



Vidya Vikas Education Trust's

Universal College of Engineering

Gujarati Linguistic Minority Institution

Approved by AICTE, DTE, Maharashtra State Government and Affiliated to Mumbai University
Accredited with "B+" Grade by NAAC



The Benchmark

DECEMBER 2020

Vol 03

Edition 06



Patrons

Dr. Jitendra B. Patil
- Campus Director

Mr. Rajesh Dubey
- H.O.D., Civil

POST BEARERS

Mr. Rahul Patil
- General Secretary

Ms. Takshika Bhut
- Joint Secretary

Mr. Chirag Gangani
- Treasurer

Mr. Brijesh Chauhan
- Technical Head

Mr. Praneeth Hegde
- Documentation Head

Mr. Rohan Talekar
- Creative Head

Ms. Sakshi Dubey
- Discipline Head

Ms. Vrushti Makwana
- Hospitality Head

Mr. Dhruv Parmar
Ms. Pranali Gudekar
- Marketing Head

Mr. Yagnesh Jamvecha
Ms. Khushi Patil
- Public Relation Officer

EDITORS

Mr. Brijesh Chauhan
Ms. Kalpita Chafekar

FACULTY ADVISORS

Ms. Swapnali Onkar



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.

Editor's Desk

We are pleased to present December 2020 edition of benchmark. In this edition you all will find an article on "Empire State Building". This edition focuses on Infrastructural project and other contribution by faculties of department of civil engineering highlighted in the month of November. It also includes the news bulletin and departmental activities.

Empire State Building (New York City)

Overview

Empire State Building, steel-framed skyscraper rising 102 stories that was completed in New York City in 1931 and was the tallest building in the world until 1971. The Empire State Building is located in Midtown Manhattan, on Fifth Avenue at 34th Street. It remains one of the most distinctive and famous buildings in the United States and is one of the best examples of Modernist Art Deco design.

At the time of its construction, there was fierce competition to win the title of tallest building in the world. The Chrysler Building claimed the title in 1929, and the Empire State Building seized it in 1931, its height being 1,250 feet (381 metres) courtesy of its iconic spire, which was originally intended to serve as a mooring station for airships. A 222-foot (68-metre) antenna was added in 1950, increasing the building's total height to 1,472 feet (449 metres), but the height was reduced to 1,454 feet (443 metres) in 1985 when the antenna was replaced. (By that time One World Trade Center, officially opened in 1972, had become the tallest building in the world.)

It is located on Fifth Avenue between 33rd and 34th streets in Manhattan. The Empire State Building took only one year and 45 days to build, or more than seven million man-hours. There are observatories on both the 86th and 102nd floors. The building has been featured in several movies such as "An Affair to Remember," "Sleepless in Seattle," "Elf" and "The Amazing Spider-Man." From the observation decks, visitors can see as far as 80 miles away into New York, New Jersey, Connecticut, Pennsylvania and Massachusetts on a clear day. The distinctive binocular viewers available around the building were made by Tower Optical company. The tower lights are turned off on foggy nights during the spring and autumn bird migration seasons, so the lights will not confuse birds and cause them to fly into the building. It is the tallest Leadership in Energy and Environmental Design (LEED)-certified building in the United States. Every year on Valentine's Day, couples who marry on the 80th floor become members of the Empire State Building Wedding Club.

The building has 24/7 security. It is monitored with security technology, such as CCTV cameras, and the screening for visitors is similar to airport security procedures.

Photos

They receive free admission to the observatory each year on February 14 (their anniversary) thereafter. Over thirty people have jumped to their deaths from the Empire State Building. The Empire State Building Run-Up is an annual race up the stairs to the 86th floor (1,576 steps).



DID YOU KNOW?

Guinea pigs are social animals that prefer the companionship of another guinea pig. That's why it's illegal to own just one of the little critters in Switzerland. Thankfully, if one of your fuzzy pets passes away and you're not ready to commit to another, Switzerland also allows you to rent a guinea pig for your remaining pet.

