads for a vehicle needn't be at a constant distance and may be at a variable distance and CSiBridge will automatically workout the maximum response for a variable axle load too.

What CSiBridge Can Do?

CSiBridge offers the widest assortment of analysis and design tools available for the engineer working on bridges. The following list represents just a portion of the features included in the CSiBridge software:

- Bridge Analysis Options
- Staged Construction
- Cable-Stayed Bridge
- Stress Ribbon and Extradosed bridges
- CSiLoadOptimizer to find cable loads to have a desired Bridge profile
- Influence Surfaces
- Superstructure Design
– Steel and Concrete
- Load Rating
- Results and Output
- Bridge Animations
- Automated step-by-step Seismic Design of Bridge including Nonlinear Pushover and/or Time History Analysis
- Bridge Wizard
- Bridge Object Modelling
- Section Designer
- Parametric Deck Sections
- Lanes and Vehicles
- Rail Track modelling for completely automated Non-Linear Rail Structure Interaction analysis
- Bearing and Bridge Pier Modelling
- Post-Tensioned Box Girders
- Pretensioned Precast Bridge sections
- Cast in place (CIP) or precast Segmental Bridges
- Foundation Modelling including complex soil modelling
- Loading and Analysis

Design Features

CSiBridge uses the SAPFire analysis engine, the state-of-the-art equation solver that powers all of CSI's software. This proprietary solver exploits the latest in numerical technology to provide incredibly rapid solution times and virtually limitless model capacity.

Superstructure designs can be performed on a variety of superstructure types, including steel girder and prestressed concrete precast I-girder, bulb tees, box and multicell box girders. The steel girder design allows engineers to optimize the design such that the girder properties may be resized and checked interactively. Stress, flexural, and shear designs in accordance with the IRC, AASHTO LRFD 2012 (steel and concrete), AASHTO STD 2002 (concrete), CAN/CSA-S6-06, and EUROCODE. The steel design results include a number of design plots that allow the user to view demand and capacities for shear and flexure design results.

SEFFECT OF SALT WATER ON THE COMPRESSIVE STRENGTH OF CERAMIC POWDER CONCRETE

Asish Kumar Mohapatra
Civil Department

The ceramic industry inevitably generates wastes, irrespective of the improvements introduced in manufacturing processes. This research examines the feasibility of using ceramic wastes in concrete and the effects of fresh and salt water environments on the compressive strength of the concrete. Inthis study the cement has been replaced with ceramic waste powder accordingly in the range of 0%,5%, 10%, 15%, 20%, and 30% by weight for concrete which was cured for 56 days in two liquid media (fresh and salt water).The findings revealed that use of waste ceramic enhances the properties of concrete cured both in fresh and salt water media, based on the results from the compressive test, higher compressive strength occurred in concrete cured in salt water than fresh water. The results demonstrate that the use of ceramic powder as active replacement endows cement with positive characteristics like major mechanical strength and the economic advantages. The concrete also exhibited a high compressive strength in both water bodies. Reuse of this kind of waste has economic and environmental advantages (onshore and offshore structures). Indirectly, all the above contribute to a better quality of life for citizens introduce the concept of sustainability and greenhouse in the construction sector.

GREEN CONCRETE

Satya Prakash Jena
Civil Department

Concrete which is made from concrete wastes that are eco-friendly are called as "Green concrete". Green concrete is the Production of concrete using as many as recycled materials as possible and leaving the smallest carbon footprint as possible. The other name for green concrete is resource saving structures with reduced environmental impact for e.g. energy saving, CO_2 emissions, waste water.

The technology considers all phases of a concrete construction's life cycle, i.e. structural design, specification, manufacturing and maintenance, and it includes all aspects of performance ,i.e.

- Mechanical properties (strength, shrinkage, creep, static behavior etc.)
- Fire resistance (spalling, heat transfer etc.)
- Durability (corrosion protection, frost, new deterioration mechanisms etc.)
- Thermodynamic properties (input to the other properties)
- Environmental aspects (CO_2 emission, energy, recycling etc.

Several factors which enhance the suitability

of green concrete in structures include:

- Reduce the dead load of the structure and reduce the crane age load; allow handling, lifting flexibility with lighter weight.
- Reduction of emission of carbon dioxide by 30%.
- Increased concrete industries use of waste products by 20%.
- Good thermal and fire resistance, sound insulation than the traditional concrete.
- Improve damping resistance of the building.
- Use of new types of residual products, previously land filled or disposed of in other ways.
- No environmental pollution and sustainable development.
- It requires less maintenance and repairs.
- Compressive strength behavior of the concrete with water cement ratio is more than that of conventional concrete.
- Flexural strength of the green concrete is almost same as conventional concrete.
- CO_2-neutral, waste-derived fuels shall substitute fossil fuels in the cement production by at least 10 %.
- Use of concrete industries own residual products.

Benefits to using green concrete

- Lasts Longer
- Uses Industrial Waste
- Reduces Energy Consumption
- CO_2 Emissions

LIGHT EMITTING CONCRETE

Subham Baliar Singh
Civil Department

Concrete is the world's most widely used construction material due to its versatility, durability, sustainability, and economy. Concrete is a mixture of aggregates (sand + gravel or crushed stone) held together by a binder of cementitious paste, typically made up of Portland cement and water. It may also contain supplementary cementing materials (SCMs), such as fly ash or slag cement, and chemical admixtures. Light-emitting cement is a green construction material designed to illuminate highways, roads, and bicycle lanes without using electricity. Light-emitting cement absorbs solar

energy during the day and radiates light at night. This innovative cement was developed by Dr. Jose Carlos Rubio from the Michoacan University of Saint Nicholas of Hidalgo in Mexico. The research focused on modifying the microstructure of cement to absorb solar energy and emit light in darkness.

How that concrete made:

The light emitting concrete composition comprises light-emitting pigments. The light emitting pigments include a titanium powder, a sulphide powder and resins, cement, sand, gravel and water. The method of synthesizing a light emitting concrete structure comprises preparing slurry. The slurry is prepared by mixing sand, gravel, cement and water. Further, a light emitting pigment mixture is prepared. The light emitting pigment mixture is prepared by mixing a titanium powder, resins and a sulphide powder. The light-emitting pigment mixture is added to the slurry. The slurry is molded by adding the slurry in molds. The molds are further kept at a temperature of 15-20° C. for at least 12-14 hours. The slurry is cured at a temperature of less than 30° C. for 24 hours.

Advantages of light emitting concrete:

- The material is sustainable since it is formed by condensation of silicates usually found in clay, sand, or dust.
- The process is ecofriendly as the only gas released during manufacturing is water vapor.
- The cement is said to have a life span of 100 years and is being fabricated to emit green or blue light.
- The cement has the power to remain lit for about 12 hours after dark.
- The level of brightness can be adjusted during production.
- The cement is inorganic, and its material components are recyclable.
- It could reduce the overhead costs of decorating homes.

