Vidya Vikas Education Trust's

Universal College of Engineering

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Gujarati Linguistic Minority Institution

ACES

Association of Civil Engineering Students

MAY 2022

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THE BENCHMARK

Editor's Desk

We are pleased to present May 2022 edition of Benchmark. In this edition you will find an article on Char Dham Highway and other contribution by Students and Faculty members of Department of Civil Engineering highlighted in the month of April. News update and departmental activities are the part along with Canva.

Department Vision:

- To excel in every area of Civil Engineering, inculcate research oriented study to explore hidden talent.
- Providing Opportunity to display creativity, out of the box thinking & innovativeness, aimed at providing cutting edge technology for sustainable development.

Department Mission:

- Providing qualified, motivated faculties to deliver the content using updated teaching methodology, inviting industry experts from various areas to disseminate subject knowledge in Civil Engineering.
- Motivating students to undertake the Research Oriented studies, participate in competitions at all levels, grasping new techniques and methods which can be improved on further.
- Conducting and participating in seminars, workshops and training programs with a view to make the students industry ready and improve their employability factor for global career ahead.
- To create quality professionals capable of planning, designing and analytical skills for better infrastructural development in the field of Civil Engineering.

CHAR DHAM HIGHWAY

Char Dham National Highway, is an under construction two-lane (in each direction) express National Highway with a minimum width of 10 metres in the Indian state of Uttarakhand. Prime Minister Narendra Modi laid the foundation stone in December 2016. The under construction highway will complement the under-construction Char Dham Railway by connecting four holy places namely Badrinath, Kedarnath, Gangotri and Yamunotri. The project includes 900 km national highways which will connect whole of Uttarakhand state.

The total cost of project is ₹12,000 crores and the foundation stone of the project was laid by Prime Minister Narendra Modi on 27 December 2016 at Parade Ground in Dehradun. The highway will be called Char Dham Mahamarg (Char Dham Highway) and the highway construction project will be called as Char Dham Mahamarg Vikas Pariyojana (Char Dham Highway Development Project) and is made to improve the connectivity to the Chota Char Dham nestled in the Himalayas. Road will include several long bridges and tunnels to eliminate accident and slide prone areas. Indian Railways and National Highways Authority of India have been directed, by the Chief Secretary of India, to ensure that rail and road highway routes are integrated on this circuit. The project will have bypasses, bridges, viaducts, pit stops, parking, helipads and helicopter emergency response services, etc. along the way

Originating from Rishikesh, Char Dham highway network will have four distinct routes,

From west to east and south to north:

Rishikesh–Yamunotri

Rishikesh–Gangotri (same route as previous one till Dharasu). This will take the railway and Char Dham road highway at Gangotri close to the border area of Nelang Valley .

Rishikesh–Kedarnath

Rishikesh–Badrinath (same route are previous one till Rudraprayag). This will take the railway and Char Dham road highway at Badrinath closer to the area of Barahoti .

-BY KALPITA CHAFEKAR
B.E. CIVIL

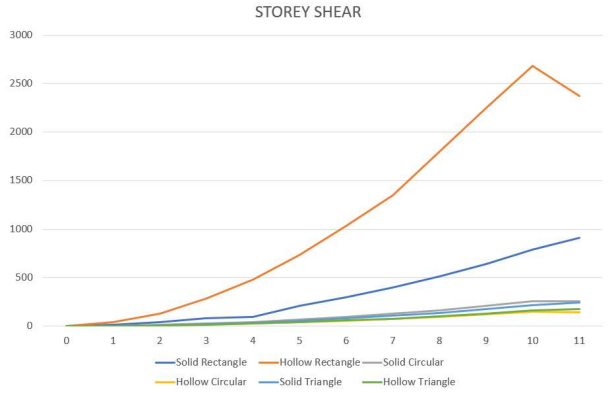
To know more about Char Dham Highway ,
Scan the QR Code

