Taameer

تعمیر

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Magazine

Department of Civil Engineering
Jamia Millia Islamia
New Delhi

VISION AND MISSION

VISION

To emerge as center of excellence for education and research in civil engineering and to produce professionally competent and ethically sound engineers of global standards, ready to serve the community and the nation with dedication.

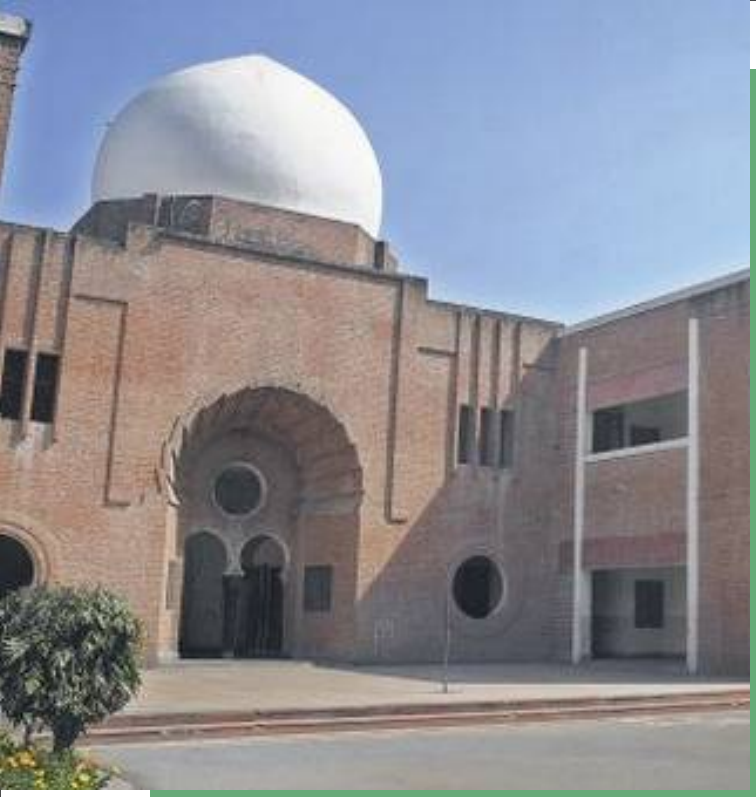
MISSION

M.1 To provide rigorous hands on civil engineering education through learner centric teaching pedagogy

M.2 Establish state-of-the art facilities for teaching and research in civil engineering domain

M.3 Motivate students to develop low-cost, sustainable, and ethical solutions to problems faced by the society

M.4 Provide opportunities to students to enable them to develop leadership and interpersonal skills



Jamia senior secondary school, Jamia Millia Islamia

Jamia Millia Islamia

Jamia Millia Islamia, an institution originally established at Aligarh in United Provinces, India in 1920 became a Central University by an act of the Indian Parliament in 1988. In Urdu language, Jamia means 'University', and Millia means 'National'

Jamia Millia Islamia, a Central Government funded University shall be celebrating its 100 years of establishment in year 2020. The University offers integrated education from Nursery to Research in specialized areas. At present, there are 39 departments and 22 centres of studies, offering more than 100 UG and PG programs. The University has more than 23 thousand bonafide students. The University has been ranked 12th amongst universities in India as per MHRD's* NIRF** India ranking 2018. (jmi.ac.in)

FTK-Centre for Information Technology

Department of Civil Engineering

The **Department of Civil Engineering** (DCE) offers two undergraduate courses in Civil Engineering and Master's program with specializations in Environmental Engineering and Earthquake Engineering. More than 80 Ph. D. scholars including foreign students from different countries are currently working in the Department on emerging research areas. DCE also renders technical advice to various Government and Private Sector companies on consultancy basis.

