



AVIT

AARUPADAI VEEDU
INSTITUTE OF TECHNOLOGY

ISO 9001:2008 Certified Institution NBA-AICTE, New Delhi Accreditation for Major Courses
Under the Ambit Of
VINAYAKA MISSIONS UNIVERSITY
(Declared Under Sec 3 of UGC Act, 1956)



CIVIL ENGINEERING NEWSLETTER

March, 2015

Volume 1, issue 2

MESSAGE FROM PRINCIPAL'S DESK



Message

I have pleasure to see good developments in the Department of Civil Engineering during recent months. Every Civil Engineer can call him as a creative artist as he builds beautiful structures, as we dream, using basic materials like brick, stone, sand, cement, steel and water. We have to analyze many case studies of building failures as they remain as a new dimension of knowledge to learn and to avert any such failures in the future.

Apart from the moral obligation to deliver quality construction to our clients, we have legal liability to face court proceedings against us, if we fail to adhere to quality standards. Hence as Civil Engineering students you have to learn the subject in detail without any doubts and execute works with total care to march towards success in your profession.

With my best wishes to my beloved students.

Prof. Dr. A. PRABAKARAN, PRINCIPAL,
TN POLICE CHIEF TRAFFIC WARDEN

“Live as if you were to die tomorrow. Learn as if you were to live forever.”

-Mahatma Gandhi

MESSAGE FROM VICE PRINCIPAL'S DESK



Message

I am happy to note that the Department of Civil Engineering is releasing its Annual Newsletter enumerating the various activities and achievements of their faculty and students. It is clear that the department is striving hard to make a mark in this Institution by way of its academic growth.

I congratulate all the students who have put their mite in bringing forth this edition consolidating the annual report of their department. I also congratulate all the faculty members and the HOD for motivating their students towards this fulfillment.

I wish each one of them in the Department success in all their endeavors.

Prof. R. KALAVATHY

There are three ingredients in the good life: learning, earning & yearning.

-Christopher Mor-

ABOUT THE DEPARTMENT

Civil Engineering is the application of physical and scientific principles, and its history is intricately linked to advances in understanding of physics and mathematics throughout history. Because civil engineering is a wide ranging profession, including several separate specialized sub-disciplines, its history is linked to knowledge of structures, materials science, geography, geology, soils, hydrology, environment, mechanics and other fields. The course cover basic sciences, Mathematics, Engineering graphics, computing techniques along with the fundamental Engineering principles of construction materials, Building Drawing and Laboratory classes in testing of materials help to understand Civil Engineering in a practical way. Software packages like AutoCAD, STAAD Pro allows our students to expand their skills and provide an adequate platform to perform analysis, design and drawing for a wide range of civil Engineering buildings and other heavy structures viz. Roads, bridges, flyovers, dams, etc.

Every semester students will be taken for Industrial Visits to various Construction sites and water Treatment Plant, Atomic Power stations ,Dams and places of interest to impart Practical Knowledge. In addition, the students have to undergo practical Training for 2- 3 weeks in any Construction industry to gain practical experience and technical skills. The students are also encouraged to give seminars on current areas of research. To acquire high degree of Engineering skills and to translate brilliant ideas into a working reality.

DEPARTMENT PROFILE

The department was established on the year of 2009, offering various programs such as- UG, PG, PhD.

The above disciplines are available for both full time as well as for part time.

Students have access to every facility in the form of 7 well equipped labs.

They are:

- Computer lab
- Soil mechanics lab
- Computer Aided Design Lab
- Hydraulics and fluid machinery Lab
- Strength of materials lab
- Concrete and highway lab
- Survey lab



SOURAV MAL, (Civil IV)
(President of ACE)

RAMKRISHNA CHATTERJEE,
(Civil IV)
(Vice President of ACE)

SUGUMAR, (Civil IV)
(Treasurer of ACE)

DEPARTMENT ACTIVITIES (2014-15)

Faculty Development Program



The Department of Civil Engineering organized a Faculty Development Program on “**Computer Aided Building Drawing Lab using REVIT ARCHITECTURE**” was held on May 14-16, 2014. Mr. Prakash from KKM Software delivered the Welcome address and explained about the significance of **Revit Architecture** “Revit Parametric modeling is a significant tool for conceptual design, with Revit software, Architecture designers can quickly Sketch through layout of the floor plan or make changes to the standard set of building designs. Around 20 faculty has attended the training program.

