SRI VENKATESWARA COLLEGE OF ENGINEERING

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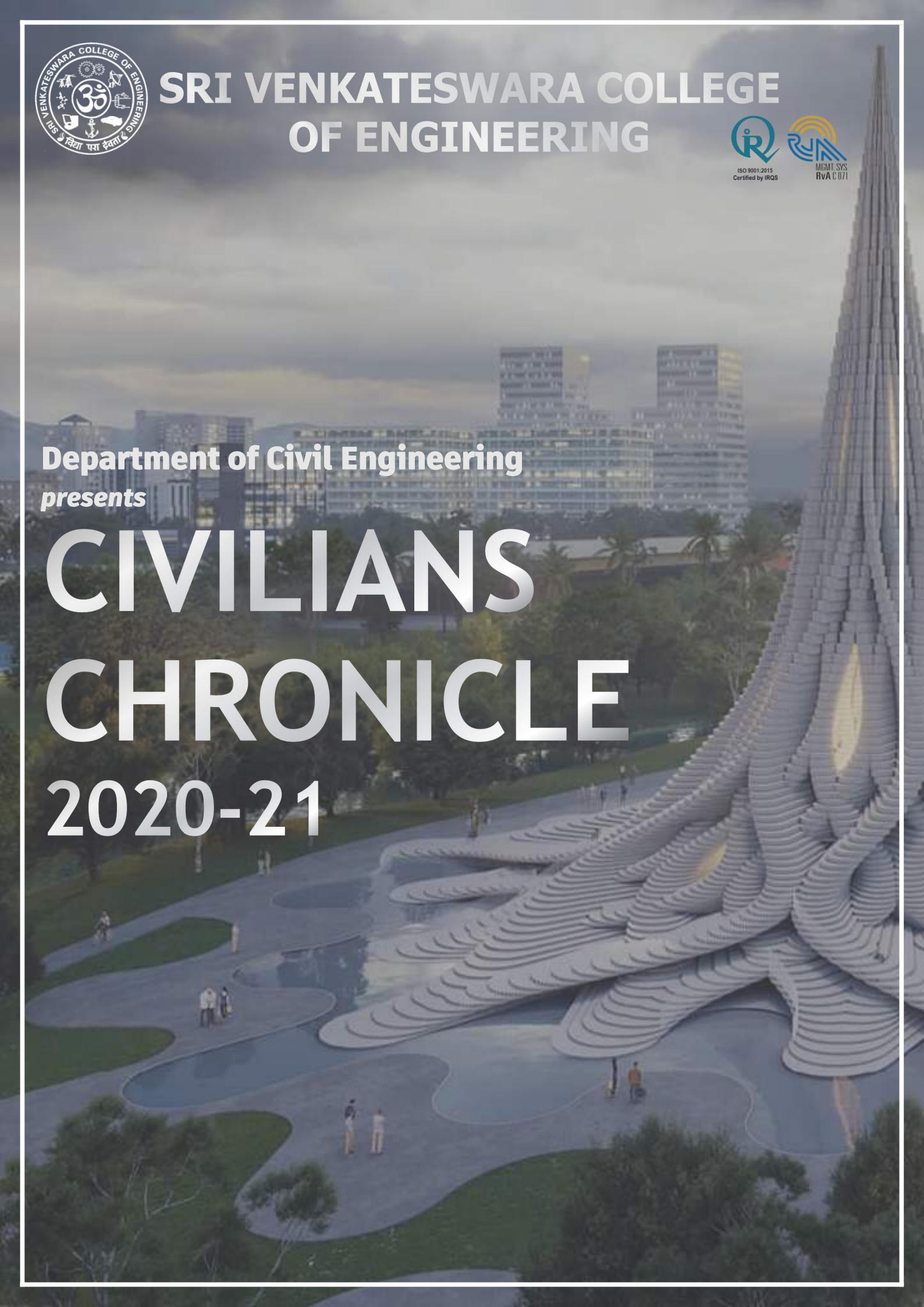
MGMT. SYS. RvA C 071



Department of Civil Engineering

presents

CIVILIANS CHRONICLE 2020-21

EDITORIAL BOARD

DEPARTMENT VISION

To become a department of excellence in Civil Engineering education and research producing globally competent civil engineers to serve the industry and society.

DEPARTMENT MISSION

The department vision will be achieved by

- Providing state-of-the art resources that contribute to an excellent learning environment.
- Imparting necessary skills, cultivating moral and ethical values.
- Establishing regular interaction and collaboration with industries.
- Motivating the students to take up competitive exams and pursue higher education.
- Promoting research and development activities in emerging areas of civil engineering and offering services to society and industry through education, research and consultancy activities.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Civil Engineering graduates during the first few years of graduation will:

I. Practice civil engineering in construction industry, public sector undertaking or as an entrepreneur by applying ethical principles and following norms of civil engineering practice.

II. Pursue higher education for professional development

III. Exhibit leadership and team working skills in their profession and other activities with demonstrable attributes to contribute to the societal needs and to adapt to the changing global scenario.

PROGRAM SPECIFIC CRITERIA

(Curricular requirements specified by International Professional Association American Society of Civil Engineers, ASCE)

1. The curriculum must prepare graduates to apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science. **(Maths and Science)**

2. The curriculum must prepare graduates to apply probability and statistics to address uncertainty. **(Probability and statistics)**

3. The curriculum must prepare graduates to analyze and solve problems in at least four technical areas appropriate to Civil Engineering. **(Breadth in Civil Engineering)**

4. The curriculum must prepare graduates to conduct experiments in at least two technical areas of civil engineering, and analyze and interpret the resulting data. **(Civil Engineering Experiments)**

5. The curriculum must prepare graduates to design a system, component, or process in at least two civil engineering contexts. **(Civil Engineering Design)**

6. The curriculum must prepare graduates to include principles of sustainability in design. **(sustainability in design)**

7. The curriculum must prepare graduates to explain basic concepts in project management, business, public policy and leadership. **(Project Management, Business, Public Policy, and Leadership)**

8. The curriculum must prepare graduates to analyze issues in professional ethics. **(Professional Ethics)**

9. The curriculum must prepare graduates to explain the importance of professional licensure. **(Professional Licensure)**

Faculty Requirements (Specified by ASCE)

The program must demonstrate that faculty teaching courses that are primarily design in content are qualified to teach the subject matter by virtue of professional licensure, or by education and design experience. The program must demonstrate that it is not critically dependent on one individual.

