SYNOCE

SYNDICATE OF CIVIL ENGINEERS, IIT GANDHINAGAR

SYNC WITH CE

MAGAZINE 2.0

2021-2022

About SYNOCE

Syndicate of Civil Engineers (SynOCE) is the civil engineering society of IIT Gandhinagar. With its foundation being laid in January 2020, the society is the first of its kind student run society. Its primary aim is to provide guidance and resources to the students of civil engineering discipline and help them pursue the career of their choice with utmost justice to their capabilities. The society's goal is to build a strong community that promotes a healthy and progressive work culture and prepares students for the professional world.

The society hosts career guidance sessions, workshops on a variety of software, organizes events, and film screenings to provide support, and peer-to-peer networking opportunities. It also collaborates with various industries and launches semester-long projects to obtain industry experience and establish positive relations with them. The society's annual magazine contains valuable information and entertaining pieces that serve as tidbits of information about IIT Gandhinagar and the happenings in the world of civil engineering.

We hope you enjoy reading the second edition of Sync with CE.

Thanks and Regards,
Team SynOCE

FROM THE PEN OF

FACULTY ADVISOR

DR. UDIT BHATIA
FACULTY ADVISOR | SYNDICATE OF CIVIL ENGINEERS
ASSISTANT PROFESSOR | DEPARTMENT OF CIVIL ENGINEERING

"The only difference between success and failure is the ability to take action."
- Alexander Graham Bell, Inventor

It has been two years since the society was founded, and I'm ecstatic to see how quickly it's growing. The efforts of the entire team, which serves as a vital pillar of society, have enabled them to take calculated risks and gain confidence in their ability to handle the responsibilities, and I am confident that they will be able to translate these experiences into significant assets in their future careers.

With the publication of the second issue of the society's magazine, I can see how students have effectively comprehended and implemented the goal that inspired its creation. We can see how much effort has gone into each section of the magazine as we walk through it. I very much appreciate the efforts of each and every member of the team for their contribution in making this magazine a success.

I'd also want to congratulate the team behind this work, as well as the whole SynOCE community, on the successful management and development of the society. We are now all bent on achieving higher goals.

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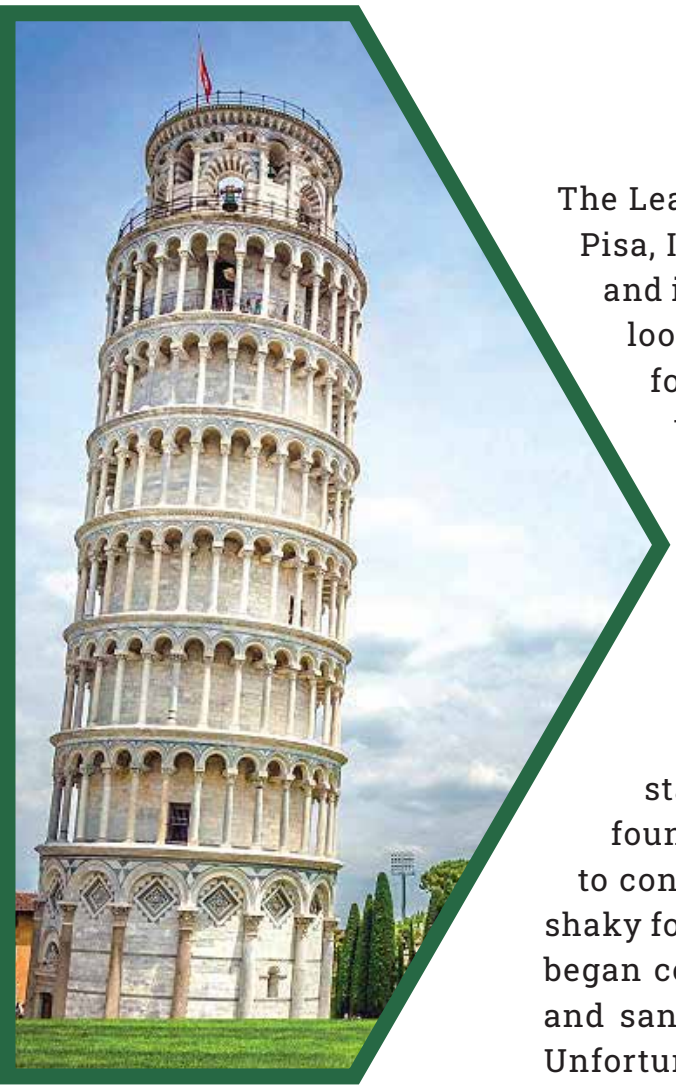
MARVELS OF CIVIL ENGINEERING



TOWER OF PISA

The Leaning Tower of Pisa is a bell tower of the cathedral in Pisa, Italy. It is leaning at about 4 degrees from the vertical and is made up of marble and stone that imparts it a unique look. The tower has eight floors, including the chamber for the bells. Two spiral staircases run up the inside of the tower. The Tower of Pisa's original completed height was 60 meters. However, the tower's height is 56.67 meters on the tallest side and 55.86 meters on the lowest. The base of the tower is 15.484 meters in diameter.

The designers of the great tower doomed it from the start by providing a shallow and comparatively heavy foundation. In 1173, limestone and lime mortar was used to construct the foundation, built on hard clay, making it a shaky foundation for a 14,500-ton structure. In 1178, the weight began compacting the dirt until it reached its weakest point and sank on one side after completion of the second floor. Unfortunately, it was too late to turn around at that point. The workers had to discontinue the construction for nearly a century as Pisa got involved in wars with Genoa, Lucca and Florence. This was a lucky coincidence as the structure might have collapsed as the construction progressed at that time. The gap provided enough time for the settlement of soil. In 1260, the construction resumed. At this time, the tower was leaning 0.2 degrees north; and by the time the construction for the seventh floor began, the tower was tilting one degree south. Two spiral staircases were built in the tower, one of them having 294 steps that spanned from the ground to the bell chamber. The other staircase had two extra steps to account for the tower's lean.