To know more about Empire State Building, Scan the QR Code



Page 03: - Looming of Plastic in Covid-19 pandemic situation

During the height of the COVID-19 outbreak in Wuhan, the city was dealing with more than 240 tons of medical waste a day, a six-fold increase over the amount being treated before the outbreak. Improperly discarded single-use face masks and gloves have already been found at beaches of remote islands and floating at sea, adding to the already chronic problem of marine plastic litter and revealing the shocking speed at which the recent shift in human behaviour impacts the environment. Responses to the health crisis led to a rise in plastics consumption and waste generation in a number of sectors – well beyond the medical sector – and put pressure on the environmentally sound handling, treatment and disposal of this waste. At the same time, as more household plastic waste was being generated, less was recycled. The risk of recycling workers contracting the virus prompted several municipalities to temporarily put a halt on separate collection and sorting, directing more waste to incineration or landfills.

As the COVID-19 pandemic continues to spread at different rates around the world, the crisis is generating its own short and long-term challenges for waste management, recycling, and the circular economy transition. Many initiatives to reduce plastics were reversed or halted in response to the crisis with sanitary concerns at the top of people's minds, the pandemic has brought about a resurgence of single-use plastics, amidst worries about the virus clinging to reusable bags, cups and straws. Policy initiatives to reduce plastic use were reversed, halted or delayed in several countries. A number of national and sub-national governments put in place waivers or delays on bans on single-use plastic bags, which were perceived as unsanitary. Few authorities went even further and temporarily banned or strongly discouraged the use of reusable plastic bags. Major brands also rolled back their waste reduction initiatives during the height of the pandemic. Also restaurants and food stores were limited to take-out and delivery with single-use packaging. Also in supermarkets, consumers opted increasingly for plastic-wrapped



The science behind shifting to single-use plastics as a measure to reduce the spread of COVID-19 currently remains very weak. When reusable options that are washed regularly may not necessarily lead to an elevated risk of exposure. In fact, the virus has been shown to survive less time on alternative materials such as paper, suggesting that plastic substitutes may even be safer in some instances.

Governments must ensure temporary measures do not become permanent while many of the recent measures appear to be intended as temporary, there is a risk that they could become permanent. This could lead to significant impacts on the environment with arguably limited or no associated benefits for public health or the economy. More generally, COVID-19 could set back efforts by governments and industry to tackle plastic pollution, resulting in a delayed or slow transition towards sustainable lifestyles and a more circular economy. Furthermore, even if precautionary measures that promote single-use plastics are rapidly lifted when the crisis is well behind us, they could still result in lasting changes to consumer behaviour. Hence, it will be important to increase consumer awareness around the importance of reducing plastic production, consumption and waste.

-Ms. Shilpa Patil
Asst. Professor UCoE



“A good scientist is a person with original ideas. A good engineer is a person who makes a design that works with as few original ideas as possible.”

- Freeman Dyson

Page 04: - Use of vermiculite for light weight floating concrete

1. INTRODUCTION :

The objectives of the project are as follows:

- 1) To study the experimental material vermiculite.
- 2) To carry out chemical analysis of the experimental material.
- 3) To study the compatibility of vermiculite with different building materials.
- 4) To introduce a light weight concrete.
- 5) To check floating characteristic of the light weight concrete made from vermiculite.

2. MATERIALS USED

2.1 Cement

The OPC 53 Grade cement has been used as after conducting necessary testing according to IS specifications.

2.2 Lime Pure Lime (CaO), generally called quick lime, is a white oxide of calcium. Much of commercial quick lime,

however, contains more or less magnesium oxide, which gives the product a brownish or grayish tinge. Quick lime is the lime obtained after the calcinations of limestone. It is also called caustic lime. It is capable of slaking with water and has no affinity for carbonic acid. The specific gravity of pure lime is about 3.40.

2.3 Sodium Silicate also known as water glass or liquid glass, available in aqueous solution and in solid form, soluble in water, producing an alkaline solution. There are various states of this compound; all are glassy, colorless, and soluble in water. Sodium silicate is stable in neutral and alkaline solutions. In acidic solutions, the silicate ion reacts with hydrogen ions to form silica acid, which when heated and roasted forms silica gel, a hard, glassy substance.