PROGRAM OUTCOMES (POs)

Students in the Civil Engineering program should, at the time of their graduation, be able to

1. Apply the knowledge of mathematics, science, engineering fundamentals and concepts of Civil Engineering to the solution of complex engineering problems. **(Engineering knowledge)**
2. Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. **(Problem analysis)**
3. Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. (**Design/Development of Solutions)**
4. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complex problems. (**Conduct Investigations of Complex Problems)**
5. Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations. (**Modern Tool Usage)**
6. Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. (**The Engineer and Society)**
7. Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. (**Environment and Sustainability)**

8. Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. **(Ethics)**
9. Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. **(Individual and Team Work)**
10. Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. (**Communication)**
11. Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. (**Project Management and Finance)**
12. Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change. (**Life-long Learning)**

PROGRAM SPECIFIC OUTCOMES

Students in the Civil Engineering program should, at the time of their graduation, be able to

1. Provide solutions for real life problems related to core areas of civil engineering by applying knowledge of mathematics, Basic and Engineering Sciences and by using appropriate engineering tools.
2. Plan, analyse, design, execute and manage infrastructure projects considering safety, societal and environmental factors.

CONTENTS

THE WAY I SEE “THE 2020”

T

The year 2020 is one that will never be forgotten. Not only will it stay etched in the memories of the ones who lost and lived through it, but for all future generations as the year that reminded humanity to never take things for granted. This is a year that brought the world to a standstill, all at once, and spared no one, no matter their age, status, or designation. Although the world’s focus has been on the corona virus pandemic, the presence of natural disasters has persisted, and in some cases, compounded with COVID-19, becoming even costlier. A record-breaking Atlantic hurricane season, flash floods, earthquakes, volcanic eruptions and wildfires plagued already reeling communities from Australia to Turkey this year, as thousands of people lost their lives. Well, that was brutal. It has been a year full of restrictions and curbs. But believe it or not, 2020 wasn't all bad. Like any other year, this pandemic-ravaged year, too, gave us a few moments of joy, giving us enough tales to tell our younger generation. While this year seemed especially hard, there were silver linings. Out of corona virus came creativity. Out of quarantine came bonus time with family.

Out of activism came changes for the better. Kollywood superstars and their characters have always been the definition of heroes for a common man but this year, it changed .And for the good , Healthcare workers, sanitation workers, police forces everywhere, airport and airline staff, civic body staff and every professional class deemed “essential” during this global crisis personified the word “hero”. This was a good year for the environment as well as the animals. With countries across the globe going into lockdown, industries shut, flights grounded and vehicles off roads, there was a drastic dip in carbon emissions worldwide. With fewer vehicles on roads and the mindless cutting of trees came to a stop, environment healed in the most beautiful ways.

Pollution decreased and people were able to see clearly to far off places was one of the most exciting things during the dreadful lockdown. And 2020 was the year of getting back to your people. Even though living in the same house, many people were so caught up in their own life that they hardly connected with their family and friends. But imposed restrictions and lockdown gave an opportunity to everyone to rekindle their love for their close ones.

It won't be wrong to say that 2020 gave a reason to make precious memories. And here comes my most favourite part of 2020, the online classes and WFH . Working from home and online classes is a lot more comfortable for lots of people. People can save a great deal of time and money since they do not have to travel so often, which means people will have more time for work and for themselves, too. The year 2020 has given more to the authors of history textbooks than it has to the writers of diaries. Decades from now, scholars will have a wealth of material for their accounts of this pivotal time, but when the people who lived through it look back on the timelines of their personal lives, many of them will find a gap where 2020 should be as in my daily diary. Since nothing is really good or bad in itself—it's all what a person thinks about it. To me 2020 was an year of realisation, made me realise who I am and what ,how and where I wanna be.

Vivedhitha Varshini.A.G
II year
vedhithav@gmail.com

THE DEVIL'S *ALWAYS IN THE* DETAILS

The small details that always avert from the human eye is something that has a high possibility of reshaping the world or the world of a person or group. That small detail is generally characterized to be the avatar of the devil. I have asked myself why the most smallest of details is personified to be the devil in itself and why did Robert Downey Jr. portrayed as Sherlock Holmes in Sherlock Holmes say "The Devil is in the Details", in a very husky voice. Then I came to the conclusion that the real devil is not the detail but the truth deep inside the heart of the detail.

Why is truth morphed to be called the devil?

This might be a stupid question that has no meaning in itself but for a very long time I have raked my brain on this. Not to boast but I have come to a very insightful philosophy on this devil. This devil is not easy to find, sometimes it hides in places that are unfathomable and sometimes they hide in plain sight and yet hidden from the naked eye. The funny thing is that the truth that is easy to find is generally not considered to be the devil. Yet the truth that is deep inside or microscopic is widely known to be the devil.

The devil resides on wrinkled shirt or a clean tie, it resides in a half cooked rice or a perfectly made fish fry. It resides in the nook and corner of a mystery case. This devil never ceases to amaze us. This devil when missed or found has a totally different effect on a situation. The way your boss speaks to you on a Monday morning is destined to be different if your pen in your shirt pocket leaks or not. The smallest of details has the ability to judge the core character of a person. Believe it or not when a normal person looks at you he/she just looks at you but when a smart person looks at you he/she looks thoroughly at you, they sometimes even notice whether your fingernails are cut. In this world if you want to strive it is not enough to strive on your wit you must also rely on the wisdom of your allies. As a result you must have allies that are smart, allies that give attention to detail, you do not want to be acquainted with a "normal" person.

The devil can be constructive as well as destructive. In various relationships failure occurs because one or both the parties require controlling details from the other, this can be a relationship of any nature. The parties are conditioned to receive each and every detail of their counterpart which is unhealthy and destructive. And when detailed analysis begins between people in a relationship it leads to its demise.(FYI the relationship I am stressing on can be friendship, sibling relationship, mother-son, mother-daughter, father-son, father-daughter relationship).

I have come to a very weird interpretation that we do require this devil, this truth deep inside the details. If we pass through this devil who knows we might see god(in my interpretation god means success). This devil is just the truth that is so indispensable. The truth that can change lives. I am just trying to say that we must make use of this devil in a very constructive manner to embrace the truth.

After all, the devil isn't so bad !

Ajay Krishnamurthy

III Year

Civil Engineering

DIGITAL PAINTING

Digital painting is an emerging art form in which traditional painting techniques such as watercolor, oils, impasto, etc. are applied using digital tools by means of a computer, a graphics tablet and stylus, and software. Traditional painting is painting with a physical medium as opposed to a more modern style like digital. Digital painting differs from other forms of digital art, particularly computer-generated art, in that it does not involve the computer rendering from a model. The artist uses painting techniques to create the digital painting directly on the computer.

The main difference between digital and traditional painting is the non-linear process. That is, an artist can often arrange their painting in layers that can be edited independently. Also, the ability to undo and redo strokes frees the artist from a linear process. But digital painting is limited in how it employs the techniques and study of a traditional painter because of the surface differences and lack of physicality

ORIGINS

SKETCHPAD

Many artists prefer using graphics tablets to create digital paintings instead of using a mouse.The earliest graphical manipulation program was called Sketchpad. Created in 1963 by Ivan Sutherland, a grad student at MIT, Sketchpad allowed the user to manipulate objects on a CRT (cathode ray tube).Digital paintings were also done using Tablets ,MacPaint , Adobe ,Kid Pix and Web-based painting programs.