Inaugural Function

Association of Civil Engineers



The Department of Civil Engineering formed an Association of Civil Engineers and its inaugural function was held on 9th September, 2014. Mrs. S.P. Sangeetha, Head, Department of CIVIL ENGINEERING, welcomed the gathering. Mr. Anil Kumar Pillai – AGM Technical Services THE RAMCO CEMENTS LTD, Chennai inaugurated the Association of Civil Engineers by lighting the kuthuvilakku. Dr. A. Prabakaran, Principal, AVIT, delivered the Presidential Address. Prof. R. Kalavathy,

Vice Principal, AVIT, delivered the Special Address. The chief guest Mr. Anil Kumar Pillai delivered the inaugural address and released the first newsletter. Mr. Sourav Mal, Association President, Department of Civil Engineering delivered the vote of thanks.

CENTER OF EXCELLENCE FOR “DISASTER MITIGATION & MANAGEMENT”

Department of civil Engineering inaugurated the center of excellence for “**Disaster Mitigation & Management**” on October 15th, 2014. Mrs.S.P.Sangeetha, Head of the Department, Department Of Civil Engineering delivered welcome speech. Dr.A. PRABAKARAN, Principal,



AVIT delivered the presidential address. He briefed the various action plans which will be implemented through this center. The Chief Guest Shri C. SIVATHANU PILLAI, Associate Director, Civil Engineering Group, IGCAR, Kalpakkam gave the Inaugural address. He gave a special lecture on causes, prevention, mitigation, preparedness works during a disaster. Mrs.B.Jayashree, Assistant Professor, Department Of Civil Engineering delivered the vote of Thanks

Workshop on “Earthquake Engineering and Seismic Detailing”



Department of Civil Engineering organized a one day workshop on “**Earthquake Engineering and Seismic Detailing**” by Dr.A.Prabakaran, Principal, AVIT, on September 24th, 2014. The third year and final year Civil Engineering Students attended the workshop. Dr.A. PRABAKARAN explained the causes and the effects of earthquake in existing buildings, and also he explained the various rehabilitation methods for damaged buildings.

Training course for Assistant Mason

A Training course on Assistant Mason was conducted by Department of Civil Engineering, Aarupadai Veedu Institute of Technology in association with Ramco Cements Chennai during October 30th & 31st 2014. The training course was inaugurated on 30th Oct 2014. Mrs. S.P. Sangeetha, Head of the Department, Department Of Civil Engineering welcomed the gathering. Dr. A. Prabakaran, Principal, AVIT Delivered The Presidential Address. The Chief Guest Shri K. Sathasivam, General Manager (Marketing), Ramco Cements, Chennai gave the Inaugural address. Mr. Bilal, Mr. Ramachandran and Mr. Uma Maheshwaran, Deputy General Manager, of Ramco Cements also addressed the gathering. Around 25 Masons participated in the training program. Dr. A. PRABAKARAN, Principal, AVIT was the course director and Mrs. S.P. Sangeetha, HOD civil was the course Instructor. During the training course masons were trained on new construction Techniques, good construction practices, safety measures during construction, yoga, etc.,



STUDENT'S COLUMN

Green Engineering

As the world finds ways to build cities that can have more people and better facilities, so too do civil engineers work in order to join the green movement and utilize fewer resources for habitation. While they may not be as well-known or productive as massive solar grids, they offer a means of reducing or even eliminating a carbon footprint or utilizing less power and water in order to get the same value from habitation.

The Three R's of Site Design

Any time that a city needs to construct a new block, a row of homes, a hospital, or any other new project, they are sure to come across a huge amount of trash and debris in order to get the project done. The sites that build up massive civil engineering projects like airports and dams produce refuse in staggering quantities, ranging from the concrete that is no longer necessary to the runoff when precipitation hits the build site.

