



ROHINI

COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE and affiliated to Anna University, (An ISO Certified Institution)

“ARCHITECTUS 23” MAGAZINE



YOU
DREAM IT,
WE
BUILD IT.



DEPARTMENT VISION

To develop knowledgeable and professionally competent civil engineers and to create ethically skilled students for better contributions to the society.

DEPARTMENT MISSION

- ❖ To provide technically valuable education for the development of Civil Professionals
- ❖ To make a platform for the students to explore their potential and critical thinking in research field.
- ❖ To create awareness and spirit of ethical thoughts in societal concerns for professional development.

PROGRAMME EDUCATIONAL OBJECTIVES(PEOS)

PEO1: Graduates will apply the knowledge of Civil Engineering concepts to solve real world Engineering problems.

PEO2: Graduates will have required qualities for a successful career in Civil Engineering and good interaction skills.

PEO3: Graduates will exhibit the professional skills with ethical values through societal concerns.

PROGRAM OUTCOMES

Civil Engineering Graduates will be able to:

PO 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution to complex engineering problems.

PO 2. Problem analysis: Identify, formulae, review research literature, and analyze complex engineering problems reaching substantiated conclusion using first principles of mathematics, natural sciences, and engineering sciences.

PO 3. Design/development of solutions: 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.

PO 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusion.

PO 5. Modern tool usage: 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.

PO 6. The engineer and society: 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.

PO 7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development.

PO 8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9. Individual and team work: Function effectively as an individual and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10. Communications: 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.

PO 11. Project management and finance: 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 in multidisciplinary environments.

PO 12. Life-long learning: Recognize the needs for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES(PSOS)

PSO1: Apply and develop basic concepts of civil engineering by including the best practices for solving real time problem through feasible solution and to specialize in various academics.

PSO2: Ability to provide interdisciplinary skill to meet the social needs through civil engineering and to develop successful professional career along with strong technical, communication and presentation skill.

PSO3: To apply experimental knowledge, analysis, interpretation of data and information to Civil Engineering problems.

FOUNDER MESSAGE



**Shri. K. NEELA MARTHANDAN
CHAIRMAN**

ROHINI College of Engineering and Technology

I am very glad to know that the students of the Department of CIVIL are bringing out a magazine to throw light on the activities and achievements of their department. Such activities among the students will enhance their communications skills, technical skills, innovative thinking and knowledge as well. I congratulate the students of departments of CIVIL for taking up this task and I wish all the students of CIVIL can have a great future which is ahead.

PRO-CHAIRMAN MESSAGE



**Dr. N. Neela Vishnu., MBA., Ph.D.,
PRO-CHAIRMAN**

ROHINI College of Engineering and Technology

It is a great pleasure for me that our CIVIL Engineering department is releasing magazine "ARCHITECTUS 23". As the Pro-Chairman of ROHINI College of Engineering and Technology, I feel proud about it. We have taken a path that we will develop RCET to world class standard and provide an overall development to all the students. We march towards that goal. We are happy that the students of RCET are properly shaping up, facilitating us to meet our goal. I wish all success to the CIVIL students.

MANAGING DIRECTOR MESSAGE



**Dr. V. M. Blessy Geo., MSc., Ph.D.,
MANAGING DIRECTOR
ROHINI College of Engineering and Technology**

It is a great pleasure for me that our CIVIL Engineering department is releasing magazine "ARCHITECTUS 23". As the Managing Director of ROHINI College of Engineering and Technology, I feel proud about it. We have taken a path that we will develop RCET to world class standard and provide an overall development to all the students. We march towards that goal. I wish all success to the CIVIL students.

PRINCIPAL MESSAGE



**Dr. R. Rajesh., ME., Ph.D.,
PRINCIPAL
ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY**

It is a great pleasure for me that our CIVIL Engineering department is releasing a magazine. The magazine is presenting a glimpse of the growth of the institution on many fronts. The essential purpose of a magazine is to inform, engage, inspire, and entertain a diverse readership- including alumni, parents, students, faculty, staff and other friends of the college- by telling powerful stories that present a compelling, timely and honest portrait of the college and its extended family. This magazine has recorded achievements

of staff members and students of CIVIL Department, competitions won by the hugely talented CIVIL students, innovative projects carried out by CIVIL students with the guidance of CIVIL staff, among others. They stand as a witness to the monumental efforts taken by the management to make the college a center of excellence in education and research. I wish the management, CIVIL staff and CIVIL students of the college success in their future Endeavor's

HEAD OF DEPARTMENT MESSAGE



Dr. J. SAHAYA RUBEN

HEAD OF THE DEPARTMENT

ROHINI College of Engineering and Technology

I am highly elated and proud to announce that our department of CIVIL is inaugurating the LIVIC Magazine Edition "ARCHITECTUS 23". As our CIVIL department acts as a pioneering department in preparing students to completely globally in their profession and to reach the pioneer levels of in intellectual attainment. I deem that the LIVIC Association and symposium will trigger the talents of the students and kindle the light of innovation and technology. It's a fact that we constant updating to establish ourselves in this revolving dynamic world. I express my heart full and sincere thanks to all conveners, colleagues and students is who are the backbone of this endowers. I am happy and wish the technical symposium as well as the release of magazine a grand success.

EDITORIAL MESSAGE

It is an occasion of immense pleasure for the Department of CIVIL Engineering to publish the magazine "ARCHITECTUS 23". The Editorial board of department of CIVIL wants to thanks all the faculty members and students who have made this issue a success by providing an article. This magazine focuses on the recent trends evolved in the field of CIVIL engineering & wants to provide advanced knowledge and awareness among the students about the same. The Editorial board also wants to thanks the Management of the Institute and Head of the department for inspiring us to go forward in publishing this magazine.

Editorial Board

Dr. N. SUTHAN KUMAR., ME., Ph.D., (Editor in chief)

Dr.M.Tamil Selvi ., ME., Ph.D., (Associative Editor)

Prof. A. ANANTH., ME (Associative Editor)

ASSOCIATION OF OFFICE BEARERS

A special guest Lion Er. P. Justin Paul, was invited for the inauguration of Association of Office Bearers was held on 19.09.2022 at ROHINI College of Engineering and Technology.

The chief guest delivered a technical talk on Industrial Expectations from Academic Institutions. His talk highlighted about some practical examples on how an organization was bridging the gap between science and disaster risk reduction in different regions of the world.



