



Vidya Vikas Education Trust's

Universal College of Engineering

Near Bhajansons and Punyadham, Kaman Bhiwandi Road, Vasai, Palghar-401208.
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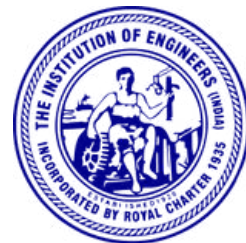


December 2022

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THE BENCHMARK



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We are pleased to present the December 2022 edition of Benchmark. In this edition, you will find an article on the "150 North Riverside Plaza" and the contribution by Students and Faculty members of the Department of Civil Engineering highlighted in the month of November. News updates and departmental activities are part of Canvas.

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.

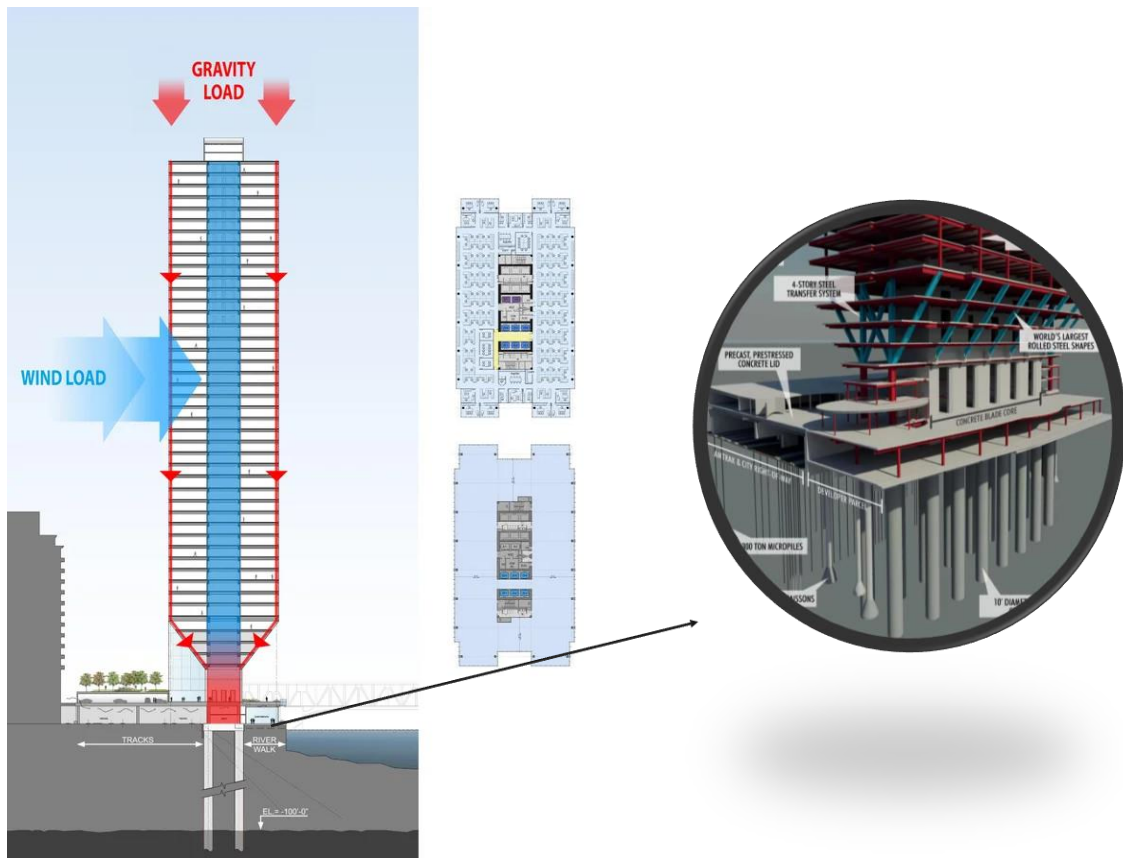
Department Mission:

- 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.