A digital drawing tablet is basically the only art supply that a digital painter needs. This tablet connects to the computer and lets you draw on the surface with a special stylus pen, so every line you make gets recorded onto the computer in real time. With digital painting there is a small learning curve. Even if you've been drawing traditionally for 10+ years it will probably take you a couple of weeks or months to get familiar with working digitally. That is totally normal and it's one of the biggest hurdles for artists who move into digital painting.

If you've already practiced art for a while then you only need 2 things to get into digital painting:

A drawing tablet & Painting software

Ranjana Priyadharshini
II nd Year
Civil Engineering

FORENSIC CIVIL ENGINEERING

INVESTIGATION PROCEDURE

- ✧ **"Define" the failure**
- ✧ **Collect evidence**
- ✧ **Analyze the evidence**
- ✧ **The possible events that root causes for the failure.**
- ✧ **Validate the hypothesis through structural analysis.**
- ✧ **Arrive at a conclusion regarding the causes.**
- ✧ **Prepare the final report.**

QUALIFICATION OF A FORENSIC CIVIL ENGINEER

- ➢ **Technically competent**
- ➢ **Detective**
- ➢ **Articulate with good communication skills**
- ➢ **Skillful in court**
- ➢ **Ethical**

Forensic Civil Engineering can be considered to be "The investigation of materials, products, structures or components that fail or do not operate or function as intended, causing personal injury or damage to property".

The purpose of a forensic engineering investigation is to locate cause or causes of failure with a view to improve performance or life of a component, or to assist a court in determining the facts of an accident. It can also involve investigation of intellectual property claims, especially patents.

Vital to the field of forensic engineering is the process of investigating and collecting data related to the: materials, products, structures or components that failed. This involves: inspections, collecting evidence, measurements, developing models, obtaining exemplar products, and performing experiments. Often, testing and measurements are conducted in an Independent testing laboratory or other reputable unbiased laboratory.

METHODS OF FORENSIC CIVIL ENGINEERING

❖ EMPIRICAL METHODS :

It contains testing of materials in laboratory.

❖ THEORETICAL METHODS :

- ✓RCA -> Root Case Analysis
- ✓ECFC-> Event & Casual Factors Charting
- ✓ MORT -> Management Oversight & Risk Tree
- ✓SSAI -> System Safety Accident Investigation

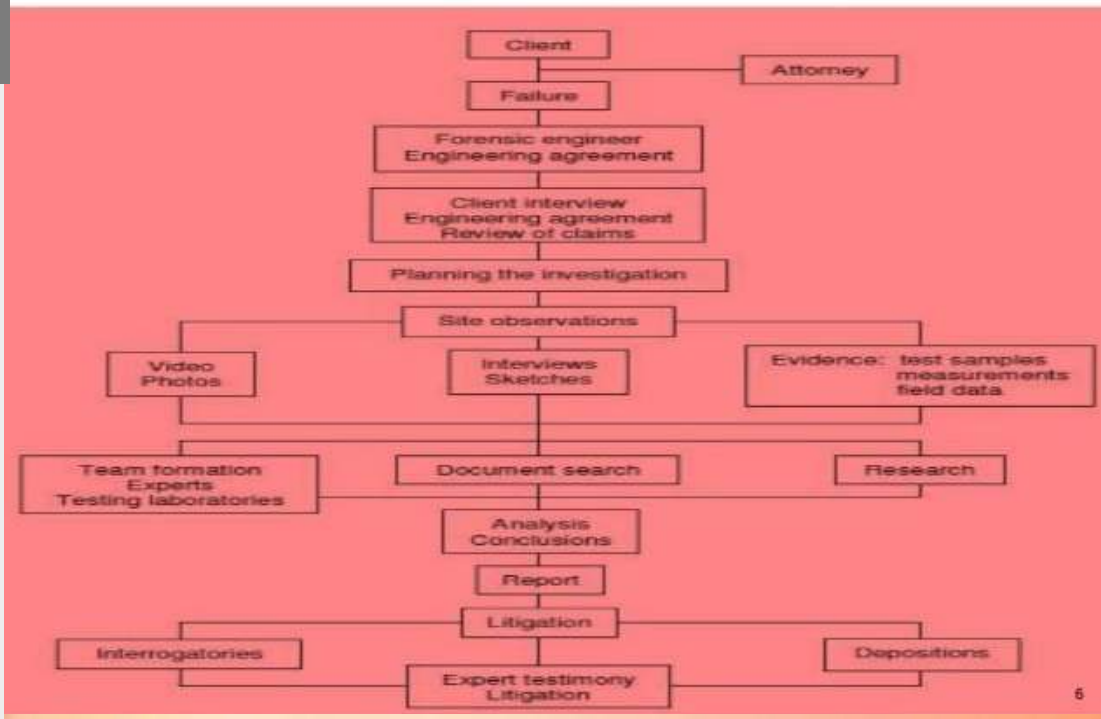
❖ NDT METHODS :

1. Rebound Hammer Test
2. Ultrasonic Pulse Velocity Test
3. Cover Meter Test
4. Half-cell Potential Measurement Test
5. Impact echo/pulse echo test
6. Ground Penetrating Radar Test

❖ SDT METHODS :

1. Concrete core test
2. Capo test
3. Windsor probe test
4. Load test

FLOW CHART OF F.C.E INVESTIGATION



TOOLS (PHOTO GALLERY)

REBOUND HAMMER TEST

U P V MACHINE

SCANNING OF REBARS

MEASUREMENT OF CORROSION

MEASUREMENT OF DEFLECTION BY DEFLECTO METER

MEASUREMENT OF DEFLECTION BY LVDT

LOAD TEST ON PSC DECK OF RAILWAY BRIDGE

EXTRACTION OF SMALLER CORE SAMPLE FROM MEMBER

EXAMPLES OF HISTORIC FAILURES

As the field of engineering has evolved over time, so has the field of forensic engineering. Early examples include investigation of bridge failures such as the Tay rail bridge disaster of 1879 and the Dee bridge disaster of 1847.