DCE has many collaboration programs with foreign universities including University of Applied Sciences, Erfurt, Germany; Wessex Institute, UK; University of Waterloo, Canada; Asian Institute of Technology, Bangkok. DCE regularly organizes international and national conferences, seminars and workshops on current themes. This international conference is a sequel to the earlier conferences held on the themes of sustainability and development and is an endeavor of the DCE to focus on the emerging areas of smart city development. (https://www.jmi.ac.in/civil)

Vibration, Vibration and Vibration!

by

T.K.Datta

The subject of vibration is vibrant over more than a century. Mathematicians ' favorite second order differential equations, ordinary or partial and stochastic or deterministic, could be elegant and beautiful, horrifying and disastrous, beneficial and advantageous. Only the independent variable, the time t, and the experts in the field of vibration are witness to them. Jointly carried forth by the fraternity of the Mechanical, Structural and Aerospace Engineering, producing tons of research papers, innumerable textbooks and edited volumes, it has enriched the technology with new inventions, products and patents. More than that, it has offered jobs to many jobless, prey to the hunters hunting for new research areas and funds to the professors eagerly waiting for research projects.

For the research scholars, it is a mine of gold. They hang on to it, linearizing the nonlinearities, look at the Poincare maps, bifurcations and jump phenomena with awe and wonder, and love to bring chaos in an otherwise calm n-dimensional space.

It has established its own identity in both science and engineering by being a separate subject of teaching in all disciplines, and it has introduced exclusive journals in its own name in the world of research.

It has the distinction of flowing in time, galloping over frequency bands and laplacing in the space domain. It forms a triad of research in the offshore engineering, wind engineering and earthquake engineering; no less scope of research, it offers to the man-made vibrations- the mechanical, impact and blast.

It has established joint collaborations with the Fuzzy logic, Artificial Neural Net, Genetic Algorithm and Wave Lets for sophisticating its own games.

It would be a big list to state the cutting edge researches in the area of vibration. A few of them cannot remain unstated:

Emerging areas of vibration control.

System identification through dynamic testing.

Health monitoring of structures.

Testing of large systems using hybrid technique - simulation and component dynamic tests.

Large Dynamic data acquisition and processing.

Uncertainties and Reliability analysis of real life dynamic problems.

Finally, let me end my talk by paying tributes to the doyens in the field of vibration, which I recall offhand- Timoshenko, Newland, Thomson, Clough, Penzien, Lin and Warburton. There are many others whose contributions to this field are legendary.

Inter-Linking of Rivers in India

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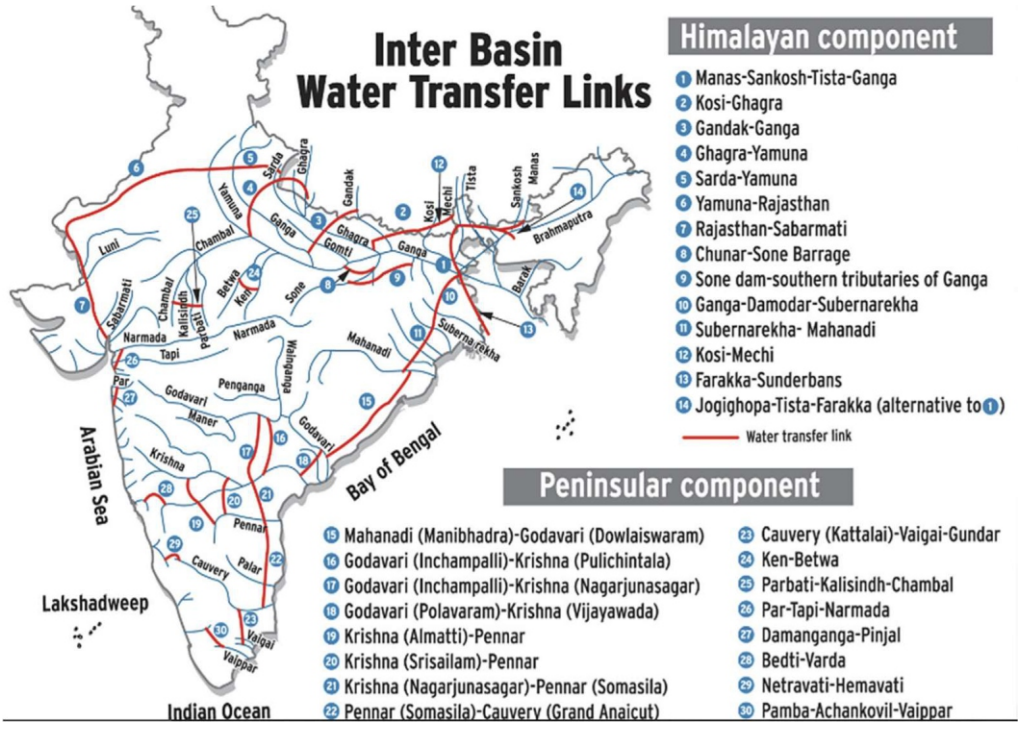
INTRODUCTION

