



# Civil Engineering

# Magazine

July-Dec 2023



## Tech and Trendz

# CONTENTS



Departmental  
events



**Famous  
Engineer**



**Placemnts and  
Research publications**



**Trick zone**



**Articles and  
marvels**



**Arts**



# DEPARTMENTAL EVENTS

## Online Three Day FDP On Modelling Approaches in Structural Engineering



Welcome address by **HOD Dr V. Ramakrishna**



Inaugural address by **Principal Dr K. Appa Rao**

**Event Type:** Online Faculty Development Program

**Date / Duration:** 30-06-2022 to 02-07-2022

**Resource Team:**

1. Dr. T.D. Gunneswara Rao, Professor, Department of Civil Engineering, NITWarangal.
2. Dr. M.V.N. SivaKumar, Assistant Professor, Department of Civil Engineering, NITWarangal.
3. Dr. G. Kalyan Kumar, Assistant Professor, Department of Civil Engineering, NITWarangal.

**Name of Coordinator:** Dr. K.V.Ramana, Associate Professor.

**Target Audience:** Faculty members of Civil, Research scholars and M.Tech students

**Total no of Participants:** 52 ( Internal - 10, External – 42)

**Objective of the event:**

- Application of various modelling approaches/techniques in structural Engineering.
- Fuzzy logic techniques for seismic hazard analysis
- Genetic Algorithms in Structural Engineering
- Finite Element approaches in modelling of various structural elements.

**Outcome of event:**

- Faculty can take up research in local regions & guide/ supervise students for dissertation or project work.
- It enables the participants to appreciate the role of various numerical and mathematical approaches available in structural engineering.

**Feedback / Suggestions:** Faculty and research scholars gave positive feedback on the FDP and requested to conduct more webinars and FDPs in similar domain.

The screenshot shows a Zoom meeting interface. The main content is a presentation slide with a light blue background. The slide title is "PROBABILISTIC SEISMIC HAZARD ASSESSMENT FOR GROUND MOTION STUDIES AT KANCHIPURAM" in orange text. Below the title, there is a box containing the presenter's name and title: "Dr. G. Kalyan Kumar, Assistant Professor, NITW". On the right side of the screen, there is a vertical list of participant icons with initials. At the bottom right, there is a watermark that says "Activate Windows".

**Presentation by Dr. G. Kalyan Kumar,  
Assistant  
Professor, Dept. of Civil Engineering, NITW**

The screenshot shows a Zoom meeting interface. The main content is a presentation slide with a light beige background. The slide features a large green graphic of a DNA double helix. The title "GENETIC ALGORITHMS" is written in purple text above the graphic. Below the graphic, the presenter's name and affiliation are listed: "Dr.T.D.Gunneswara Rao, Professor of Civil Engineering, National Institute of Technology, WARANGAL". On the right side of the screen, there is a vertical list of participant icons with initials. A larger icon with the initials "KR" is highlighted in a grey box. At the bottom right, there is a watermark that says "Activate Windows".

**Presentation by Dr. T.D. Gunneswara Rao,  
Professor, Dept. of Civil Engineering, NITW**

**FINITE ELEMENT APPLICATIONS**

**NUMERICAL MODELLING OF FRACTURE BEHAVIOR IN METAL AND CONCRETE MEMBERS**

**Dr.M.V.N.Sivakumar**  
Structural Engineering Division  
Department of Civil Engineering  
mvns@nitw.ac.in

NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL

**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING**  
(AUTONOMOUS)  
LB.REDDY NAGAR, MYLAVARAM, ANDHRA PRADESH-521230  
Approved by AICTE & Affiliated to JNTUK,Kakinada.

**Certificate of Participation**

This is to certify that  
**V RAMANA KOLLIPARA**  
Associate Professor, LBRCE

has participated in the Faculty Development Programme on  
“Modelling Approaches in Structural Engineering”, organized by Department  
of Civil Engineering, Lakireddy Bali Reddy College of Engineering  
(Autonomous) during 30-06-2022 to 02-07-2022.