Disadvantage of Light emitting concrete:

- Cement is an opaque body that does not allow light to pass into its interior.
- Although it is manufactured like ordinary cement, the change in the microscopic structure needed to make it glow modifies the structural properties of the material. It may not have the same applications as the ordinary cement and is intended to be used on surfaces as a coating material.

PARTIAL REPLACEMENT OF CEMENT BY PROSOPIS JULIFLORA ASH AND FINE AGGREGATE BY STEEL SLAG

Rahul Kumar
Civil Department

The performance of concrete by partial replacement of cement with Prosopis Juliflora Ash and Fine aggregate with Steel Slag. Steel Slag is an industrial waste which is generated during the production of steel. In India, annual outcome of Steel Slag is about 10 Million Tonne. It is very important to utilize these wastes in order to avoid the land pollution. Therefore, replacing some of the natural

aggregate by Steel Slag would lead to considerable environmental benefits. Prosopis Juliflora Ash is the residue powder left after the combustion of wood, such as burning wood in home, hotels or an industrial power plant. It is also difficult to decompose and also absorbs more groundwater. Therefore, using PJA as a partial replacement of cement providing the green and clean environment. In this proposed work Prosopis Juliflora Ash with specified ratio of about 2.5%, 5%, 7.5% & 10% is replaced for cement and 10%, 20%, 30% & 40% of Steel Slag for partial replacement of fine aggregate is used. The mechanical properties of concrete such as compressive strength, tensile strength and workability has been evaluated. The optimum percentage of combined percentage was found to be 7.5% of PJA and 30% of SS. The project result reveals that 7.5% of PJA and 30% of SS enhance the strength of concrete compared to other replacements.

PRECAST CONCRETE TECHNOLOGY

Rosan Kumar
Civil Department

As the construction & Real Estate Sector in India & several countries booming rapidly .Today, we can see that the Indian& International construction majors are adopting precast concrete technology in constructing their latest projects. Precast concrete technology is a durable and versatile technology for construction. In this technology the different elements or panels of concrete are produced under strict quality control measures in state of the art factories by highly trained personnel, with virtually no wastage. There are dedicated precast factories which serve produce for multiple construction projects as well as on-site precast factories which serve a particular construction project.

Precast concrete technology consists of custom-designed precast concrete elements such as:

roof slabs

- beams
- columns
- wall panels
- partition walls
- load bearing walls facades
- preinstalled windows
- staircases
- central core

These elements offer flexibility in size and shape with a variety of surface finishes and colour options. With precast concrete technology, the developers have a world of creative possibilities in application and design. Precast concrete technology also offers an abundance of in precast concrete technology, the precast elements are manufactured or cast in strictly controlled environment with state of the art machinery by the experts. These elements are then erected on the site with the help of the cranes. Then the precast elements are joined together as per specification with grouts and screed to provide the required strength and rigidity to the structure.

Key factors which are enabling the growth of precast concrete technology in India are:

- quality
- speed of construction
- value-for-money
- avoiding large labour force on site
- almost 1/3rd less delivery time than the conventional methods
- delivering quality products
- large spans can be achieved using prestressed elements

The following practical considerations make precast concrete technology the best choice for almost all types of construction projects:

- wastage-control
- speed of construction
- best of quality
- virtually no repair or reworking cost

There is a great potential in the Indian market to become a major hub for the precast concrete technology across the globe.

SURFACE ENGINEERING BY SYLOCON

Sapan Kumar Das
Civil Department

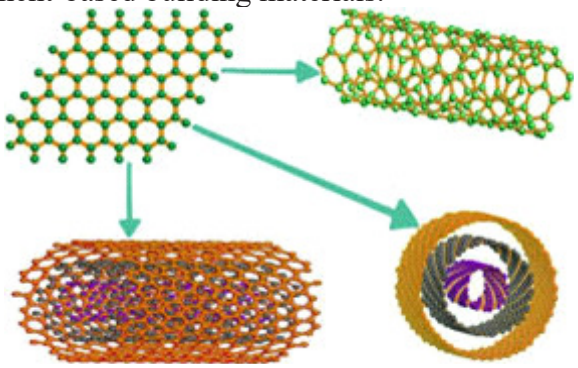
SYLOCON® - The Nano composite plaster additive is closely related with Surface engineering. This is a time-honored solution to protect masonry and concrete from aggressive weather action consistently. This strengthens the masonry units and concrete as well as serves to shield the structure against weather actions. From the point of Surface engineering, now there is a range of techniques available to get rid of material degradation. But, in some cases it's noticed that shielding material itself degrades due to Biological and Biochemical modes of materials degradation. Different type of modes is found in this field. I would like to add few relevant points for better understanding of this claim of self-degradation of shielding materials by the Biological and Biochemical effects. If we talk about few polymers those are widely used in shielding purposes like PVC, Polyurethane, Nylon, Different Acrylics, POLY (Styrene Butadiene Styrene} – SBS, Styrene Butadiene Copolymer, etc. we find the mode of degradation of different types of shielding material those are based on these kinds of protective polymers.

- POLY (Styrene Butadiene Styrene) – SBS, Styrene Butadiene Copolymer - The Biocompatibility of ESBS Membrane was evaluated with the cell culture of fibroblasts on the membrane. It revealed that the cells not only remained viable but also proliferated on the surface of the various ESBS membranes

and the population doubling time for fibroblast culture decreased.

- PVC - This popular item itself is degraded by microorganisms like Fungi (e.g. Aureobasidium Pullulans) and bacteria (e.g. Pseudomonas Aeruginosa). The main mode of action is increased loss of plasticizers due to microbial degradation.
- Polyurethane – This is widely used base material for shielding. But, that too is degraded by Fungi (e.g. Chaetomium Globosum) and bacteria (e.g. Bacillus Subtilis). The enzymatic activity of Fungi and bacteria causes a major failure of the shielding products based on this.
- Nylon - This is strange degradation of this shielding compound by wood – degrading fungi (e.g. Bjerkandera Adusta) and bacteria (e.g. Bacillus Pallidus). The degradation is physical disruption and enzymatic degradation.
- Acrylics – This popular material is decayed by Melanin producing fungi that causes physical disruption.
- Interestingly Fungi can also affect glass by colonizing its surface and secreting organic acids, which etch the surface of the glass. This form of damage is relatively mild and mainly significant in tropical climates.

These clear evidences prove that shielding material should have its own durability property to withstand weather action to protect the underneath substances. Considering all above the degradation and mode of actions of different microorganisms, SYLOCON® is engineered to protect and provide honored life of cement-based building materials.