India essentially forms a separate geo-hydrological and climatic unit due to its isolation from the rest of the Eurasian landmass, hence some parts of India might experience flood while some other part experiencing drought at the very same time. Lack of irrigation water regionally leads to crop failures and farmer suicides. Despite abundant rains during July–September, some regions in other seasons see shortages of drinking water. Some years, the problem temporarily becomes too much rainfall, and weeks of havoc from floods. This excess-scarcity regional disparity and flood-drought cycles have created the need for water resources management. Rivers inter-linking is one proposal to address that need.

ADVANTAGES & CONCERNS



Some of the major benefits of The Interlinking Project are :

Irrigation facilities being improved, **Electricity generation** at humongous scale due to large scale construction of a number of canals across the whole Indian sub continent , will open up way for **water navigation** making goods transportation very cheap, majority of our population is expected to get surplus amount of clean **drinking water**.

However at the same time we cannot ignore the major concerns related to this project which are as follows:

A large scale **Ecological Imbalance** is expected since we are disturbing the natural courses of river . Creation of canals will lead to large scale **Deforestation** affecting flora and fauna at a major level.

Possibility of new dams comes with threat that habitable or reserved land getting submerged under water. Also with construction new canals there is a possibility that many people might have to be rehabilitated to new areas.

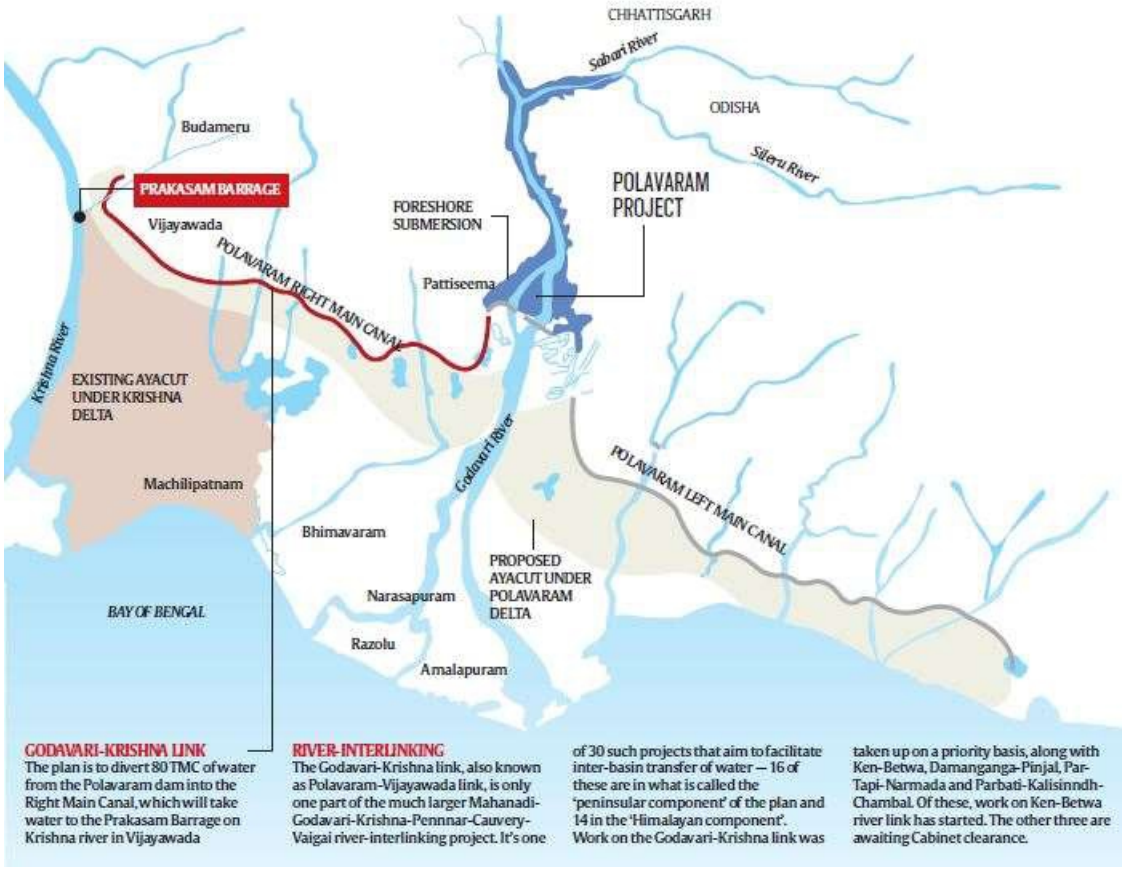
Inter-Linking of Krishna and Godavari

A milestone achieved

