

# CONSTRUCTOR

ISSUE - I  
2022-23

DEPARTMENT OF CIVIL ENGINEERING



RAAJDHANI ENGINEERING COLLEGE, BHUBANESWAR





**CA. B. Ramprasad Rao**  
Founder Chairman  
Raajdhani Engineering College, BBSR



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

## From the Desk of Chairman

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.

## From the Desk of Vice Chairman

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. S. C. Panda**  
Secretary  
Raajdhani Engineering College, BBSR

## *From the Desk of Secretary*

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.



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

## *From the Desk of Director (Adm & fin.)*

I am glad to know that our Institution is bringing out its magazine THE 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.

I 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.



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

### *From the Desk of Director (T & P)*

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”.



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

### *From the Desk of Principal*

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 "THE CONSTRUCTOR" will be a grand success..

## From the Desk of Chief Editor

*'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 'THE 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. I 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 'THE CONSTRUCTOR'.*

*From the entire family, we present to you " 'THE CONSTRUCTOR' "*  
*We hope you enjoy this edition. Happy reading!*

## From the Desk of Departmental Editor

**"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.



**Dr. Sanjay Kumar Behera**  
Editor in Chief



**Geetanjali Mahanta**  
Departmental Editor

## Editorial Board

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# Non Scholastic Activities



# Galvanic Achievers

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Umakanta Das  
Civil



Subhalaxmi Sahoo  
Civil



Sitakanta Pradhan  
Civil



Soumya Ranjan Barik  
Civil



Viven Pradhan  
Civil

## Toppers in 4th Sem. Examination



Chinmaya Kanhar  
Civil



Lambodhar Kanhar  
Civil



Ritesh Ghadei  
Civil



Priyanshu Dalai  
Civil



Gulnaz Praveen  
Civil

## Toppers in 6th Sem. Examination



Puja Rani Sethy



Pikun Mohanty



Truptimayee Kanhar



Rakesh Kumar Das



Soumya Ranjan Nayak



# 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

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**TECHNICAL  
SECTION**

## UTILIZATION OF DEMOLISHED WASTE AS COARSE AGGREGATE IN CONCRETE

**Dr. S.K. Behera**  
**Civil Department Head**

Demolishing concrete building usually produces huge amounts of remains and wastes worldwide that have promising possibilities to be utilized as coarse aggregate for new mixes of concrete. High numbers of structures around the world currently need to be removed for several reasons, such as reaching the end of the expected life, to be replaced by new investments, or were not built by the local and international standards. Maintaining or removal of such structures leads to large quantities of concrete ruins. Reusing these concrete wastes will help in saving landfill spaces in addition to more sustainability in natural resources. Core samples for demolished concrete were tested to determine its compressive strength. The core test results can be thought of as aggregate properties for the new concrete. Then, the compressive strength and splitting tensile strength of the new recycled aggregate concrete (RAC) were determined experimentally by casting a cubes and cylinders, respectively. It was found that the evolution of compressive strength of recycled aggregate concrete is similar in behavior to the concrete with natural aggregate, except that it is about 10% lower in values. It was also seen that water absorption for recycled aggregate is noticeably higher than that for natural aggregate, and should be substituted for in the mix design.



**Masonry waste**



**Construction and Demolition Wastes (CDW)**



**Concrete waste**



**Ceramic waste**



**Mortar waste**



**Drywall**



**Excavation material**



**Others:**

- Asphalt
- Wood
- Metals
- Polymers
- Glass
- Cardboard/Paper

## MACADAM ROAD

Prof. M.D. Aras Ansari  
Civil Department



Macadam is a form of pavement invented by John Macadam of Scotland in the 18th century. Macadam's road cross section was composed of a compacted sub grade of crushed granite or greenstone designed to support the load, covered by a surface of the light stone to absorb wear and tear and shed water to the drainage ditches.

Macadam's are all based on the principle of an aggregate coated with a binder, usually bitumen, hence "bituminous macadam". Asphalts are a mixture of asphaltic cement or mortar (often) bitumen with fine aggregates such as sands and grits) and some coarser aggregate, such as gravel or crushed rock.

Not only did Macadam's design result in a smoother surface and carriage ride, but it was cheaper to build and lasted longer. Modern asphalt is quite similar. The roadway surface and construction process took Macadam's name.

Macadam roads can be classified into following types:

- 1) Water bound macadam
- 2) Traffic bound macadam

3) Bituminous macadam

4) Cement macadam

Water bound macadam: broken stone bound together by stone dust and water applied during construction (seldom construction).

Traffic bound macadam: It is the wearing course composed of broken stones or gravel, consolidated by the action of traffic. This type of surface is generally built gradually by successive application of two or more layers.

The compacted thickness of each layer may vary from 2.5 to 5.0 cm

Bituminous macadam: crushed stone base or wearing surface in which fragments are bonded together by bituminous material; the aggregate layer is compacted and bituminous material is applied to the surface.

Cement macadam: It is similar to bituminous macadam. The only difference is that in this case, cement is used in place of bitumen

# RAILS

**Prof. Saruk Mallick**  
**Civil Department**

A rail is a horizontally extending steel bar between supports that serves as a track for trains, automobiles, and other vehicles.



## Types of Rails

There are three types of rails:

- Double-headed rails
- Bull-headed rails
- Flat-footed rails

### 1. Double-Headed rails

These rails were used in the early stages of railroad development. They are divided into three sections:

- Upper table
- Web
- Lower table

The upper and lower tables were identical, and they were introduced in the hopes of doubling the rail's lifespan. When the upper table wears out, the rails can be placed on the chair upside down and reversed, allowing the lower table to be used.

However, this plan quickly proved to be incorrect since the continuous contact of the lower table with the chair caused the lower table's surface to become rough, making smooth train operation impossible. As a result, this type of rail is almost obsolete. These rails are now available in lengths ranging from 20 to 24 feet.

### 2. Bull-Headed rails

This type of rail is made up of three pieces:

- The head
- The web
- The foot

Steel was used to construct these rails. The head is larger than the foot, and the foot holds the wooden keys that fasten the rails in place.

As a result, the foot's sole purpose is to provide the required strength and rigidity to rails.

When these rails are used, two cast iron chairs are required for each sleeper. Their weight ranges from 85 to 95 pounds, and they can grow up to 60 feet long

### 3. Flat-footed rails

These rails were first invented in 1836 by Charles Vignoles, and so are also known as Vignols rails. They are divided into three sections:

- The head
- The web
- The foot

This type of rail has grown in popularity to the point where it now makes up over 90% of all railway lines in the world.

The benefits of flat-footed rails are as follows:

- They don't require a chair and can be spiked or keyed to the sleepers directly.
- They are thus cost-effective. They're less expensive than bull-headed rails.
- Both vertically and laterally, they are substantially stiffer; for curves, lateral rigidity is crucial.
- They are less prone to kinking and have a more consistent top surface than bull-headed rails.

The weights from train wheels are distributed over a large number of sleepers and hence a broader area, resulting in increased track stability, longer rail and sleeper life, lower maintenance costs, less rail failure, and fewer traffic delays.

# RAILWAY SLEEPERS

**Prof. Achintya Sahoo**  
Civil Department

Railway sleepers constitute an important component of the railway track. These maintain proper gauge and also facilitate the transfer of point load from the wheel loads to the uniformly distributed load to the ballast. The sleepers rest on the ballast and are also referred as ties.

## Functions of railway sleepers

The main functions of sleepers in railway track are:

- ❖ These keep the rails firmly in place also maintain a uniform gauge.
- ❖ These facilitate the transfer of wheel loads to the ballast.
- ❖ Rail sleepers lessen the vibrations emanating from the rails.
- ❖ These provide lateral and longitudinal stability.



## Types of sleepers in railway

### 1. Wooden sleepers

- ❖ Wooden sleepers are typically 2600 mm long, 254 mm broad, and 127 mm thick in cross-section.
- ❖ Wooden sleepers are treated with preservatives after being seasoned (drying for up to 12 months to remove the juice/sap) for the preservation of timber. Creosote is an oil that is typically applied to or sprayed on the surfaces of wooden sleepers.