Recycling construction materials is no new process, but never before has it been possible to do so on site, until now. Civil engineers can use green concrete recyclers without having to expand the time and energy needed to transport large quantities of the bricks and rubble to a facility. These individual recycles are about the size of a dumpster and cannot go through more than about a ton of concrete per day, but ends up with a new lump of concrete instead of throwing out an old one to get a new one.

Driving On Green Roads

There is enough asphalt on American roads to reach to the moon and back three times. This much asphalt — as well as gravel, cement, and other materials — takes a huge toll on the environment. A new project by the Asphalt Research Consortium, however, is spending five million dollars in order to figure out how to make asphalt more green and sustainable.

One major area of research is “cold mixing” asphalt, using a process popular in under-developed nations to pour asphalt without needing to expend a huge amount of energy to heat it up first. Since all asphalt needs to come from refined oil, furthermore, heating it up creates the carbon byproduct that creates choking greenhouse gases. Why have US roads refrained from using cold mixing? In general, because they have not had to. As the cost becomes more expensive, however, the green factor applies to both energy and money.

Green Roof, Green Walls

There are parts of the world that are attempting to turn the clock back on technology to create green resources. As in, so far back that there is no technology. The 1050 K Street project by Timmons LEED is an example of projects that are literally green: this building is constructed with plant roofs and sidings in order to absorb moisture and UV light, cool down the interior, and develop a carbon-neutral structure. While this building can look a bit odd from far away — like a gardener had planted trees and shrubs into the side of the building — it offers a new chance to create projects that incorporate the environment directly.

Sustainable Living

Few phrases make the rounds in the green sphere more than sustainability. For some, this means being sustainable in your very house. New building projects are incorporating urban farming into their list of features. These small areas allow an individual to raise everything from a vegetable patch to a chicken coop in their own (or a communal) part of a building. This effort in sustainability not only ensures access to organic food, but does so at a much lower cost than most of the options you would purchase at the grocery store.

With millions of construction project occurring weekly across the United States, it is in the hands of civil engineers and construction crews to minimize their carbon footprint. Those in the decision-making positions, such as individuals with an engineering management degree, should consider the new green technologies and trends available in their field. Building sustainable structures and cutting emissions in the process should be the goal of civil engineers worldwide.

Vikash Patel (2nd year, civil)

STUDENT'S COLUMN

10 Facts about the Kingdom Tower:

1. The tower will be home to the world's highest observatory. It will also have a separate, 98-foot-diameter outdoor balcony, which was originally intended to be a helipad.
2. The building is so big they are unable to show it realistically in one rendering. Only elevations and birds-eye views can contain the entire project. Imagine those construction drawings...
3. The foundation piles are about as large as a small room at 10 feet in diameter, and can reach up to 360 feet in length.
4. Its shape is functional. The narrowing silhouette has to fight wind as well as gravity, so the three-sided shard is designed to be aerodynamic. The taper also helps maximize usable/rentable area. It offsets the large core size on the lower floors by widening the base, while the shape also narrows the core overall, making it less space-consuming at the top.
5. Its form is interesting for a tower of its size. The "three petal" plan allows separate extrusions to nudge against one another, while the profile is inspired by folded fronds of young desert plant growth. Gill-like indentations add another scale of visual intrigue.
6. It's on a plinth! But joking aside, the building does meet the ground in a nuanced, thoughtful way. Transportation routes crisscross around it, and the plinth melds it with its urban surroundings.
7. It has 59 elevators and 12 escalators, and five of these elevators will be double Decker. The lifts will not reach the speeds of normal elevators, as the change in air pressure at those altitudes would cause nausea. Three sky lobbies will prevent any one elevator from having to go all the way to the top, eliminating the need for excessively huge cables.
8. It has high-tech features. A high-performance exterior wall system, including low-conductivity glass, will minimize energy consumption by reducing thermal loads.
9. There are super-cool patios all along its three sides. Each side features a series of shaded notches where outdoor terraces offer extreme views of Jeddah and the Red Sea.
10. The massive structure will contain 80,000 tons of steel. Parts of the core will contain concrete that is several meters thick.