The specific characteristic of SYLOCON® is commonly known as a plaster additive for crack free plastering and water ingression and efflorescence. But the recent analysis has proved its unique efficacy to prolong its sustainability against weather action. Thus, the underneath substances remain intact and durability of building is enhanced. The most important mode of this reaction in terms of Surface engineering between the Nano particles in SYLOCON® is a slow and prolonged process, as the agglomeration occurs within the pores or voids in cement mortar.

TECHNOLOGY OF OSMOTIC RENDERS IN WATER-PROOFING WORLD

Ms. Geetanjali Mahanta
Civil Department

The concrete gets wet or water initially get below the membrane to create the osmotic cell by initial saturation, condensation and liquid water within holes and voids below the membrane and vapour diffusion from.

Osmosis is the chemical-physical phenomenon whereby two liquid solutions spread into one another through a semipermeable membrane and is caused by the difference in concentration between the two liquids.

Specially formulated cement systems, which are defined as 'osmotic renders', provided important waterproofing performances both in the occasional and permanent presence of rainwater, natural water, groundwater, etc.

Basic Working Principle

The particular adhesion of osmotic waterproofing systems, determined by the deep osmotic diffusion, also made them suitable for operating both in conditions of positive and negative water pressure.

In building materials (and not only) adhesion and adherence are the result of two different mechanisms that can be present both separately and as more often happens, in coaction: mechanical adhesion and chemical adhesion. The osmotic or diffusive adhesion also comes into play in the osmotic process.

Final Performance

With 22% mixing water - thickness 2.5 mm: It is tested in accordance to EN 1504-2 (surface protection system for concrete, where this membrane comes in the category of Moisture Control and Increase Resistivity coating.)

Coefficient of permeability to free water (kg/m²·h0.5): Note w < 0.05 Class III (low permeability) according to EN 1062-1.

Permeability to water vapour - equivalent air thickness SD - (m): SD < 1 Class I (permeable to water vapour).

Bond strength on concrete (substrate in MC 0.40 - water/cement ratio = 0.40) according to EN 1766 (MPa): > 2

Advantage Of Osmotic Renders On Crystalline Coatings

- Osmotic renders are compatible for potable water tanks whereas crystalline coatings are not.
- Osmotic renders are recommended for both concrete & masonry structure, crystalline coating only react with the free lime present in concrete surface to give the reactive solution
- Osmotic renders bonding with concrete surface is more than 2M Pa gives extra assurance towards the integrity of the watertightness, whereas crystalline deeply penetrate in the pores and does not have any surface reaction.
- Osmotic renders can bear negative pressure too upto 1 ATM whereas crystalline coatings have no testing for negative pressure.

English Section

QUALITIES OF A GOOD STUDENT

Radha Rani Sahu
Civil Department

Historically the term student refers to anyone who learns something. However, the recent definition of a student is that anyone who attends a school, college or university. Based on personal experience and research, I list down the qualities of a good student.

1. **Attitude :** Basically, a good student should possess the ability and willingness to learn new subjects even the subjects are not interesting.
2. **Academic skills :** Acquiring academic skills is the most important quality of a good student. Ability to read comprehensively, to write effectively, to speak fluently, and to communicate clearly are the key areas in which a good student must be proficient.
3. **Ability :** A good student should have the ability to apply the results of his or her learning to achieve the desired goals in a creative way.
4. **Perceptiveness :** How well a student can interpret and perceive meanings from a conversation greatly determine the quality of a good student. A good student always perceives right meaning from conversations, but an average student often misunderstands the original thoughts of a speaker or writer and derives a wrong conclusion.
5. **Self discipline :** Discipline in managing the time is an important factor that every good student must possess. Often, delaying the tasks, such as writing assignments, reading text books, etc. may negatively impact the ability of a student to deliver the goods.
6. Understanding rather than memorizing concepts A lot of surveys suggest that students must understand the concepts rather than just memorize them. The memorized facts and theories will stay in students memory until they leave the school, college or university. Once out of school, the student will totally forget the core concepts that they have learned. A good student always understands instead of memorizing the concepts.
7. **Behaviour :** A student should have to know how to behave with his or her mates, teachers, parents and elders.
8. **Asking doubts :** A good student doesn't hesitate ask questions in order to clarify his/her doubts.

BENEFITS OF YOGA

Kumari Subhalaxmi Sahoo
Civil Department

It seems like yoga is becoming more and more popular each year, with additional classes and studios opening up all over the country. Whether you're already practicing yoga or are just thinking about getting into it, it's important to understand that this form of exercise offers several amazing benefits. To help you better understand the ways yoga might improve your health and fit into your lifestyle, learn about some of the benefits of regularly practicing yoga and how they'll positively impact your life.

Flexibility

One of the most notable benefits of doing yoga regularly is that it can increase a person's flexibility, regardless of their age or weight. Contrary to what you might believe, you don't have to be flexible to start doing yoga. Beginning in introductory classes, yoga instructors will teach participants how to do the poses to the best of their ability. By practicing these poses and incorporating the breathing techniques of yoga, you may find that your flexibility quickly begins to improve and you're able to do more poses correctly over time. This is due to the gradual stretching of your muscles and an increased range of motion in your joints, both of which develop over time when you start a regular yoga practice.

Strength

The variety of poses utilized in yoga helps to build muscles in key areas of your body, including your arms, abdomen, back and legs. Because the poses are held for long periods of time, your muscles are forced to work hard to keep your body balanced and in the correct position. Frequent yoga participants typically experience an increase in muscle tone as a result of their workouts. The amazing thing about yoga is that no weights or machines are necessary. Instead, your own body provides the weight you use to build your strength over time.

Posture

Because yoga is so effective for strengthening the core muscles in the abdomen and the back, most people experience an increase in their core strength. This, in turn, improves posture, which protects your back from strain and helps you look confident and healthy.

Balance

Many of the poses in yoga require diligent balance, which some participants may not master at first. However, after practicing for a few weeks, many yoga participants are able to improve their balance and hold poses for longer periods of time. Your coordination can also improve as you learn to balance better.

Circulation

Doing yoga typically leads to better circulation in your body. The more efficient your body is when it comes to circulation, the better equipped it'll be to transport nutrients and oxygen throughout your body every day. This results in a wide variety of health benefits, including lower blood pressure and healthier organs.

Endurance

Despite the fact that there's no running or jogging involved in yoga, this form of exercise can

actually increase your endurance. This is because yoga helps to lower your heart rate and improve the oxygenation in your body. This leads to better cardiovascular health and, in turn, improved endurance.

Stress

Because yoga involves a kind of quiet concentration and deep breathing exercises, it typically tends to draw away the stresses of the day and lead to a more peaceful state. By lowering stress on a regular basis by doing yoga, you can often improve your health and your quality of life.

Energy

One of the key benefits of practicing yoga is that it usually leaves participants feeling energized rather than tired after a workout. Other forms of exercise that involve extreme physical exertion and sweating can leave individuals feeling exhausted. With yoga, the quiet, slow, deliberate movements get you the workout you need without using up all of your energy.