The soil under the tower's surface, which was very swampy and soft, was excavated with a foundation of merely 3 meters. As the weight on the top increased, it leaned towards the side where the weight was higher.

MARVELS OF CIVIL ENGINEERING

TOWER OF PISA

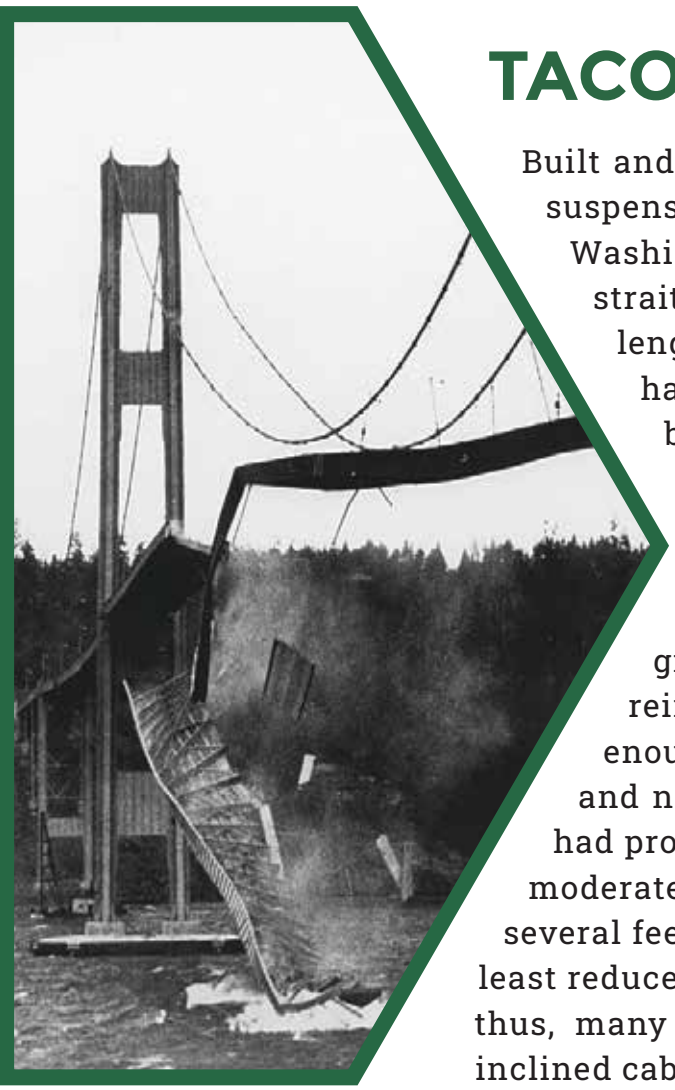
Over the next 400 years, seven bells were installed in the tower. The largest bell weighed about 3600 kilograms. As the construction progressed, the lean of the tower kept on increasing. Before any restoration attempts were made, the tower was leaning at an angle of 5.5 degrees south. In the 20th century, the heavier bells were silenced. It was feared that these bells' movements would worsen the tilt. Engineers and architects worldwide made attempts to straighten the tower. In 1990, a significant project costing over 30 million euros was launched to fix the tower. The project involved reinforcing the soil under the foundation and creating space for the tower to compress some soil and move towards the north to get straightened. The project succeeded in bringing back tilt to 4 degrees from the previous 5.5 degrees.

In an attempt to compensate for the tower's tilt, the subsequent upper floors were built, with one side being taller than the other. The additional masonry weight made the tower sink even more.

The project involved the following steps:
1. Counterweights were placed on the north side of the tower's base to slow down its lean towards the south.
2. The tower was harnessed with steel cables to prevent collapse during the project and straighten the tower after reinforcing the soil.
3. About 60 cubic metres of clay was dug out from the region below the tower's foundation to make a pit.
4. Water was drained from the pit.
5. Foundations were reinforced with concrete.
6. Steel cables were pulled to straighten the tower.

After the project ended, the tower was declared out of danger of collapsing.

MARVELS OF CIVIL ENGINEERING



TACOMA NARROWS BRIDGE

Built and finished during the time of World War 2, this twin suspension bridge was made over Puget Sound in Washington, U.S, and spanned over the Tacoma narrow strait. Tacoma Narrows bridge was almost 855 metres in length. The bridge was designed to have two lanes, having a total width of 12 metres. This meant that the bridge was relatively narrow, given its length. Its deck was stiffened by plate girders that had a depth of 2.4 metres. It was the first bridge that had plate girders as roadbed support. The west side approach featured a 450 metres continuous steel girder, while the east side had a 64 metres long reinforced concrete frame. The bridge was not rigid enough to withstand moderate winds due to the shallow and narrow girders. Even during construction, the bridge had problems involving its movement due to winds. Mild to moderate winds caused the bridge to move up and down several feet. These vertical oscillations had to be stopped or at least reduced while the bridge was still under construction, and thus, many measures were taken to do the same. A pair of inclined cable stays were also installed that connected the main cables to the mid-span of the bridge deck. These cables did not break before the final collapse of the bridge; however, they were ineffective in reducing the oscillations. The bridge was then installed with a hydraulic buffer between the towers and the floor system of the deck. Its purpose was to dampen the vertical movements of the mid-span. However, as the bridge was sand-blasted before being painted, the seals of the hydraulic buffers were damaged, and thus, they became useless in dampening the oscillations.