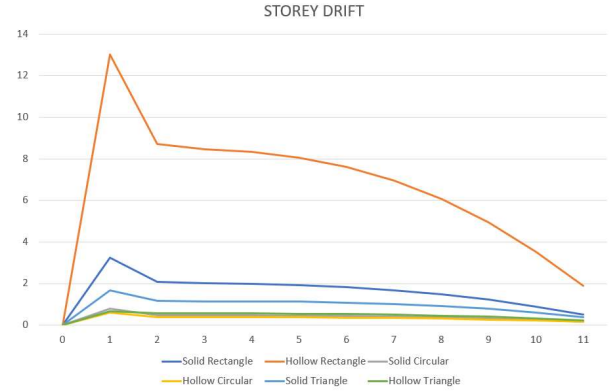
"Seismic Analysis of Solid and Hollow Building of different shapes using STAAD PRO"

By Jay Jagada, Jayant Rakhonde, Tushar Chavan under guidance of Mr. Sachin Pawar and Mr. Nikhil Sontakke

ABSTRACT:

This paper is intended to compare the structuralanalysis of Solid and Hollow Rectangular, Circular and Triangular high rise building by using STAAD PRO the parameters checked for the analysis of the buildings were shear, drift anddisplacement by using response spectrum method. We are going to analyze that inwhich types ofsupport thebuilding is morestable.



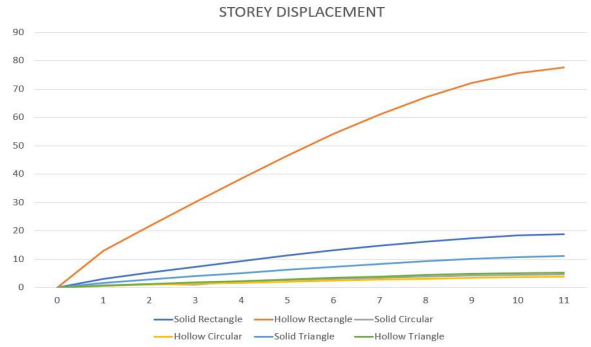


	Rectangular		Circular		Triangular	
	Solid	Hollow	Solid	Hollow	Solid	Hollow
Disp	24%	100%	6%	5%	14%	7%
Drift	25%	100%	6%	5%	13%	5%
Shear	34%	100%	10%	6%	10%	7%

Percentage Comparison of Storey Shear, displacement and drift

SPECIFICATIONS:

1. Number of storeys- 10 Storey
2. Plan size- 50m x 40m
3. Storey Height- It has been considered 3.2-4m.
4. Seismic Zone- Zone V has been specified for Guhwati for designing purpose
5. Structure Type- Concrete frames with the beam size of 300x300mm and column size of about 300x600mm and the grade of the concrete for column and beams are M30 and the grade of steel is Fe415. For slab the grade of concrete is M25 and the thickness of the slab is 120mm.



CONCLUSION:

After analysing the different shapes of building, we concluded that Hollow Circular Shaped Building is efficient in drift, Shear as well as displacement as compared to other shaped building.