A NATIONAL LEVEL TECHNICAL SYMPOSIUM “LIVIC 22”

Department of Civil Engineering organized LIVIC'22 on 1st April 2022 for the students to showcase their technical soundness. Lion Er. P. Justin Paul has been invited as the Chief Guest for the event. Receiving the dignitaries for the Inauguration to the “The Grand Arena”. The event started at 10.30 AM with the prayer song with august presence of Board of the directors, departments, Event Coordinator Dr. Sudan. The events such as Paper Presentation, CAD Contest, Code Cracking, Brick Tricks, Model Making and Photography was held as a part of the Symposium. Several committees were formed inclusive of Editorial, Event Management, Registration, Technical and Financial and Miscellaneous committees and were headed by faculty members under the guidance of Dr. Sudan, Event Coordinator of LIVIC 2022.

Chief Guest Lion Er. P. Justin Paul Addressed the gathering stating few tips for the Engineering Professional Life. He also emphasized the importance of Civil Engineering in connection towards all the other branches in the field of Engineering, “Civil Engineering is the Mother of all the other Branches in Engineering”, said Lion Er. P. Justin Paul.

INDUSTRIAL TRAINING/INTERNSHIP UNDERGONE BY STUDENTS

During summer vacation, students are permitted to undergo training in reputed industries/companies to get practical exposure to latest technologies. It helps the students to relate theory and its application to real world engineering problems.

S.NO	YEAR	NO. OF STUDENTS
	IV Year -A	46
	IV Year -B	47
	III Year -A	21
	III Year -B	12
	II Year	42

INDUSTRIAL VISITS

The department is associated with various government, quasi-government and private industries in the field of Civil Engineering. Our students visit these companies to get practical exposures to current work practices.



Poigai Dam



Ready Mix Concrete Plant

S.NO	YEAR	DATE OF VISIT	PLACE OF VISIT	SCOPE OF VISIT
1.	IV	09.04.2022	<ul style="list-style-type: none"> ➤ Poigai Dam ➤ Ready Mix Concrete Plant 	<ul style="list-style-type: none"> ➤ Dam and harbor structures are included in the civil engineering. ➤ Major projects like dams, roads, bridges, tunnels, canals etc., are mostly made by concrete.

SEMINARS/WORKSHOPS ATTENDED BY STUDENTS



SI.NO	NAME	TOPIC	INSTITUTE
1.	AKRAM KHAN .A .R	<ul style="list-style-type: none"> ➤ Why Civil Engineer is best? ➤ How to build a Building without heat affection? 	<ul style="list-style-type: none"> ➤ PSN College of Engineering and Technology. ➤ Stella Mary's College of Engineering.
2.	PRABINA .M	<ul style="list-style-type: none"> ➤ Innovative usage of slag ➤ Alternatives for fine aggregates. 	<ul style="list-style-type: none"> ➤ Arunachala College of Engineering. ➤ Civil Engineering Association of Kanyakumari District.
3.	THANGA SELVI.C	<ul style="list-style-type: none"> ➤ Sewage water treatment plant. 	<ul style="list-style-type: none"> ➤ PSN College of Engineering and Technology.

CLASS TOPPERS

S.NO	NAME	YEAR	CGPA%
1.	ASHIKA .R	IV-A	8.41%
2.	PRABINA .M	IV-B	9.09%
3.	JAMEELA JASEEMA .A	III-A	9.01%
4.	PREETHIKA .R	III-B	8.9%
5.	SEMIYA ROSE .J	III-B	8.9%
6.	ROHIT LAISHRAM	II	8.8%

Rohini College of Engineering and Technology
Department of Civil Engineering



Final Year A (2019-2023) Batch



Final Year B (2019-2023) Batch



Third Year A (2020-2024) Batch



Third Year B (2020-2024) Batch



Second Year (2021-2025) Batch

Rohini College of Engineering and Technology
ME-Construction Engineering and Management



II year (2021-2023 Batch)



I year (2022-2024 Batch)

கவிதை நூரல் மலடி

திடீரென மனதிற்குள் ஒரு யுட்பய்யு
 ஒரு நொடி சிலிர்த்த திவ்வொள்
 கண்ணுக்குள் குளிர்ந்தது
 மலநான் காணாத ஒருவரை அன்றுதான்
 என் வாசலில் மாந்தித்தன்
 வாசலில் வந்ததும் வந்த மனம்
 என் மனதில் அழகான யாதிரிமைய
 உண்டாகியது.
 யார் என்னை தெரிந்துகொள்ள எப்போதும்
 உங்களை வான் நானும் தொன்று மாந்தித்தன்
 அத என் மனதை நனைத்த
 " நூரல் மலடி "

54. கிடுகாண்டி பி.சி.யு.கா.
B.E. 10 Year Class 'A'

கல்யாணி நாடகம்

கனாக்கள் பல கண்டு
 கல்யாணிக் கிள் நடைமுறைகள்!
 என்ன பாரமாய் எண்ணாமல்
 அன்பாய் சிவவணைத்தாய்!
 நாயாய் திடுக்கு
 வாழ்க்கையைக் கெட்டுத்தாய்!
 வாழ்க்கையின் பாணியை
 தில பாடுவதை திணைத்தாய்!
 திடுகு நீடித்த வாழ்வில்
 ஒளியாய் வந்தாய்!
 பானதிலையைப் போல நம்மனைந்து
 மறையும் கல்யாணி நாடகம்!
 மீண்டும் மலகிள
 திந்த கல்யாணி நாடகம்!!!

By
[Signature]

மற்றியிருவம்

கனாயில் கிழிந்து
 கை காலி உடைத்து
 அழகு யுட்பய்யு
 கண்ணின் கிழிப்பு
 அழகின் அழகினையே அழகுக்கொண்டு
 வரக் கிடுகியுமில் அம் கிழிப்பு
 கிழிப்பு அழகுக்கு கொண்டு
 அழகை வைத்து கிழிப்பு
 முகமும் வகுப்புகள்
 கிழியாத கிழிப்பு
 கிழியாத முகம்
 கிழியாத கிழிப்பு
 என் கிழிய உலகில்
 கிழிமையில் கிழியு போல்
 கிழி கொண்டு
 அழகுக்கு கிழிப் புகழை எண்ணி
 அழகுக்கு மாந்தித்தன்
 அழகுக்கு அழகுக்கு கிழிப் புகழை
 என் கிழிமையில் கிழியு கிழிப்பு
 கிழிமையில் கிழியு கிழிப்பு
 கிழிமையில் கிழியு கிழிப்பு
 கிழிமையில் கிழியு கிழிப்பு
 கிழிமையில் கிழியு கிழிப்பு
 கிழிமையில் கிழியு கிழிப்பு