- ❖ These sleepers are either made of soft wood or hardwood.

- ❖ Due to the easy availability of wood, these sleepers are extensively used.

### Benefits of wooden sleepers

- ❖ Wooden sleepers are less expensive than other types of sleepers.
- ❖ They are lightweight, making them portable and simple to handle during installation.
- ❖ On wooden sleepers, fasteners may be fitted with ease. The rails are adequately protected since they are effective insulators.
- ❖ Wooden sleepers can be used to maintain the rail gauge effectively.
- ❖ They are appropriate for all kind of rail sections.
- ❖ These possess sufficient elasticity which allows them to absorb vibrations and shocks. In fact, wooden sleepers have the best track elasticity among all the types of sleepers.

### Disadvantages of wooden sleepers

- ❖ Wooden sleepers are easily vulnerable to pest and weather attacks.
- ❖ They are prone to fire.
- ❖ With wooden sleepers, maintaining a uniform gauge can be a challenging task.
- ❖ The scrap value of wooden sleepers is less.
- ❖ They can only last for a period of 12 to 15 years.

### 2. Steel sleepers

- ❖ Steel sleepers can be used when wooden or concrete sleepers cannot be adopted.
- ❖ In heavier curves that are prone to gauge widening, steel sleepers are extensively used.
- ❖ The signal control system may face issues due to steel sleepers.
- ❖ Furthermore, these sleepers are also prone to fatigue cracking issues.
- ❖ Steel and concrete sleepers are now often used

on railroads due to a shortage of wood and other economic concerns.

### Advantages of steel sleepers

- ❖ Steel sleepers are durable and resilient.
- ❖ They have a span of 35 years.
- ❖ Less damage sustained in these sleepers during handling and transportation.
- ❖ They are resistant to attack of vermin and fire.
- ❖ Steel sleepers have a high scrap value.

### Disadvantages of steel sleepers

- ❖ It is susceptible to corrosion.
- ❖ Cannot be used for track circuiting.
- ❖ It can only be used with the rails for which it was designed.
- ❖ Throughout the service of steel sleepers, cracks appear at the rail seats.
- ❖ Higher number of fittings is needed overall in steel sleepers.

### 3. Cast iron sleepers

- ❖ Cast iron sleepers are used extensively worldwide, but particularly in Indian railways.
- ❖ They come in two varieties: pot sleepers and plate-shaped cast iron sleepers.
- ❖ Curves sharper than 4 degrees are not ideal for pot type sleepers.
- ❖ In Indian railways, cast 9 type sleepers are extensively adopted.

### Advantages of cast iron sleepers

- ❖ Cast iron sleepers have a life span of 60 years.
- ❖ They can be produced easily and locally, so there is no need for extensive shipping.
- ❖ Cast iron sleepers are resistant to vermin attacks.
- ❖ They provide the rail a sturdy seat.
- ❖ Cast iron has a high scrap value because worn-out sleepers may be reshaped into new ones.
- ❖ Cast iron sleepers can prevent creep in rails.

### Disadvantages of cast iron sleepers

- ❖ Due to its fragile nature, cast iron is damaged during handling. So dealing with the transportation and placement of cast iron sleepers is a challenging task.
- ❖ Cast iron sleepers are not appropriate for coastal areas since salt water may readily harm and corrode them.

- ❖ The derailment may cause serious damage to cast iron sleepers.
- ❖ When compared to other sleeping materials, cast iron is more costly. It is thus not profitable.
- ❖ These require many fastenings for attaching the rail to the sleeper.
- ❖ Maintenance of cast iron sleepers should be done properly.

### 4. Concrete railway sleepers

- ❖ Concrete sleepers have a life span of upto 40 years.
- ❖ They are simple to mold into the desired shape to withstand forces brought on by heavy traffic.
- ❖ The additional weight of concrete sleepers strengthens the rail's ability to withstand stresses brought on by thermal expansion, which can cause the track to buckle. Notably, concrete sleepers weigh around 2.5 to 3 times as much as wooden sleepers.
- ❖ Nowadays, pre-tensioned concrete sleepers are typically used.

### Advantages of concrete sleepers

- ❖ It is more resilient and has a longer lifespan up to 50 years.
- ❖ Compared to steel and wood, it is more affordable.
- ❖ Concrete sleepers are simple to produce.
- ❖ It is resistant to attacks from pests.
- ❖ It is resistant to fire.
- ❖ Concrete sleepers provide good track circuiting.

### Disadvantages of concrete sleepers

- ❖ Concrete sleepers are fragile and prone to sudden cracking.
- ❖ They need to be replaced since overhauling them is not possible.
- ❖ These require large number of fittings.
- ❖ They have no scrap value.

### 5. Prestressed concrete sleepers

Concrete sleepers in which prestressed cement concrete is employed are called prestressed concrete sleepers.

### Advantages of prestressed concrete sleepers

- ❖ These have a life expectancy of 40 to 50 years.
- ❖ Lesser number of fittings are required.

- ❖ The gauge is uniform and simple to adjust.
- ❖ Strong connections are possible between the rail and the sleeper.
- ❖ The track has greater lateral and longitudinal stability.
- ❖ Track circuiting is feasible in case of prestressed concrete sleepers.
- ❖ These are more resilient and less likely to degrade.
- ❖ There is an effective check on the creep in rails.
- ❖ They can endure the strains brought exerted by heavy traffic.
- ❖ They have a low cost of maintenance.

#### Disadvantages of prestressed concrete sleepers

- ❖ They have a higher initial cost.
- ❖ These sleepers are prone to breakage when subjected to rough handling.
- ❖ Renewal of prestressed concrete sleepers is difficult.
- ❖ Scrap value of these sleepers is zero.

#### Requirement of railway sleepers

- ❖ The initial cost and maintenance cost of railway sleepers should be low.
- ❖ Sleepers should have a moderate weight and they should be easy to handle
- ❖ They should possess a sufficient bearing area.
- ❖ These should offer sufficient track circuiting.
- ❖ Sleepers should resist shocks and vibrations.
- ❖ Removal of fasteners and their overhauling should be easy.
- ❖ Sleepers should have an easy maintenance and gauge adjustments.

## TRANSLUCENT CONCRETE

**Prof. Shubhashish Bhoi**  
Civil Department

Translucent concrete (also: light-transmitting concrete or transparent concrete) is a concrete based building material with light-transmissive properties due to embedded light optical elements — usually optical fibers. Light is conducted through the stone from one end to the other. Therefore, the fibers have to go through the whole object. This results in a certain light pattern on the other surface, depending on the fiber structure. Shadows cast onto one side appear as silhouettes through the material. Translucent concrete is used in fine architecture as a façade material and for cladding of interior walls. Light-transmitting concrete has also been applied to various design products. Several ways of producing translucent concrete exist. All are based on a fine grain concrete (ca. 95%) and only 5% light conducting elements that are added during casting process. After setting, the concrete is cut to plates or stones with standard machinery for cutting stone materials. Due to bends in the fibers and rough nesses on the cut surfaces of the

fibers, light transmission is generally a bit less than half the incident light on the fibers, so given five percent fibers, about two percent. As the human eye's response to light is nonlinear, this can still give useful day lighting. In theory, the fibers could carry light around corners and over a distance of tens of meters, with the rate of loss with increasing length depending on the type of fiber and how it is bent. Working with natural light it has to be ensured that enough light is available. Wall mounting systems need to be equipped with some form of lighting, designed to achieve uniform illumination on the full plate surface. Usually mounting systems similar to natural stone panels are used — e.g., LUCEM uses perforated mounting with visible screws, undercut anchors with agraffes or façade anchors. Translucent concrete Translucent concrete (also: light-transmitting concrete or transparent concrete) is a concrete based building material with light-transmissive properties due to embedded light optical elements — usually optical fibers.