-Puja saikia (2nd year civil)



Earthquake liquefaction

Earthquake liquefaction, often referred to simply as liquefaction, is the process by which saturated, unconsolidated soil or sand is converted into a suspension during an earthquake. The effect on structures and buildings can be devastating, and is a major contributor to urban seismic risk. Ancient earthquakes have caused liquefaction, leaving a record in the sediments (paleoseismology).

-Zia pathak bora (3rd year, civil)

“I don't want revenge on the Taliban, I want education for sons and daughters of the Taliban.”

- Malala Yousafzai

FACULTY'S COLUMN

SMART CONCRETE

The world is becoming smart day by day, then why not the concrete?

The answer for this question is the invention of smart concrete, in which concrete itself acts as a sensor of strain or stress. The sensing ability is not due to the embedment or attachment of sensors. Rather, the concrete has been modified through the use of admixtures so that it becomes a sensor. Without the admixtures, the sensing ability is poor. The sensing ability is associated with the reversible change of the electrical resistance of the concrete upon deformation in the elastic regime. The concept of concrete itself functioning as a sensor has not been put forth prior to this innovation. Prior concept involves the embedding or attaching of conventional sensors (such as conventional strain gages). This mechanism involves the discontinuous carbon fiber used as an admixture in the smart concrete bridging micro cracks and getting slightly and reversibly pulled out upon tension, thereby increasing reversibly the electrical resistivity of the concrete. The reverse occurs upon compression. Smart concrete replaces the need for embedded or attached sensors, which suffer from high cost, low durability, limited sensing volume and, in case of embedded sensors, degradation of the structural performance of the concrete. This innovation can be used in traffic monitoring, border monitoring, weighing in motion and building security. In addition, it can also be used for building facility management, i.e., the use of smart concrete to weigh each room of a building, thereby monitoring the room occupancy in real time, thereby allowing the lighting, heating, cooling and ventilation to be controlled in accordance with the room occupancy for the purpose of saving energy. This can also be used for monitoring structures.

S.P.SANGEETHA (HOD)

Carpet area:

It refers to the total usable area within the four walls of an apartment or a commercial space, as the case may be.

In other words, it refers to the area for which a carpet can be laid if required by the owner.

Plinth area:

It refers to the area entire carpet area along with the thickness of the external walls of the apartment. It obviously includes the thickness of the internal wall and columns, if any, lying within the four wall of an apartment.

(Commercial space is not taken into account in calculating the plinth area)

S.Dhinakaran
(Faculty)

Vastu tips for House Construction

Vastu provide basic tips for the house construction that can be followed at the time of construction even they are also applied during the head hunting of plot. These enormously useful tips of Vastu if followed religiously can yield best results immediately in terms of goodhealth, wealth, prosperity and contentment. Here are some important and authentic Vastu tips for the house construction:

#Before starting the construction some things have to be considered such as shape of plot which is the most important to determine. Irregular shape plot can have bad impact on occupants, so choose regular plot such as square or rectangle.

#Vastu suggests digging a well in North-east and after that to start the construction.

#Open space should be given more towards the North and the East and less towards the South and the West.

#Open space at South-east and North-west should be equal.

#Avoid planting trees in North-east corner while all other directions are suitable. Heavy trees must be grown towards South, West and South-west side.

#More windows must be given towards East and North while Southern and Western sides must be avoided for windows and doors.

#Avoid doors in straight line.

#Front door must be larger than other doors especially exit door.

#In the plots Western side must be elevated than Eastern side and Southern must be elevated than North to determine the auspiciousness.

#As discussed North-east is the first to dig and Vastu recommends starting construction from here and then move forward to East, North and finally South & West.