84
A. Anurag

கல்யாணி புத்தகம்

கல்யாணி என்னும் புத்தகத்தைப் படித்து ஒப்புகாட்டு
 நான்கு வகுப்பினர் அறிவிக்கிறார். அப்போது
 என்னை புத்தகத்தைக் கற்றுக் கொடுக்கிறார்
 பயனற்றதில் சம்பந்தமுள்ளிருந்து என்னை நினைக்கிறார் கொடு
 வகிப்போகை அனைத்தையும். கிழிப்பு புத்தகத்தை
 அழகியப்படி நினைக்கிறார் நான்யார் என்னை
 உறுதியுடன் ஒப்புகை அழகை வாடிக்கையை, என்னை
 நினைக்கிறார் யாரும் நினைக்கி அனைத்தையும்.
 அழகு கல்யாணி என்னை புத்தகம் பயனற்றது
 யாரிடமிருந்து சம்பந்தமுள்ளும் நினைக்கும் யார்
 யாரிடமிருந்து சம்பந்தமுள்ளும் நினைக்கும் யார்
 உறுதியுடன் நினைக்கிறார்
 என்னை கிழிப்பு
 உறுதியுடன் நினைக்கிறார்
 H. அனராக் கனா

தமிழகக் கவிதை

→ வேடமடையைக் காதுவித்த

வெளி நாயை கைப்பிடித்த

காடகங்குள் போவதெனோ

→ தீத்குச்சியை உயர்ந்தினான் அறிஞன்

ரணினில், எரிவதை விட

ஏற்றியது உயர்ந்தது

→ எந்த கிளி ஏமாற்றியதோ

நாயுடன் திருக்கிறது

அவமரம்

Submitted by

M. Alfina
Civil 'A'
IIIrd year.

கவிதை : கல்வி

• அள்ளி அள்ளி ஓற்றாயாத
அபசிய புத்திரம் தான் கல்வி!

அறிவு ஏதும் பெய்ததென
சிறக்க உதவும் விரை சாவிதான் கல்வி!

அறிவாயையை அகற்றி
அறிவைக் காடும்
அழிந்த விளக்கு தான் கல்வி!

நாடின நீ கல்வியை
அறிய கல்வி!

அறிவு இனம் நல்ல நடத்தை
உருவாக்கிடுக கல்வி!

ஏடுகள் பல முடியாதால்
வாழ்க்கையில் ஏற்றம் உண்டிடுக கல்வி!

கல்வி என்னும் அறிந்தும்
நம் வாழ்வை உய்க விடுபடும்
பொல் வளரச் செய்யும்!

கல்வி என்பது தவம்!
அதை கற்றிப்படி வரம்!

யார் கைவிடாது
கற்ற கல்வி கைவிடாது உணர்!!!

இறை: தொட்டணங்கு உணர்வும் மணற்கெணி; மாந்தர்க்குக்
கற்றணங்கு உணர்வும் அறிவு.

விளக்கம்: மணற்கெணி தொண்டிய அளவிற்றீர் உணர்வும்,
அடியால் மக்களுக்குக் கற்ற கல்வியின் அளவிற்றீர்
அறிவு பெடுதும்...

வெய் மரத்திற் நிழல்
மலைய உணர்வு கிடைப்பதை
கிரகிதால் பகிரப்பட்ட உணர்வு
மணலால் பகிரப்பட்ட அன்பு
பிரகிதானால் கொடுக்கப்படும் இன்பு
வெய்ப்பணையில் பாடிப்படும் வாழ்க்கை
முன்னால் முடிக்கப்படாத விடப்ப்பட்டம்
முடிக்கப்படும் குணத்தை பெரும்
நண்பனின், அன்பு
மற்றி முடிக்கப்படும் அடிக்கப்படும்
மணியின் சந்தம்
காலத்தை அணியுமாற்றிப் பல் விடுவதை
என அரவங்கொண்ட
இன்ப நிகழ்வுகளை கிடைப்ப அப்பகல்களில்
நின்றும் நின்றும் நினைக்கக் கூர்ந்தும்
அழகிய காலமது
வந்தகம் இவ்விர தெருதும்
கற்ற கட்டம் இவ்விர மணல
கவலைகள் இவ்விர மணல
கவலைகள் இவ்விர மணலயற்
சென்றிடுகின்ற காலமது
அன்பு ரசிக்கும் மார்த்த நிராகரை
இன்றி கவலைகள் எல்லா
ரசிக்கும் கொண்டு இருக்கின்றது

By
A. Anushya
IIIrd, Civil A

<விடுகதைகள்>

1. சிவன் சிவன் வரும் அழகால் சீவிய வரவே வராது அது என்ன?
2. சூலையுண்டு பூவுண்டு அழகால் உடம்பு அல்ல அது என்ன?
3. அரையடிப் புல்லில் ஏறுவான் கிறங்குவான் அவன் யார்?
4. மணற்கெணிக்கு விடு கட்டுவான். மரம் அரிக்கு உயிர் வாழ்வான். அவன் யார்?
5. வெளிநிய வெள்ளிக்கட்டி உள்நாடு தங்கக்கட்டி அது என்ன?
6. தும்பிக்கை எழும் அண்ணலுக்கு எழபடி அது என்ன?
7. அண்ணன் தும்பி திரண்டு சீமர், அவர்களைத் தொடுவது மண்ணிரண்டு சீமர் அது என்ன?
8. உயிர் கில்லாப் புறவை உள் விடடு உள் செல்லும் அது என்ன?
9. தாய் கிணியான், மகன் முனியான், புத்தி மணியான் அது என்ன?
10. காற்றாடி பறப்பது எப்படி? கல்வி வளர்வது எப்படி அது என்ன?

விடைகள்:-

- | | | | |
|----------------------|-------------|-------------|------------|
| 1. வயது | 2. நாணயம் | 3. சிமர் | 4. கரையான் |
| 5. முட்டை | 6. உதடு | 7. கடிசாரம் | 8. கடிதம் |
| 9. பால், சிமர், நெய் | 10. சூவால். | | |

"TROUBLE WORLD"

The trouble with the world
is that everyone thinks
that he's doing it right!
but the real trouble starts
when he thinks;
Everybody else is wrong!
Granted that everyone is right
from his own point of view;
and has his own philosophy.

But one must be open
to attempt to understand
the philosophy of others.

If there's anything possible
and philosophy teaches universality,
there'd be no trouble in the world.

*

By
Hemant Jainam Singh
CIVIL
(2021-2025)
Batch
II year

GREEN ROOF SYSTEM

→ A Green roof or living roof is a roof of a building that is partially or completely covered with vegetation and a growing medium.

→ Green roofs are also referred to as eco-roofs, vegetated roofs, living roofs.