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Variants:

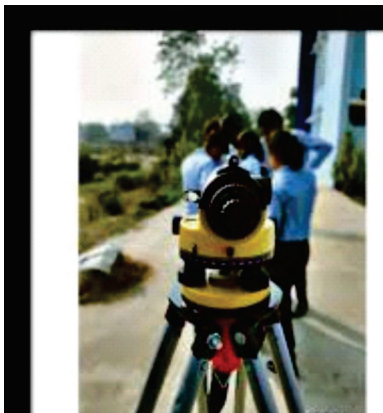
Apart from fine fiber patterns due to the use of optical fibers or textiles some products with much coarser light pattern are available. The main advantage of these products is that on large scale objects the texture is still visible — while the texture of finer translucent concrete becomes indistinct at distance. Further pictograms and lettering can be realized with this technology. An approach that does not use waveguides involves using transparent aggregate and binders. However, chemically this would not necessarily resemble concrete, and might resemble fiberglass. Unlike materials requiring alignment of optical fibers, however, it might be transported and poured using existing infrastructure.



## THEODOLITE AND DUMPY LEVEL

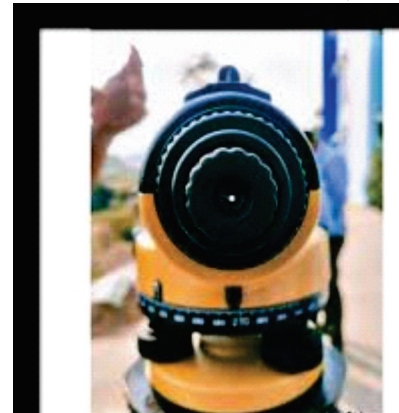
**Prof. Geetanjali Mahanta**  
Civil Department

A theodolite is a precision optical instrument for measuring angles between designated visible points in the horizontal and vertical planes. The traditional use has been for land surveying, but it is also used extensively for building and infrastructure construction, and some specialized applications such as meteorology and rocket launching. It consists of a moveable telescope mounted so it can rotate around horizontal and vertical axes and provide angular readouts. These indicate the orientation of the telescope, and are used to relate the first point sighted through the telescope to subsequent sightings of other points from the same theodolite position. These angles can be measured with accuracies down to micro radians or seconds of arc. From



Dumpy Level is a surveyor's level with a short telescope rigidly fixed and rotating only in a horizontal plane. It is widely used in surveying and construction to measure height differences and to transfer, measure, and set heights of known objects or marks. It is also known as a Surveyor's level, Builder's level, Dumpy level or the historic "Y" level. The primary advantage of using the Dumpy level over other leveling instruments is its greater accuracy. For most Tachometric methods, a dumpy level is known for high precision values. A dumpy level's accuracy can be as high as 1:4000 for every 100 meters. In

these readings a plan can be drawn, or objects can be positioned in accordance with an existing plan. The modern theodolite has evolved into what is known as a total station where angles and distances are measured electronically, and are read directly to computer memory. In a transit theodolite, the telescope is short enough to rotate about the trunnion axis, turning the telescope through the vertical plane through the zenith; for nontransit instruments vertical rotation is restricted to a limited arc. The optical level is sometimes mistaken for a theodolite, but it does not measure vertical angles, and is used only for leveling on a horizontal plane (though often combined with medium accuracy horizontal range and direction measurements)



a dumpy level, there are only two adjustments as the telescope is rigidly fixed to the spindle. 1. The axis of the bubble tube should be perpendicular to the vertical axis 2. The line of collimation should be parallel to the axis of the bubble tube. The dumpy level instrument is set up on the top of the tripod. Foot screw is used to screw the device tightly on the tripod. As the level head is very sensitive, special care is required in this step. To work properly, it is very important to make the dumpy level completely horizontal.

# ESTIMATION IN CIVIL ENGINEERING

**Prof. Abhipsa Mohanty**  
Civil Department

Estimation in civil engineering is the process of determining the number of materials, resources, and especially project costs needed to operate during a construction project. This is usually done before the start of the project, so you can procure estimated materials and gather the funds as the project progresses. It's pretty close to the actual cost of your project requirement.

Depending on the accuracy of the estimation method used and the correct list of operations performed, the estimates will approach the actual values. The estimated value should not be far from the actual project cost. This is because it can lead to a disadvantage for the client or expert. If the project is undervalued, the client will always be shocked if the budget exceeds the estimate, and if it is overvalued, the estimator will repel when the company loses bids and even jobs. You may face it

Cost estimation in civil engineering is one of the most important aspects of construction management, so great care should be taken when calculating costs. Future quote engineers need to show their skills. It may seem like a trivial task, but it requires careful analysis, proper procedures,

and the most appropriate method. Importance of Estimation in Civil Engineering

Without estimation in civil engineering, it is impossible to complete a construction project at actual operating costs. The client or project manager cannot keep the project cost within reasonable limits unless the project cost has already been estimated.

Each owner can decide whether or not to proceed with the proposed project based on the estimated cost of the project. Depending on the funds available and the value of the product, the client can proceed with the project or carefully consider the details of the quote and then abandon the project.

Most construction project bids are open to the public by government agencies, so you need to make reasonable estimates to secure your bids. If the cost of the project exceeds the bid (or contract amount), not only will the contract be paid at your own expense, but legal action may be taken if you abandon the project. For this reason, the quote should be performed by a knowledgeable and experienced estimator, along with the required resource methods.

## Importance of Estimation in Civil Engineering



## SLAB CULVERT

**Prof. Monalika Mohanty**  
**Civil Department**

Culvert is a structure constructed over running water or physical obstruction. The main purpose of constructing culvert structure is to provide passage over the obstruction.

Slab culvert, a type of culvert, could be three-sided or simply a deck slab. It is embedded in the soil on both sides. The slab provides a bridge over the

distance. Slab culverts can replace box culverts if no artificial flooring is necessary.

Slab culverts do not have bottom slabs, therefore, the natural flow of water is maintained and natural bottom substrate remains intact. The safety of high-velocity vehicles is not affected by slab culvert as it doesn't have any sharp corner.



While constructing the slab culvert, a series of slabs are laid to form the bridge-like structure. After that, a pavement surface is placed on top to serve the purpose as the road.

The standard span length ranges from 8' to 48'. ASTM C 1504 design code is followed to design the slab culvert.

## FIBER REINFORCED POLYMER USED IN CONSTRUCTION

**Prof. Sanjeev Kumar Chaudhury**  
**Civil Department**

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.

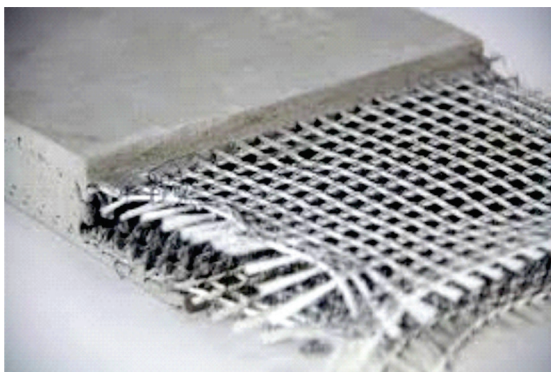
Fiber reinforced polymer can be used for repair and strengthening of existing structures. Externally bonded reinforcements can be used to reinforce concrete, timber, steel and masonry structures.

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.