Weight

Yoga helps to increase your metabolism while also providing a calming, low-impact workout. That's why yoga is a great way to start shedding a few extra pounds and start leading a healthier lifestyle. Moreover, yoga is just a fun way to start exercising more, which also can influence your weight.

Chronic Conditions

Some people with chronic conditions find that yoga helps to keep their symptoms at bay or relieve some of the pain they experience on a regular basis. Some of the chronic conditions which may be alleviated or improved by yoga are sleeping disorders, depression and anxiety.

FAMOUS PERSONALITIES

Chandan Sethy
Civil Department

THE MOUNTAIN MAN

There are many people who sacrificed their lives and families to achieve great feats for their country. But out of them only a few are recognized by the world. The rest remain unsung. Dashrath Manjhi is one of them. Who is Dashrath Manjhi ?

Dashrath Manjhi (14th January 1934- 17th August 2007) was a social reformer Gehlaur, Bihar. He spent 22 years building a road with just a hammer and chisel. He was also nominated for the Padma Shri award. Why did Manjhi build a road ? Manjhi lost his wife in an accident and couldn't get quick treatment because of the bad quality of roads. After this blow, Manhji thought of building a road which is accessible to his village so that all the people can have easy access to medical care. The main lesson learnt from such people is to never give up the fighting spirit and not to be selfish. Even a small contribution can make a difference.

TULSI GOWDA

Tulsi Gowda is an Indian environmentalist from Honnali village, Ankola taluk in Karnataka state. She was born in the year 1944 and is currently 77 years old. She has planted more than 30,000 saplings and looks after the nurseries of the Forest Department. Despite having no formal education, she has made immense contributions towards preserving the environment. She was

conferred the Padma Shri award on Monday for her contribution to the protection of the environment. Barefoot and dressed in traditional attire, she received India's fourth-highest civilian award from President Ram Nath Kovind during a ceremony in New Delhi. She has enormous knowledge on diverse herbs and plants and is therefore known as the 'Encyclopaedia of forests '. Since she was 12, she has nurtured and planted thousands of trees and later joined hands with the forest department as a temporary volunteer. Later on, she was offered a permanent job in the department.

SUBRAMANIA BHARATI

"A liberated human existence": this was what Subramanya Bharati was fighting for, what he wanted for himself and for every Indian at the time of British dominion over the Indian subcontinent – and for every human being ever after. Subramania Bharathi was born in Ettayapuram of Tirunelveli district. He was a Tamil poet, writer, journalist and an Indian freedom fighter. Because of his clarity of thought and poetic vision, he came to an understanding that freedom and equality go hand in hand. "Ellaram ennattu makkal," he wrote: "Everyone – all the people of India – are my country folk!" In 100 years, has India lived up to his vision? It is clear that Bharati's writing today is more relevant than it has ever been. For now, it is even more than a struggle for independence: it is a matter of survival. An important lesson we can all keep in mind from Bharathi's inspiring life is that he never wanted to be 'chained', he loved freedom in thought, word and deed and this reflected in whatever he did. We can arm ourselves with this important takeaway. Purely from an individual perspective, his life inspires me to look within and enquire. Today there is also a need to contemporize Bharathi from various angles and to see how he envisaged a paradigm shift in understanding social cohesion, women-led empowerment, international relations and nationalism to name a few. Can he be an inspiration to all of us? That is, to speak truth to power? In the 21st century, mere word 'speak' will not be enough. Only sustained action will sow the right seeds. Bharathi personified this.

MAJOR DHYAN CHAND

Rajiv Gandhi Khel Ratna award will now be known as Major Dhyan Chand Khel Ratna award, as announced by our honourable PM Narendra Modi! Major Dhyan Chand was among India's foremost sportspersons who brought honour and pride for India. It is fitting that our nation's highest sporting honour will be named after him! But who is Dhyan Chand? Know all about the hockey great. • Major Dhyan Chand was born on 29 August 1905, in Allahabad. His family played hockey for the British Indian Army. Dhyan Singh got the name 'Chand' after his fellow players noticed him practising generally during the night after his duty hours. • With his extraordinary goal-scoring feats, the sportsperson earned his name and fame in the field of Indian hockey. For his contribution towards Indian hockey, Dhyan Chand was also known as The Wizard or The Magician of hockey. He has been conferred with several honours, including India's third highest civilian honour of Padma Bhushan in 1956. In addition to this, the Government of India also celebrates his birthday on August 29 as the National Sports Day. The Khel Ratna award is generally given for the spectacular and most outstanding performances by a sportsperson over a period of the previous four years. This year, it's indeed a proud moment for the Olympic bronze-winning Indian men's hockey team captain Manpreet Singh who was added to the list of Major Dhyan Chand Khel Ratna awardees. The awardees received their awards from the President of India at a specially organized function at the Darbar Hall of Rashtrapati Bhavan on Saturday,13 November 2021.

SYMBOLS OF INSPIRATION

Bibeka Ranjan Pradhan
Civil Department

Inspiration is the process of instilling faith in someone to motivate him or her to do something. Many people do many things simply out of the kindness in heart, and do not realize that they are inspiring others around them.

Each one of us has..... The ability to lead and inspire

We all have the ability to inspire people. This inspiration comes from a strong commitment of wanting to achieve our objectives. Our passion shines through because it is the right thing to do. If it is our actions that inspire others, there may be times when it just happens and other times when we work hard to make it happen.

What can we intentionally do to inspire others? What impact can we hope to have?

When we inspire others, connections are made. This inspiration brings about hope, energy and a path of possibilities. How can we approach others and help them tap into their strengths? How can we help them to see the possibilities? What can we do to empower others to succeed in turn, inspire others? There have been times in our lives when others have inspired us. It is nice to know that we can also have inspired us.

Martin Luther king, a genuine leader in America, out of kindness and love for Negroes who were being burnt in the flames of social injustice and racial discrimination, struggled to emancipate the lives of Negroes from slavery and injustice. He inspired millions of Americans with his great speeches. Inspired by him, the Negroes achieved justice and were emancipated from cruel bondage of slavery.

As a teacher while teaching Martin Luther King's "I Have a Dream" to the students of 1st year degree students, I fell under its spell. His language is full of imagery. His words tell the story about the AfricanAmericans' struggle for social equality. Whenever I read out his speech for the students in the class, I get so inspired that the hair on my skin stand erect and I visualize actual scene and I am transported to that scene where Martin actually made the speech. I become one of the spectators of King's speech. If this is the kind of feeling that I have, what type of reaction did the Negroes had, I can very well guess. His words have a magical power. In my view only a genuine and true leader who has concern for the people can do it. Martin Luther King's speech shows us that even abstract words and concepts can be made more inspiring and memorable.