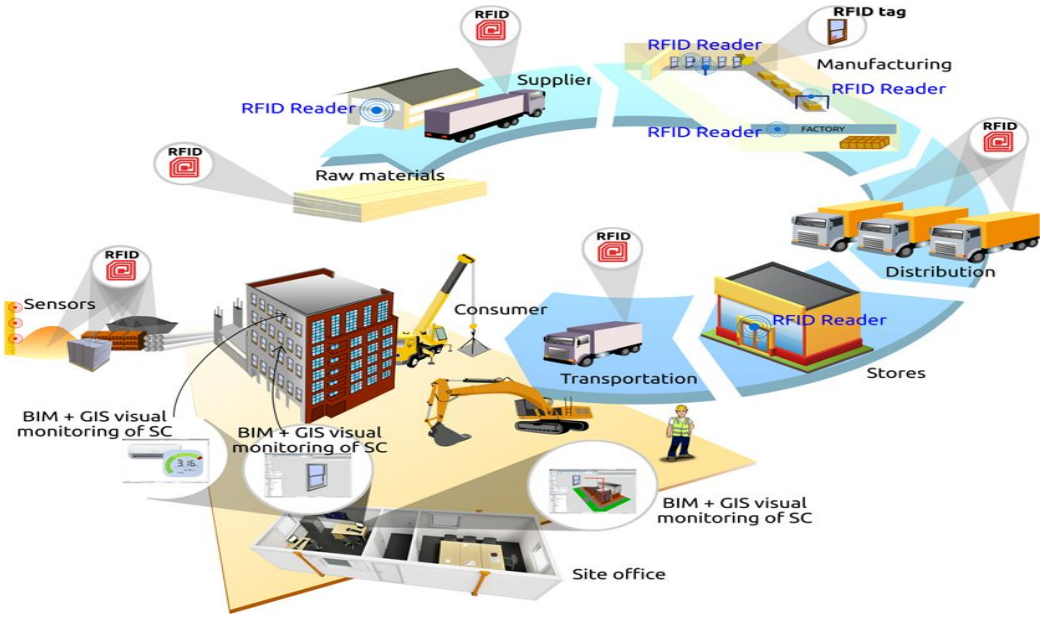
Storey displacement is linearly increasing from bottom to top for all the structures. The maximum storey displacement occurs in hollow rectangular shaped building i.e., 77.5382 mm and minimum storey displacement occurs in Hollow Circular building i.e., 3.7681mm.

The storey drift being an important parameter to understand the drift demand of the structure is considered while collecting the results from the structure as per IS 1893-2002, value of drift for the given hollow circular shaped structure is 0.6107.

IMPACT OF THE INTERNET OF THINGS (IOT) ON THE CONSTRUCTION INDUSTRY

The internet of things (IoT) is the inter-networking of physical devices, vehicles, buildings, and other items—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. Integration of the IoT in construction business offers managers a steady stream of real-time data that comes in handy during all kinds of decision-making — task planning, resource allocation, reporting, negotiation with investors, etc. Having on-demand access to relevant data improves team communication, protects teams from making unfounded decisions, enables real-time asset tracking.

The construction industry facing productivity difficulties. Many projects run over time, over budget, and the industry is slower than others at readjusting to change and it's costing companies billions. The real estate and constructions by large will be transformed into IoT devices with this technology. The objects will be connected to the internet and data shared among them. Imagine a bridge communicating with your vehicle to inform you of all possible routes you can use to avoid traffic, this will be astounding.



Solutions IoT can Offer For a Construction Business

The impact of the challenges described above can be minimized once the Internet of Things is introduced to the field. Here are the objectives construction companies using IoT reach by adopting the technology.

Project progress tracking

Using wearables, business owners can track employee movements, ensuring that the team's working time is used efficiently. Additionally, connected fleet management systems help project managers keep tabs on material deliveries, improving the precision of deadline estimates. By gathering real-time data about the progress of the

project, construction managers will be able to identify the causes of setbacks and optimize the team's day-to-day operations.

Monitoring the construction site

By implementing a range of sensors — noise, vibration, motion, and others — construction site managers can ensure safety in the area, predict and minimize the damage dealt by natural disasters, and respond to on-site accidents promptly.

Ensuring employee safety

Monitoring security and safety on large construction sites is not easy — human agents don't have the reaction speed nor needed data to predict and prevent potential intrusions. IoT-enabled tags allow business owners to track the integrity of materials and equipment.

A system of connected sensors will enable environment monitoring to ensure that workers aren't exposed to hazardous substances. IoT wearables can detect physical manifestations of distress — an elevated pulse rate, blood pressure, and others.

Facilitating day-to-day task management

Poor project maintenance practices often result in a higher cost of project completion. Outdated tech systems don't allow business owners to track all assets efficiently, monitor the performance of equipment and schedule up-to-date repairs, plan maintenance stops.

Sensor-based tools for monitoring on-site trash levels;

Determining how waste loads vary across the year and optimizing the operating mode to prevent debris pile-ups;Calculating the most efficient routes for waste collectors to reduce recycling and disposal costs;Offering business owners real-time waste management data for the sake of precise reporting.