This bridge was the first major bridge to have cable suspension and the third largest suspension bridge. Unfortunately, bridge collapsed after four months of completion due to high oscillations under moderate winds (67 kmph).

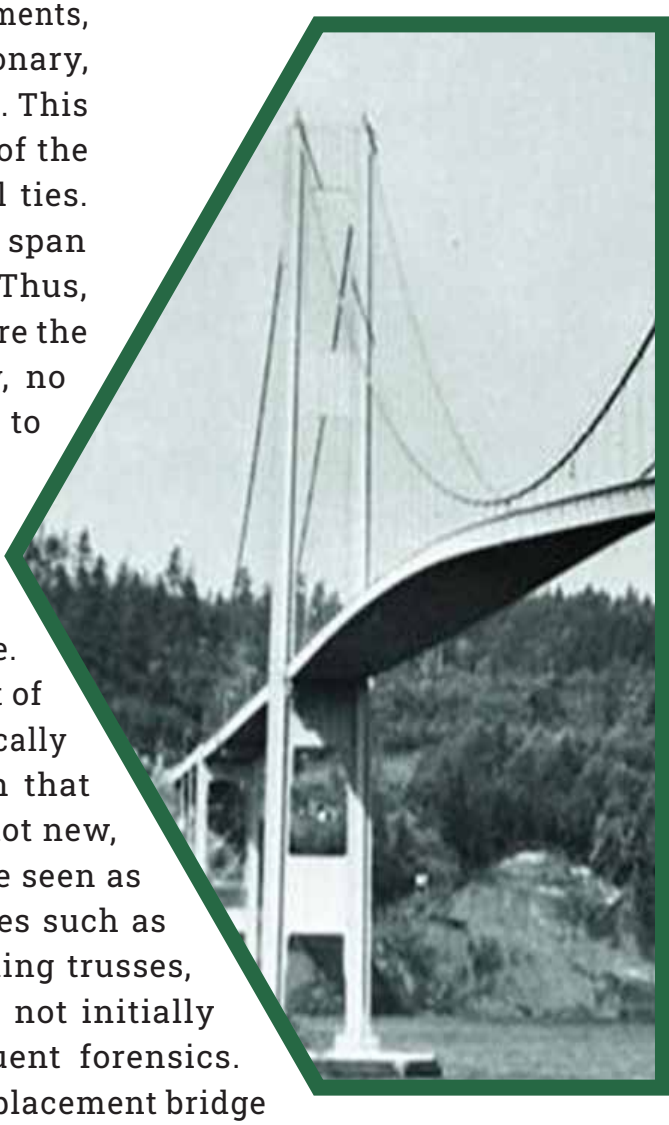
Following these ineffective attempts, the Washington Toll Bridge Authority hired an engineering professor from the University of Washington, Frederick Burt Farquharson, to look into the situation and provide a solution. The professor carried out wind tunnel tests, and his team proposed two solutions: drilling holes in lateral girders and along the deck so that the airflow could circulate through them.

MARVELS OF CIVIL ENGINEERING

TACOMA NARROWS BRIDGE

This would reduce the lift forces. The other solution included the addition of fairings or deflector vanes attached to the girder fascia along the deck. This would provide a better aerodynamic shape to the transverse section of the deck. However, none of these solutions could be implemented as the bridge collapsed after five days of completion of the study. On the day of the collapse, winds of speed 67 kmph were recorded. In nine separate segments, the central stay was torsionally vibrating at a frequency of 36 cycles/min. The torsional vibration amplitude increased during the following hour, and the motion shifted from regularly rising and dropping to a two-wave twisting. Despite these movements, the bridge's centre (along its length) remained stationary, while its other two parts twisted in opposite directions. This dangerous torsional motion began due to the failure of the cable band that was joined to the centre of diagonal ties. Due to the alternative hogging and sagging of the span members, the towers were pulled towards them. Thus, significant cracks developed in the bridge's deck before the whole bridge collapsed into the strait. Fortunately, no human lives were lost as the bridge had been closed to traffic at that time.

Tie-down cables anchored to 50 tons of concrete blocks on the shore were attached to the plate girders to reduce the amplitude of the oscillations; however, these cables broke down shortly after installation.



The entire incident highlighted the importance of aerodynamic research and the post-investigation pointed out the reasons and physics behind the collapse. Wind-induced oscillations were discovered as a result of the investigations. The bridge's form proved aerodynamically unstable in the transverse direction. The condition that caused the Tacoma Narrows Bridge to collapse was not new, but it had gone unnoticed. Increased stiffness may be seen as a result of wind action by different design approaches such as providing a higher dead load, using dampers, stiffening trusses, or using guy cables. However, these elements were not initially examined and were only included in the subsequent forensics. Following the Tacoma Narrows Bridge collapse, the replacement bridge was planned and constructed in 1950.

STUDENT'S CORNER

01 ABHISHEK KUMAR PANDEY

02 KOLLI MOHAN KRISHNA

03 DANISH MANSOOR

04 VIMAL PANARA

05 HARI DAVE

06 AYUSH LODHA

Abhishek Kumar Pandey

PhD Scholar

The flow separation zone (FSZ) is one of the main flow characteristics of the combining open channel junction and is associated with energy dissipation. Bed shear stress in the contracted flow region increases as the channel's effective width is reduced. Reduction of the FSZ at the junction to improve efficiency is desirable. The present numerical study focuses on continuous suction and blowing perturbations in reducing the FSZ at a right-angled open channel junction. The flow field is simulated using computational fluid dynamics (CFD) software. The numerical model is validated by comparing the simulated velocity field, water surface elevation, and the energy loss for the steady junction flow with the corresponding experimental results available in the literature. The continuous suction and blowing perturbation is generated by a sinusoidal function with zero net discharge and is applied through a rectangular slit. Three different slit locations are considered downstream of the junction.