- 3,000 TMC of the Godavari's flood waters flows into the Bay of Bengal every year. Successive Andhra Pradesh governments have been trying to harness at least 10 per cent of this water and divert some of it into the Krishna, whose delta faces an acute shortage of water for irrigation from June to August.

- While the plan is to eventually divert water from the Polavaram dam, since the dam is still under construction and will take at least 4 to 5 years to be ready, the Chandrababu Naidu government decided to divert Godavari water from the Pattiseema Lift Irrigation Scheme. This plan will kick off on September 16. For now, since September 1, the government has been carrying out a trial run, pumping water into the canal from the Tadipudi lift irrigation project of the Godavari. It's this water that will enter the Krishna delta on September 15.

- Of the 80 TMC of Godavari water, 10 TMC will be diverted to domestic and industrial users in major towns in Krishna and West Godavari districts. The remaining 70 TMC will be released for irrigation in Krishna and West Godavari districts, enough to irrigate 7 lakh acres of paddy fields



- 80 TMC of Godavari water in the Krishna delta means the pressure to supply water from river Krishna eases and the Krishna water can be saved and stored at Srisailam dam, from where it can be supplied to the drought-prone Rayalaseema region.

- Rs 1,427 crore is the cost of the Pattiseema project, which was approved on January 1, 2015, and work on which began on February 23

--Article from Indian Express September 11,2015

Fig : Vijayawada Dam

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- https://www.quora.com/What-are-the-benefits-and-disadvantages-oflinking-rivers-In-India
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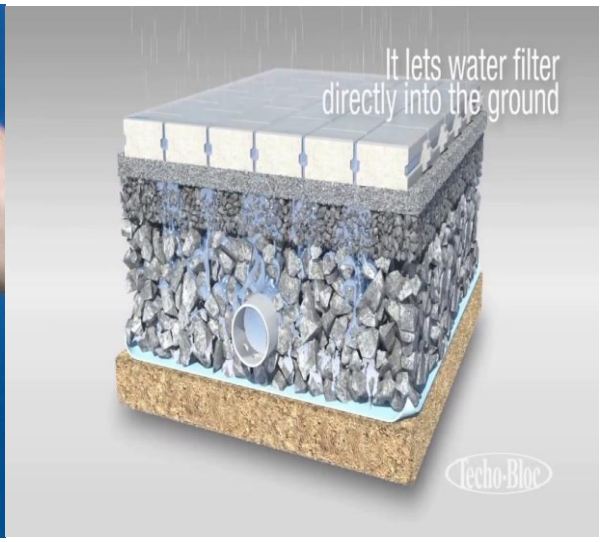
Permeable Concrete