Benefits of IoT in construction

Adopting IoT in construction industry activities is neither a one-step process nor a cheap one to complete. That's why, in order to complete digital transformation, business owners need to clearly understand the benefits of adopting innovation.

Adopting Building Information Modeling. BIM refers to creating a digital version of the project. Many construction managers work with Building Information Modeling software that allows building a project's digital model based on real-time construction and maintenance data. IoT is changing construction by providing a steady flow of relevant data, which when used in BIM can be shared with all stakeholders involved in the process and represent the insights visually in a dashboard.

Reducing project costs. IoT devices help site manages keep track of daily expenses, monitor resource-efficiency of construction by tracking supply and assets. The Internet of Things reduces project costs by ensuring timely delivery of new equipment and other resources — this way, the entire team uses its time efficiently and a business manager doesn't need to extend the crew's contracts before the project is complete.

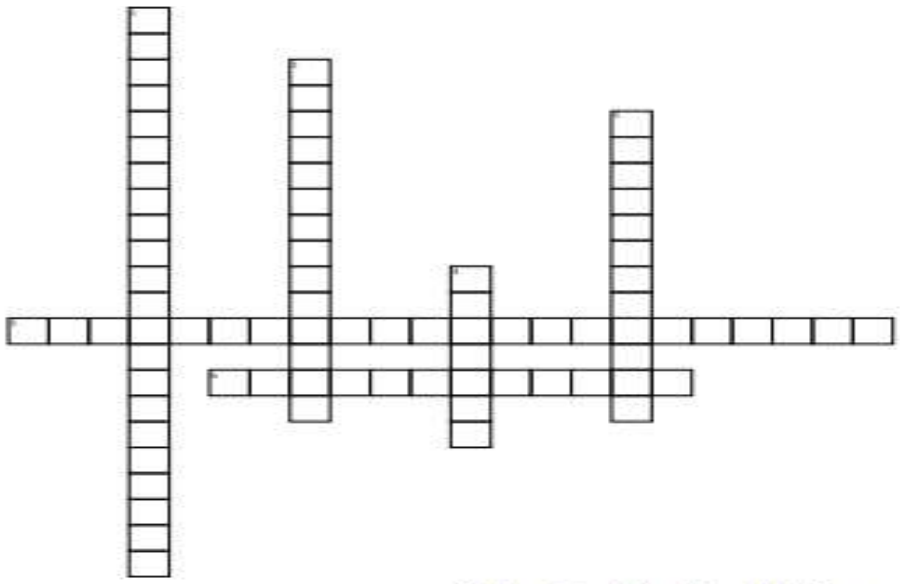
Improving employee safety. The Internet of Things helps provide real-time guidance using connected wearables, monitoring the working environment and ensuring no workers are exposed to dangerous substances, tracking the worker's physical well-being thanks to heart rate, body temperature, and other sensors.

P**redictive maintenance.** In construction, predictive maintenance technologies are adopted to track the state of heavy equipment — lifts, excavators, and others. By attaching sensors to track fuel consumption or brake temperature to a machine, business owners can identify performance issues at the earliest stages and repair the equipment before it breaks down and triggers project downtime.

Improved waste management efficiency. Measuring trash levels with a sensor-equipped device will allow construction managers to create a flexible schedule of waste disposal activities. This way, product managers can ensure they are not hiring waste disposal professionals when the dumpster is not full — such careful waste disposal control will improve the cost-efficiency of the process.

Facilitated project management. Being able to collect worker, equipment, environmental, and other types of data facilitates the project manager's decision-making. The Internet of Things helps educate the workforce as well, ensuring the crew can find answers to all questions on their own, as opposed to bothering the manager. Using an IoT platform to pinpoint patterns about working productivity, risks and threats, or project expenses will improve the precision of estimates and lay the groundwork for creating realistic strategies.