The simulated results (time-averaged) show that the sinusoidal perturbation effectively reduces the dimensions of the FSZ and, consequently, the energy loss and bed shear stress. The results demonstrate the enhanced effectiveness in reducing the energy loss when the slit is more proximate to the junction for the chosen flow configuration and the sinusoidal perturbation characteristics. The time-averaged depth ratios show only a marginal reduction due to the flow perturbation.

About Me:

I am legitimately bad at…

-> getting ready appropriately for events

My most useless skill is...

-> negotiation

Kolli Mohan Krishna

PhD Scholar

The increase in the infrastructure needs from the past three decades around the globe resulted in the diverse applications of Geosynthetic Reinforced Soil (GRS) walls such as embankments and load-bearing abutments for highways and railways other than being a typical retaining wall. Serviceability of such structures is an essential part of the design, which involves limiting displacements of the structure to a certain level based on the importance/requirement of the application. But, the comprehensive methodology for serviceability/ deformation based design is missing in the literature and design practice. To address this issue, initially, the deformation behaviour of rigid faced GRS walls is studied by Finite Element modelling in OpenSEES. The importance of soil-reinforcement interface modelling and parameter selection is essential in simulating realistic behaviour. A simplified method is proposed to calibrate interface stiffness and strength from laboratory interface tests.

Further, the toe is a load-carrying component in rigid faced GRS walls. Toe conditions (fixed or free or rotating) significantly affected deformations. A unique, simplified mechanistic model is proposed to estimate displacements at different stages of rigid faced GRS wall's life from the observed deformation behaviour. The model is the superposition of three modes of deformation, i.e., internal, external and global displacements. The model can capture the effect of fascia and toe stiffness in addition to reinforcement stiffness. The comparison of the proposed model with existing methods revealed the higher reliability of mechanical modelling.

About Me:

I am legitimately bad at…
-> keeping my house in order

If I ever write a book, it will be about…
-> how to rebuild world with no boundaries

Danish Mansoor

M.Tech Student

My research topic on a broader scale is to understand the Spatio-temporal dynamics of extreme rainfall over India during the Monsoon period. Three-fourths of the annual precipitation over India occurs during the monsoon season and causes significant socio-economic impact, including the potential risk of flooding and landslides. With climate change(global warming), the frequency and intensity of extreme rainfall events have increased, which leads to different kinds of hazards. I am trying to understand whether global warming leads to concurrency or synchronization (i.e. occurrence of extreme rainfall at the same time at various places) in extreme rainfall events or not and its pattern through the network theory. In addition, I am trying to understand the governing mechanism of extreme precipitation events.

Prof. Udit Bhatia, who has been an outstanding mentor to me in both academic and non-academic concerns, deserves my gratitude. His excitement for research, teaching, and other fields, in general, has been and will continue to be a fantastic source of inspiration for me during the time I have been lucky enough to spend under his mentorship.

About Me:

If I were not a civil engineer, I would have been...
-> Medical Doctor

If I were to spend an entire day doing just one thing, it would be...
-> reading books

Vimal Panara

M.Tech Student

Nowadays, the number of high-rise buildings is increasing at a tremendous pace. As the population grows, space requirements also increase. In this case, high-rise buildings offer an excellent solution for space problems in India. Concrete is the most frequently used material for constructing high-rise buildings because of its low cost compared to other materials. However, high-rise buildings are more vulnerable to earthquakes. The critical component to resist the earthquake forces in high-rise buildings is the shear wall. Shear walls provide significant strength and stiffness to the building in the directions of their orientation.

Nevertheless, earthquakes are not the only concern for high-rise buildings. Fire also affects the performance of the building. Concrete loses 85% of its strength at 800°C, and 90% at 1100°C (Euro code 1992-1-2). Structural components such as beams and columns are studied, but very little literature is available for the shear wall at high temperatures. I am currently working with Prof. Gaurav Srivastava, and we are trying to model shear wall behaviour numerically at high temperatures using Finite Element Analysis (FEA). ABAQUS is used for carrying out FEA. This model will provide an alternative to costly and time-consuming experiments, accurately predicting shear wall behaviour at high temperatures.

About Me:

You can ping me if....

-> you noticed "Khonshu" in first "Moon Knight" trailer

My most useless skill is…

-> taking headshots in sniper games

Hari Dave

Senior Undergraduate

Concrete being an environmentally unfriendly material, enhancing the durability of the material would mitigate the excessive production of cement and thus reduce the burden on the environment. The nanoscale structure of concrete is analogous to glass and exhibits creep, i.e., the flow of glass structure under a load over time. Creep adversely affects the longevity of infrastructures and, thus, their sustainability. From the previous studies, the creep behaviour in concrete is observed to be governed by the rearrangement of C-S-H globules at mesoscale.

I worked with Dr Luis Ruiz-Pestana, an assistant professor in the Civil, Architectural, and Environmental Engineering Department at the University of Miami, to study the effects of porosity on the creep response of concrete. Our simulation results obtained through accelerated creep protocol indicate that the creep response is affected qualitatively and quantitatively upon variation in the porosity. The increment in the porosity results in greater deformation magnitude, along with the shift in behaviour from exponential to logarithmic with time.