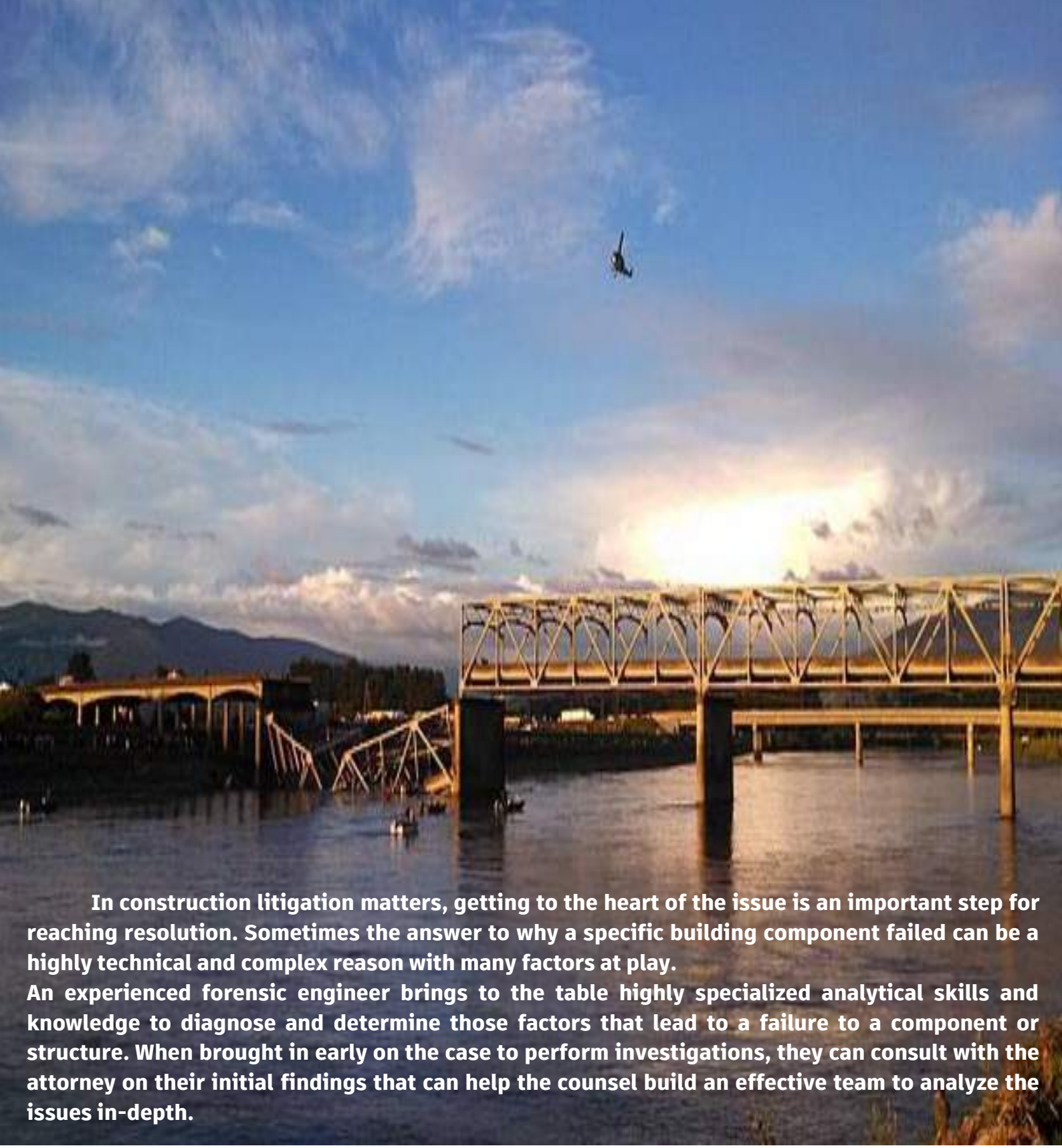
Many early rail accidents prompted the invention of tensile testing of samples and fractography of failed components.

CASE STUDY

THE TACOMA NARROW BRIDGE

1940

2007



In construction litigation matters, getting to the heart of the issue is an important step for reaching resolution. Sometimes the answer to why a specific building component failed can be a highly technical and complex reason with many factors at play.

An experienced forensic engineer brings to the table highly specialized analytical skills and knowledge to diagnose and determine those factors that lead to a failure to a component or structure. When brought in early on the case to perform investigations, they can consult with the attorney on their initial findings that can help the counsel build an effective team to analyze the issues in-depth.

G.HARSHAVARTHANI

SECOND YEAR

CIVIL ENGINEERING

CONCRETE SHEAR WALL STRENGTH AND PROPERTIES

Shear wall is a structural member used to resist lateral forces i.e parallel to the plane of the wall. For slender walls where the bending deformation is more Shear wall resists the loads due to Cantilever Action and for short walls where the shear deformation is more it resists the loads due to Truss Action.

These walls are more important in seismically active zones because during earthquakes shear forces on the structure increases. Shear walls should have more strength and stiffness. When a building has a story without shear walls, or with poorly placed shear walls, it is known as a soft story building. Shear walls provide adequate strength and stiffness to control lateral displacements. Shear walls perform dual action that is lateral as well as gravity load-bearing elements.

Concrete Shear Wall

Concrete Shear wall buildings are usually regular in plan and in elevation. Shear wall buildings are commonly used for residential purposes and can house from 100 to 500 persons per building. Horizontal and vertical distributed reinforcement (ratio 0.25%) is required for all shear walls.

Strength of Shear Walls

The strength of a wall system depends on many factors including the strength of the sheathing; the type, size, and spacing of the fasteners; the panel aspect ratio (ratio of long to short dimension of shear panel); and the strength of the studs. Because of these variables, the design strength of shear walls is usually based on tests of full height specimens. Shear walls that are perforated with openings are called coupled walls. These walls act as isolated cantilevered walls connected by coupling beams (also called spandrel beams or lintels) designed for bending and shear effects.

Arrangement in buildings with different functions

The location of a shear wall significantly affects the building function, such as natural ventilation and day lighting performance. The performance requirements vary for buildings of different functions.

Hotel and dormitory buildings

Hotel or dormitory buildings require many partitions, allowing insertions of shear walls. In these structures, traditional cellular construction is preferred and a regular wall arrangement with transverse cross walls between rooms and longitudinal spine walls flanking a central corridor is used.

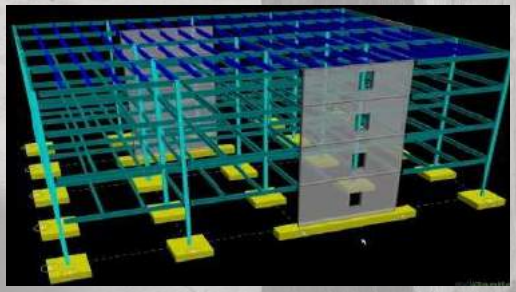
Commercial buildings

A structure of shear walls in the center of a large building—often encasing an elevator shaft or stairwell—form a shear core. In multi-storey commercial buildings, shear walls form at least one core. From a building services perspective, the shear core houses communal services including stairs, lifts, toilets and service risers. Building serviceability requirements necessitates a proper arrangement of a shear core. From the structural point of view, a shear core could strengthen the building's resistance to lateral loads, i.e., wind load and seismic load, and significantly increase the building safety.