*K.V. Ramana*  
**Dr. K.V. Ramana**  
(coordinator)

*V. Rama Krishna*  
**Dr.V.Rama Krishna**  
(Convener & HOD-CIVIL)

*K. Appa Rao*  
**Dr.K.Appa Rao**  
(Principal)

Certificate Number: PXV3AO-CE000317

Made for free with Certify'em

Presentation by Dr. M.V.N. Sivakumar, Assistant Professor, Dept. of Civil Engineering, NITW

Copy of Participation certificate

## PLACEMENTS

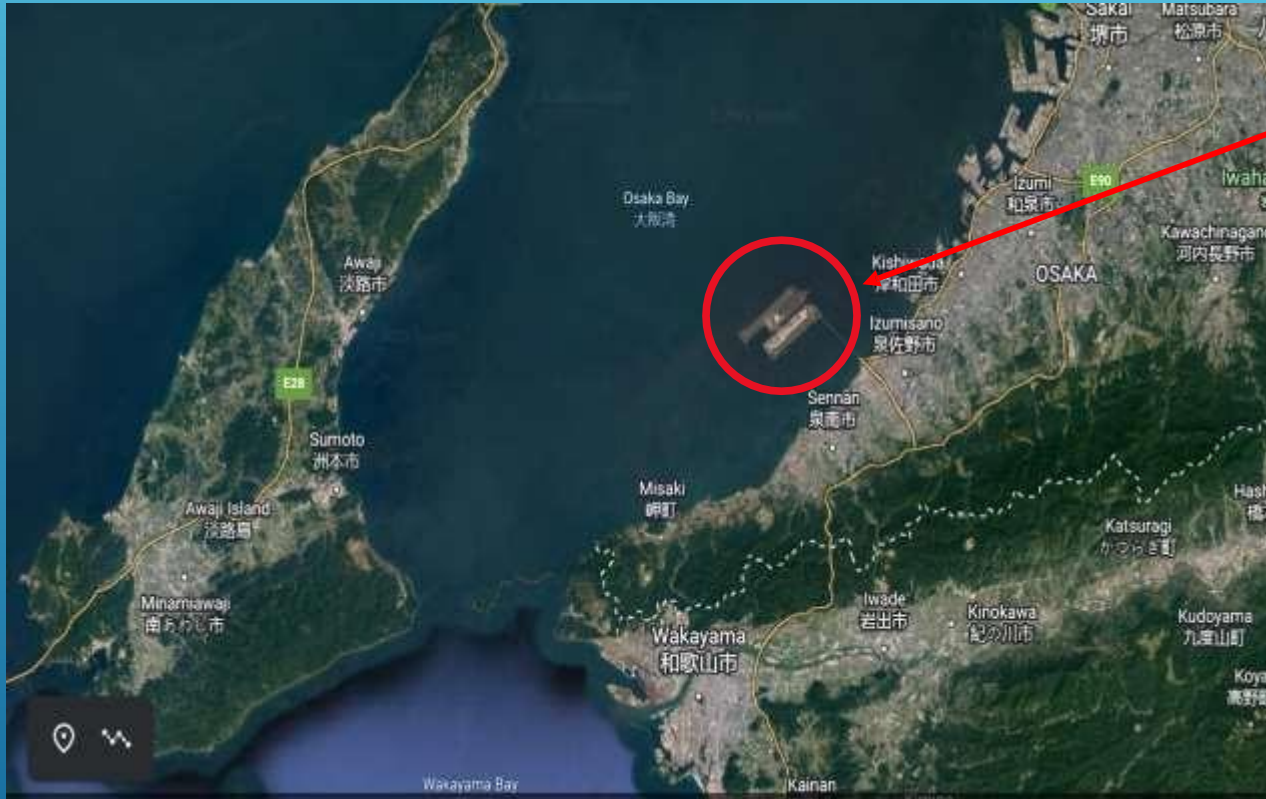
S.NO	COMPANY	SELECTED
1	Infosys	B. Gurava Reddy, S.Deepthi, Y.Surarchala, B.Lokesh
2	CTS-Genc	G.Lakshmi Anuhya, J.Eswari Pavani Lakshmi
3	Wirpo	K.Subramanyam
4	TCS	K.Siva Satya Narayana
5	CAP Gemini	P.Divya Sri
6	Formonitech	Ch.Venkata Naga Sai Santhikala, G.Ranjith

## RESEARCH PUBLICATIONS

1. Role Of Recycled Ceramics Towards Sustainable High Strength Self-Compacting Concrete Venkateswara Rao J. , Rama Krishna B. , Nethaji A. N. and Ravi Prasad D., ARPN Journal of Engineering and Applied Sciences, (NOV 2022), 1906-1914, ISSN:1819-6608.
2. Experimental Study on Fly ash and GGBS Based Geopolymer Corbels Dr. B. Sumanth Kumar, Dr. V. Ramana Kollipara, Dr. D. Rama Seshu, Lecture Notes in Civil Engineering, Springer, (Sep 2022), 117-130, ISBN: 978-3-031-05984-1.