About Me:

If I were not a civil engineer, I would have been…
-> astronomer

The only thing I hate discussing is…
-> prejudices

Ayush Lodha

Senior Undergraduate

Climate Systems are high dimensional and complex phenomena. Methods like Empirical Orthogonal Functions (EOF) are used to reduce complexity and dimensions. EOFs decompose climate datasets into spatial and temporal structures which capture maximum variance and are orthogonal to each other. These climate systems are frequently studied to gauge the reliability of EOFs and their derivatives. Systems such as the Indian Winter Monsoon(IWM) are the principal phenomena occurring in the southern Indian Subcontinent, whose variability causes extreme conditions of floods and droughts in this region, thus critical to the livelihood of many people.

In this proposed study, we try to present detailed comparisons and tradeoffs between three statistical data analysis methods on the dataset of IWM: EOFs, rotated-EOFs (rEOF), and Independent Component Analysis (ICA). rEOFs relieve our results from orthogonality constraints imposed by traditional EOF analysis. At the same time, ICA focuses on drawing out independent components of the dataset rather than dependent components based on variance rank.

About Me:

When in bathroom, most of the time I think about…
-> interesting startup ideas to present in Shark Tank.

My most useless skill is…
-> I can fit lyrics of songs in day to day talk with people, unknowingly.

TIMELINE OF SYNOCE

2021-22

April 4

Orientation Session

IIT Gandhinagar freshmen were introduced to SynOCE, with an emphasis on the goals and objectives, as well as the inspiration behind the effort. To offer a look into the realm of civil engineering, a brief quiz was held on Kahoot.

May 22

GRE Guidance Session

A seminar for potential students preparing for higher education in a foreign country was organised. Utkarsh Gangwal, an IITGN alumnus and PhD scholar at the University of Delaware, led this session and presented resources and information regarding the application process.

June 8

InfoCE

A weekly online quiz on the social media page of SynOCE was announced focusing on a theme released every month. The winners were featured every week promoting the reach of the page.

June 12

SynQuisitive

An online event was organized wherein the task was to propose a solution to a complex civil engineering problem. The responses were judged by Prof. Gaurav Srivastava based on the extensiveness of literature review, feasibility study, and uniqueness of the solution.

June 12

GATE Guidance Session

A session was held for one of the most prominent entrance tests, the GATE, which is necessary for admission to Indian institutes for higher education as well as PSUs. Aishwary Omkar, an IITGN Alumnus and Mtech student at IIT Bombay, led this session, providing resources to prospective students.

June 26

Socha Hai Kya Kabhi

Collaborated with IR&P council for organizing a part of the event commenced by them, to invite responses to a problem statement in the interdisciplinary field of environmental engineering, and automation.

July 25-27

AutoCAD Workshop

Initiated a workshop series with the first one for AutoCAD, and Autodesk Fusion conducted by Anand Pujari focusing on the floor plan of the building extensively important for a civil engineer graduate.

July 28

Industrial Projects Announcement

SynOCE for the first time collaborated with Udaipur Cement Works Ltd. (A subsidiary of J K Lakshmi Cement Pvt. Ltd) for giving the students an exposure to the industrial world by providing opportunities to work on some real world projects. A total of 9 students worked with them under this initiative.

SynOCE continued this effort and brought an interesting project on Cost of Poor Quality Construction by collaborating with CQRA Consultant Pvt. Ltd., over which 4 B.Tech students have been working.

Sept 18-19

Advanced Excel workshop

Collaborated with Academic Council, and Professional Development Council of IIT Gandhinagar to continue with the workshop series by inviting Mr. Raj Singh, a Microsoft certified trainer having 10 years of experience in the field of Information Technology for organizing an Advanced Excel workshop.

Nov 2

Treasure Hunt 2nd Edition

Continued the tradition of Treasure Hunt event but this time again in an online mode navigating between PDFs, trying to open them with the minds of civil engineering. The sophomore batch students were encouraged to organize this event to provide an essence of the field.

Nov 19

Movie Screening

Screened the documentary - 'Lifting a River' based on the world's biggest Lift Irrigation Project, the Kaleshwaram Project, with an objective to promote inter-batch interaction, and motivating students to pursue a career in the field of civil engineering.

CONSULTANCY PROJECTS

01 REVIEW AND PROPOSE MODIFICATIONS ALONG WITH COMMENTARY OF THE LATEST 2016 VERSION OF INDIAN SEISMIC CODES

02 PILOT STUDY FOR STRENGTHENING OF BRIDGE APPROACHES USING GEOCELL

03 DEVELOPMENT OF HIGH STRENGTH CONCRETE MIXES CAPABLE OF ACHIEVING HIGH EARLY STRENGTH

CONSULTANCY PROJECTS

PROF. SUDHIR JAIN

PROF. MANISH KUMAR

REVIEW AND PROPOSE MODIFICATIONS ALONG WITH COMMENTARY OF THE LATEST 2016 VERSION OF INDIAN SEISMIC CODES

Organization : nicee IIT KANPUR | WORLD BANK

Duration : 1 year

Location : IIT Gandhinagar

PI : Sudhir Jain

Co-PI : Durgesh C Rai (IIT Kanpur), O R Jaiswal (VNIT Nagpur), Manish Kumar (IIT Gandhinagar)

ABSTRACT

Approximately 60% of India falls under moderate to high seismic hazard. Therefore, it is important to analyze and design structures to perform "reasonably" during these earthquakes. The performance of a building stock depends on many factors, for example, the design standards, compliance with the standards in the process of design, and implementation of the design on the ground. Earthquake engineering has evolved significantly across the world in recent years. Accordingly, there are aspirations to adopt the state-of-the-art design provisions in the relevant Indian standards. However, challenges associated with implementation of the provisions remain.