Another great personality of our country, Mahatma Gandhi, out of love and affection inspired crores of Indians to take up the powerful weapons of truth and nonvoilence and became instrumental in achieveing independence for our nation.

What Gandhi achieved in his life was a miracle. He lives in the hearts of millions of Indians and is respected by all. He laid great emphasis on eradicating untouchability, promoting Hindu Muslim unity, promoting literacy and the development of the great nation... India. He moved the people with his sincerity and sacrifice. At his behest, they were ready to lay down their lives for the freedom of the country from foreign powers. His name lives on. Even after all these years his principles, dedication and mission continue to

inspire the country.

Gandhiji has shown us how to live by setting an example. He was an ordinary man with an extraordinary will to live his life according to the principles of truth and nonviolence. What he preached he first practised.

Mother Theresa, another great personality, was a great woman, who inspired the world and the people with her unselfish acts of love and dedication. She took a vow to alleveate poverty and spent most of her life helping others and serving God. Mother Theresa did what God expects from each of us and that is to do the best that we can, with what we have. She used her position in life to the best of her abilities. She taught the world and people that Universal Love will open doors that hate has closed. She taught us that the greatest way to show God's love is to meet the needs of others. She helped those who were in need. She helped the poor, the dying, and abandoned children. She showered on them love, compassion, and kindness. She gave them shelter, food and hope. She was truly a right source of inspiration.

By observing these great personalities, we can conclude that everyone has the ability to inspire. You too can start inspiring others.

Sometimes our work seems small and insignificant. But remember a small ripple can gain momentum and build a current that is insurmountable. Even a great Tsunami requires a small ripple in the starting.

Begin your journey with one small step. Great distances are covered with a small step. Don't let others stand in your way. There may be many barriers and hindrances but don't be discouraged. Overcome these with strong determination and courage to achieve your goal.

Walk your own path with a strong determination and rest will follow. You will find many ways in you if have will to do.

Some may laugh at you. So what? Many will follow. Many people laughed at the work of great people but they achieved their goal with a strong determination. When John Logie Baird wanted to send pictures from one place to another through wireless, many laughed at him. But he was strong enough in his determination and he invented the most popular gadget of the modern days called the TV.

Here are some tips to achieve success

- Don't give up your efforts however huge your goal is. Work with perseverance and persistence. Success seems to be a matter of hanging on after others have let it go.
- Fear keeps people small. Most people lag behind in life because of the fear they have in the mind. Run towards your fears. Chase them. Embrace them. On the other side of your greatest fears lives your greatest life.
- Don't just stand as a spectator of the game from outside the court. Get out of the stands, get on, the court and play the game of life.
- Take to risks in life. Without risk you can't achieve success.
- Be positive. It is essential requirement for all in life. A person having positive attitude can achieve success because what he thinks is what he becomes.
- Dream in life. Dream big. Feel it. Believe it. Chase it. Achieve it.
- Whatever your goal is.....go for it. Work hard with perseverance towards realizing your dreams.
- Extend a helping hand for the poor and needy and care for them. Be kind to them and in return the Almighty will shower His Grace on you.
- When someone does something good applaud. Share others' happiness.

Be a positive role model You will INSPIRE OTHERS

THE GIFT OF INDIA

Mr. Saruk Mallick
Civil Department

India is a Nation,
Without us, there is no sensation
India has its culture,
Enriching customs & traditions;
India has elaborate architecture,
From Taj Mahal at Agra,
to India Gate at its heart
Malwa witnesses mesmerising nights,
Rising to immeasurable heights,
Kashmir is a paradise on Earth
The Beauty of Indian culture
Whether Folk or tribal art
Even the wall paintings & sculptures
Have their own heritage embedded
Its Hindustani music that taught me the
strum of the strings,
But today instead of cultural dances
It's rock shows and only partying
With all such wonderful things in our country
Instead of making our country a developed
country
There is only brain drain,
People wake up & let's shape this country
for a better tomorrow!
RAISE YOUR VOICE AND SAY 'MERA BHARAT
ITNA MAHAN'
Bringing that positiveness & emotions into
your heart Saying 'MAA TUJHE SALAM'

INCREDIBLE IDIA

Akash Mallick
Civil Department

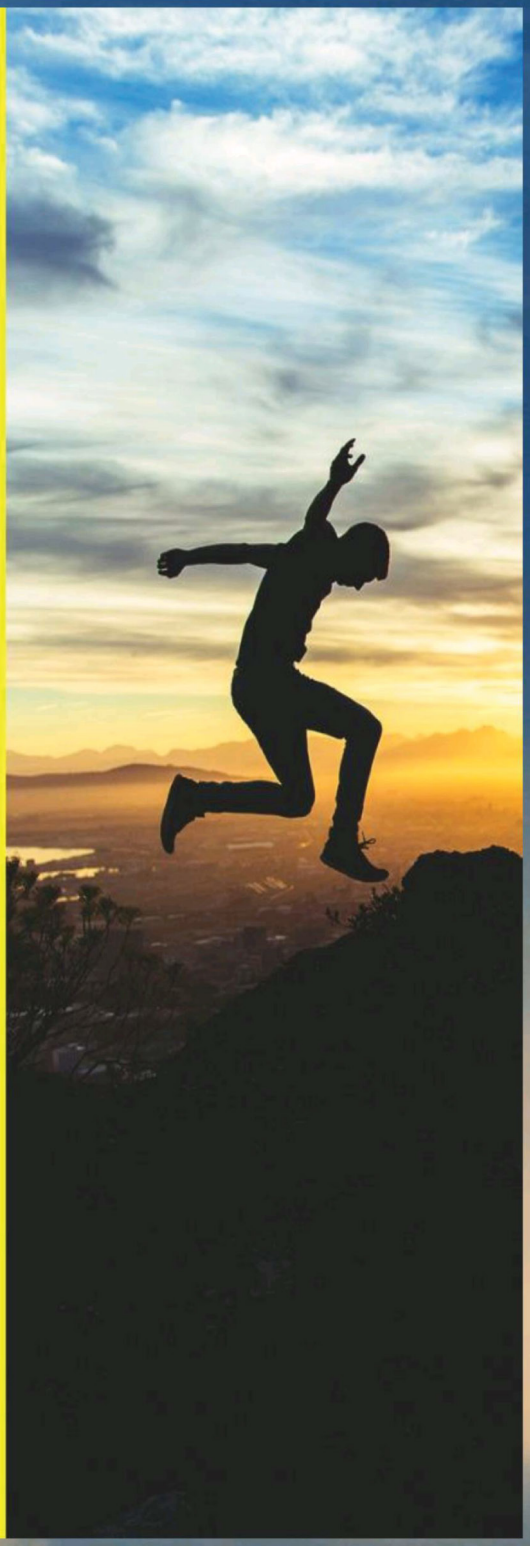
Indian culture and Tradition are unique,
Oh so very distinct, Magnifique!
Indian culture is of a beautiful form,
So sublime, impossible to imagine anything be-
yond.
The richness of Indian art,
Folk or tribal, Wall painting or sculpture,
Have their own embellishments marked
Indian culture is rare,
That it is to be found nowhere.
Our country is very different,
But it's truly magnificent.
The culture and tradition we follow,
Is neither hollow nor shallow.
Our India is so incredible,
You just can't leave it, If you do,
It's so unforgettable.
India has its customs and traditions
India is known for its distinctive celebrations
A unique land of vibrant colours
India is different from any other
The loud music, people dancing
The smell of good food Refreshing fragrance of
flowers,
and the colourful clothes
Celebration of our culture is a tribute to the diver-
sity
The festivals of India are a symbol of our unity