Types

<p>Extensive</p> <ul style="list-style-type: none"> • Lower profile, typically 6 inches or less • Relatively low cost and minimal maintenance <p>Advantages</p> <ul style="list-style-type: none"> → Green roof reduce the total amount of runoff and slow the rate of runoff from the roof. → It creates a habitat for wildlife → Green roof not only retain water, but also moderate the temperature of the water 	<p>Semi-Intensive</p> <ul style="list-style-type: none"> • Slightly higher profile - 25 percent of the roof area above 6 inches • Slightly higher cost and maintenance than the extensive roof type. 	<p>Intensive</p> <ul style="list-style-type: none"> • High profile, greater than 6 inches, sometimes several feet thick or more. • High cost and maintenance. <p>Disadvantages</p> <ul style="list-style-type: none"> → The main disadvantage of green roof is that the initial cost of installing a green roof can be double that of a normal roof. → Green roofs require significantly more maintenance and maintenance energy compared to a standard roof.
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Layers of Green Roof :-

- Layer 1: water proofing membrane
- Layer 2: Root barrier
- Layer 3: Drainage Layer
- Layer 4: Filter fabric
- Layer 5: Irrigation
- Layer 6: Growing medium
- Layer 7: Plants

By
M. Madhujee Bani
III Year, CIVIL - A

7 FUN ENGINEERING FACTS

- The word engineer comes from a Latin word meaning "cleverness".
- The golf ball with dimples was designed by English Engineer William Taylor. So that they can reduce the drag and fly further than the smoother ones.
- The world's tallest bridge is the Millau Viaduct in France. which stands at a height of over 1000 feet. It is supported by beams and is suspended by cables.
- The London eye in England is the largest Ferris wheel in Europe. Standing at a height of 135 metres (443 feet).
- Concrete is the second most consumed material on the planet by humans.
- The Petronas Towers are a tower with the world's deepest foundation.
- The Burj Khalifa can apparently be seen from around 90 kms away.

Name: Jansela Jaisena. A.
B.E. III Year Civil Engineering.

The Space Needle

The Space Needle is an observation tower in Seattle, Washington, United States. Considered to be an icon of the city and the Pacific Northwest, it has been designated a Seattle landmark. Located in the Lower Queen Anne neighborhood, it was built in the Seattle center for the 1962 World's Fair. Over 2.5 million visitors. Nearly 20,000 people a day used its elevators during the event.

The Space Needle was once the tallest structure west of the Mississippi River. Standing at 605 ft (184 m). The tower is 136 ft (41 m) wide, weighs 9,050 short tons (8,160 metric tons), and is built to withstand winds of up to 200 mph and earthquakes of up to 9.0 magnitude, as strong as the 1700 canter earthquakes.

The Earthquake stability of the Space Needle was assessed when a hole was dug 30 ft (9.1 m) deep and 10 ft across and 481 concrete franks took one full day to fill it.

The foundation weight 5,000 short tons. The same as the observation structure. The structure is bolted to the foundation with 72 bolts, with one 30 ft long.

The circularity of the Space Needle is the result of compromise between the design of two major elements: the column and the spire. It is the two leading ideas for the world fair involved businessmen Edward J. Carlson's sketch of a great lattice returned to the ground.

References: www.cccr.ie

PAPERS PUBLISHED BY FACULTY

BUILDING INFORMATION MODELLING (BIM)- A SUCCESSFUL KEY TO CIVIL ENGINEERS

R. Reno Infanto, AP/CIVIL/RCET

Building Information Modelling, BIM is the new tool in the construction, that links the client's idea with the technology to process an explicit virtual model of proposed building to construct. It helps architects, engineers, and constructors visualize what is to be built in a simulated environment to identify any potential design, construction, or operational issues. BIM workflows allow for a much more dynamic and synchronized approach to project management.

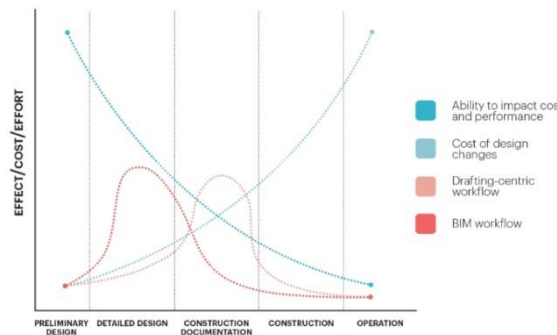
How BIM works in a construction project?

Design-Building proposals can be rigorously analyzed, simulations performed quickly, and performance benchmarked, enabling improved and innovative solutions.

Workflow planning - Adopting BIM means establishing a continuous flow of information. Every phase of the building process – from early planning and design, to construction, operation, maintenance and final recycling – is captured, digitally. This opens new possibilities for better efficiency, accuracy, collaboration and cooperation between the parties involved in the built.

Construction - A building information model can be effectively used to coordinate material ordering, fabrication, and delivery schedules for all building components.

Operation- Better operation with all the workflow data and proper maintenance is not compromised anywhere.



As the red line in the graph demonstrates, by dynamically connecting design, analysis, and documentation in a BIM workflow, most of the effort in a design project is shifted back into the detailed design phase, when the ability to impact project performance is high and the cost of making design changes is low. This allows engineers to spend more time evaluating what-if scenarios to optimize the design, and less time generating construction documentation.

Why should I adopt BIM?

1. Via a rapid exchange of design information, different scenarios can be explored faster, allowing for more iterations of the architecture, structure and engineering systems and resulting in an accurate and optimized building design.

2. All drawings can be captured into one comprehensive 3D model, avoiding information loss and enabling more educated decisions based on data.

3. Necessary engineering calculations for ventilation, heating and piping systems can be performed quickly and easily.

4. All geometric and spatial data required to perform energy calculations can be produced directly from the model.

5. Ensuring compliance with environmental requirements is easier and the increased efficiency helps reduce building lifecycle costs.

6. Integration of cost and scheduling data enables online cost estimation and visualization of the construction progression.

7. Accurate Bills of Quantities can be produced directly from the model.

8. Data required to control procurement can be linked directly from the model, optimizing the procurement process.

9. Detailed model contains all data and geometry required for accurate installation of MEP systems.

10. Once the building is completed, the next version of the model will inform facilities management decision-making and systems, allowing for preventative maintenance and repair.

Applications of BIM in construction

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

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

- **Code reviews:** Fire departments and other officials may use these models for their review of building projects.

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

- **Construction sequencing:** A building information model can be effectively used to coordinate material ordering, fabrication, and delivery schedules for all building components.

- **Conflict, interference, and collision detection:** Because building information models are created to scale in 3D space, all major systems can be instantly and automatically checked for interferences. For example, this process can verify that piping does not intersect with steel beams, ducts, or walls.