In urban areas where there is a lot of hard landscaping and limited green space, only around a tenth of rainwater is absorbed into the ground. Thereby decreasing the groundwater level and hindering the sustainable urban drainage system while in rural areas water level is periodically recharged because of porosity of soil which infiltrate water through it. What if concrete could also do the same? Yes, it can happen and it is happening. Let me introduce you to the technology of permeable concrete that is a proven panacea of large variety of civil engineering problems.

- Permeable concrete is a special type of concrete with a high porosity used for concrete framework applications that allows water from precipitation and other sources to pass directly through, thereby reducing runoff from a site and allowing groundwater recharge. Permeable concrete can play a fundamental role in sustainable urban drainage system by draining excess of water from road, pavements, parking surface and walkaways. Cities like Delhi, Mumbai along with other metropolitan city is facing the increasing demand for portable water with an uncontrolled decrease in the groundwater table. Various preventive measures have been taken by the government in order to increase water table, rainwater harvesting is being encouraged and structures having proper rainwater harvesting system are being promoted but still a large amount of rainwater falling on road, footpaths, parking areas and walkaways are being wasted. The rainwater falling on these areas not only get wasted as sewage water and poses hinderance to sustainable drainage system but also increases the water level of rivers where they get merged and causes flood like conditions in low lying areas.



Unlike conventional concrete it has high void content between 20-30%. This allows surface water to drain through into the sub strata and dissipate naturally. This drained water could also be used where recycling is required by implementing drainage system below the concrete. Depending upon the use of water the concrete can be used in three ways with slight modification

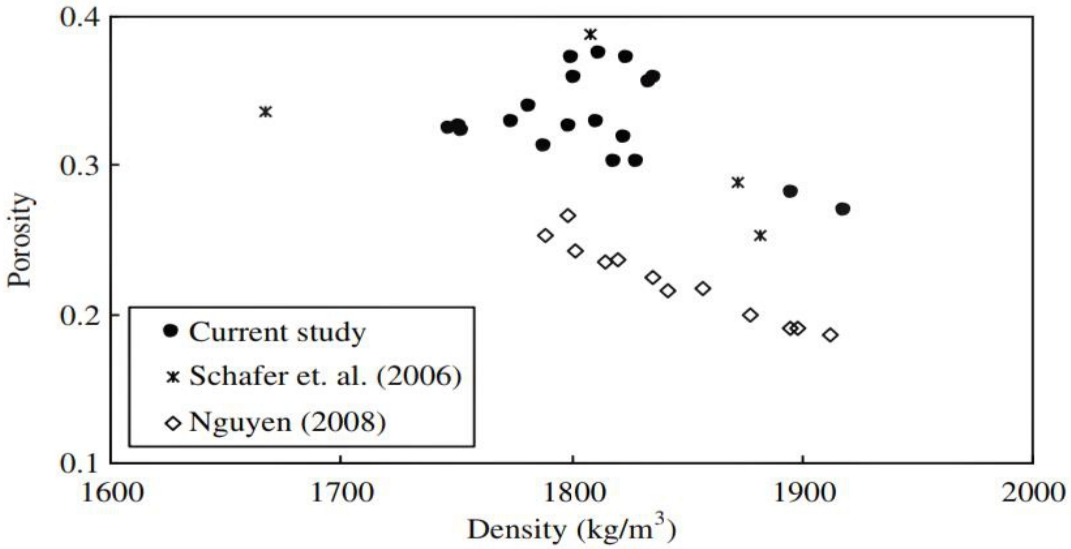
- Full Infiltration :- where all the water falling is allowed to soak into the soil.
- Partial Infiltration :- where the underlying soil is partially permeable
- Full attenuation :- In this a impermeable membrane is laid below previous aggregate sub base and the water collected through drainage system reaches filtration/recycling plant [2].