हिन्दी बिभाग

एक दिन तेरा भी आयेगा

तू सब्र कर, एक दिन तेरा भी आयेगा...
वह खुदा तेरी हर एक चाहत पुरी कर जायेगा!!
तू जंग कर तेरीही किस्मत के खिलाफ...
बदल जायेगी वह भी गर तेरी नियत है साफ!!
तू सिर्फ अपने अंदर कि आग को जलाये रख...
कोशिश कर रात से दिन और दिन से रात होने तक!!
तू सब कि शिकायते करना बंद कर...
उठ और कदम रखता जा तेरी मंजिल कि राह पर!!
तू भरोसा रख अपने सपनो पे...
मुह बंद हो जायेंगे कुछ पराओके तो कुछ अपनो के!!
तू घबरा मत किसी भी हालात में...
नाज कर खुद पे और तेरे इरादो पे!!
तू ध्यान मत दे इन कुत्तो के भोकने पर...
तू शेर है तू इन सब बातो कि फिक्र ना कर!!
तू इस निंद चैन का मोह छोड दे...
मेहनत और निश्चलता कि तरफ खुद को मोड दे!!
तू सब्र कर तेरा दिन नाही जमाना आयेगा...
खुदा नाही तू खुद तेरे सपने पुरे कर जायेगा!!!

Jitendra Khanar
Civil Department

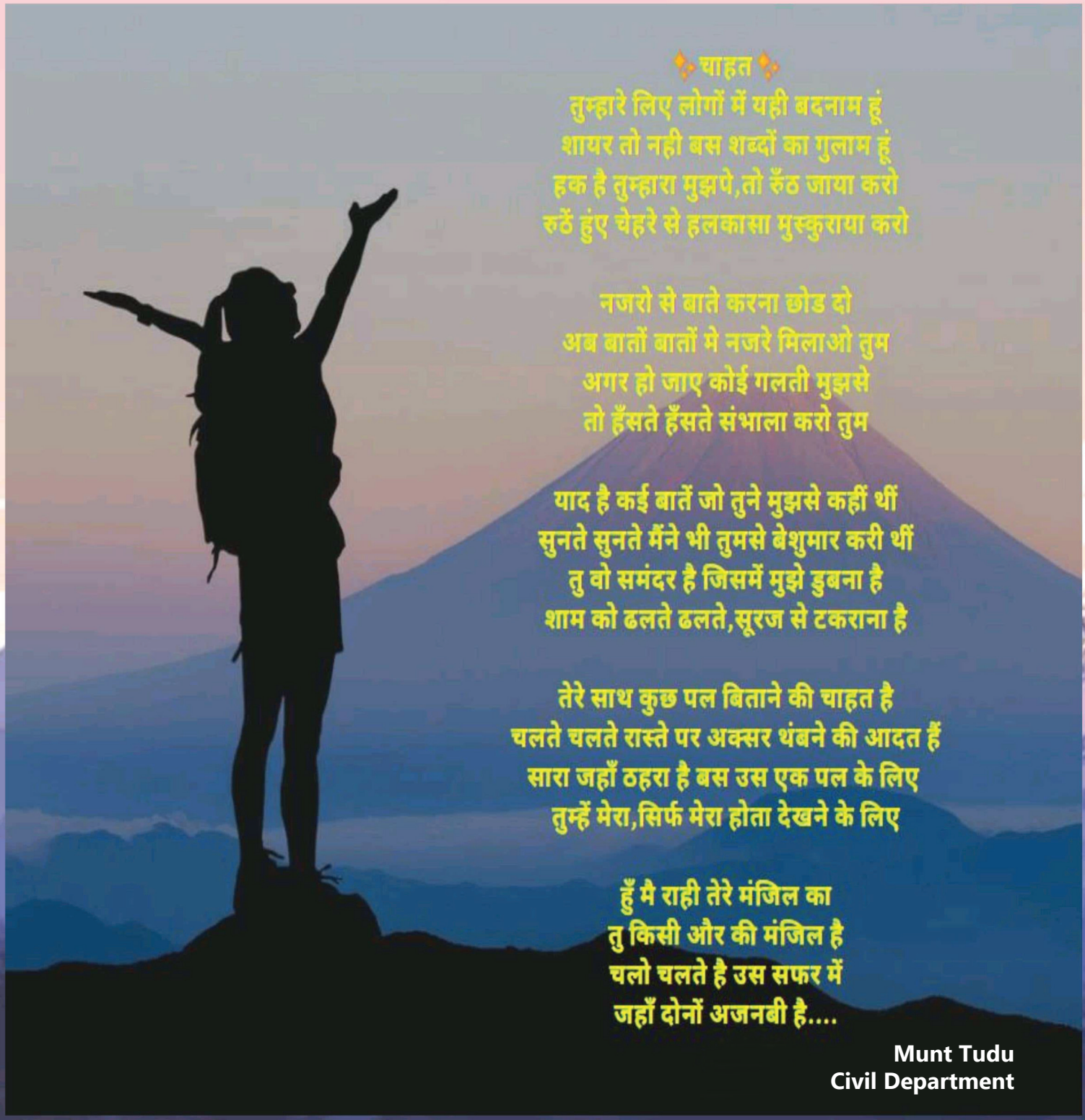


स्त्री...!

स्त्री म्हणजे राजमाता जिजाऊंची शक्ती,
स्त्री म्हणजे जनाबईंची निस्सीम भक्ती,
स्त्री म्हणजे सावित्रीबाईंची धारदार लेखणी ,
स्त्री म्हणजे एका उर्जेच स्मरण क्षणो क्षणी,
स्त्री म्हणजे आनंदीबाईची जिद्द,
स्त्री म्हणजे कुटुंबात येणाऱ्या कुविचारांना रोखणारी सरहद्द
स्त्री म्हणजे किरण बेदी आणि मीरा बोरवणकर यांची शिस्त,
स्त्री म्हणजे जणू एक आग ज्वलंत,
स्त्री म्हणजे आईची ती निस्वार्थ माया,
स्त्री म्हणजे तळपत्या उन्हात जणू भक्कम वडाची शितल छाया,
स्त्री म्हणजे मदर तेरेसा आणि सिंधूताईंनी केलेली सेवा,
स्त्री म्हणजे पुकारलेला बंड अन्याय होत जेव्हा जेव्हा..