- **Forensic analysis:** A building information model can be easily adapted to graphically illustrate potential failures, leaks, evacuation plans, and so forth.

- **Facilities management:** Facilities management departments can use it for renovations, space planning, and maintenance operations.

BIM Benefits: Case Study

Case Study: Aquarium Hilton Garden Inn, Atlanta, Georgia

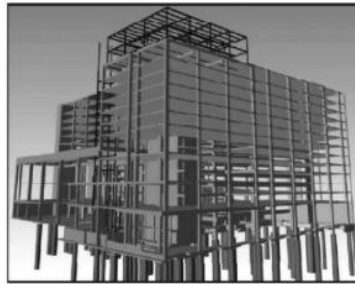
The Aquarium Hilton Garden Inn project comprised a mixed-use hotel, retail shops, and a parking deck. Brief project details are as follows:

- **Project scope:** \$46 million, 484,000-square-foot hotel and parking structure
- **Delivery method:** Construction manager at-risk (CM at-risk)
- **Contract type:** Guaranteed maximum price
- **BIM scope:** Design coordination, clash detection, and work sequencing
- **BIM cost to project:** \$90,000, or 0.2% of project budget (\$40,000 paid by owner)
- **Cost benefit:** Over \$200,000 attributed to elimination of clashes
- **Schedule benefit:** 1,143 hours saved

Although the project had not been initially designed using BIM technology, beginning in the design development phase, the GC led the project team to develop architectural; structural; and mechanical, electrical, and plumbing models of the proposed facility, as shown in Fig. below. These models were created using detail-level information from subcontractors based on drawings from the designers.



(a) Architectural Model



(b) Structural Model



(c) Plumbing Model

After the initial visualization uses, the GC began to use these models for clash detection analysis. This BIM application enabled the GC to identify potential collisions or clashes between various structural and mechanical systems. During the design development phase, 55 clashes were identified, which resulted in a cost avoidance of \$124,500. Just this stage alone yielded a net savings of \$34,500 based on the original building information model development cost of \$90,000. At the construction documents phase, the model was updated and resolved collisions were tracked. Each critical clash was shared with the design team via the model viewer and a numbered collision log with a record of individual images of each collision per the architectural or structural discipline. The collision cost savings values were based on estimates for making design changes or field modifications had the collision not been detected earlier. More than 590 clashes were detected before actual construction began. The overall cost savings based on the 590 collisions detected throughout the project was estimated at \$801,565, as shown in Table 1. For calculating net cost savings, a conservative approach was adopted by assuming that 75% of the identified collisions can be detected through conventional practices (e.g., sequential composite overlay process using light tables) before actual construction begins. Thus, the net adjusted cost savings was roughly considered to be \$200,392.

Table 1. An Illustration of Cost and Time Savings via Building Information Modeling in the Aquarium Hilton Garden Inn Project

Collision Phase	Collisions	Estimated cost avoidance	Estimated crew hours	Coordination date
100% design development conflicts	55	\$124,500	n/a	30-Jun-06
Construction (MEP Collisions)				
Basement	41	\$21,211	50hrs	28-Mar-07
Level 1	51	\$34,714	79hrs	03-Apr-07
Level 2	49	\$23,250	57hrs	03-Apr-07
Level 3	72	\$40,187	86hrs	12-Apr-07
Level 4	28	\$35,276	68hrs	14-May-07

Level 5	42	\$43,351	88hrs	29-May-07
Level 6	70	\$57,735	112hrs	19-Jun-07
Level 7	83	\$78,898	162hrs	12-Apr-07
Level 8	29	\$37,397	74hrs	03-Jul-07
Level 9	30	\$37,397	74hrs	03-Jul-07
4Level 10	31	\$33,546	67hrs	05-Jul-07
Level 11	30	\$45,144	75hrs	05-Jul-07
Level 12	28	\$36,589	72hrs	05-Jul-07
Level 13	34	\$38,557	77hrs	13-Jul-07
Level 14	1	\$484	1hr	13-Jul-07
Level 15	1	\$484	1hr	13-Jul-07
Subtotal construction labor	590	\$564,220	1,143hrs	
20% MEP material value		\$112,844		
Subtotal cost avoidance		\$801,565		
Deduct 75% assumed resolved via conventional methods		\$601,173		
Net adjusted direct cost avoidance		\$200,392		

Source: Holder Construction Company, Atlanta, GA.

Note. MEP = mechanical, electrical, and plumbing.

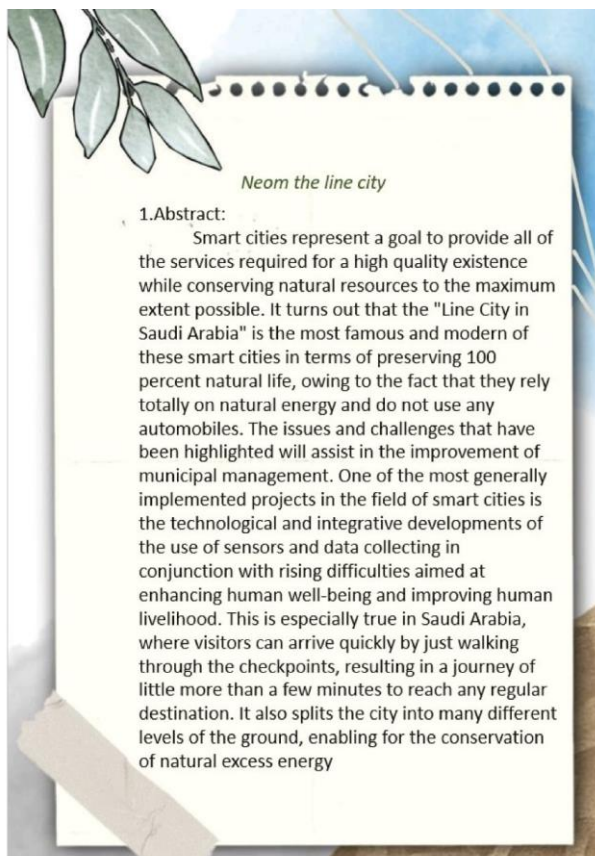
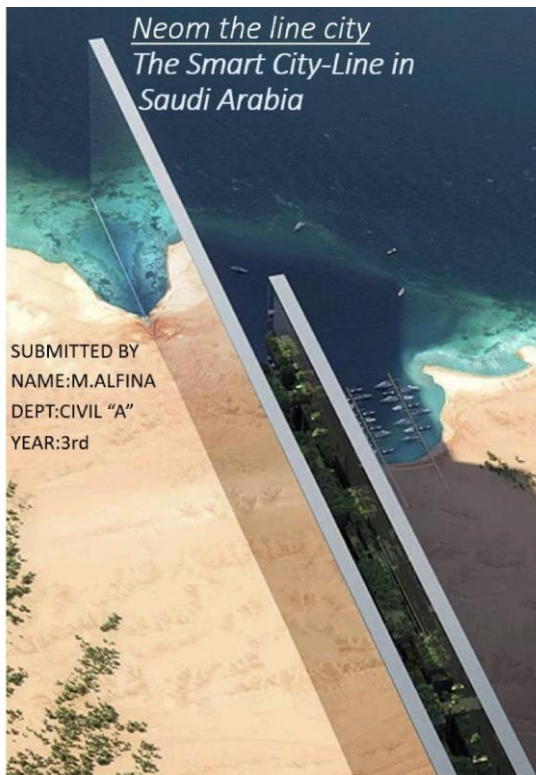
During the construction phase, subcontractors also made use of these models for various installations. Finally, the GC's commitment to updating the model to reflect as-built conditions provided the owner a digital 3D model of the building and its various systems to help aid operation and maintenance procedures down the road.