## Macroscale Hydrological Modelling To Assess The Impact of Land Cover Change On Stream flows

**Prof. Subrat Kumar Nayak**  
**Civil Department**

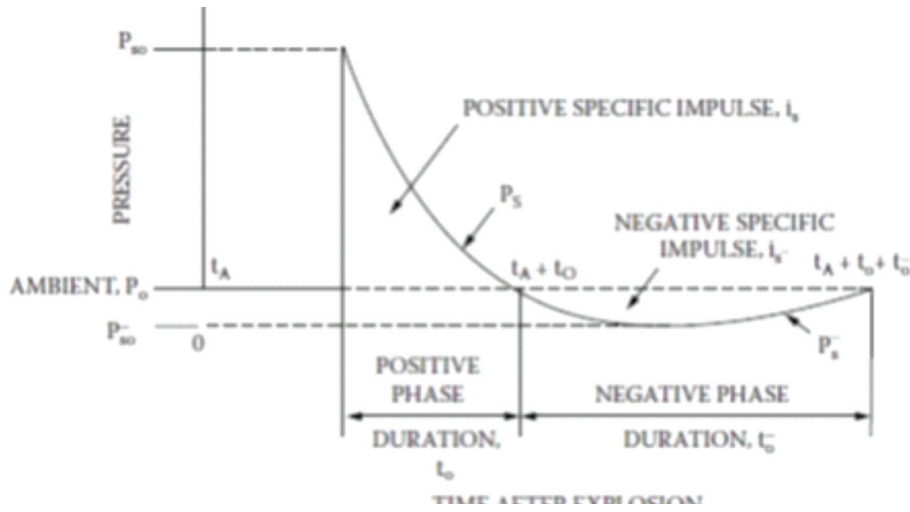
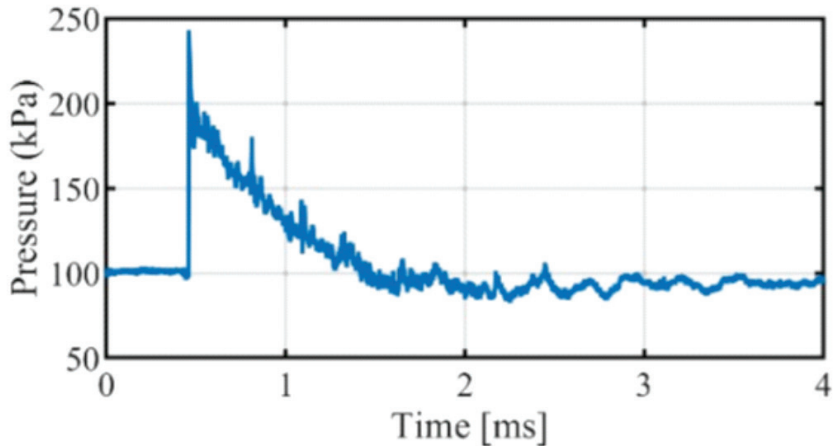
Western Ghats of India is identified as one of the biological hotspots with diversified flora and fauna. However, for the river basins in this region starting from Tadri to Kanyakumari is undergoing continuous land-use land-cover (LU/LC) changes in the past few decades. These changes in LULC has caused major hydrological impacts in this region. In this study, the hydrological impacts of LU/LC changes in the river basins of Tadri to Kanayakumari in Western Ghats is assessed using the VIC model. Initially the LU/LC changes for the past four decades are analysed using the Landsat images for the years 1985, 1995, 2005 and 2016. It is observed that, there are reduction in forest areas (7%), increase in croplands (4%) and increase in urban areas (4%). Using 30 years (1979-2015) of climate data and changing LU/LC, the hydrological impacts were assessed using the VIC model. It is observed that impact due to change in land use pattern in mean basin runoff is noticeable ( $\pm 5\text{mm/year}$ ). Further station wise analysis showed that, there is noticeable variation in the streamflow ie, 11 mm/year (increase) at Bantwal (Nethravati river) due to conversion of forest land into built up and at the same time 12 mm/year (decrease) at Karathodu (Kadalundi river). From Fig. 1, we can see the impact of LU/LC on runoff is noticeable. When we analyse the LU/LC classes over that area we can see earlier it was of waste land and then by 2016, it gets converted to urban built up which reduces the infiltration capacity and finally an increase of runoff. Similarly, most of the forest regions in the basin gets depleted which increased the runoff in

those grids of upper and middle part of the basins (Reference : Aswathi Sebha John. Navya Chandu, T I Eldho (2019) “Macroscale hydrological modelling to assess the impact of land cover change on streamflows” Proc. HYDRO International Conference Hydraulics, Water resources Coastal Engineering, 18-20 Dec 2019, Osmania University, Hyderabad, India.)

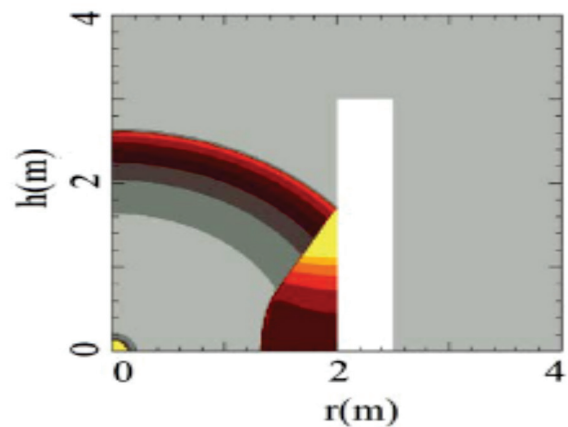
blast-resistant structures to save lives and protect infrastructure against such threats. This research work focuses on developing analysis methods and design techniques to mitigate the structural damage and reduce the loss of lives from blast-induced structural failures of critical civil infrastructure vulnerable to explosions. The blast load due to far-field detonations is estimated accounting for near-field detonations in confined urban environment characterized by fluidstructure interaction (FSI). Experiments are conducted to estimate the capacity of reinforced concrete columns against varying amounts of explosives. A performance-based analysis and design approach is developed for blast-resistant design of RC column. The design approach is validated using experiments and verified using high-fidelity numerical simulations.

### Estimation of blast load

The detonation of high-explosives generates blast waves that travel through the surrounding media and applies pressure on a structure or object in its path. The pressure history observed from experiments and its idealized representation are shown in Figure 2 and Figure 3, respectively.



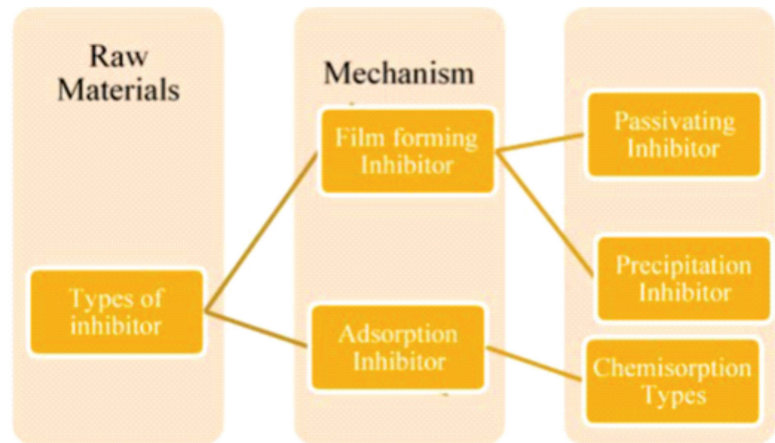
The parameters of the idealized pressure history in Figure 3 can be obtained using experimental data available in the literature as the Kingery-Bulmash chart (Kingery and Bulmash, 1984). However, these charts are not valid for near-field explosions characterized by several complex phenomena that occur during an explosion, including the Fluid Structure Interaction (FSI). The interaction of blast wave with a column using computational fluid dynamics (CFD) and the schematic of a newly developed FSI model are shown in Figure 4.



## WHY CORROSION & ITS CONTROL

**Prof. Saruk Mallick**  
Civil Department

Corrosion is a big menace to the economy of the country. The loss due to corrosion has been estimated to be of the order of 2 - 5% of the GNP of any country. In India the losses have been estimated approximately at 25,000 crores rupees per year due to the impact of corrosion according to Newsletter NACE, India Deterioration of a material, usually a metal, that results from a chemical reaction with its environment.- ACI Concrete Terminology Corrosion occurs when the protective layer (passivation layer) in concrete steel reinforcement is destroyed. Steel in concrete is usually protected against corrosion by the high pH of the surrounding Portland-cement paste. Cement paste has a minimum pH of 12.5, and steel will not corrode at that pH level. If the pH is lowered (for example, to pH 10 or less), corrosion may occur if moisture, oxygen, and chloride ions are present. Chloride ions destroy the protective layer on the steel reinforcement, making it prone to corrosion. The corrosion product (rust) occupies a greater volume than the steel and exerts destructive stresses on the surrounding concrete. To avoid corrosion damages and durability of reinforced concrete, it's important to protect structure against corrosion. There are various methods are available to prolong service life of structure against corrosion.