# CIVIL ENGINEERING MARVELS

## Kansai International Airport



- **Kansai International Airport** is the primary international airport in the Greater Osaka Area of Japan and the closest international airport to the cities of Osaka, Kyoto, and Kobe.
- It is located on an artificial island in the middle of Osaka Bay off the Honshu shore, 38 km (24 mi) southwest of Ōsaka Station, located within three municipalities, including Izumisano (north), Sennan (south), and Tajiri (central), in Osaka Prefecture.

Compiled by  
S. Phanindra reddy  
(19761A0145)

# HISTORY

- In the 1960s, when the Kansai region was rapidly losing trade to Tokyo, planners proposed a new airport near Kobe and Osaka.
- The city's original international airport, Itami airport located in the densely populated suburbs of Itami and Toyonaka was surrounded by buildings; it could not be expanded, and many of its neighbours had filed complaints because of noise pollution problems.
- After the protests surrounding New Tokyo International Airport (now Narita international airport), which was built with expropriated land in a rural part of Chiba prefecture, planners decided to build the airport offshore.
- The new airport was part of several new developments to revitalize Osaka, which had been losing economic and cultural ground to Tokyo for most of the century.

# Construction

- An artificial island was proposed, 4 km (2+1/2 mi) long and 2.5 km (1+1/2 mi) wide. Engineers needed to overcome the extremely high risks of earthquakes and typhoons (with storm surges of up to 3 m or 10 ft).
- The water depth is 18 m on top of 20 m of soft Holocene clay which holds 70% water. A million sand drains were built into the clay to remove water and solidify the clay. Construction started in 1987.
- The sea wall was finished in 1989 (made of rock and 48,000 tetrapods). Three mountains were excavated for 21 million cubic meters (27 million cubic yards), and 180 million cubic meters (240 million cubic yards) were used to construct island 1. Over 3 years, 10,000 workers using 80 ships took 10 million.
- In 1990, a three-kilometers bridge was completed to connect the island to the mainland at Rinku Town, for \$1 billion. Completion of the artificial island increased the area of Osaka Prefecture just enough so that it is no longer the smallest prefecture in Japan (Kagawa prefecture is now the smallest).

- On 17 January 1995, Japan was struck by the Great Hanshin earthquake, the epicenter of which was about 20 km (12 mi) away from KIX.
- Due to its earthquake engineering, the airport emerged unscathed, mostly due to the use of sliding joints. Even the glass in the windows remained intact.
- On 22 September 1998, the airport survived a typhoon with wind speeds over 60 m/s (130 mph). On 19 April 2001, the airport was one of ten structures given the "Civil Engineering Monument of the Millennium" award by the American Society of Civil Engineers.
- As of 2008, the total cost of Kansai Airport was \$20 billion including land reclamation, two runways, terminals, and facilities. Most additional costs were initially due to the island sinking, expected due to the soft soils of Osaka Bay.
- After construction the rate of the sinking was considered so severe that the airport was widely criticized as a geotechnical engineering disaster. The sink rate fell from 50 cm (20 in) per year in 1994 to 7 cm (3 in) per year in 2008.