2.4 Fly Ash or Pulverized Fuel Ash (PFA) is the residue from the combustion of pulverized coal collected by mechanical separators obtained from Dahanu Thermal power plant.

2.5 Grit The Grit was primarily used for the purpose of providing bulk to the mixture.

2.6 Vermiculite Vermiculite is a hydrous phyllosilicate mineral. It undergoes significant expansion when heated. Exfoliation occurs when the mineral is heated sufficiently, and the effect is routinely produced in commercial

3 CHEMICAL & PHYSICAL TESTS ON VERMICULITE

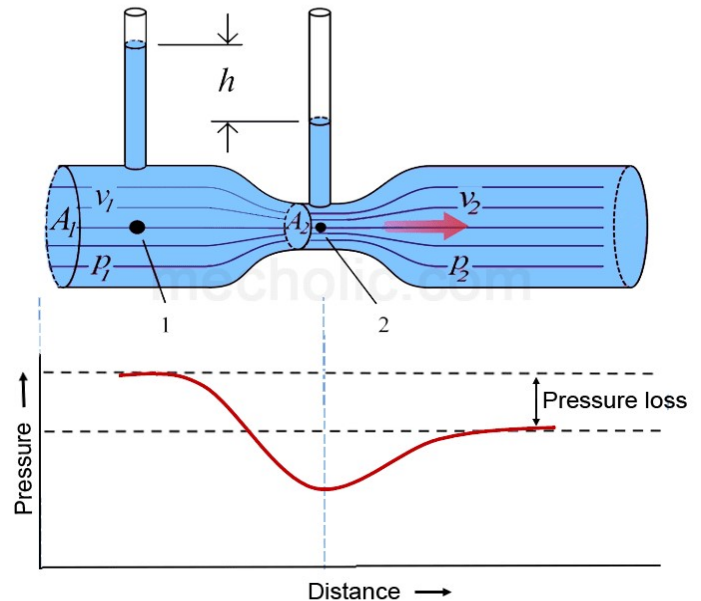
3.1 Chemical Analysis Report

By Inorganic qualitative analysis the following results are obtained.

- 1) Sulphates of SO_4^{2-} present
- 2) Chlorides as Cl^- present
- 3) Fe^{3+} and Fe^{2+} present ,
- 4) NO_3^- present
- 5) Ca^{2+} present in negligible amount
- 6) Mn^{2+} present

3.2 Physical Tests

Lime reactivity Test (IS:1727-1967)



Scratch Your Head!!

1) A task that is simple to complete:

Ans :- A P_ _ _ _ O_ C_ _ _

4 EXPERIMENTAL PLAN

From the chemical analysis that was available, it was found that the vermiculite contains significant quantities of aluminium and sulphate (SO₄-2). With this composition it was impart that lime (CaO) may have better binding characteristics as compared to cement. In such combination sodium silicate was known to have a positive effect on the binding material composition. With this in background following experimental programme was devised.

4.2 Casting Methodology:

- Moulds of dimensions 100mm*100mm*100mm were used for casting of cubes.
- The Weigh Batching was done. Quantity for each mould was 2.5 Kg and for each trial was 17 Kg.
- Mixing by hand followed by pan mixing was done to get intimate mixture.
- Gunny bag and air setting curing was adopted.
- Compression testing was done with the help of proving rings.
- Compressive strength were found out and tabulated.

5. CONCLUSION

- The experimental results indicate that in general there is an increase in strength with decreasing in cement content and increasing lime content.
- In the present experimental programs, the maximum percentage lime content was 60% of the total binders.
- This indicates that the vermiculite is more suitable for lime as a binder as compare to that of cement.
- The addition of Sodium Silicate as a co-binder has favorable effect up to 15% of the total binder weight. Beyond this it leads to a fall in 28 days strength. This indicates that 15% Sodium Silicate as a co-binder is the optimum % for 28 days Strength.
- The results show that the experimental material (vermiculite) is more compatible with LIME than with CEMENT. It gives appreciative strength with 15% of Sodium Silicate by weight of bonding materials.