## COPPER SLAG AS A HIGH VALUE APPLICATION MATERIAL IN CONCRETE

**Prof. Shubhashish Bhoi**  
**Civil Department**

Concrete is the most common material used in construction industry which offers dimensional stability to the structure with low cost and high durability. Out of the main ingredients of concrete, sand and aggregate together make up around 60-70% part of concrete while remaining part includes cement, mineral admixture, chemical admixture, water etc. Taking in to consideration the high cost of cement than other ingredients, use of industrial by products as a cementitious material or binder in concrete can be considered as a high value application material in concrete which can help to reduce the cost of construction and to solve the environmental issues. One of such material is copper slag.



Our research includes both application part as well as fundamental study. Currently we are working on pozzolanic reactivity part. Results showed that it has a potential to use it as a binder in concrete which is beneficial to construction industry as it is difficult to find quality material at particular site. Flow chart of the research work is shown below. Also, we are trying to develop a Guarded hot plate apparatus (ASTM C 177) in our lab which can measure the thermal conductivity of blocks, bricks etc. which is a part of our study.

## IS THE WATER SAFE TO DRINK?

**Prof. Achintya Sahoo**  
Civil Department



The average person doesn't think twice before drinking from a water fountain. The public assumes the water is safe, that the building manager monitors the water quality. In reality, there are no standardized practices that govern plumbing safety. And water quality is easily compromised when buildings are underutilized and water in pipes remains stagnant for long periods of time. It's a problem exacerbated by the COVID-19 pandemic which led to salons, gyms, offices, municipal buildings, schools and sports venues standing empty for months.

Andrew Whelton, associate professor of civil engineering and environmental and ecological engineering faculty scholar, has researched the preservation and disinfection of water supplies for decades. Now, he and his team have fielded calls

from around the world asking for advice on how to test water quality, flush and disinfect systems and ensure that building water is safe for occupants as facilities begin to reopen.

"It's not unusual that building managers don't know how to determine if plumbing is safe," Whelton said. "People have never really thought about it. Public health officials who oversee building occupancy and safety don't have extensive training in plumbing safety. And there are no federal, state, or county regulations to guide them on how to clean that water."

Whelton is developing a course in collaboration with Purdue Online to train public health officials about building water safety. He's also conducting research on buildings that have been sitting idle during the pandemic. This research will



contribute significant gains in the area of plumbing safety which currently lacks evidence-based guidance on how to reinstate plumbing systems that sat idle for extended periods of time.

“Many building owners have never thought about plumbing safety because buildings are meant to be used,” Whelton said. “When a building is in normal use, there is disinfectant and hot water running through the plumbing systems. When you have water sitting in plumbing for lengthy periods of time, all the chemical disinfectant is gone.”

The longer water sits, the more lead and copper leaches into it. Consuming high concentrations of copper can lead to stomach cramps and nausea. Bacteria is also a concern, particularly *Legionella pneumophila* which causes Legionnaires’ disease. The disease is contracted by breathing in droplets of water contaminated by the bacteria. But, Whelton cautions, just because major outbreaks associated with waterborne illness aren’t

reported, doesn’t mean they don’t happen.

The Centers for Disease Control issued water safety guidelines for schools as they reopen, encouraging staff and students to bring their own water to minimize use of water fountains. Although the guidelines were specific to schools, the same cautionary principles apply to any facility with significant periods of underuse.

“Circumstances surrounding the pandemic have led to a realization that what people thought they knew about water safety isn’t necessarily true,” Whelton said. “The assumption that water is safe at every tap is not based on science or evidence. We want to establish protocols for plumbing safety so when a building manager is asked, not only, ‘Is the water safe to drink?’ but ‘What did you test it for? How did you test it?’ They will be able to provide evidence-supported results based on established scientific testing procedures.”

## CONSTRUCTION & DEMOLITION WASTE MANAGEMENT IN INDIA

**Prof. MD Aras Ansari**  
**Civil Department**

The construction industry has gained very fast growth in recent decades due to the increase in the population, increase in the IT sector and increase in industrialization and also the introduction of new infrastructure projects resulted in the increase of the construction industry drastically. Due to this, the demand for construction materials is huge for the construction activities which results in the generation of a huge amount of construction waste. Construction material wastage resulted in huge financial setbacks to builders, contractors, regional authorities and also to the country. The production of waste due to the demolition of structures is more than the wastage which occurs during the construction of structures, so there is a need for

the management of Construction and Demolition (C&D) wastes, as distinct from Municipal Solid wastes, is a relatively new subject in India. To begin with the issue there is no proper estimate regarding the quantity of waste that occurs in India. The primary reason is being disciplinary and less focused on this issue. In this problem, there is the absence of a regulatory framework and strict enforcement. Specific recommendations have been made in this paper to overcome the loopholes in the issue. In this paper, the current global status of construction and demolition waste management is overviewed and also the sustainable waste management hierarchy is studied so to overcome the waste problem.

Due to the increase in the economic growth after development and redevelopment projects in the country and subsequent increase in the urbanization in the cities has made construction sector to increase drastically, but also environmental impacts from construction and demolition (C & D) waste are increasingly becoming a major issue in urban solid waste management.



Environmental issues such as increase in the flood levels due to the illegal dumping of construction and demolition waste into the rivers, resource depletion, shortage of landfill and illegal dumping on hill slopes are evident in the metro cities. For the purpose of management of C&D Wastes in India, Construction and demolition waste has been defined as ‘waste which arises from construction, renovation and demolition activities. Also included within the definition are surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities. The concept of 3R which refers to reduce, reuse and recycle particularly in the context of production and consumption is well known today.

## CONSTRUCTION POLLUTION

**Prof. Abhipsa Mohanty**  
**Civil Department**

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

create and take precautions to limit the harmful impact. Construction and a healthy atmosphere are equally important to humans.



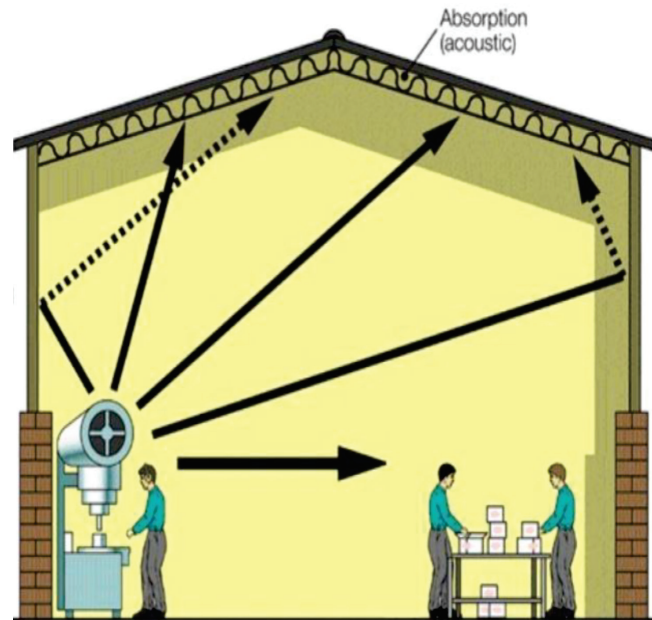
Be a part of  
solution not a  
part of pollution

## NOISELESS BUILDINGS

**Dr. S.K. Behera**  
Civil Department HOD

It's a noisy world. Twenty-four hours a day, seven days a week, we are exposed to sounds we do not want, need, or benefit from. Noise from many outdoor sources assails our hearing as it invades our homes and workplaces: traffic, aircraft, barking dogs, neighbour's voices. Noise within the workplace from office machines, telephones, ventilating systems, unwanted conversation in the next cubicle distracts us from our work and makes us less productive. Noise from within the home from appliances, upstairs footsteps, TV sound travelling from room to room keeps our homes from being the restful refuges they ought to be. Noise in the classroom impedes the learning process and threatens students' educational experience. Construction activities produce huge noises, which causes discomfort to the people nearby. There are many structures like schools, corporate offices, and residential buildings that are constructed nearby highways face a huge problem of noise pollution due to heavy traffic. Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress.