-PROF. SACHIN PAWAR
Assistant Prof.
Dept. of Civil Engg; UCoE



Across

5. easement created by the giverment or agency that has exerscised its rights under eminent domain

6. The degree, quantity, nature and extent of interest that a person has in real property.

Down

1. An easement acquired by continuous, open, ad hostile use of the property for the period of time prescribed by state law.

2. An estate in land in which the ownership is for an indeterminate length of time, in contrast to a leasehold estate.

3. A building or some portion of it-a wall or a fence, for instance-that extends beyond the land of the owner and illegally intrudes on some land of an adjoining owner or a street or alley.

4. The gradual wearing away of land by water, wind, and general weatherconditions; the diminishing of property caused by the elements.

News Bulletin

Fire breaks out at Delhi's Safdarjung Hospital, no casualty reported

An incident of fire was reported at Delhi's Safdarjung Hospital on Friday morning following which fire tenders were rushed to the spot. "A fire broke out in an inverter in Safdarjung Hospital...which has been doused now," Delhi Fire Department said. The cause of the fire is yet to be ascertained and there is no report of any casualty yet.

Real estate prices may increase by 10-15% across India: CREDAI

Real estate industry body CREDAI on Tuesday said real estate prices have increased 5-8% due to a rise in construction costs and are expected to rise further by 5-7%. There's been a steady increase in raw material costs in last two years, CREDAI National President HV Patodia said. The Ukraine war has caused a further rise in costs, he added.

Crash site of Nepal plane carrying 22 people including 4 Indians located, pic surfaces

The crash site of Nepal's Tara Air plane carrying 22 people including four Indians has been located. The Nepal Army Spokesperson shared a picture from the crash site and wrote, "Search and rescue troops have physically located the plane crash site. Details will be followed...Crash site: Sanosware, Thasang-2, Mustang." The flight had lost contact at around 10 am on Sunday.

Google India selects 20 startups for accelerator programme

Google released a list of 20 startups selected for the fourth batch of Google for Startups (GFS) Accelerator India programme. This year the batch size has been doubled from 10, and the selected startups were chosen from 600 applicants. The startups have come from sectors including education, retail, mental health and wellness, healthtech, fintech and agritech.

DEPARTMENTAL ACTIVITIES

JUNIOR TANTROTSAV

Junior Tantrotsav is an event where all the engineering minds meets to compete, which enhances their practical knowledge It aims to foster scientific temper innovation, Inquisition and creativity among the masses and to enlighten young minds through technology.

On 23rd April 2022 Jr. Tantrotsav conducted for Diploma Students

FAREWELL

The Farewell Program for the Final year students of Universal College of Engineering was organized in the campus itself on 23th April 2022. The Program commenced at 5:00 pm with an inspiring introduction speech by Dr. J.B. Patil motivating us to rise and grow in future, inspiring good in everyone we meet and connect with, & while doing so maintain the currently made bonds with fellow students. Then the program continued with a Musical concert. The event followed with speeches, further followed by student representatives of various classes. Most speeches focused on the various experiences enjoyed together during our shared 4-year duration in this campus, cherishing countless memories and reminding us of a few special ones. After the speeches, the event came towards the ending with everyone clicking pictures with each other, capturing each other in their memories through photographs and concluded by DJ night and dinner. The night ended on an emotional note & with a promise to stay connected with each other for many years to come.