I 50 North Riverside plaza



150 North Riverside Plaza is a high rise building in Chicago, Illinois, completed in 2017 and anchored by William Blair and Co. The building is 54 stories tall. The building occupies a two-acre site on the west bank of the Chicago River, whose size and location demanded an unusually small base for the building. The building features 1.2 million square feet (110,000 m²) of leasable office space. Due to its unique superstructure design, it encompasses just 25 percent of the lot. In 2019, the building was given the Chicago Chapter of the American Institute of Architects' highest award for design excellence.



History

As required by the city of Chicago for any new riverfront building, the developer was required to set aside part of the lot size for public park space; 75 percent of the project site is reserved for a public park, amphitheater, and riverwalk. The site is built with air rights over tracks that carry Metra and Amtrak trains into Chicago Union Station. The building has achieved LEED gold and Wired Score Platinum certification.

Uniqueness

The west side of the building features a lobby with a glass wall that is nearly 100 feet (30 m) tall at its peak. The architect's intention is to connect the interior and exterior visually.

One signature aspect of 150 North Riverside building is the way the office floors cantilever out from the central core. The building is constructed with a smaller base for a height of 8 stories (104 ft), but the building cantilevers out to the full size of the office floor space. This gives it a slenderness ratio of 1:20 at its base. Structural Engineer of Record: Magnusson Klemencic Associates.



To know more about Bhakra Dam
Scan the QR OR Link [Click Here](#)

Find Civil Engineering Words – Solve this Civil Engg. Puzzle

S	O	O	L	T	I	A	B	H	T	C	D	G	O
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Methods to Construction Marine Civil Structures –

Introduction:

While marine construction is often viewed as a specialised area and cloaked in mystery, ‘best left to the experts’, there are many aspects of marine construction that fall within the ambit of general civil engineering construction practice. It is not the purpose here to describe these common aspects which are widely known and generally accepted.

General Requirement for The Design of Marine Structures-Basic Principle of Construction
Generally, there are two basic principles for making floating houses. First is the pontoon principle in which one makes a solid platform, lighter than the water and the other based on the ship in which a hollow concrete box is created which is open on the top. The pontoon principle has the benefit of its use in shallow water, compared to the hollow concrete box while the concrete box has the benefit of higher space utilization within as a part of the building. Both type of floating houses is connected with a flexible connection to the quay, so the houses can rise with the water when the tide changes. When needed the floating system can be moved elsewhere at short notice without leaving any scar to the environment. Instead, a new house can be placed in to the old situation which makes it the most sustainable and durable way to build.

Some Of These Challenges Include:

- Finding suitable materials: Many of the materials we use frequently on land—like wood—simply are not suitable for long-term underwater use.
- Dealing with water pressure: Both during construction and over the life of a structure, the effects of water pressure play a pivotal role.
- Managing corrosion: Undersea projects in coastal environments must take into account the corrosive effects of saltwater.