**Noise pollution is a relative thing in a city, it's a jet plane taking off in a monastery it's a pen that scratches.**



STC is a sound transmission class rating that is put forward by the AMERICAN SOCIETY OF TESTING AND MEASUREMENT. The sound transmission class is the numerical value equal to the number of decibels in terms of reduction of sound when it passes through a material, which is intended to have some insulating property. This acts as a parameter to guide an architect to know which material would suit the most to have an essential acoustic feature by the reduction of noise. This acts as a parameter to guide an architect to know which material would suit the most, to have an essential acoustic feature by the reduction of noise.



**ENGLISH  
SECTION**

## THE KING'S PAINTING

**CHANDAN KUMAR JENA**  
2nd Year Diploma Civil Department

There was a king with only one leg and one eye but was generous and competent as a ruler. One day while walking in his palace, the king noticed the portraits of his ancestors along the hallway. He also wanted his portrait painted by an artist but was unsure how it would turn out due to his physical abnormalities. The King invited all the painters across the kingdoms and asked who could paint a beautiful picture of him. The painters were confused about how to make a beautiful picture of the King with only one leg and one eye.

All the painters politely refused to make a painting of the King. Then one young painter came forward

and ensured to make a beautiful portrait of the King. After a few days, the young painter unveiled the portrait in the court in which the King was seen sitting on the horse with one leg visible, holding his bow and aiming the arrow with one eye closed. There was no sign of physical deficiencies in the king in the painting. The King was pleased to see that the painter had creatively presented the King's positive characteristics but not highlighted the abnormalities.

Moral: Look at the positive aspects of someone without emphasizing the limitations.

## THE CAT AND THE FOX STORY

**CHANDAN KUMAR JENA**  
2nd Year Diploma Civil Department

Once upon a time, there was a fox and a cat who were discussing multiple ways to save themselves from the dogs who were their common hunters. The fox who was so full of himself started boasting about how clever and intelligent he was. Why, 'I know at least a hundred tricks to get away from our mutual enemies, the dogs', she said. Listening to this, the cat felt insecure and inferior to herself and confessed that she only knows one trick to save herself from the dogs, the hunters. 'I know only one trick to get

away from dogs', said the cat. 'You should teach me some of yours!'; 'Well, maybe someday, when I have the time, I may teach you a few of the simpler ones,' replied the fox in a serious voice.

Just when they were in conversation with each other, they heard a pack of dogs who were barking at a distance. Slowly the barking grew louder and louder as the dogs started approaching them. They came very close to the fox and the cat. Seeing that the cat with just one trick she knew climbed up the tree which



was out of reach of any dog. She then saw the fox who was actually boating about the hundred ways he knew to defend himself from the dogs and got confused as to which trick to use. She called down to the fox asking ‘Which one of your hundred tricks are you going to use?’ But the poor fox sat down under the tree thinking about which trick to use to protect him. Before he could make up his mind, the dogs arrived. They fell upon the fox and tore him to pieces.

## MUMMA HANDS

**CHINMAYA KANHAR**  
**2nd Year Diploma Civil Department**

Her hands held me gently from the day I took my first breath.

Her hands helped to guide me as I took my first step.

Her hands held me close when the tears would start to fall.

Her hands were quick to show me that she would take care of it all.

Her hands were there to brush my hair or straighten a wayward bow.

Her hand helped hold the stars in place and encouraged me to reach.

Her hands would clap and cheer when I captured them at length.

Her hands shaped and molded me into all she knew I could be.

Her hands are now twisting with age and years of work.

Her hands now need my gentle touch to rub away the hurt.

Her hands are prettier than everything.

Her hands are the reason I am me.

# EXAM TIME

**CHINMAYA PRADHAN**  
**2nd Year Diploma Civil Department**

It was exam time at Joe's school.

Every day, their teacher gave them loads of homework and told them they should be working hard so as to do well in their tests.

Joe didn't take any notice. He reckoned he would rather be playing football.

He didn't care if he came bottom in the exams.

His mum and dad told him that he should be working harder but the weather was sunny and Joe had better things to do.

"Shall we go to the park?" he said to his friend Finn one afternoon. "We could take a football and have a kick around."

Finn shook his head.

"I need to revise," he said. "I'm going home to do some maths."

Joe was amazed. "You'd rather do maths than football?"

"Maths is important. Besides, my mum says she'll buy me a mountain bike if I do well."

"That's crazy," said Joe.

Finn shrugged. "Wait until I beat you in the test and you watch me riding past on my mountain bike!"

"You won't beat me," said Joe.

"Oh yes I will."

"Oh no you won't! Just you wait and see!"

For the first time ever, Joe wanted to do well. He couldn't bear it if Finn came top and he did badly. So when he got home, he opened his maths book.

There was so much to do.

Suddenly, he felt like he'd forgotten everything he'd learnt that year! He couldn't think where to start.

He was still sitting there when Bella came in chasing Caspar the kitten.

"You don't look happy," she said. "Your mouth is all sad."

"You wouldn't be happy either if you had to learn all this maths," said Joe.

"I would just use my magic pencil. It always gets the right answer."

"That's silly! There's no such thing as a magic pencil."

"Yes, there is. Look, I'll show you."

Bella ran out of the room and came back carrying a shiny, silver pencil with a fluffy unicorn stuck to one end.

"What a silly thing," thought Joe.

But Bella was beaming and he didn't want to hurt her feelings. So he picked up the pencil and looked at the maths question. To his surprise, he saw the answer straight away.

After that, Joe worked hard every evening.

On the day of the maths test, Bella said, "You can use my magic pencil if you like."

"No way. I don't need your pencil," said Joe rudely. He was thinking about how much his friends would laugh if he came to school with a fluffy unicorn pencil.

Bella was cross. "All right then, I'm not lending it to you!" "Fine by me!"

When Joe arrived at school, everyone was talking about how much work they'd done. Finn kept grinning at him. The look that said, "I'm coming top, just you wait and see!"

Joe began to panic. He sat down at his desk, opened the test paper – and felt like he couldn't do a single question.

There was a knock at the door.

"What is it, Bella?" asked Joe's teacher. "We're busy now."

"Just something Joe forgot," said Bella. Before anyone could stop her she skipped over and put her magic pencil on Joe's desk. She grinned at Joe as she left.

Joe picked up the pencil. He looked at the fluffy unicorn and could feel himself calming down.

He knew it wasn't really magic, but somehow he could do all the maths questions after all.

When the results came out, Joe had done even better than Finn.

"Well done!" said Mum. "I knew you could do well if you tried. We could go to a movie to celebrate, and you can choose which one."

"I think Bella should choose," Joe said. "I'd never have done it without her magic pencil!"



## “Yours”

CHINTU DIGAL  
2nd Year Diploma Civil Department

I am yours as the summer air at evening is  
Possessed by the scent of linden blossoms,

As the snow-cap gleams with light  
Lent it by the brimming moon.

Without you I'd be an unleaded tree  
Blasted in a bleakness with no spring.