The Bureau of Indian Standards recently revised the key Indian earthquake design standards, namely, IS 1893, Part 1 and IS 13920. These revisions generated a lot of interest among academicians and practitioners alike. Accordingly, World Bank decided to sponsor a project at IIT Gandhinagar with following central objectives: (1) evaluate provisions of IS 1893, Part 1 and IS 13920 from the point of view of consistency and implementability, and suggest measures to improve the provisions, (2) development of design examples consistent with the proposed modifications in the design standards, and (3) assessment of compliance of the standards in the process of design. The evaluation of the design provisions was performed through a rigorous consultation and review process. The compliance assessment was performed for the drawings of buildings constructed across India in recent years. Some details of the project are available at https://nicee.org/IITGN-WB_Codes.php.

CONSULTANCY PROJECTS

PROF. AMIT PRASHANT

PILOT STUDY FOR STRENGTHENING OF BRIDGE APPROACHES USING GEOCELL

Organization : रेल विकास निगम लिमिटेड Rail Vikas Nigam Limited (A Government of India Enterprise)

Duration : 1 year

Location : Under-construction railway bridge on the Dhasa-Jetalsar Gauge conversion project, Western Railway (applicable throughout the Delhi-Mumbai route).

ABSTRACT

Investigations at the transition zone of railway bridges show that there is an abrupt change of stiffness in that area which causes differential settlements and leads to bumps formation. It has been proposed to strengthen the bridge approaches of bridges on the Delhi-Mumbai route for running trains at 160 kmph, in order to provide smooth transition from low stiffness of formation to high stiffness of railway girder and vice versa. The increase of stiffness will be done by providing varying lengths of geocells in different layers, as it is known for its good basal reinforcement in the weak soil and good load support system through its confinement mechanism. The site will be investigated to provide further recommendations on the proposed solution as a part of the project along with development of conceptual design and its numerical analysis.

CONSULTANCY PROJECTS

DEVELOPMENT OF HIGH STRENGTH CONCRETE MIXES CAPABLE OF ACHIEVING HIGH EARLY STRENGTH

Organization : adani

Duration : 1 year

Location : Gandhinagar

PROF. GAURAV SRIVASTAVA

ABSTRACT

The project involved development of high performance concrete mixes (M60 and M80) capable of achieving a minimum strength of 35 MPa within 24 hours of casting. This kind of high performance concrete mix was required by the client for use in drilled-pile casting yards. Achieving a high early strength (35 MPa) in this case allows early removal of the formwork and makes the assembly line function faster. The performance parameters were met by devising an accelerated curing regime for the M60 and M80 mixes. A curing protocol involving steam curing at temperatures in the range of 70-100°C with appropriate ramp-up, holding and ramp-down times was designed. The green concrete was kept in a steam curing chamber after the final setting time of the cement at atmospheric pressure. One of the main challenges of designing concrete to gain high early strength is a relative reduction in the final target strengths; thus, the actual target strengths were kept higher than the required 28 day strengths of 60 MPa and 80 MPa. A large number of batches of different mixes were considered to optimize the material quantities as well as the curing regime for ready applicability in field conditions.

DID YOU KNOW?

Estimated cost of the **Mumbai-Ahmedabad bullet train** project is ₹110,000 crore.

World's first rotating skyscraper, **Dynamic Tower** planned for Dubai would have separate rotating floors that would be attached to a central column.

Falkirk Wheel which is 35 metres tall, the equivalent of 8 double decker buses stacked on top of each other is the only fully rotating boat lift in the world.

Design of **Marina Bay Sands** is inspired by a deck of cards having the longest elevated pool in the world at a height of 191 meters.

The **Channel Tunnel** is a 32-mile underwater rail tunnel that runs through the English Channel, connecting Folkestone, England, with Coquelles, France. The American Society of Civil Engineers has named it one of the "Seven Wonders of the Modern World".

The **Bhupen Hazarika Setu** is an Indian beam bridge that connects the states of Assam and Arunachal Pradesh is India's longest bridge across water, measuring 9.15 kilometres (5.69 miles).

DID YOU KNOW?

Ratneshwar temple located in Varanasi has an inclination of 9 degrees, which is greater than double of the inclination of Leaning tower of Pisa.

World's highest railway bridge, **Chenab Bridge** is located in J&K, India over the Chenab river.

Pir Panjal Railway Tunnel, Jammu & Kashmir: An 11-kilometer tunnel cuts under the treacherous Pir Panjal mountain range, making it Asia's longest such transit corridor.

The **slab-stone single-arch bridge** across the river **Meles** in Izmir, Turkey, is the world's oldest datable bridge still in service, dating from around 850 BC.

Umling La Pass, located in eastern Ladakh is now the world's highest motorable road.

The **Panama Canal**, a lock-type canal that links the Atlantic and Pacific oceans is one of the world's most strategically critical artificial waterways, and it significantly decreases the sailing distance for voyages.

ACHIEVEMENTS OF IITGN CIVIL COMMUNITY

01 PROF. SUDHIR K JAIN

02 PROF. VIMAL MISHRA

03 PROF. MANISH KUMAR

04 PROF GAURAV SRIVASTAVA AND DHARMIT NAKRANI

05 PROF. AMIT PRASHANT

Achievements of IITGN Civil Community

Prof. Sudhir K Jain
Vice-Chancellor, BHU

- Padma Shri for Science and Engineering

Professor Sudhir Jain joined IIT Gandhinagar as a founder director in June 2009. He served as the director of IIT Gandhinagar for 12 years. He received the Padma Shri for Science and Engineering from President Ram Nath Kovind. He has made significant contributions to earthquake engineering education, research, and practice, with an emphasis on India's and other developing countries' requirements.