Laxmi Sethy
Civil Department

चाहत



✨ चाहत ✨

तुम्हारे लिए लोगों में यही बदनाम हूं
शायर तो नही बस शब्दों का गुलाम हूं
हक है तुम्हारा मुझपे,तो रुँठ जाया करो
रुठें हुंए चेहरे से हलकासा मुस्कुराया करो

नजरो से बाते करना छोड दो
अब बातों बातों मे नजरे मिलाओ तुम
अगर हो जाए कोई गलती मुझसे
तो हँसते हँसते संभाला करो तुम

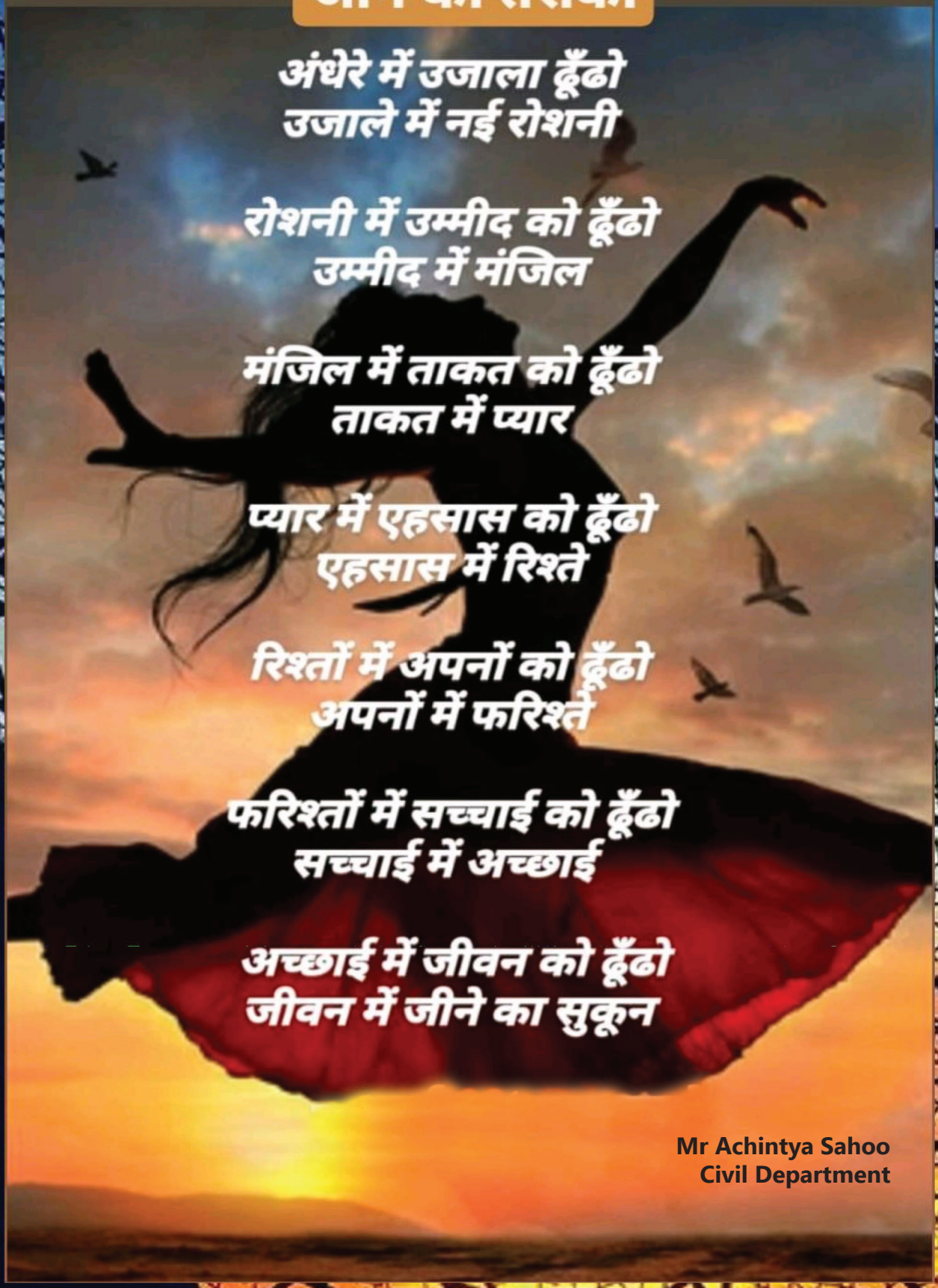
याद है कई बातें जो तुने मुझसे कहीं थीं
सुनते सुनते मैंने भी तुमसे बेशुमार करी थीं
तु वो समंदर है जिसमें मुझे डुबना है
शाम को ढलते ढलते,सूरज से टकराना है

तेरे साथ कुछ पल बिताने की चाहत है
चलते चलते रास्ते पर अक्सर थंबने की आदत हैं
सारा जहाँ ठहरा है बस उस एक पल के लिए
तुम्हें मेरा,सिर्फ मेरा होता देखने के लिए

हुँ मै राही तेरे मंजिल का
तु किसी और की मंजिल है
चलो चलते है उस सफर में
जहाँ दोनों अजनबी है....

Munt Tudu
Civil Department

जीने का तरीका



Mr Achintya Sahoo
Civil Department

मम्मी-पप्पा

आपल्या आयुष्यात सर्वात जास्त काय महत्वाचं असतं
ज्याला आपण कधी महत्व दिलेले च नसतं.
आपल्या साठी त्यांनी काय-काय केलेलं नसतं
तरी पण आपल्याला त्याच काही वाटतच नसतं

जो बाप कधी-कधी रागात शिव्या देत असतो
तोच आपल्या शिक्षणाच्या पैशासाठी जिवाचे रान करत असतो.
जी आई मरेपर्यंत आपल्या साठीच मस्मर मरत असते
तिलाच आपल्याला कधी-कधी आई म्हणायची ही लाज वाटू लागते

इकडे हजार मागवलेले असतात
तिकडून आई-बाप दोन हजार पाठवतात.
जर समजल लेकरू आजारी य त्याला जेवण जात नाही
तर त्यांना दिवसभर काबाडकष्ट करून ही अन्नाचा घास ही गिळत नाही

त्यांनी लेकराला जन्म देताना
काही करार केलेला असतो काय माहीत नाही.
जो पर्यंत आपण आपल्या पायावर उभे राहून सुखी होत नाही.
तो पर्यंत यांच्या डोळ्यात कधी आनंदाश्रू येत नाही.