## “FOR HIM”

CHINTU DIGAL  
2nd Year Diploma Civil Department

*No,  
It won't  
Be love at  
First sight when  
We meet it'll be love  
At first remembrance  
'Cause I've recognized you  
In my mother's eyes when she tells me,  
Marry the type of man you'd want to raise your son to be like.*



## Habitation “by Margaret Atwood”

CHINTU DIGAL  
2nd Year Diploma Civil Department

*At the back where we squat  
Outside, eating popcorn*

*The edge of the receding glacier*

*Where painfully and with wonder  
At having survived even  
This far  
We are learning to make fire*

## “Bird-Under stander”

CHINTU DIGAL  
2nd Year Diploma Civil Department

These are your own words  
Your way of noticing  
And saying plainly  
Of not turning away  
From hurt

You have offered them  
To me I am only  
Giving them back

If only I could show you  
How very useless  
They are not

# Explore

DEBASHISH SAHOO  
2nd Year Diploma Civil Department



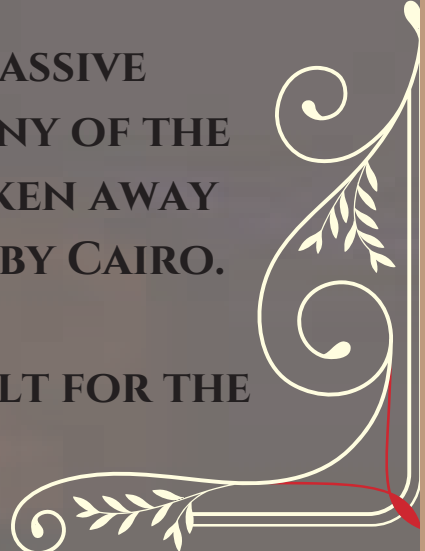
**MORE THAN 2 MILLION STONE BLOCKS  
WERE USED.**

**THE STONES REFLECTED THE SUN'S  
LIGHT SO WELL THAT THE EGYPTIANS  
CALLED THE PYRAMID 'IKHET', MEANING  
THE 'GLORIOUS LIGHT'.**

**IT HAS SHRUNK BY 25 FEET.**

**IT IS THOUGHT THAT A MASSIVE  
EARTHQUAKE LOOSENING MANY OF THE  
STONES AND THEY WERE TAKEN AWAY  
TO BUILD MOSQUES IN NEARBY CAIRO.**

**THE GREAT PYRAMID WAS BUILT FOR THE  
PHARAOH KHUFU.**





हिन्दी  
विभाग

## गरीबी एक रोग है

GYANARANJAN BARIK  
2nd Year Diploma Civil Department

गरीबी का अर्थ है आराम, सुख, संतुलन और चैन का अभाव। अपने चारों ओर नज़र डालें। आपको जीवन के सभी क्षेत्रों और सभी प्रकार के व्यवसायों तथा पेशों में ऐसे लोग मिलेंगे, जो अमीर बन रहे हैं और जीवन में अपने लक्ष्य हासिल कर रहे हैं, जबकि बाक़ी लोग उनके आस-पास रह रहे हैं, वही काम कर रहे हैं, उसी पेशे में हैं, लेकिन इसके बावजूद गरीब हैं ख़राब कपड़े पहन रहे हैं और सस्ता, घटिया भोजन कर रहे हैं।

यदि आपको कोई शारीरिक रोग है, तो आपको समस्या को तत्काल सही करने के लिए डॉक्टर के पास जाकर अपनी शारीरिक जाँच करानी चाहिए। चाहे आप कितने ही गरीब दिखते हों, यदि आप दौलत, उन्नति, विस्तार और प्रगति के बारे में सोचने की आदत डाल लें, तो आपको अपने अवचेतन मन से स्वतः ही एक उपचारक प्रतिक्रिया मिलेगी, जिससे आपकी खुशकिस्मती असंख्य तरीकों से कई गुना बढ़ जाएगी।

हो सकता है कि आप कर्ज़ में हों और आपके पास पैसा, प्रभाव या मूर्त संपत्ति न हो, लेकिन यदि आप यह दावा करने लगें, “ईश्वर की दौलत मेरे जीवन में प्रवाहित हो रही है और दैवी संपन्नता हमेशा मौजूद है,” तो आपके जीवन में जल्द ही चमत्कार होने लगेंगे!

## जान ही दौलत है

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**आ**प जो सबसे बड़ी खोज कर सकते हैं, वह इस बारे में जागरूक होना है कि आपके भीतर एक असीमित शक्ति और बुद्धिमत्ता वास करती है, जो आपको सभी समस्याओं से उबरने, सभी बाधाओं पर विजय पाने और जीवन के सभी कार्य करने में समर्थ बनाती है। आप जीतने के लिए पैदा हुए हैं और आपको वे सारे आवश्यक गुण, विशेषताएँ और क्षमताएँ प्रदान की गई हैं, जिनकी बदौलत आप अपनी तक्रदीर के स्वामी तथा आत्मा के मुखिया बन सकते हैं।

यदि आप अपनी आध्यात्मिक शक्तियों को नहीं जानते हैं, तो आप सांसारिक घटनाओं और स्थितियों द्वारा शासित व नियंत्रित होंगे। आपमें आत्म-आलोचना की प्रवृत्ति होगी और आप आम तौर पर अपना मूल्य कम आँकेंगे। दूसरे शब्दों में, अपने ज्ञान के अभाव के कारण आप परिस्थितियों की शक्ति को कुछ ज़्यादा ही मान बैठेंगे तथा आपको अपने भीतर की उन ज़बर्दस्त शक्तियों का आभास भी नहीं होगा, जो आपको ऊपर उठा सकती हैं और खुशहाली स्वास्थ्य, स्वतंत्रता व आनंद के राजमार्ग पर पहुँचा सकती हैं।

## आकर्षण का महान नियम

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कुछ महीनों पहले एक आदमी ने मुझे इंजीनियरिंग का एक बड़ा आविष्कार दिखाते हुए कहा, “इसके प्रचार-प्रसार के लिए मुझे पैसों की ज़रूरत है - ढेर सारे पैसों की।”

मैंने उसे बताया कि आकर्षण का एक नियम होता है। यही नियम उसका सपना साकार करने के लिए ज़रूरी हर चीज़ देगा। मैंने सुझाव दिया कि वह मानसिक रूप से यह दावा करने की आदत डाले: “मेरे अवचेतन मन की असीमित प्रज्ञा उस आदर्श कंपनी को आकर्षित करती है, जो इस आविष्कार का उत्पादन करेगी, इसका प्रचार करेगी और इसे बेचेगी। इससे जुड़े सभी लोगों को आपसी संतुष्टि, सामंजस्य और दैवी अनुबंध का वरदान प्राप्त होगा।” यह कथन उसकी स्थायी प्रार्थना बन गया।

उसका अवचेतन काम में जुट गया। कुछ ही समय बाद उसे लॉस एंजेलिस के विलशायर ईबेल थियेटर में एक प्रतिष्ठित व्यवसायी मिल गया, जहाँ मैं व्याख्यान दे रहा था। इस व्यवसायी ने उस आविष्कार को प्रायोजित किया और आविष्कार से अधिकतम लाभ उठाने के लिए सही पक्षों से संपर्क तथा अनुबंध किया। उसने मुझे हाल ही में बताया कि यह एक क्रांतिकारी और अद्भुत प्रॉडक्ट है, जिसमें लाभ की असीम संभावना है।

यह आकर्षण के नियम को स्पष्ट करता है। जिस प्रकार किसी बीज में मौजूद बुद्धिमत्ता अपने विकास के लिए आवश्यक हर चीज़ को अपनी ओर आकर्षित कर लेती है, उसी प्रकार मनुष्य भी सोचकर दौलत एकत्रित करने के आदर्शों, लक्ष्यों और उद्देश्यों को पाने के लिए आवश्यक बुद्धिमत्ता तथा नए विचार उत्पन्न कर सकता है।

याद रखें, सभी मानव-निर्मित आकार, प्रक्रियाएँ और वस्तुएँ सबसे पहले मनुष्य के विचार जीवन में बनती हैं। मनुष्य किसी चीज़ को तब तक ढाल नहीं सकता, बना नहीं सकता या आकार नहीं दे सकता, जब तक कि वह उसके बारे में सोच न ले। यह अकादमिक सत्य है: विचार ही विश्व पर शासन करता है।

# आर्थिक रूप से सुरक्षित बनने का अचूक तरीका

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धन आदान-प्रदान का साधन है। यह स्वतंत्रघृणा, सौंदर्य, विलासिघृणा, शक्ति, सुरुचि और समृद्ध व आनंददायक जीवनशैली का प्रतीक है। धन को एक दैवी विचार के रूप में देखा जा सकघृणा है, जिसकी बदौलत राष्ट्रों की आर्थिक सेहत कायम है। इसलिए इसका उपयोग समझदारी, बुद्धिमत्ता और सृजनात्मक तरीके से करना चाहिए।