Construction

Pervious concrete consists of cement, coarse aggregate and water with little or no fine aggregate. The addition of small amount of sand will increase the strength. The mixture has a water cement ratio of 0.28-0.40 with void content of 15-25%. Low water to cement ratio will increase the strength of the concrete but too little of water causes surface failure. A proper water content gives the mixture a wet mettalic appearance

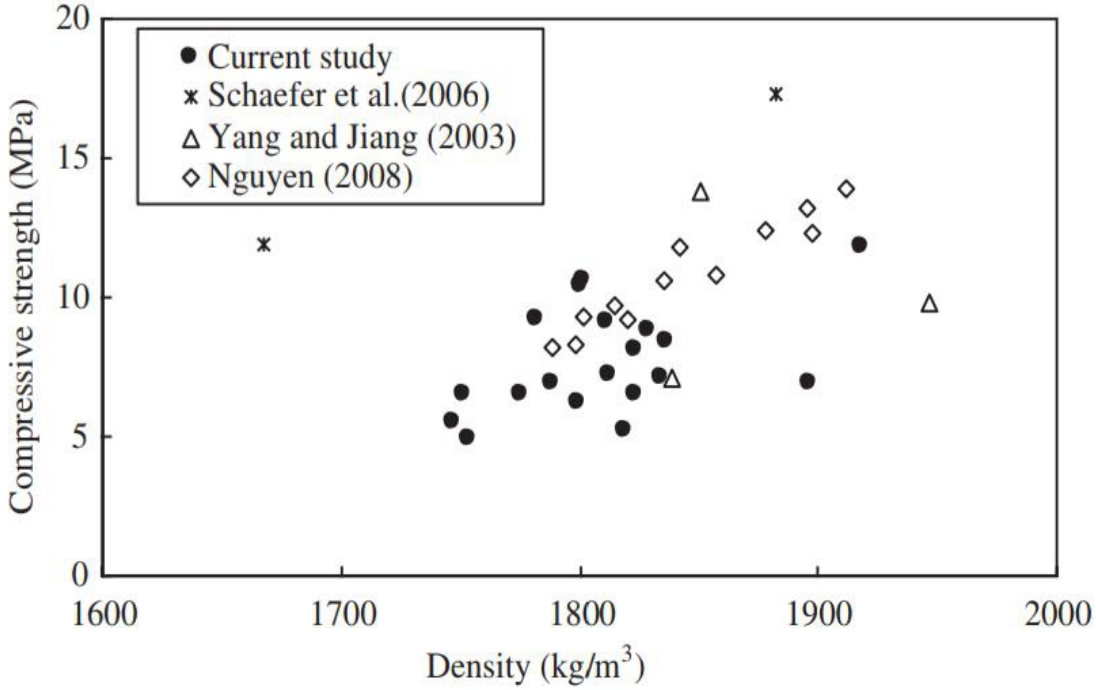
Technical overview

- Drainage capacity :- 150-1000 litres per minute per square meter
- Void content :- 15-25%
- Typical compressive strength :- 10-20 N/mm^2
- Flexural strength :- 1.5-3 N/mm^2 [1].



- . Effect of density on porosity.

[3]



. Effect of density on compressive strength.

[3]

Disadvantages

- Concerns over the resistance to the freeze thaw cycle have limited the use of pervious concrete in cold weather environment.
- The main reason pervious concrete not being used for high traffic pavements such as highways is surface raveling due to shear force applied by tire.
- Proper engineering of substrate beneath the pavement is essential since it must be able to temporarily store water while it percolates into the soil.
- Repair of permeable concrete is difficult as it may result in making it impervious.
- If used carelessly near structure that had plain concrete may allow more water into the foundations, crawlspaces and basements.