Construction methods—concrete

Concrete shear walls are reinforced with both horizontal and vertical reinforcement. A reinforcement ratio is defined as the ratio of the gross concrete area for a section taken orthogonal to the reinforcement. Construction codes of practice define maximum and minimum amounts of reinforcement as well as the detailing of steel bars. Common construction methods for in-situ reinforced concrete walls include:

- **Shuttered lifts methods**
- **Slip form method**
- **Jump form method**
- **Tunnel form method**



GogulaChezhiyan.N
Second Year

Good health is a boon to our body.The key source of being happy is being fit and healthy.It can be maintained by doing regular exercise and a well-balanced diet.In these days no one cares about their body. We all say health as hygiene but the **World Health Organization** defines health as the 'state of physical,mental and social well being not merely physical well-being.**Fitness** is crucial for us to live long and healthy facilitated by increased immunity and the resistance to diseases.

"HEALTHIER THE HAPPIER"

Good health is central to human happiness and well-being that contributes significantly to prosperity and wealth and even economic progress, as healthy populations are more productive, save more and live longer.

EAT HEALTHY MEALS. What you eat is closely related to your health. Eating a healthy diet can help boost your immune systems, help you maintain a healthy weight and can improve your overall health.

GET REGULAR EXERCISE. Do a moderate workout for at least 30 minutes a day, as exercise can help prevent heart disease, stroke, colon cancer, and diabetes.

BENEFITS OF YOGA. Yoga can improve overall fitness level and lower blood pressure and heart rate.Being healthy should be part of our lifestyle.Living healthy lifestyle helps to prevent **Chronic diseases and long-term illness**

Just 20 minutes of yoga everyday and a good , hearty laugh relieves stress and boosts immune system.It keeps your body healthy and beautiful.Eating junk food may result in weight gain and cause diseases.

GET ENOUGH SLEEP. Sleep plays an important role in good health and well-being throughout your life because it enables the body to repair and be fit and ready for another day.

Getting enough sleep at the right times may help prevent physical health problems such as excess weight gain, heart disease, protect your mental health issues and improve your quality of life and safety.

Now-a-days , in this modern world , in the chase of career and money , nobody knows the necessity of good health and fitness.Taking good care of our body should be our priority.Our body is the only place for our soul to live or exist. So we must take good care of it.

“A Healthy body holds a Healthy and Happy Soul”

Hariprakash.J
II year

BEING LIMITED

Facts about Sustainability

Nowadays, because of the environmental and social problems societies around the world are facing, there is a need to use the resources in limited rate. In this way, the term "sustainability" has been broadly applied to characterize improvements in areas like natural resources over-exploitation, manufacturing operations (its energy use and polluting sub-products), the linear consumption of products, the direction of investments, citizen lifestyle, consumer purchasing behaviors, technological developments or business and general institutional changes.

The principles of sustainability are the foundations of what this concept represents. Therefore, sustainability is made up of three pillars: the economy, society, and the environment. These principles are also informally used as profit, people and planet. John Elkington, author of Cannibals with forks and co-founder of the sustainability consultancy firm Sustainability and Volans, was one of the first people to integrate these 3 principles. He argued companies should start considering this triple bottom line of development. Also known as the grandfather of sustainability, Elkington's most recent book (2020) Greens Swans: Regenerative Capitalism addresses precisely the need to re-design businesses and the economy, and the opportunities and risks the absence of such change might bring on the short run.

The term sustainability has its most known roots in the 1987 Brundtland Report which officially defined sustainable development for the first time. In 2016 many world leaders adopted the United Nation's 17 global goals/Sustainable Development Goals to improve life all around the world and preserve the earth's resources and fight climate change. The concept of circular economy looks beyond societies' current take-make-dispose model to create a more restorative economy which designs out waste, keeps products and materials in use for as long as possible and regenerates natural systems.

Climate change is defined as “a change of climate that is attributed directly or indirectly to human activity, that alters the composition of the global atmosphere, and that is in addition to natural climate variability over a comparable time period.” China is the world’s top polluter emitting 10,357 metric tons of carbon dioxide, followed by the United States, India, Russia and Japan. Mpumalanga province in South Africa has the highest levels of air pollution in the world, in terms of nitrogen dioxide levels, due to a high concentration of coal power plants.

While sustainability is certainly a trendier concept, there’s another one that’s quickly gaining ground: regeneration.

Regeneration takes sustainability even further, acknowledging modern societies’ lifestyles don’t have to be sustained for generations to come. First, because the structures that allow such conditions are incompatible with the way Nature creates Life (they are economy-oriented, which is often opposed to being nature oriented). But also because humans have damaged the planet to such an extent that stopping to do harm wouldn’t be enough to recover ecosystems are the percentage of biodiversity to keep them running – we need to enhance and facilitate the conditions in which Life can flourish and ecosystems can recover and become resilient.

Sustainability encourages people, politicians, and businesses to make decisions getting on the long term and taking future generations into account. In this way, acting sustainably encompasses a temporal framework of decades (instead of a few months or years) and considers more than the profit or loss involved in the short run.

There is no universally agreed definition of sustainability. In fact, there are many different viewpoints on this concept and on how it can be achieved.

However, moving toward sustainable production is often a complex process for companies. By basing decisions on longer timelines, some of the higher up-front investments in efficiency and renewable sources are easier to justify.

KAVINSELVA P
Second Year

PREFABRICATED STRUCTURES

Prefabrication is the method of construction which includes assembling components of a structure in a manufacturing or production site, transporting complete assemblies or partial assemblies to the site where the structure is to be located. It is combination of good design with modern high performance components and quality controlled manufacturing procedures. This work is carried out in two stages, manufacturing of components in a place other than final location and their erection in position.Prefabrication is especially helpful to projects with a high degree of redundancy. This means that the building has many rooms that are similar or identical. Some examples are student housing, hotels, hospitals, and institutional buildings.

The concept and practice of prefabrication in one form or another has been part of human experience for centuries; the modern sense of prefabrication, however, dates from about 1905. Until the invention of the gasoline-powered truck, prefabricated units—as distinct from precutbuilding materials such as stones and logs—were of ultra light construction. Since world war 1 the prefabrication of more massive building elements has developed in accordance with the fluctuation of building activity in the United States, the Soviet Union, and western Europe.Prefabrication requires the cooperation of architects, suppliers, and builders regarding the size of basic modular units. In the American building industry, for example, the 4 × 8- foot panel is a standard unit. Building plans are drafted using 8-foot ceilings, and floor plans are described in multiples of four. Suppliers of prefabricated wall units build wall frames in dimensions of 8 feet high by 4, 8, 16, or 24 feet long. Insulation, plumbing, electrical wiring, ventilation systems, doors, and windows are all constructed to fit within the 4 × 8-foot modular unit.