The Future of Underwater Structure

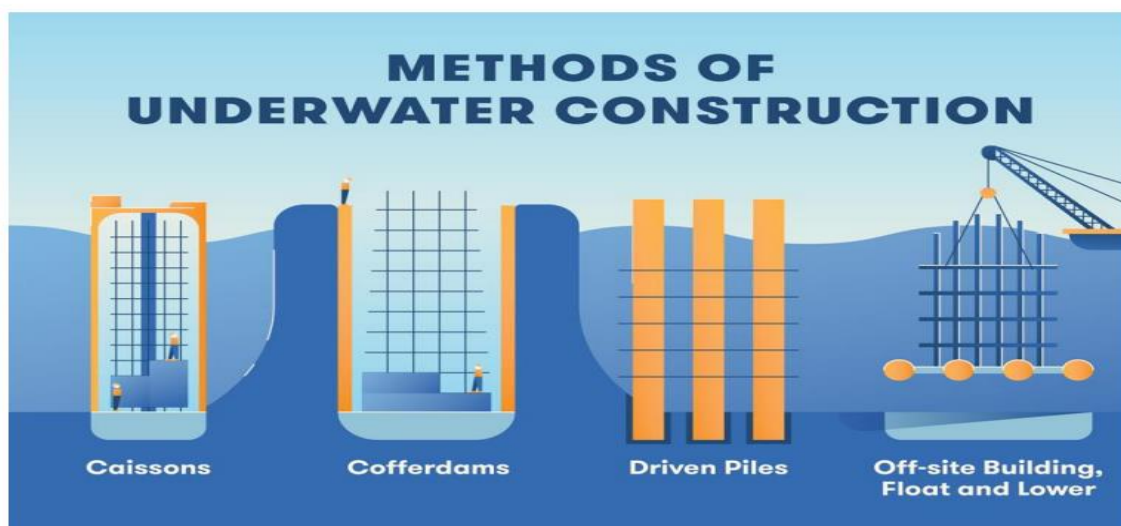
With all of these incredible underwater structures already existing around the world, a natural question emerges: Why can’t we build underwater floating houses? The short answer is that we can. We have the materials, technologies and construction techniques to support floating houses under the sea. However, underwater floating houses, at least right now, have a cost that makes them unreasonable, which is why we only tend to see underwater structures pop up at expensive resorts around the world. Nevertheless, architects and engineers have already begun considering plans for elaborate underground floating houses in various forms. Still, human

innovation has made it possible to build underwater structures in ways that seemed impossible just a short time ago. It may not be long before floating houses on the seafloor become a reality.

Methods Of Underwater Construction

1. Caissons
2. Cofferdams
3. Driven piles
4. Off-site building

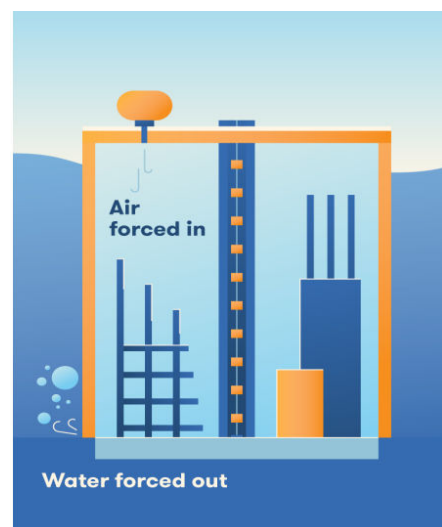
float and lower Interestingly, all of these “underwater construction” methods have the same underlying goal: avoid building underwater. Instead, water is diverted or avoided in various ways during construction—an essential approach because it is nearly impossible to actually build in water. Thus, “building underwater” is more about finding creative ways to work around water and make structures that can withstand it after construction is completed.



1. Caissons

Caissons are watertight structures that can be lowered into the water while preserving a dry environment inside. Inside of the dry interior of an open caisson, workers can dig down in order to reach a solid surface that the caisson will rest upon.

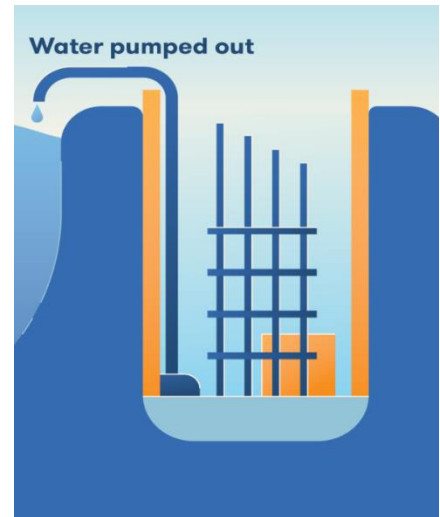
- Open caisson: An open caisson has no bottom and contains only vertical walls, which enables workers to dig at the bottom of it.



- Pneumatic caisson: A pneumatic caisson is similar to an open caisson, but compressed air is pumped in to keep water from seeping in
- Box caisson: Unlike other caissons, a box caisson contains a floor, so it is lowered onto a pre-established foundation.