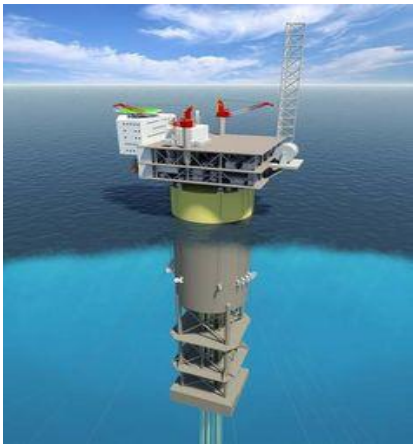
Conclusion

IMPORTANT OIL PLATFORMS

An oil platform, offshore platform or offshore drilling rigs are used to explore, extract, store, process petroleum and natural gases and can be used in lakes, inshore waters and inland seas, but most commonly these engage activities on the great continental shelf. As per the circumstances these platforms may be floating type, may be fixed to the ocean bed, or may consist of an artificial island. These remote subsea wells may be connected to a platform by umbilical connections and by flow lines. There are different types of facilities from which these offshore drilling operations can take place. Some of these include combined drilling and production facilities (bottom founded or floating platforms) , bottom founded drilling rigs (swamp barges and jacked barges), and deepwater mobile offshore drilling

THE PERDIDO OIL PLATFORM

The Perdido is located in the Perdido fold belt which is a rich discovery of crude oil and natural gas that lies in water that is nearly 8000 feet deep. The platform's peak production will be 100,000 barrels of oil equivalent per day. At 267 meters, the Perdido is nearly as tall as the Eiffel Tower.The platform has three decks or topsides which support the oil and gas processing units, a drilling rig and living quarters .The spar acts as a hub for and enables development of three fields Great White, Tobago, and Silvertip. The oil and gas fields beneath the platform lie in a geological formation holding resources estimated at 3-15 billion barrels of oil equivalent &peak production is 100,000 barrels of oil equivalent a day, and 200 million cubic feet of gas. It has the largest rescue boat used on any Shell facility,blast-resistant quarters and the number of fire and gas detectors used is ten times more than any other installations in the Gulf.



BERKUT OIL PLATFORM

While the Berkut oil platform toils in near anonymity in Russia's Far East,at 200,000 tons, the BERKUT ,holds the record for the biggest in the world above water. It can work under its own power down to minus 47 degrees Fahrenheit, contains its own power supply to keep operations running throughout the long winter months with a newly-developed ice protection belt made from concrete, withstand chunks of floating ice upto six feet thick and shake off waves up to 60 feet high.

The platform is built on a gravity-based structure (GBS) which is fixed to the seabed at a depth of 35 metres. The rig can also survive earthquakes thereby making Berkut a very remarkable feat of engineering.

STONES OIL PLATFORM

STONES OIL RIGWHILE may prove the heftiest above the water,

goes the deepest of any offshore structure reaching a staggering 9500 feet underwater. Located in the gulf of Mexico ,the stones above water structure-significantly more boat like than your average oil rig .Stones uses a flexible “steel lazy wave riser” to carry oil and gas to the top,with the bend in the piping absorbing the motion of the structure.In addition to the extreme water depth, the wells themselves are quite deep, exceeding 5,181 m (17,000 ft) below the mud line

OLYMPUS

Weighing 120,000 tons more than 300 Boeing 747 jets , the 2014 built Olympus Mars B development in the Gulf of Mexico sits in 3,100 feet of water. From the base of the hull to the top of the derrick, Olympus is 406 feet tall and has a combined deck area of 342,000 square feet, taller and with more floor area than the Mercedes-Benz Superdome in New Orleans.

The Olympus tension leg platform (TLP) is installed about one mile (1.6km) away from the existing Mars platform. It is the biggest floating deep-water platform deployed in the Gulf of Mexico and the seventh platform owned by Shell. It is also equipped with process facilities to facilitate production from the neighbouring Boreas and South Deimos satellite fields.The tension legs of the platform are fitted with 16 rotationally lined caissons coated with modified high-density polyethylene (HDPE).