Another prefabricated unit widely used in light construction is the roof truss , which is manufactured and stockpiled according to angle of pitch and horizontal length in 4-foot increments.A prefabricated building component that is mass produced in an assembly line can be made in a shorter time for lower cost than a similar element fabricated by highly paid skilled persons at a building site. Many contemporary building components also require specialized equipment for their construction that cannot be economically moved from one building site to another. Savings in material costs and assembly time are facilitated by locating the prefabrication operation at a permanent site. Materials that have become highly specialized, with attendant fluctuations in price and availability, can be stockpiled at prefabrication shops or factories. In addition, the standardization of building components makes it possible for construction to take place where the raw material is least expensive.

The use of prefabrication and reassembly is estimated to have almost doubled in the last 15 years, increasing by 86%.The use of precast concrete construction can significantly reduce the amount of construction waste generated on construction sites to Reduce adverse environmental impact on sites.

HARIHARAN.V
-SECOND YEAR

Renaissance Again

Developments in the field of Engineering

The Science of Today is the technology of Tomorrow ' as quoted by Edward Teller clearly shows the tight corners that we have over come using technology development . We are in a period of transition between two epochs , a time comparable to the industrial revolution, when the steam engine was introduced and coal was the emerging energy source. Then, as now , there is wide - spread fear of future, as derived from the difficult of even imagining the range of opportunities that an on- going revolution bring in terms of new activities and related jobs.

The world is in the throes of technological revolution that differs from the periodic waves of technical change that have marked the progress of industrial society since its origin 200 years ago. In an advanced technological world, we need engineer to bring ideas into reality. To create the new reality there is a need of development in engineering.

As the future is heading to a digital era, digitization is shaping the trend of future. The Civil Engineering industry is adopting digital transition and moving towards advanced and smart technologies for the construction. Engineers can now create virtual models of their design through intelligent 3D-design modelling process. Advanced materials with shifting properties that adapt to external condition are being introduced into the civil engineering industry. The advanced technology includes BIM, Augmented Reality, Virtual reality , Drones, 3D scanning and printing, Autonomous equipment and Advanced building.

Back in the 1950's the activation of a computer without a personal management evolved through many phases that were first pioneered by IBM, including grid, utility and on demand computing. This was later called as cloud computing. While the term " cloud" may seem abstract, the benefits of cloud computing to customers are very real and tangible. Cloud providers typically use as " pay-as-you-go" model, which can lead to unexpected operating expenses if administrators are not familiarised with cloud - pricing models.

This cloud computing created the rapid growth of virtual and augmented reality technology. This has the potential to transform architectural visualization at multiple scales, from the production workflow for visual assets to the way VR integrates with overall design process.

Immerse technologies are also opening up new roles in AEC industry, creating opportunity for a rising generation of designers and technologists with skill-sets that straddle architecture, visualization and scripting. Selecting the right software and hardware depends on your desired effect and presentation environment, whether the experience will be presented on a mobile device or connected to a computer station as well as the computing power and resources you have available

The development in this field is just due to improvement of artificial intelligence. Artificial Intelligence refers to the simulation of human intelligence in machine that are programmed to think like humans and mimic their actions. The terms may also be applied to any machine that exhibits traits associated with human mind such as learning and problem - solving. AI enable producers to make sense of over - whelming data that their factories , operations and consumers generate and to transform that data into meaningful decisions. Today, 70 percent of captured production data goes unused.

Thus the availability of abundant raw materials and cheap labour are no longer key factors for success in the world market. New technology restore vitality to certain sectors in industrialized countries, sectors that were hither to viewed as almost certain candidates for relocation to the Third World War. At the same time, developing countries now have available to them a whole set of new technologies that lend themselves to blending with traditional technologies and thereby make faster developments possible across the world.