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## FAMOUS CONSTRUCTION

# GRAND ETHIOPIAN RENAISSANCE DAM

Constructed between 2011 and 2023, the dam's primary purpose is electricity production to relieve Ethiopia's acute energy shortage and to export electricity to neighbouring countries. With an installed capacity of 5.15 gigawatts, the dam is the largest hydroelectric power plant in Africa <sup>[9]</sup> and among the 20 largest in the world

The first phase of filling the reservoir began in July 2020 and in August 2020 the water level rose to an altitude of 540 meters (40 meters higher than the bottom of the river, which is at an altitude of 500 meters above sea level).<sup>[11][13]</sup> The second phase of filling was completed on 19 July 2021, with water levels rising to an altitude of around 575 meters.<sup>[14]</sup> The third filling was completed on 12 August 2022 to a level of an altitude of 600 metres (2,000 ft).<sup>[15]</sup> The fourth filling was completed on 10 September 2023 with water levels at around 625 metres (2,051 ft).<sup>[16]</sup> The fifth and last filling was completed in October 2024, with a final water level at altitude of around 640 metres (2,100 ft).<sup>[17][18]</sup> According to Prime Minister Abiy Ahmed, the dam's inauguration was set for the second half of 2025.



On 20 February 2022, the dam produced electricity for the first time, delivering 375 MW to the grid. A second 375 MW turbine was commissioned in August 2022. The third and fourth 400 MW turbines were commissioned in August 2024. The dam's official opening was 9 September 2025.

The name that the Blue Nile river takes in Ethiopia ("Abay") is derived from the Ge'ez word for 'great' to imply its being 'the river of rivers'. The word Abay still exists in Ethiopian major languages to refer to anything or anyone considered to be superior.

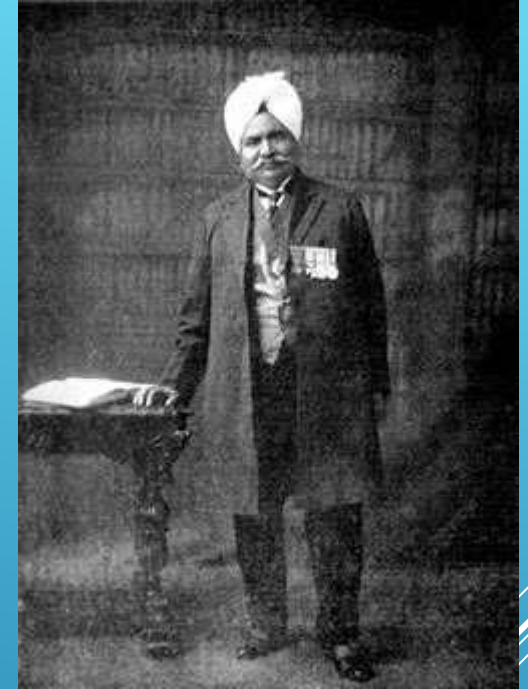


The site chosen for the Grand Ethiopian Renaissance Dam was identified by the United States Bureau of Reclamation in the course of the Blue Nile survey, which was conducted between 1956 and 1964 during the reign of Emperor Haile Selassie. However due to the coup d'état of 1974, Somalia's invasion of Ethiopia in 1977–78, and the 15-year-long Ethiopian Civil War, the project did not progress until the early 2000s. The Ethiopian Government surveyed the site in October 2009 and August 2010. In November 2010, a design for the dam was submitted.

On 31 March 2011, a day after the project was made public, a US\$4.8 billion contract was awarded without competitive bidding to Italian company Salini Impregilo, and the dam's foundation stone was laid on 2 April 2011 by the Prime Minister Meles Zenawi. A rock-crushing plant was constructed, along with a small air strip for fast transportation. The expectation was for the first two power-generation turbines to become operational after 44 months of construction, or early 2015

# FAMOUS ENGINEER

Born	13 April 1851 Mangtanwala, Nankana Sahib District, Punjab, British India (now Pakistan)
Died	10 July 1927 (aged 76) London, England



**Sir Ganga Ram**

## Early life:

- Ganga Ram was born on 1851 April 13 in Mangtanwala, a village in the Nankana Sahib District of Punjab Province in British India (now in Pakistan) into a Punjabi Hindu family.
- His father, Doulat Ram, was a junior sub-inspector at a police station in Mangtanwala. Later, he shifted to Amritsar and became a copywriter for the court. Here, Ganga Ram passed his matriculation examination from the Government High School and joined the Government College, Lahore in 1869.