TROLL –A PLATFORM

The Troll A platform has an overall height of 472 metres (1,549 ft), weighs 683,600 tons (1.2 million tons with ballast and has the distinction of being the tallest and heaviest structure ever moved by mankind. The platform stands on the sea floor 303 metres (994 feet) below the surface of the sea and one of the continuous-slip-formed[3]concrete cylindrical legs.The walls of Troll A's legs are over 1 metre thick made of steel reinforced concrete.The concrete legs must be able to withstand intense pressure so are built using a continuous flow of concrete.The four legs are joined by a "chord shortener", a reinforced concrete box interconnecting the legs, that damps out unwanted potentially destructive wave-leg resonances by retuning the leg natural. The base is a Condeep gravity base structure built from reinforced concrete.

PETRONIUS PLATFORM

Petroniu**s** is a deepwater compliant tower oil platform operated by Chevron in the Gulf of Mexico, 210 km southeast of New Orleans, United States.

BY HAYA ZAFAR

(M.Tech Earthquake Engineering)

A compliant piled tower design, it is 609.9 metres (2,001 ft) high, and was arguably the tallest free-standing structure in the world, until surpassed by the Burj Khalifa although this claim is disputed since only 75 metres of the platform are above water. The multi-deck topsides are 64 metres by 43 metres by 18.3 metres high and hold 21 well slots, and the entire structure weighs around 43,000 tons. Around 8,000 m^3 (50,000 barrels) of oil and 2,000,000 m^3 (70 million cubic feet) of natural gas are extracted daily by the platform.

It can deflect (sway) in excess of 2% of height. Most buildings are kept to within 0.5% of height in order to have occupants not feel uneasy during periods of movement.

HIBERNIA PLATFORM

The world's first iceberg resistant gravity based structure, the Hibernia platform includes a 41,000 ton topside facility mounted on a 660,000 ton gravity base structure, which literally sits on the seabed.The largest offshore platform in Canada, the Hibernia can withdstand a six million tonn iceberg, and has an iceberg management system that works to detect the movements of incoming ice and alter its path away from the structure.

The production platform *Hibernia* is the world's largest oil platform[2] (by weight) and consists of a 37,000 t (41,000 short tons) integra ted topsides facility mounted on a 600,000 t (660,000 short tons) gravity base structure.

source:google

جامعہ کا ترانہ

ہوئے تھے آ کے یہیں خیمہ زن وہ دیوانے
اُٹھے تھے سن کر جو آواز ہبران وطن

یہیں سے شوق کی بے ربطیوں کو ربط ملا
اسی نے ہوش کو بخشا جنوں کا پیراہن

یہیں سے لالۂ صحرا کو یہ سراغ ملا
کہ دل کے داغ کو کس طرح رکھتے ہیں روشن

دیارِ شوق میرا، شہرِ آرزو میرا

یہ اہلِ شوق کی بستی یہ سر پھروں کا دیا
یہاں کی صبح نرالی، یہاں کی شام نئی

یہاں کے رسم و رہ سے کشی جدا سب سے
یہاں کے جام نئے طرح رقص جام نئی

یہاں پہ تشنہ لبی سے کشی کا حاصل ہے
یہ بزم دل سے یہاں کی صلائے عام نئی

دیارِ شوق میرا، شہرِ آرزو میرا

یہاں پہ شمع ہدایت ہے صرف اپنا ضمیر
یہاں پہ قبلہ ایمان کعبہ دل ہے

سفر ہے دین یہاں ، کفر ہے قیام یہاں
یہاں پہ راہ روی خود حصول منزل ہے

شناوری کا تقاضہ نو بہ نو طوفان
کنار موج میں، آسودگی ساحل ہے

دیارِ شوق میرا، شہرِ آرزو میرا