-Mr. Yuvraj Chavda
Asst. Professor UCoE



DID YOU KNOW?

In October 2018, the Gilbert Minnesota Police Department issued a public notice about birds that appeared to be "under the influence." It turns out that the airborne animals were apparently eating berries that had fermented due to early frost, which was making them "tipsy." Unfortunately, this meant that the buzzed birds were acting confused and flying into windows. Hopefully, they were able to sleep it off.

News Bulletin

➤ **AICTE extends engineering admissions' date till Dec 31 over late CET result**

All India Council for Technical Education has extended last date for admission to various engineering courses till December 31 over "late announcement of CET result in some states due to COVID-19". "Last date...extended in cases...where counselling and admission hadn't started," AICTE said, adding it's also applicable where classes haven't started for more than 15 days "to avoid academic loss".



➤ **MMRDA plans signal-free ring road in Mumbai by 2030**

Mumbai Metropolitan Region Development Authority (MMRDA) Metropolitan Commissioner RA Rajeev said, "There Will be a signal-free ring road in Mumbai Metropolitan Region by 2030." While speaking about the Mumbai Trans Harbour Link (MTHL) project's progress, Rajeev added, "The sea link will act as a crucial connectivity for the city as it will also connect to other ongoing and proposed roads".



➤ **Complete exams of first year batch by Jan 9: Mumbai University**

The University of Mumbai (MU) on Monday released a circular stating, "This is to inform all affiliated colleges to ensure that exams for the first year batch of 2020-21 (winter session) should be completed by January 9, 2021." The decision comes days after the Bombay University and College Teachers' Union (BUCTU) approached MU's Vice Chancellor, seeking postponement of these exams.



➤ **IITS, NITS to offer engineering courses in mother tongue from 2021.**

IITs and NITs will start offering engineering courses in mother tongue for the academic session 2021-22, the Ministry of Education said on Thursday. "A few IIT and NIT are being shortlisted for the same," a government release said. An official told The Print, "For now we have zeroed down on IIT BHU to start engineering courses in the mother tongue."



➤ **What is 'Co-WIN' digital platform government has made for COVID-19 vaccine delivery?**

The government has announced a 'Co-WIN' digital platform and a free app to monitor the COVID-19 vaccination process and recording vaccine data. The app will provide self-registration facility for vaccination and also send real-time data of the temperature of the cold-storages to the main server. An administrator module will let administrators in vaccination process create vaccination Sessions.



Scratch Your Head!!

2) When something is extremely expensive, it costs:

Ans :- A _ A _ _ A _ _ A L _ _

Page 07: - Departmental Activities

REPORT ON ALUMINI MEET-2020

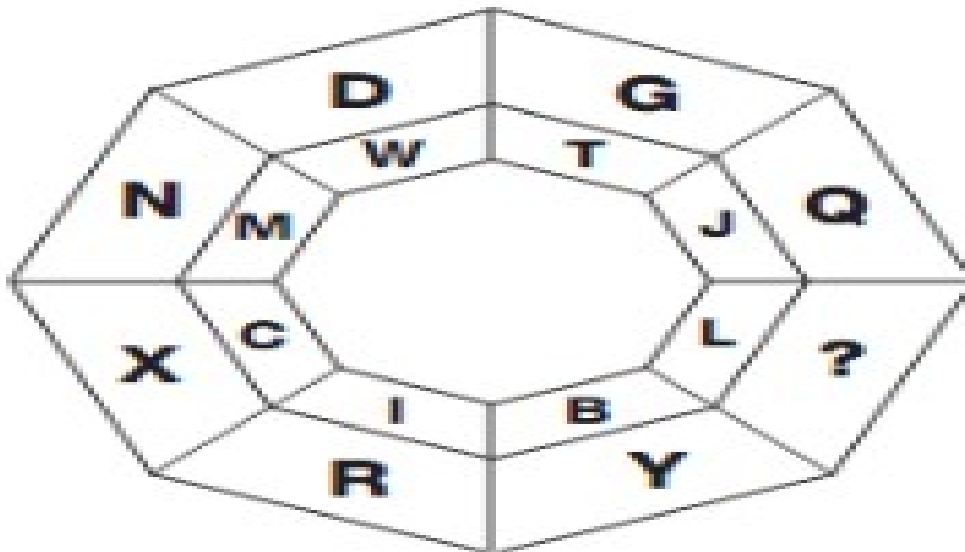
Universal College of Engineering, Students council organised Alumni Meet- 2020 via virtual platform Google meet on 28th November 2020. Mr. Allan lopes and Mrs. Mudra were event co-ordinators. The Meet was attended by around 300 alumni in total, which included 75 alumni from Department of Civil Engineering. The event started around 11 am. Dr.J.B. Patil, Campus Director, Universal College of Engineering addressed the alumni regarding the Academic , Achievements, Curriculum, and Contributions of the various alumni. Few alumni were awarded with various post among which Mr. Davda Hardik Narendrabhai was elected as President, Mr. Ansari Eram Arif as Vice President, Mr. Savalia Bhavin Pravin as Secretary, and Mr. Shah Aanit as Treasurer.