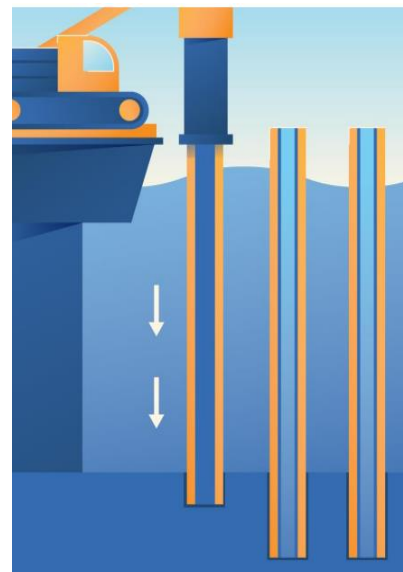
2. Cofferdams

Cofferdams are temporary enclosures that allow water to be pumped out, creating a dry environment for construction. As the name suggests, cofferdams work similarly to dams, preventing the flow of water from a particular area. A fully-constructed cofferdam looks like a large, walled pit with water surrounding it. Cofferdams can be created from a variety of materials, including steel and rocks. The most basic type of cofferdam is made by simply piling up large amounts of dirt. However, these types of cofferdams often require some kind of reinforcement to prevent erosion.



3. Driven Piles

When building foundational elements underwater, driven piles enable crews to create sturdy structures without having to remove any water at all. Piles, which look like long, vertical columns, can be driven into the ground using a powerful hammer, creating a stable foundation for underwater or overwater structures. You can imagine piles as similar to nails being driven into a piece of wood, except in the case of underwater construction, the piles are being driven into layers of soil or rock. In underwater construction, piles are most often made of steel, though they have a partially hollow interior. After the piles are placed, a tube is used to fill the inside of the pile with concrete, which displaces the water that was previously inside the pile.



4. Off-site Building, Float and Lower

As we've made clear, the main goal of underwater construction is to avoid having to actually build underwater. As a result, one of the most common practices in underwater construction is off-site building. Structures are built and assembled off-site, sometimes

using modular construction, and then transported to the construction site. Often, structures or pieces of a structure are floated out on or towed by barges, then lowered into place. Some pieces are lowered using their own weight while other pieces are loaded with weights that help them reach the seafloor.


By Prof. Osama Diwan

NEWS BULLETINE


Nesca Homes aims to build 10,000 wooden buildings by 2030 in India

By Neha Dewan, ET Online • Last Updated: Nov 30, 2022, 02:02 PM IST


Synopsis
The company is emerging as an experienced player in the Indian industry, having previously designed over 65,000 structures in Canada and the United States.



ADVERTISING



NEW DELHI: **Nesca Homes**, a wooden home construction company, aims to build 10,000 wooden buildings in India



TCR Engineering gets new projects in defence, gas pipeline space: President Rohit Bafna



Maharashtra-based [TCR Engineering](#) has bagged multiple new projects in the area of defence and gas pipeline, company's global president [Rohit Bafna](#) said. The company is into quality assurance of materials and testing industrial assets used in various projects related to sectors like steel, cement, nuclear power, capital goods,

TS.

ETPrime Gurgaon administration to demolish tower of Chintels after IIT-Delhi finds structural deficiency



Curigram's Chintels Paradiso's Tower-D will be demolished, DC ordered demolition

The [Haryana](#) administration has decided to demolish the [tower of Chintels](#), almost nine months after a building collapsed in one of its housing societies in [Gurgaon](#), killing two residents.

IIT-Delhi has submitted the [structural audit report](#) of the tower on Saturday and has found structural deficiencies in the building. The report has said that repair is not possible and the tower has to be demolished.



CANVAS



BE. CIVIL DEEP PARIKH



BE. CIVIL HARI HARSORA



BE. CIVIL KUNAL KADAM