आप आर्थिक रूप से सुरक्षित तब होते हैं, जब आप अपने मस्तिष्क पर यह छाप छोड़ देते हैं कि पैसा न सिर्फ अच्छा है बल्कि बहुत अच्छा है और यह असंख्य तरीकों से मानव जाति के लिए वरदान है। अपने मन में यह कल्पना करते रहें कि आप एक वितरण केंद्र हैं, कि आपके पास सभी प्रकार की दौलत है और आप ये वरदान दूसरों को प्रदान कर रहे हैं। ऐसा करके आप वह राह खोल देते हैं, जिससे धन आपकी ओर अधिक तीव्र गति से प्रवाहित होगा।

आप अपने दिल में जानते हैं कि आपका उद्देश्य सही है और आप बहुत सारी धन-संपत्ति के हकदार हैं। आप समृद्धि के सैलाब को अपनी ओर आने की आशा करते हैं। आपको जो संपन्नघृणा और खुशहाली मिलती है, वह अवचेतन मन में निहित शक्ति और बुद्धिमत्ता का समझदारी से उपयोग करने का ही परिणाम है।

जीवन आपको तब पुरस्कार देगा, जब आप यह विश्वास करेंगे और मानेंगे कि सफलघृणा आपका दैवी अधिकार है। आर्थिक सुरक्षा की वास्तविक कुंजी निरंतर यह महसूस करना, जानना और कल्पना करना है कि आप ज़्यादा भव्य, ज़्यादा महान और ज़्यादा अद्भुत तरीके से दूसरों की सेवा कर रहे हैं। कल्पना करें कि ज़्यादा बड़ी सफलघृणा और दौलत आपके पास आने का इंतज़ार कर रही हैं। जो भी पैसा आपको मिलघृणा है उसे गहरी कृतज्ञघृणा के साथ स्वीकार करें और उसका निश्चितघृणा से उपयोग करें। साथ ही उस परम सत्ता के प्रति कृतज्ञघृणा जघृणाएँ, जिससे सारे वरदान प्रवाहित होते हैं।

# कच्चे रिश्तो की पक्की डोर

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दीपावली के दिन की खरीदारी करने भाई के साथ में हर बार की तरह बाज गई हुई थी बाजार की सजावट भी जैनेंद्र कुमार की बाजार दर्शन सिद्धांत की तरह काम करती है। तरह-तरह की वस्तुओं को इस आकर्षक अंदाज में सजाया जाता है कि कोई सामान नहीं लेना भी चाहता है वह भी चकाचौंध के वशीभूत होकर कुछ ना कुछ ले ही लेता है। बाजारीकरण का सीधा सा सिद्धांत है जो दिखता है वह बिकता है। सब लोग अपने-अपने पसंद और जरूरत का सामान ले रहे थे। त्यौहार का दिन था तो दुकानों पर भीड़ का होना स्वभाविक था। संयोगवश मैं जिस दुकान पर गई उस पर भीड़भाड़ कुछ ज्यादा ही थी तो मुझे थोड़ा इंतजार करना पड़ा। एक वृद्धा माई जिसकी उम्र तकरीबन 80 के वर्ष के करीब रही होगी जिनको मैं थोड़ा बहुत जानती थी वह अपने बेटे बहू से अलग रह रही थी , वह एक विधवा औरत थी।

दीपावली की जरूरत का लगभग सब सामान लेने के बाद दुकानदार ने कहा माई आपने जो सामान बोला था सब दे दिया , अब और क्या चाहिए ? एक फूलमाला की तरफ इषारा करते हुए बोली फूल वाला हार चाहिए बेटा। इसका क्या करोगे माँ दुकानदार बोला ? बेटा नारायण के बिना लक्ष्मी की पूजा अधूरी होती है और मेरे नारायण यानी तुम्हारे बाबा तो है नहीं तो उनकी तस्वीर पर ये हार चढ़ाकर उनकी पूजा करुंगी। मेरी आंखें डबड़बा गईं। लेकिन एक सवाल बा. रम्बार कचोट रहा था की रिश्ते कि नाजुक डोर के इस मजबूत रिश्ते को लोग बीच मझधार में क्यों छोड़ जाते हैं और किसके भरोसे और वह भी उम्र के इस पड़ाव पर जब हमे सबसे ज्यादा उसकी जरूरत होती है।

# मास्टरजी का बेटा (कहानी)

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38 दिनों की गर्मियों की छुटिया समाप्त हो चुकी थी। मास्टरों की छुटियाँ बच्चों की छुटिया से कुछ पहले समाप्त हो चुकी थी क्योंकि गुरुजनो को अभी प्रवेशोत्सव की भी तैयारी करनी थी। कल से विधालय खुलने थे। सरकारी विधालय के बजाय प्राइवेट विधालय कुछ जल्दी खुल गये थे क्योंकि उनके सामने एक सबसे बड़ी समस्या होती है अपने अस्तित्व को बनाने की उनमें खुद को बेहतर बनाने के लिए कम्पीटिशन की भावना होती है। दो विधालय भी अगर परस्पर आमने सामने हों तो दोनों में यही महत्वपूर्ण होता है की मेरिट में कितने बच्चे आ रहे हैं। कितने बच्चों ने प्रथम श्रेणी स्थान प्राप्त किया। कुछ भी हो कोषिष यही रहती है की कोई बच्चा फेल ना हो, सबके मेरिट आये। अगर क्लास में एक 2 बच्चे भी मेरिट में आ जाये तो फिर होता है उनका बाजारी प्रदर्शन। बड़े बड़े बोर्ड व हॉर्डिंग लगाए जाते हैं। साथ में अगर कोई दूसरी स्कूल का बच्चा मेरिट में आ जाये तो कोषिष रहती है वह बच्चा उनके ही विधालय में पढ़े ताकि अगली क्लास में वह मेरिट में आए तो बच्चा उनके ही विधालय में पढ़े ताकि अगली क्लास में वह मेरिट में आए तो उसके माध्यम से उस विधालय में बच्चों की संख्या में वृद्धि हो सके, कुछ स्कूल वाले तो ऐसे बच्चे के स्नातक स्तर की फीस तक फ्री कर देते हैं।

ऐसा नहीं है की सरकारी विधालयों में पढ़ाई नहीं होती। सरकारी विधालय में लगभग शिक्षक जी तोड़ मेहनत करवाते हैं। कुछ निक्कमें और नाकारा लोगो को छोड़ दो तो लगभग शिक्षक जी तोड़ मेहनत करवाते हैं। तथा सरकार द्वारा भी तमाम सुविधाएं विधार्थियों को उपलब्ध करवाई जाती है।

महिपाल गुरुजी ने आज स्कूल खुलने के उपलक्ष्य में अपने मोबाईल पर स्टेटस लगाया। अपने बच्चों को सरकारी विधालय में प्रवेश दिलाकर उनका भविष्य सुनिश्चित करे, यहां आपको अत्यधिक प्रशिक्षित मास्टर मिल रहे हैं, सरकार आपको ये सुविधाएं दे रही है फलाना ठिकाना उनके मित्र किसन ने देखा तुरंत रिप्लाई कर दिया। गुरुजी जब सरकारी विधालय इतने ही अच्छे हैं तो आपने अपने खुद के बच्चे को प्राइवेट स्कूल में एडमिशन क्यों दिला रखा है ? बस फिर क्या था गुरुजी ने तो बात की पूछ ही पकड़ ली। किषन और महिपाल दोनों अच्छे मित्र थे। बचपन से दोनों साथ ही पढ़े थे। किषन क्लास का पढ़ाई में सबसे टॉप विधार्थी था। सरकारी नौकरी उसे पसंद नहीं थी। वह लेखक और कवि था। कवि के अंतस ने कह दिया की सरकारी नौकरी नहीं करनी, मतलब नहीं करनी फिर क्या था ? सम्हाल लिया अपना पुस्तैनी धंधा। वही किराणे की दुकान और हरिपुरा की वही चौपाटी आज गुरुजी का गुस्सा सातवे आसमान पर