The session was followed by fun activities and games, the Head of all the Department's gave a presentation on departmental activities, about the curriculum, lab developments, etc. All the alumni interacted during the meet and cherished their memories. The alumni also shared their experiences of their college days and their journey from student to the present position. Alumni survey and feedback were taken at the end of the meet.

❖ Short Course by Faculties in Nov 2020

Sr.No.	Date	Name of the Faculty	Short Courses
1.	15/09/2020 to 10/11/2020	Mrs. Mitali Poojari	Effective Documentation for Accreditation
2.	23/11/2020 to 28/11/2020	Mr. Rajesh Dubey	Digital Teaching Techniques

Which letter replaces the question mark?



Options:- 1) P

2) O

"Architects and engineers are among the most fortunate of men since they build their own abutments with public consent, public approval and often public money."

4) C

- John Prebble

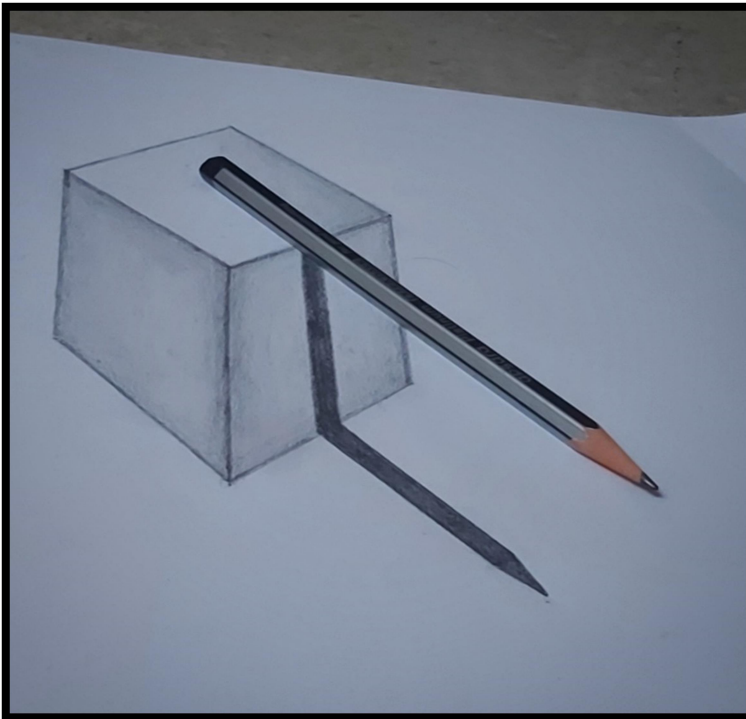
CANVAS



-Ms. Shweta Bhadekar
B.E. CIVIL



-Ms. Shweta Bhadekar
B.E. CIVIL



-Mr. Rahul Patil
B.E. CIVIL

ANSWERS to "Scratch Your Head"
1) A Piece Of Cake 2) An Arm And A Leg



-Mr. Rahul Patil
B.E. CIVIL