- Elected a member of the U.S. National Academy of Engineering (2021) for leadership in earthquake engineering in developing countries

He is one of the 16 other international members from India in the US NAE, which is a premier independent body of eminent engineers, business leaders and academicians from across the globe. He is among 23 international members elected in 2021 and the only current director of IITs to be ever elected to this prestigious body.

Prof. Vimal Mishra
Professor, Civil Engineering Department

- IMS Young Scientist Award 2020

A paper authored by Professor Vimal Mishra and others has been selected as the best paper for the Indian Meteorological Society (IMS) Young Scientist Award 2020 on Tropical Meteorology. The paper which was considered for this award was

Vimal Mishra, Anukesh Krishnankutty Ambika, Akarsh Asoka, Saran Aadhar, Jonathan Buzan, Rohini Kumar and Matthew Huber, (2020): **Moist heat stress extremes in India enhanced by irrigation**. Nature Geoscience, Vol. 13 (11), Page No. 722–728.

- Elected as a Fellow of the National Academy of Sciences, India

- Wins 2021 AGU Devendra Lal Memorial Medal

He is one of 35 people honored by the American Geophysical Union for their achievements in scientific research, education, communication, and outreach. As an awardee, he will also become an AGU Fellow.

- Appointed as an Editor of Earth's Future

Earth's future is a journal of the American Geophysical Union (AGU). His current appointment is from July 2021 to December 2024.

- Selected as a member of the Drafting group and Working group for the Mega Science Vision-2035 (Climate Research) initiative of the Office of the Principal Scientific Adviser to the Government of India.

Prof. Manish Kumar
Assistant Professor, Department of Civil Engineering

- Honoured with the Commendation Card (a badge worn at the chest) for providing overall leadership and guidance in developing 3D printed defence structures for the Indian Army.

Lieutenant General Jai Singh Nain, AVSM, SM, General Officer commanding-in-Chief (GOC-in-C) of the Southern Command, Indian Army, presented the Card to him as a recognition of exemplary contribution and services to the Indian Army. This work was a part of his student Shashank Shekhar's PhD thesis. In addition, Prof Kumar joined the Earthquake Engineering Research Institute's World Housing Encyclopedia committee. The Institute provides leadership towards earthquake risk reduction across the world. His role will be to review the reports on housing types from different parts of the world focusing on earthquake performance.

Prof. Gaurav Srivastava
Associate Professor
Civil Engineering Department

Dharmit Nakrani
PhD Scholar
Civil Engineering Department

Work identified as having exceptional relevance

The Editors of Fire Technology have chosen a work titled 'Performance of Combustible Facade Systems with Glass, ACP, and Firestops in Full-Scale, Real Fire Experiments' by Prof Gaurav Srivastava, Prof Chinmay Ghoroi, and Dharmit Nakrani as having exceptional relevance. It has been added to the new 'Editors' Choice' Topical Collection, which features the year's best 15 publications.

Prof. Amit Prashant
Officiating Director, IIT Gandhinagar
Professor, Civil Engineering Department
Dean, Research and Development

- Gopal Ranjan Technology Award of IIT Roorkee

Professor Prashant will be given Rs. 1,00,000/- for his Creative Work in the fields of Soil Characteristics, Foundation Engineering, Ground Improvement, Soil Structure Interaction, Engineering Geology, Underground Structures, Rock Mechanics, and Subsurface including marine structures. The nominees of this award are evaluated by the Khosla National Awards Award Committee.

MEET OUR ALUMNI

01 RESEARCH

Prerna Singh
Prakut Kansara
Deep Shah

02 INDUSTRY

Amjeth Basheer
Rajat Kumar Gupta
Shubham Baheti

03 MANAGEMENT

Anusha Gupta
Jitesh Mittal

04 CSE

Abhishek Anand

ALUMNI SECTION

RESEARCH

PRERNA SINGH

Batch of 2017 | B.Tech

Post Doctoral Researcher in Transportation and Infrastructure Systems at Georgia Tech