In a nutshell, the Aquarium Hilton Garden Inn project realized some excellent benefits through the use of BIM technology and certainly exceeded the expectations of the owner and other project team members. The cost benefits to the owner were significant, and the unknown costs that were avoided through collaboration, visualization, understanding, and identification of conflicts early were in addition to the reported savings. After this project, the architect and GC began to use BIM technology on all major projects, and the owner used the developed building information model for sales and marketing presentations.

Conclusion:

BIM is used in many Indian construction Projects by various companies for the betterment of their resources, scheduling, planning and implementing. Like other software, BIM is one of the desired software and processor to excel in the field of Civil Engineering as predictability of building performance and operation is greatly improved.

ARTICLE BY STUDENT



2. Introduction:

The Line is a [linear smart city](#) under construction in [Saudi Arabia](#) in [Neom](#), Tabuk Province, which is designed to have no cars, streets or [carbon emissions](#). The 170-kilometre-long (110 mi) city is part of [Saudi Vision 2030](#) project, which Saudi Arabia claims will create around 460,000 jobs and add an estimated \$48 billion to the country's GDP. The Line is planned to be the first development of a \$500 billion project in Neom. The city's plans anticipate a population of 9 million. Excavation work had started along the entire length of the project by October 2022

The project has faced criticism over its impact on the environment and the current population of the area, as well as doubts about its technological and economic viability.

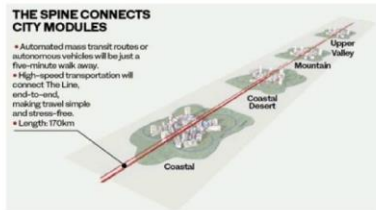
3. Inside NEOM's LINE:

The total area of Neom is 26,500 km² (10,200 sq mi) or 33 times the size of New York City. The city's plans include multiple regions, including a floating industrial complex, global trade hub, tourist resorts, and a linear city—"all powered exclusively by renewable energy sources"



3.1. The spine layer

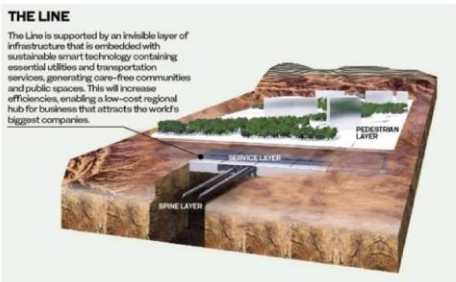
Saudi Arabia's man-made vertical city THE LINE, is currently developing its own high-speed rail link called "THE SPINE". The rail link will improve connectivity across all of the US\$500bn NEOM city, cutting down travel times. "THE SPINE [high-speed rail link] on THE LINE will deliver amazing journey times down its length from the airport and we can then spur off the line or take people up into TROJENA,"



This spine will connect the different communities, which Neom envisages will house one million inhabitants and be stretched across 100 miles. Transportation from one end of The Line to the other will never take more than 20 minutes, according to Neom's developers.

3.2 service layer

The second level, called Service Layer, will contain all daily service facilities such as schools, medical clinics, leisure facilities.



3.3 Pedestrian Layer

The top level, called Pedestrian Layer, will be dedicated to only pedestrians without cars and streets, with green spaces.

6. Job opportunities in Neom

Chief urban development officer at Neom, Antoni Vives, said one of the largest international airports in the world would be ready before 2030. A business and tech centre is expected to contribute \$48bn to the kingdom's gross domestic product and create **380,000 jobs**.

Bechtel, one of the world's largest industrial contractors, has been appointed as the project management consultant for Trojena at Neom, the mountain development in Saudi Arabia.

Neom Construction And Real Estate Development pays an **average salary of \$4,830,375 and salaries range from a low of \$4,249,482 to a high of \$5,473,856**. Individual salaries will, of course, vary depending on the job, department, location, as well as the individual skills and education of each employee.

NEOM has an overall rating of 3.3 out of 5, based on over 35 reviews left anonymously by employees. 47% of employees would recommend working at NEOM to a friend and 34% have a positive outlook for the business. This rating has improved by 8% over the last 12 months

7. The Ideal Crossroads of the World

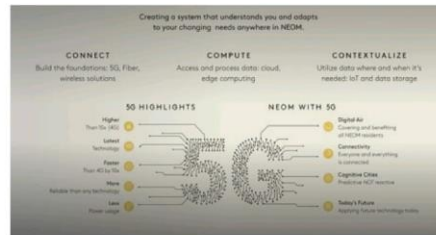
The line is distinguished by that it connects four distinctive ecologies. The place extends along the beaches and is characterized by the presence of exotic nature and continues to extend to the southeast of Neom as it reaches beyond the Red Sea islands, and the abundance of places and natural reserves



The following area is also distinguished by the coastal desert region by its relatively flat land, its interior areas in which THE LINE is the axis in it,

4. Artificial intelligence (AI)

NEOM After the rapid development of artificial intelligence (AI) in all fields of machine learning (ML), deep learning (DL), natural language processing (NLP), and others, life has become easier.