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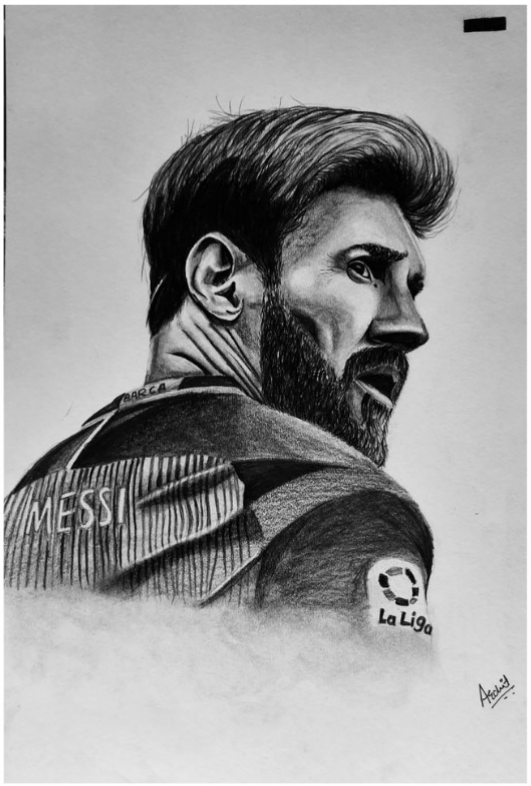
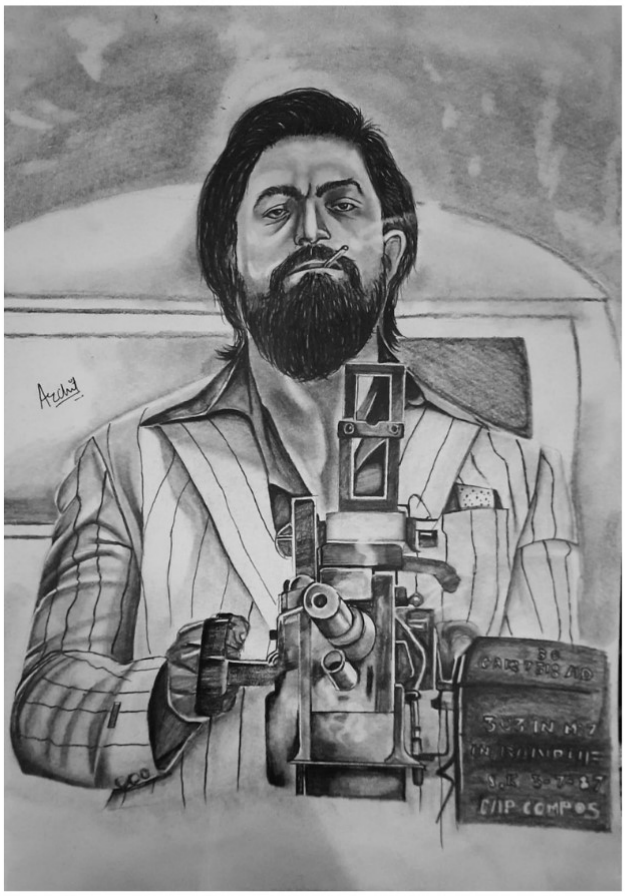
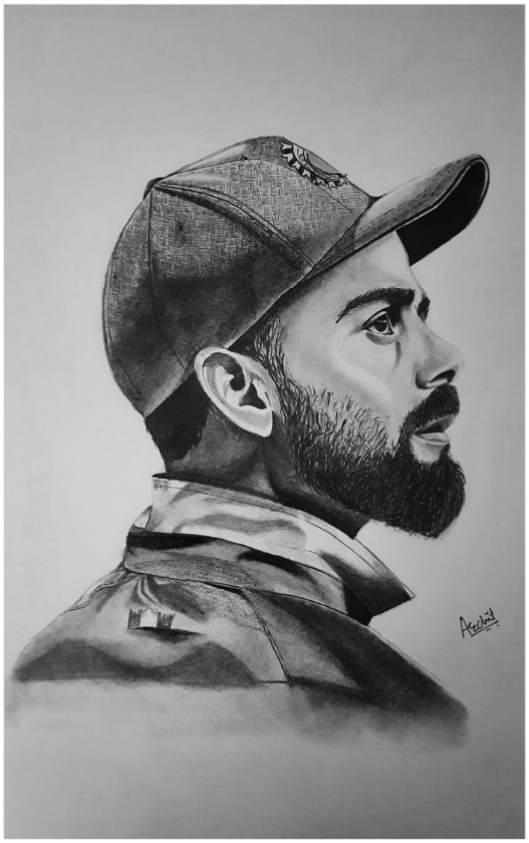
BATCH 2018-2022

CANVAS







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