Juli Sethi
Civil Department

माझी माय

याद आती हैं जब तेरी
आँखे भर लेती हुँ मैं।

तेरी खुशी देखकर
जीना सीख लेती हूँ मैं।

बचपन की तेरी यादों को
संभाल कर रखती हूँ मैं।

तेरी हर परेशानी से
पहले गुजरती हूँ मैं।

तु रोता हैं तो दर्द मुझे होता हैं।
मेरा साया हर वक़्त तेरे साथ होता हैं।

अफसोस नहीं इसका
तु साथ नहीं हैं मेरे।

दुनिया से लड़ने की ताकत
आज भी हैं मुझ में।

कहने के लिए तेरी माँ हूँ।
पर तेरे लिए तो बस्स ऐक बोझ हूँ।

कभी जरूरत पड़े तो
याद करना इस बुढ़ी को।

खाली हाथ लौटकर
नहीं जाने देगी तुझ को।

गुजारिश हैं खुदा से
मेरी उम्र तुझे लग जाए।

माँ की ममता क्या होतीं हैं
इसका एहसास तुझे हों जाए।

दुःख नहीं मुझे इस बात का
मैंने अपना बेटा खोया।

खुशी हैं इस बात की
तूने मुझे माँ बनाया।

Tapan Panda
Civil Department

मन माझे

मन का माझे असे स्वैर होऊन संचारते ?
अनेक विचारांच्या अंतरंगी का डोकावते?
अवखळ वेडे मन का माझे स्व
र होऊन संचारते?

न बोले कधी कुणाला स्वतःशीच बोलते ..
अनेक प्रश्नांची निर्मिती स्वतःच करून
स्वतःच उत्तर शोधते

न मिळता उत्तर मात्र विचलित का होते ?
अवखळ वेडे मन का माझे
स्वैर होऊन संचारते?

न वाटे भीती याला न कुणाचा धाक असे..
या अमर्याद विचारांच्या दुनियेत
एकटे हरवून जात असे..

कधी कधी वाटे या मनाला
विचारांच्या मर्यादेल डोरखंडात बांधावे ..
न कसला विचार मग निश्चिंत शांत रहावे..
अवखळ वेडे मन हे माझे
स्वैर होऊन संचारते?

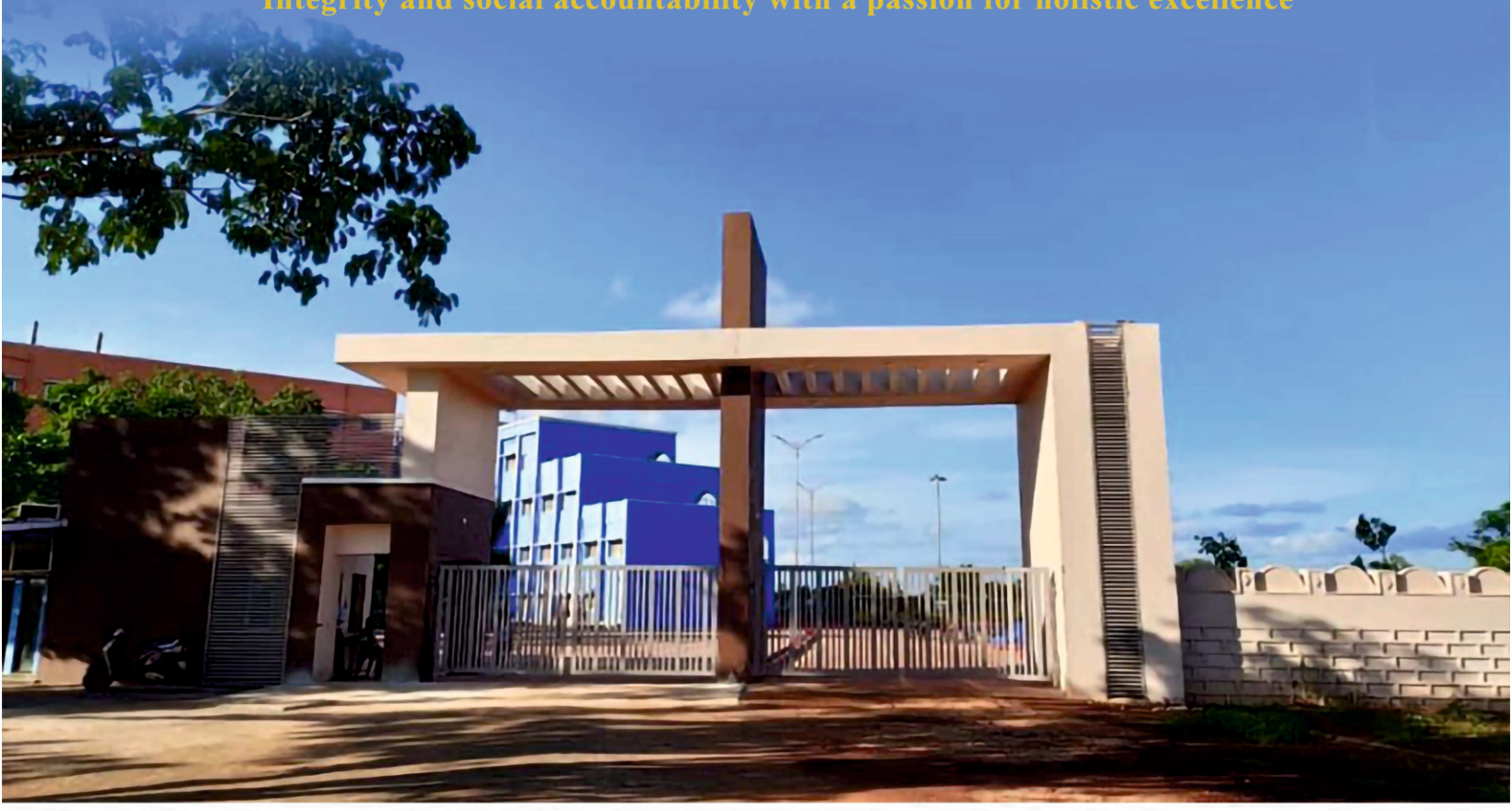
Subhasmita Gouda
Civil Department

----------VISION----------

Evolve as a leading technology institute to create high calibre leaders and innovator's
Of global standing with strong ethical values to serve the industry and society.

----------MISSION----------

- Provide quality technical education that transforms students to be knowledgeable, Skilled, innovative and entrepreneurial professionals.
- Collaborate with academia and industry around the globe, to strengthen the education And research ecosystem.
- Practice and promote high standards of professional ethics, good discipline, high Integrity and social accountability with a passion for holistic excellence



RAAJDHANI ENGINEERING COLLEGE, BHUBANESWAR

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Near Mancheswar Rly Station, Mancheswar, Bhubaneswar-751017
Ph- 9937888555, Email: rec_bbsr@yahoo.co.in
www.rec.ac.in