The greatest successes in various tasks such as "speech recognition", "autonomous vehicles", "image classification", "machine translation", and "question answering systems" have been achieved through a high degree of integration and a mixture of ideas between "artificial intelligence (AI)", "neuroscience", "machine learning (ML)", and other multiple fields. The advancement of a society is done not just by increasing the capabilities of artificial intelligence, but also by maximizing the societal benefits that AI can provide

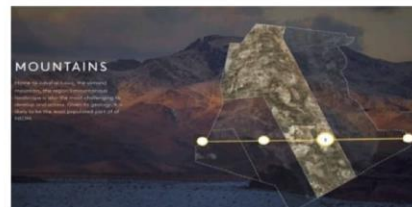
5. Neom plan for renewability and sustainability development

All energy in NEOM will be 100 per cent renewable -- from solar, wind and hydrogen-based electricity generation -- ensuring a zero-emissions, carbon-positive ecosystem. NEOM will be a regional powerhouse in water production and storage based on water desalination. Neom use solar power to provide energy for the city. The city has the potential of using 20 MJ/m2 of perennial solar resources from its desert location. Solar, along with wind and water energy will launch Neom into becoming **one of the most sustainable cities in the world. The city will preserve 95 per cent of the site's natural environment, highlighting mankind's relationship with the natural world.** All energy in NEOM will be 100 per cent renewable

which is a corridor between the north and south of the project, and it is the main meeting point for the transportation routes in THE LINE



The mountain region, the most famous of which is Jebel al-Lawz, and some mountains may reach 2500 meters in height, and the mountain is one of the least populated areas in it due to its geological nature,



Here are the high valleys that connect the regions of the Kingdom of Saudi Arabia with the eastern region of Neom. These valleys are characterized by rocky layers interspersed with sandy plains, and these valleys are related to the province of Tabuk



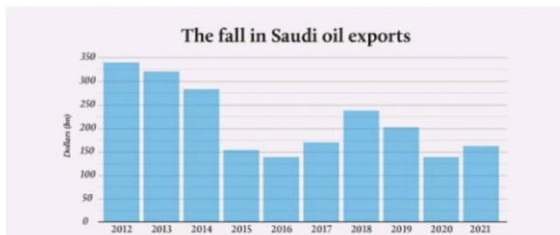
8. The Challenges Associated with NEOM

The new way of living is meant to limit the number of people who die. Given that life will end at some time, this will result in the extension rather than the saving of the lives of around 8 million people. providing clean water and food to an ever-increasing population that poses the most significant challenge for us as a species, as we are doing little to address the underlying problem of overpopulation.

the fundamental problem of an uncontrolled and limitless population constrained by a finite supply of food and water; however, the elimination of pollution from transportation and road fatalities is commendable. Humans, on the other hand, have only been given a certain supply of water, which is vital to our survival as a species despite our potential ability to produce more food than we consume.

Saudi Arabia's Desalination Plants are **Producing Seawater Pollutants**. Everyday, large amounts of seawater undergo processing in Saudi's 30 desalination plants. As the desalting processes extract high concentrations of salt, the brine extracted becomes wastes the go back to the sea.

Saudi Arabia's crude oil exports hit a five-month low in November 2022, as it declined to 7.28 million barrels per day from 7.7 million bpd in October, the International Energy Forum said.



On the negative side, Saudi Arabia remains heavily dependent on oil revenues, for 88% of total export earnings, about 75% of state revenues, and 40% of GDP. The dramatic reduction in revenues will result in a **significantly lower GDP growth rate, as well as higher budget deficit**. Hence its affects the neom project growth

9. Conclusion:

According to what was previously talked about, when the NEOM project is fully completed in 2025, this will be within the framework of the ambitious aspirations of Vision 2030 to transform the Kingdom of Saudi Arabia into a leading global model in a variety of areas of life, with a particular emphasis on the development of the future city. The Line that provides a life that puts the human being on top of its priorities. It is characterized by an ideal geographical location that is characterized by wonderful nature, sustainable energy, and easy-to-access services, and thus the artificial intelligence technology is important and deeply influencing. Regarding the view of the Kingdom of Saudi Arabia, considering that artificial intelligence is the one that revolutionizes urban life to transform the state. The life that cannot be achieved by relying on hydrocarbon fuels. Thus, through this research, we can expect that artificial intelligence will make a qualitative leap in the development of the Kingdom of Saudi Arabia in technology in the future

10. Reference:

1. Agarwal, P. K., Gurjar, J., Agarwal, A. K., & Birla, R. (2015). Application of Artificial Intelligence for Development of Intelligent Transport System in Smart Cities. *International Journal of Transportation Engineering and Traffic System*, 1(1), 20-30. <http://civil.journalspub.info/index.php?journal=JTETS&page=article&op=view&path%5B%5D=24>
2. <https://en.wikipedia.org/wiki/Neom#:~:text=The%20total%20area%20of%20Neom,City>
3. Integration of solar thermal and photovoltaic, wind, and battery energy storage through AI in NEOM city. *Energy and AI*, 3, 100038. <https://doi.org/10.1016/j.egyai.2020.100038>
4. Rezk, H., Kanagaraj, N., & Al-Dhaifallah, M. (2020). Design and sensitivity analysis of hybrid photovoltaic-fuel-cell-battery system to supply a small community at Saudi NEOM city. *Sustainability*, 12(8), 3341. <https://doi.org/10.3390/SU12083341>



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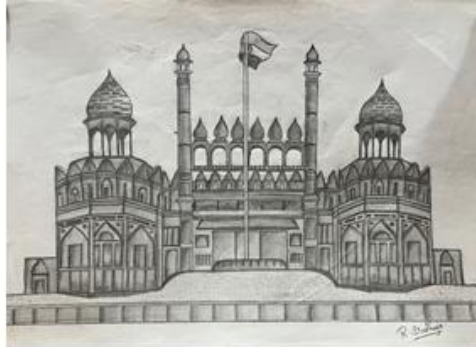
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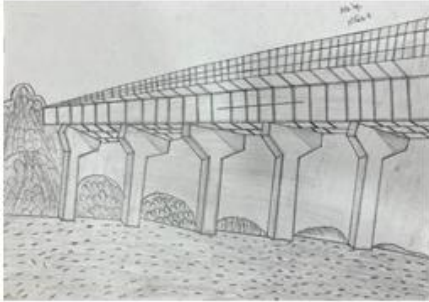
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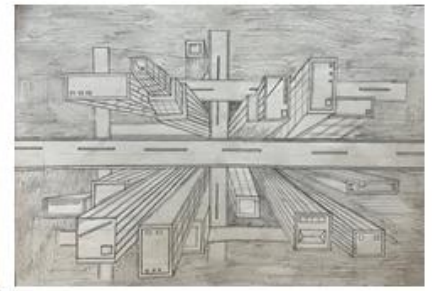
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AKSHAYA.K.J III-A