- In 1873, after a brief Service in Punjab P.W.D devoted himself to practical farming.
- He obtained, on lease from the government, 50,000 acres (20,000 ha) of barren, unirrigated land in Montgomery and within three years converted that vast desert into smiling fields, irrigated by water lifted by a hydroelectric plant and running through a thousand miles of irrigation channels, all constructed at his own cost.
- This was the biggest private enterprise of the kind, unknown and unthought-of in the country before. Sir Ganga Ram earned millions most of which he gave to charity.
- In the words of Sir Malcolm Hailey, the Governor of Punjab, “he won like a hero and gave like a Saint”. He was a great engineer and a great philanthropist. He designed and built the General Post Office, Lahore Museum, Aitchison, Mayo School of Arts (now the National College Of Arts), Ganga Ram Hospital, Lahore 1921, Lady Mclagan Girls High School, the chemistry department of the Government College University, the Albert Victor wing of Mayo Hospital, Sir Ganga Ram High School (now Lahore College for Women), the Hailey College of Commerce (now Hailey College of Banking & Finance), Ravi Road House for the Disabled, the Ganga Ram Trust Building on “The Mall” and Lady Maynard Industrial School.
- He also constructed Model Town and Gulberg town, once the best localities of Lahore, the powerhouse at Renala Khurd as well as the railway track between Pathankot and Amritsar.
- After the partition of India and Pakistan, another hospital Sir Ganga Ram Hospital, New Delhi was built in 1951 in his memory.



The Lahore Museum building was designed in the Indian Revival architectural style by Sir Ganga Ram.

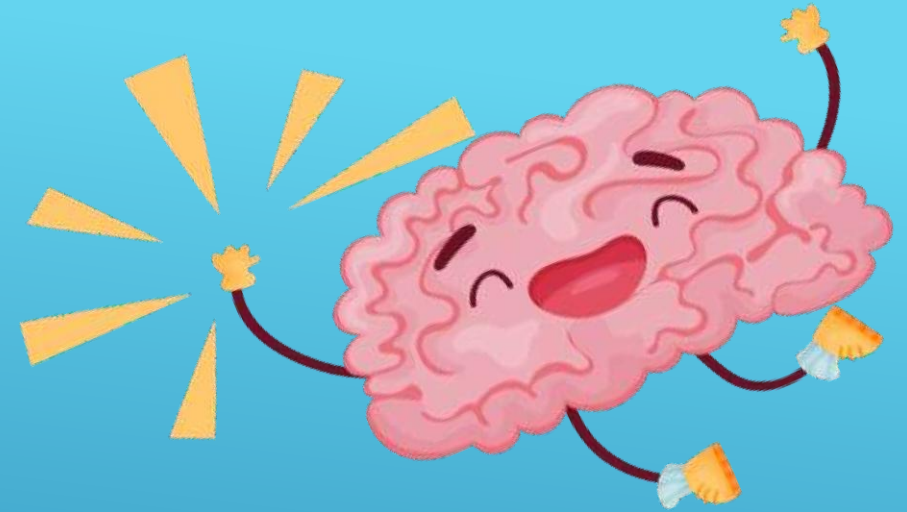
# Trick Zone

## RIDDLES

1. What starts with “e” and ends with “e” but only has one letter in it?
2. How can a girl go 25 days without sleep?
3. If it takes eight men ten hours to build a wall, how long would it take four men?
4. If you have a bowl with six apples and you take away four, how many do you have?
5. If you had only one match and entered a dark room containing an oil lamp, some kindling wood, and a newspaper, which would you light first?
6. If you spell “sit in the tub” s-o-a-k, and you spell “a funny story” j-o-k-e, how do you spell “the white of an egg”?

### Answers:

1. An envelope
2. She sleeps at night
3. No time, because the wall is already built
4. The four you took
5. The match
6. E-G-G W-H-I-T-E



## Number Puzzles

1.  $22+4 = 24$

$13+6 = 16$

$80+2 = 82$

$67+9 = ??$

2.

4	8	16
5	10	20
6	12	?

1.  $\begin{array}{r} \underline{22} + \underline{4} = \underline{24} \\ \underline{13} + \underline{6} = \underline{16} \\ \underline{80} + \underline{2} = \underline{82} \\ \underline{67} + \underline{9} = \underline{69} \end{array}$

2. 

4x2	8x2	16
5x2	10x2	20
6x2	12x2	24

# ARTS



ART BY  
D. JHANAVI  
19761A0111