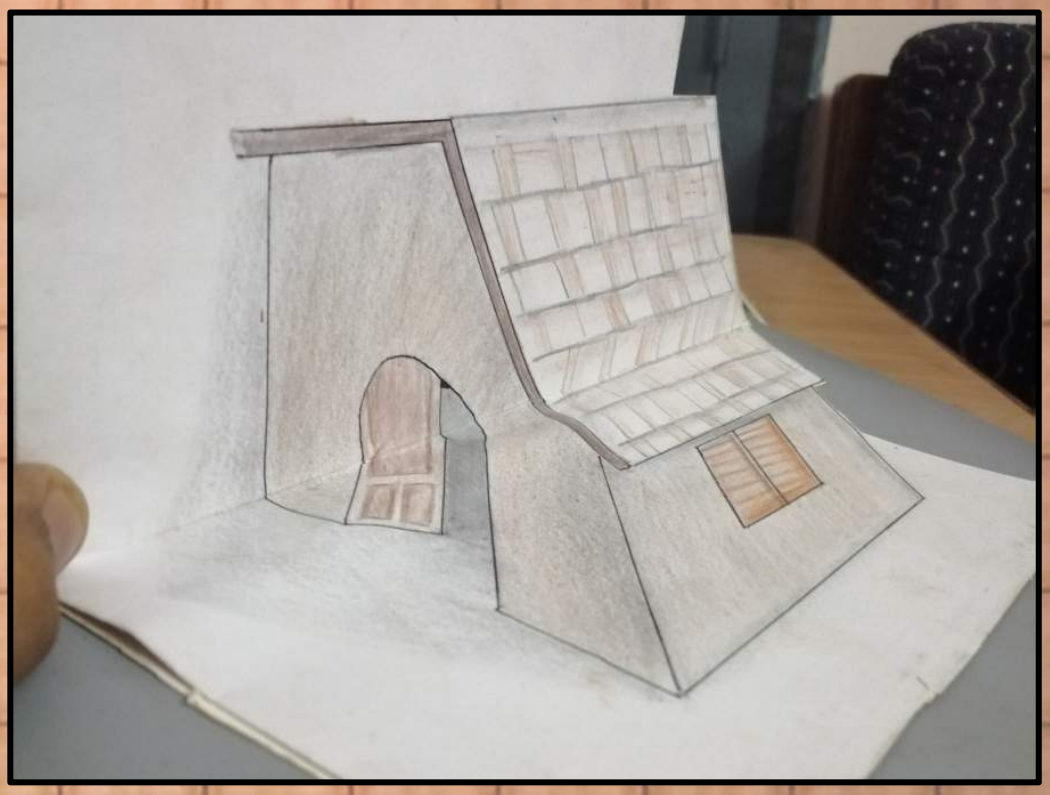
Siddharth J.U
-Second Year

STUDENTS' TALENTS

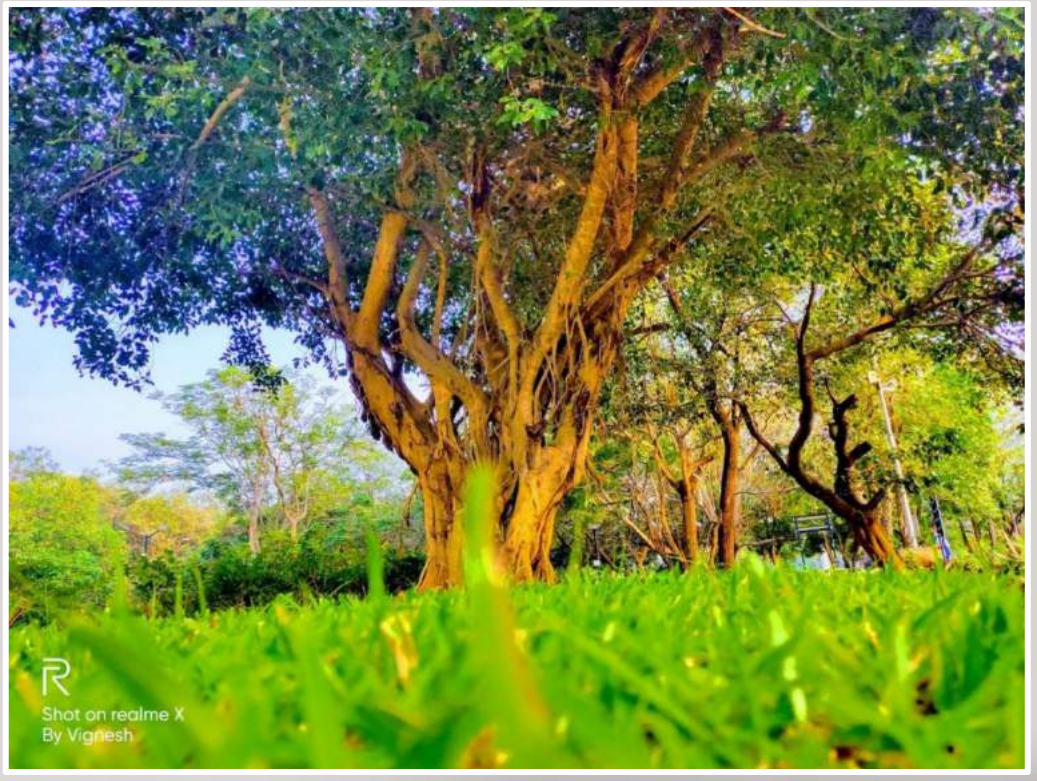
மரம்

சுவாசத்தை தேடி ஓடாதே
என் மூச்சு காற்றை தருகிறேன் வா...

Hari prakash
-II YEAR



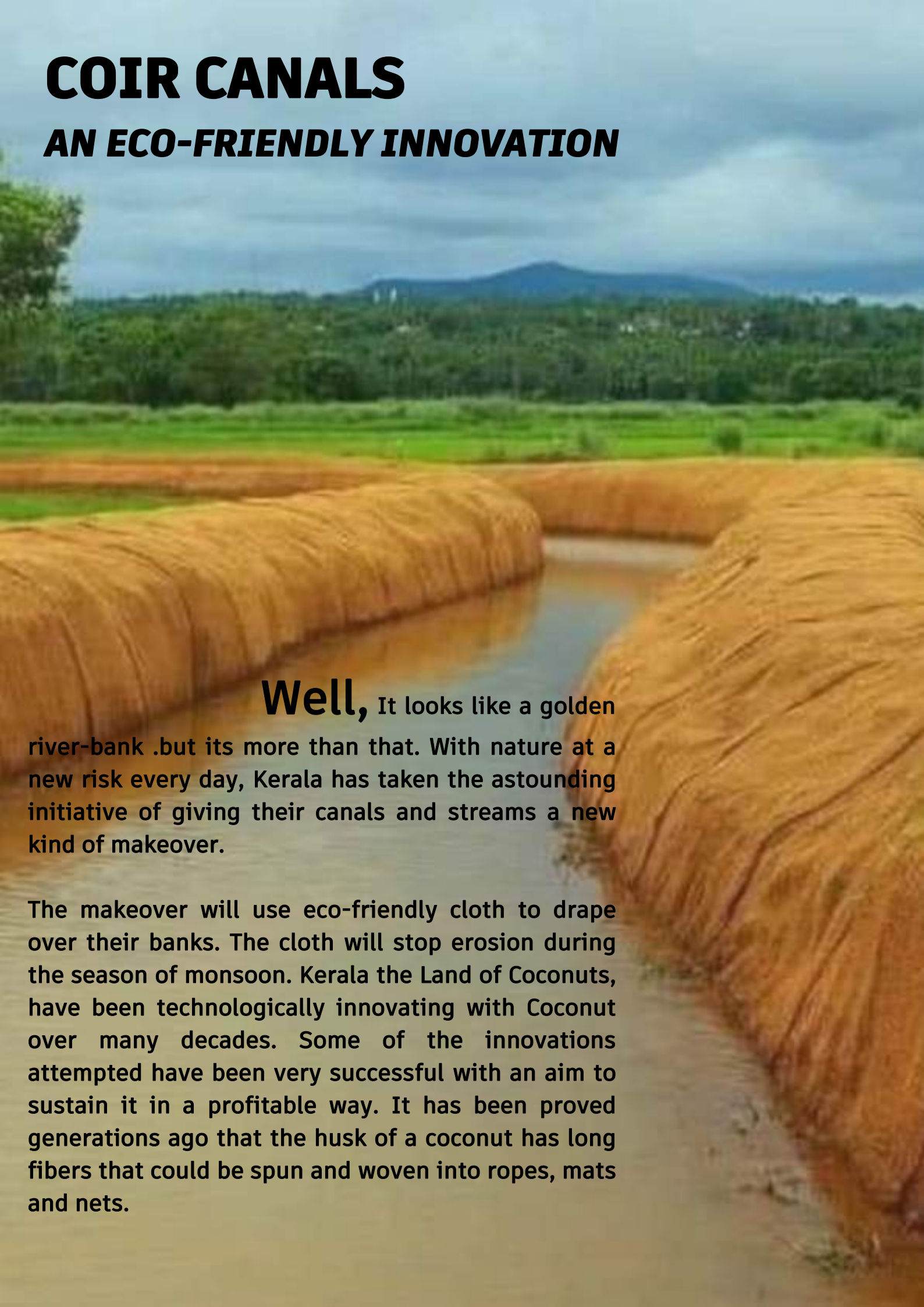
Kavin malar
II Year



Vignesh A
II Year

COIR CANALS

AN ECO-FRIENDLY INNOVATION



Well, It looks like a golden river-bank .but its more than that. With nature at a new risk every day, Kerala has taken the astounding initiative of giving their canals and streams a new kind of makeover.