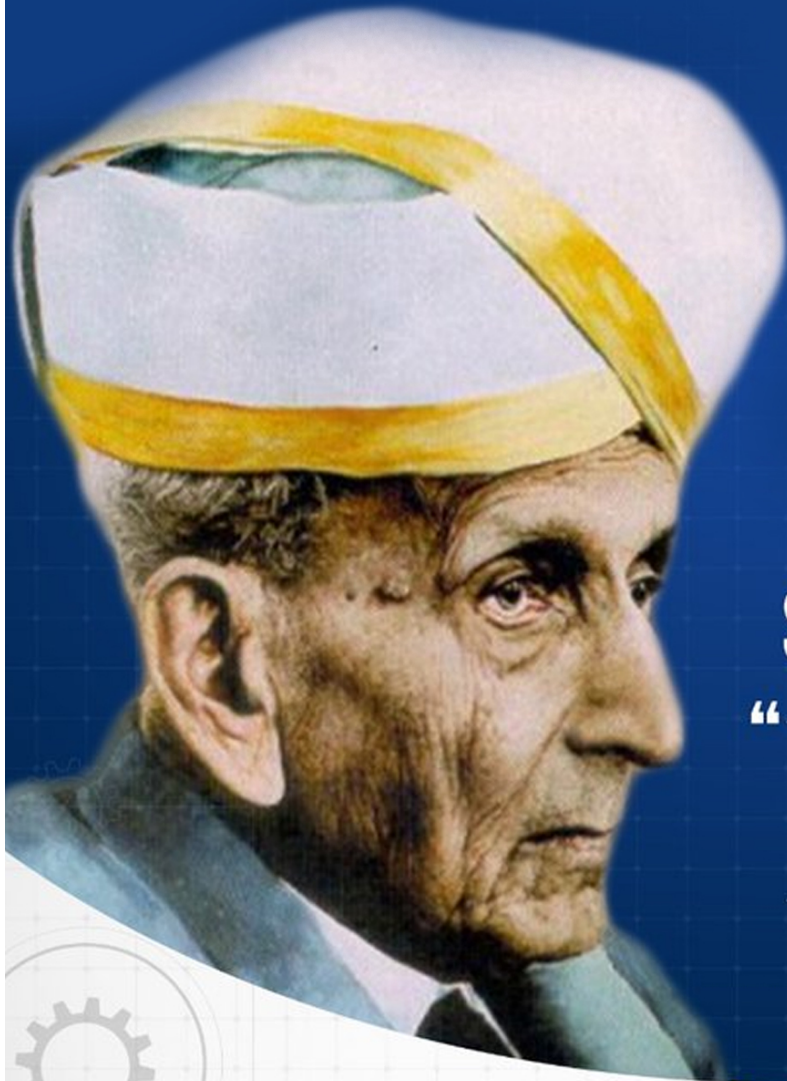
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BALA SURUTHI.J IV-A



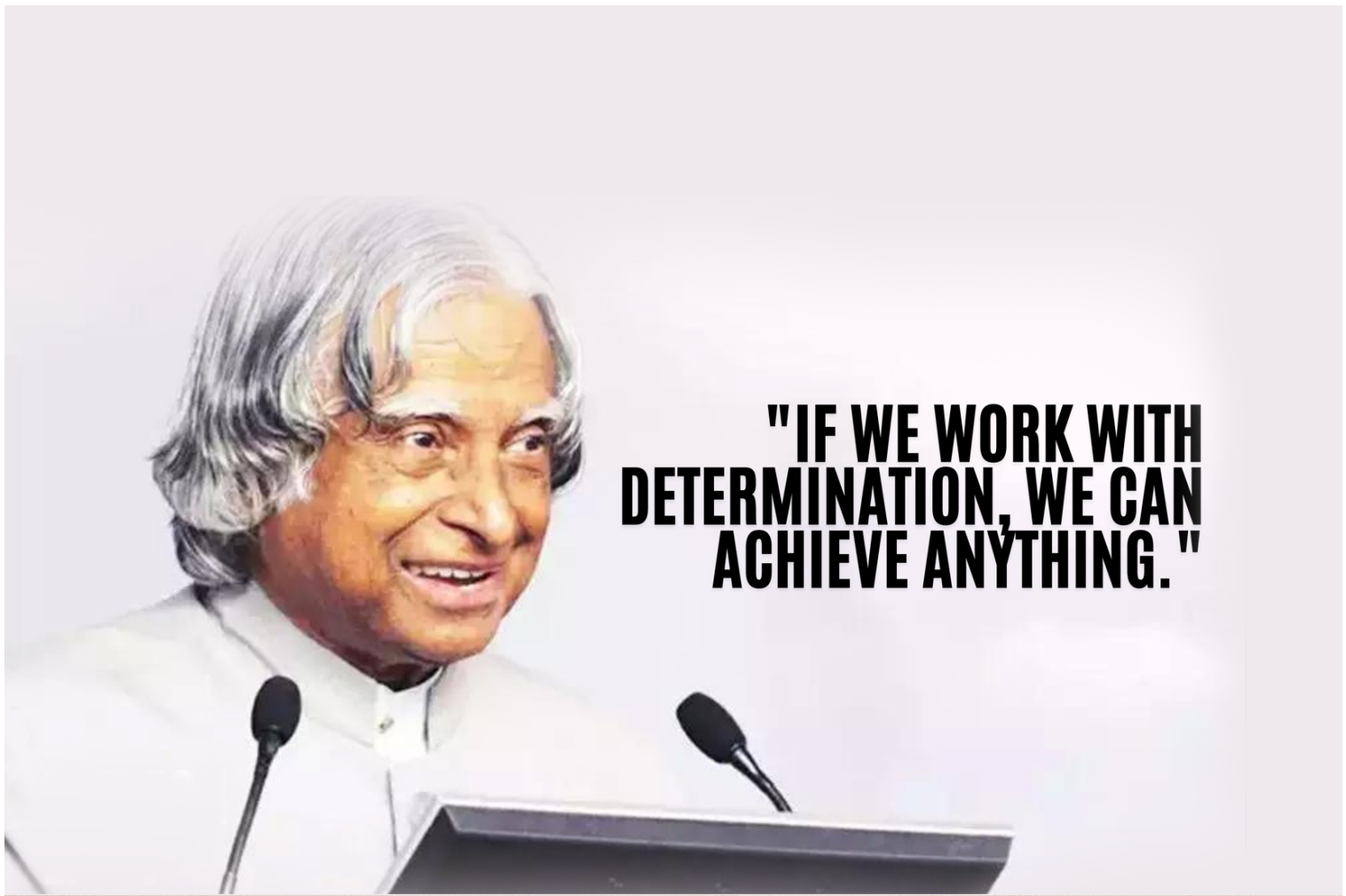
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SIR M. VISVESVARAYA

“
Every man who has become
great owes his achievement
to incessant toil ”





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DETERMINATION, WE CAN
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KALLANAI DAM