PRAKRUT KANSARA

Batch of 2018 | B.Tech

PhD in Global Hydrology and Remote Sensing at University of Virginia

DEEP SHAH

Batch of 2019 | M.Tech

PhD Researcher in Water Resources Engineering at TAMU

INDUSTRY

AMJETH BASHEER

Batch of 2017 | M.Tech

Geotechnical Engineer at Horizon Geosciences, Sharjah, UAE

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Batch of 2018 | M.Tech

Assistant Engineer in NWRWS&K Department of Govt. Of Gujarat

SHUBHAM BAHETI

Batch of 2021 | B.Tech

Assistant Manager (Technology Group) at Suzlon Energy Limited

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ALUMNI SECTION

MANAGEMENT

ANUSHA GUPTA
Batch of 2018 | B.Tech

IIM Lucknow

JITESH MITTAL
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IIM Calcutta

CSE

ABHISHEK ANAND
Batch of 2017 | B.Tech

Software Development Engineer
Amazon

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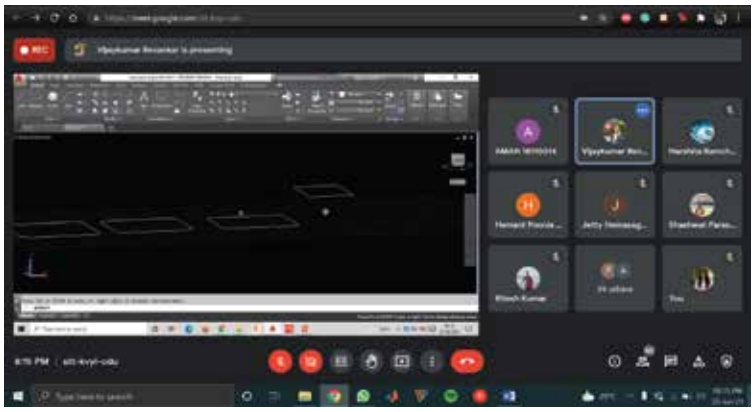
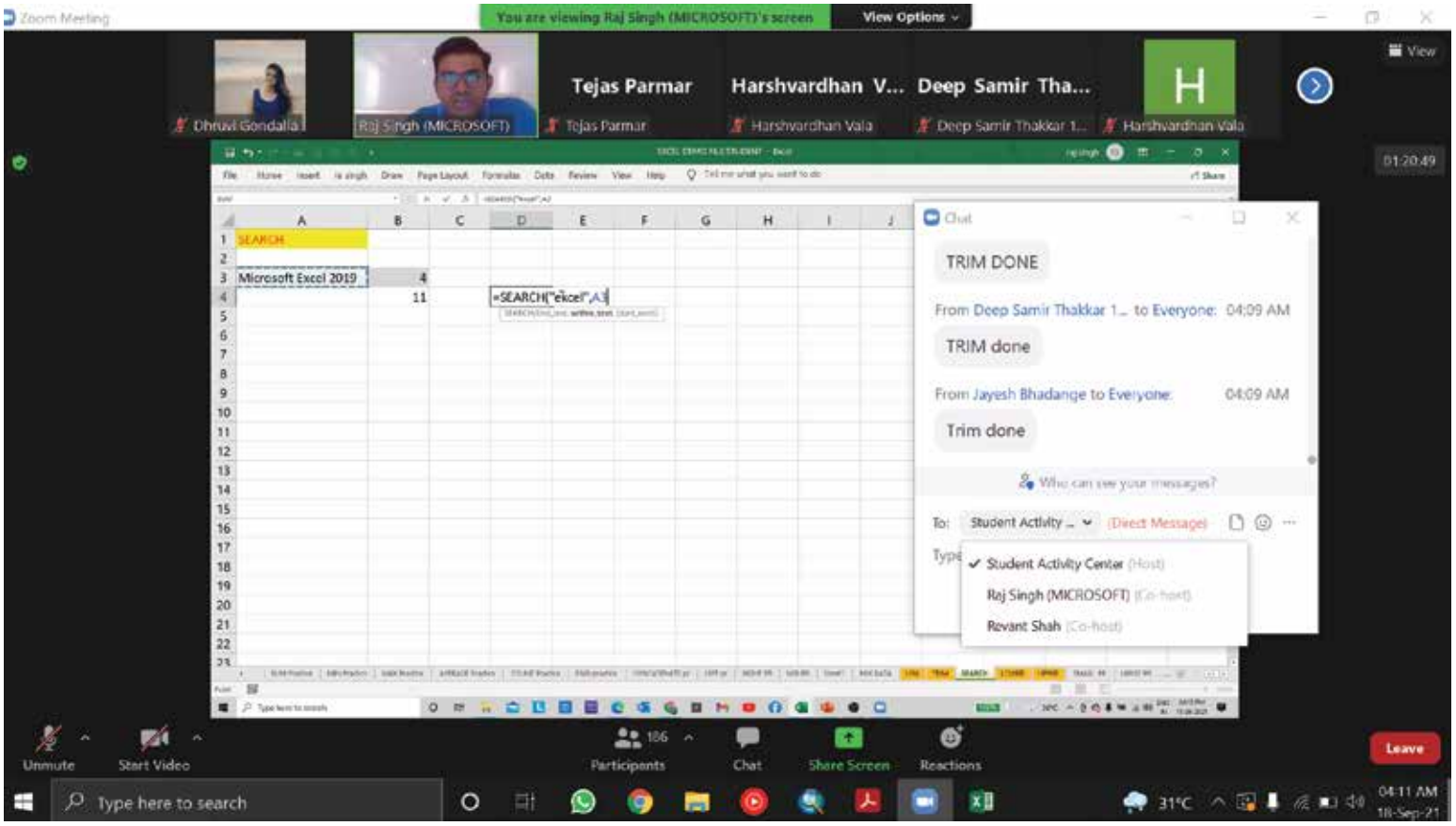
Photo Gallery




Zoom Meeting
You are viewing Raj Singh (MICROSOFT)'s screen
View Options
Dhruvi Gondalia
Raj Singh (MICROSOFT)
Tejas Parmar
Harshvardhan V...
Deep Samir Tha...
Harshvardhan Vala
Chat
TRIM DONE
From Deep Samir Thakkar 1... to Everyone: 04:09 AM
TRIM done
From Jayesh Bhadange to Everyone: 04:09 AM
Trim done
Who can see your messages?
To: Student Activity ... (Direct Message)
Student Activity Center (Host)
Raj Singh (MICROSOFT) (Co-host)
Revant Shah (Co-host)
Unmute
Start Video
Participants
Chat
Share Screen
Reactions
Leave
Type here to search
31°C
04:11 AM
18-Sep-21

MEET THE TEAM

DHRUVI GONDALIA
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RAAVI PATEL
Content Developer

ARUSHI ARNAV
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YUVRAJ GUPTA
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ANUSHKA NITI
Designer

UPASHANA PANKAJ
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IIT GANDHINAGAR

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