The makeover will use eco-friendly cloth to drape over their banks. The cloth will stop erosion during the season of monsoon. Kerala the Land of Coconuts, have been technologically innovating with Coconut over many decades. Some of the innovations attempted have been very successful with an aim to sustain it in a profitable way. It has been proved generations ago that the husk of a coconut has long fibers that could be spun and woven into ropes, mats and nets.

The tensile strength of these ropes are simply great. This simple idea of its tensile strength has been taken into account for processing them into Geotextiles that could be used for covering eroding landscapes that could help further inundation.

These Coir Geotextiles are also called Coir Bhoovastra. These were actually used in 2019 to cover slopes, streams bunds, canals and river banks and they are been proved great for slope stabilization. These kinds of work will also provide livelihoods to people.

Coir Bhoovastra is a natural earth cover made from coconut fiber. It can be spread over the walls of streams, bunds, farms and ponds during rains. The bhoovastra retains the earth's moisture and protects the roots of the plants.

Another interesting thing about this concept is that it also disintegrates in 5-6 years enriching the soil and promoting vegetation growth. Since, it has so many benefits, Kerala has spread the bhoovastra on scores of its canals and streams, which has provided a fillip to the slackening coir industry and securing the lives of more than 2 lakh families who depend on coir making a traditional job in the state.

The story has taken inspiration from the video posted by The News Minute. Link - https://www.youtube.com/watch?v=fc_1k1Mvo4I.

Kalaivannan. R
Assistant Professor
Civil Engineering

GROUND IMPROVEMENT

By PVD

Prefabricated Vertical Drains (PVDs) are a type of geocomposites which has got application in railway embankment. PVD can be defined as any prefabricated material or product consisting of a synthetic filter jacket surrounding a plastic core as shown in figure 1.

For construction of embankment over soft sub-soils (E less than 20 MPa or Cu less than 25 kPa or N value less than 5), the sub-soil/ground has to be improved for :

- Reducing consolidation time & associated settlement; and
- To increase bearing capacity/shear strength of sub-soil.

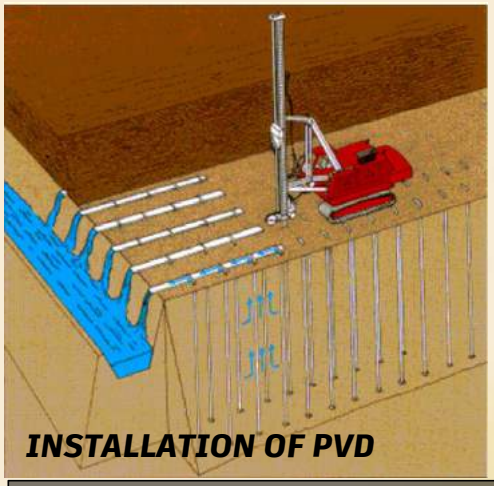
Out of various techniques for "ground improvement", use of "Pre-fabricated Vertical Drains (PVDs)" is one of the widely used techniques.

Benefits

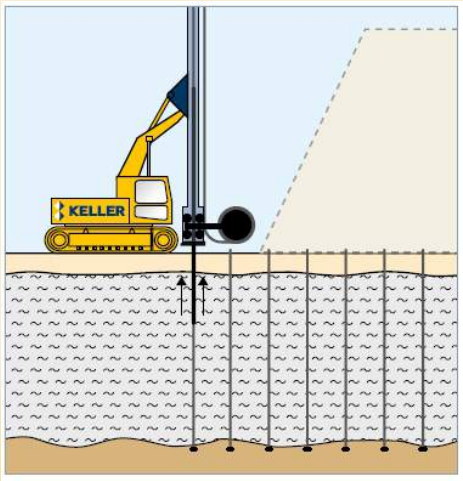
Vertical drains offer a cost-effective method of pre-consolidating soft, saturated and low permeability soils to allow construction of earth structures such as road or rail embankments (Figure 2). By incorporating a drainage layer and a superimposed surcharge load, such as earthworks fill, the consolidation of the soft soils is accelerated through the drainage paths introduced by the wick drains.

PREFABRICATED DRAIN

INSTALLATION PROCESS OF PVD AT SITE



INSTALLATION OF PVD



PREFABRICATED DRAIN

Applications

Vertical drains are often used in the consolidation of soft soils in conjunction with a preload fill (or applied negative pressure) or the accelerated construction schedule for staged loading or staged construction on soft soils.

Typical Application for Vertical Drains

- Acceleration of excess pore water dissipation.
- Reduction of soft soil consolidation period.
- Shear strength increases and stiffness.

Process of Vertical Drains

Before starting the installation process, the working platform is prepared with a sand or gravel layer that is well compacted to ensure a stable surface for the safe movement of the rigs. The sand and gravel used to construct the working platform also act as a drainage blanket allowing the dissipated pore water rising to the surface to be directed away from the treatment area.

The rig used for installation of vertical drains consists of a special mast fixed on a track mounted excavator or crane (Figure 3). The maximum drain length to be installed governs the required mast length and capacity of the base machine. The vertical drain, with an anchor plate at its end, is passed through a mandrel which is mounted on the mast with a mechanism that can force the mandrel downwards into the soil. This takes the drain with it and leaves the drain anchored in the ground while pulling the mandrel upwards. The mandrel protects the vertical drain from damage during the installation process. The mandrel is forced into the ground typically by a mechanism that is static or vibratory or a combination of both, depending on subsoil conditions. An anchor attached to the bottom of the drain keeps it in place during withdrawal of the mandrel. The drain is then cut leaving a “wick” above the ground. A new anchor is fastened to the drain end that is projecting from the bottom of the mandrel in preparation for the next installation point. After installation of the vertical drains, the area is pre-loaded to reach the desired consolidation of the soils.

Hariswaran S
Assistant Professor
Civil engineering

ALUMNI MESSAGE

Mr. Srijesh Reddy

2011 - 2015 BATCH

Project coordinator at Ledcor Construction, Canada

SVCE is a place that changed the perspective that I had about my career. It gave me technical knowledge and confidence to move out of my comfort zone and helped get to the place where I am right now.

Mr. Venkata Prashanth

2011 - 2015 BATCH

Project Engineer, Geotechnical Engineering, Intertek PSI

SVCE provided a great learning experience. A conducive environment; where one can learn outside of textbooks and make great friends.

Tr.A.Aarliusrebony

2014 - 2018 BATCH

Deputy Superintendent Police

(U/T) Tamil Nadu Academy, Chennai

I chose Sri Venkateswara College ofEngineering because of its excellent track record. The college is noted for its freedom and academic excellence. The Department of Civil Engineering is a friendly department with motivating faculties. My life at SVCE was remarkable and gave me a new perspective to decide my career as a public servant.