-A.Abdul salam (Faculty)

“The secret of education lies in respecting the pupil.”
- Ralph Waldo Emerson

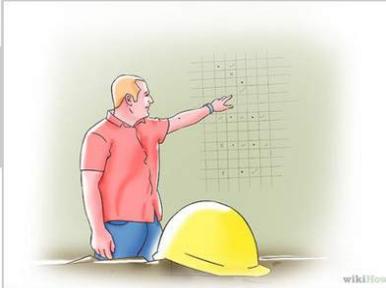
FACULTY'S COLUMN

How to Make a Construction Site Safe



1. Perform a thorough walk through of the site

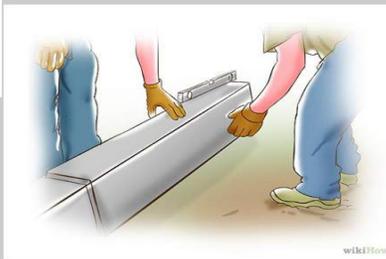
2. Train all personnel in work-site safety and operating procedure either on-site or at a training facility



3. Identify and mark any hazardous materials



4. Inspect equipment to be sure it is working properly



5. Use harnesses and other safety equipment when performing roof work or working on scaffolds



6. Provide personal protective equipment to all employees, including hard hats, safety goggles and boots, work gloves, ear plugs (or another form of protection) and face masks



7. Prepare for emergencies



8. Protect the public by barricading the construction site during work hours

The practical things a civil engineering student must know are:

- Lab and field tests of building materials.
- Basic knowledge of soils and their properties.
- Methods of force, displacement and moment calculation.
- Tests like pH value, acidity, basicity, amount of Total dissolved solids (T.D.S.), etc. in water.
- Standard formulae of RCC and Steel structure design.
- Properties of fluids (water, to be precise) in laminar flow.
- Use of theodolite, leveling machines and other surveying equipments.

B.JAYASHREE
(Faculty)

Top Construction Companies in India

- 1 | GMR Group
- 2 | Lanco Infratech Limited
- 3 | Man Infraconstruction Limited
- 4 | Atlanta Limited
- 5 | Simplex Infrastructures Limited
- 6 | IVRCL Limited
- 7 | Hindustan Construction Co. Limited
- 8 | Ramky Infrastructure Limited
- 9 | IL&FS Engineering and Construction Company Limited
- 10 | Gammon India

-M.HARINI PRIYA (Faculty)

ARTICLES

The best portion of a good man's life is his little, nameless, unremembered acts of kindness and love.

-P.Subathra (Faculty)

I believe everything begins with a positive idea. Positive thinking is the key to success in business, education, anything you mention. The mind is your most powerful muscle.

-V.Shalini Sri (Faculty)

There's nothing I believe in more strongly than getting young people interested in science and engineering, for a better tomorrow, for all humankind.

S.Dhinakaran (Faculty)

Civilization has happened with civil engineering. Civil Engineers have great responsibility in the new millennium there are lot of challenges to be faced by the civil engineers related to the environmental issues, resource utilization and sustainable development. I wish all the budding civil engineers to focus on the present scenario and equip them accordingly. It gives me immense pleasure to know that the students of civil engineering department are bringing up a newsletter. In this moment, I wish every one of them great success in their future endeavor.

*With Regards
A. Abdul Salam
(Faculty)*

Engineering or Technology is the making of things that did not previously exist, whereas science is the discovering of things that have long existed.

-R.Johnson Daniel (Faculty)

Education is the ability to listen to almost anything without losing your temper or your self-confidence.

-Shahs Crishnan (3rd year, civil)

"Education is a progressive discovery of our own ignorance."

-Vimal (3rd year, Civil)

Believe nothing, no matter where you read it, or who said it, no matter if I said it... Unless it agrees with your own reason and your own common sense.

-vinay Prasad (3rd year, civil)

-JilSri

"Study without desire spoils the memory, and it retains nothing that it takes in."

-Venkateshwaran (2nd year, civil)

The scientist discovers a new type of material or energy and the engineer discovers a new use for it.

-Pa.Suriya (Faculty)

I don't believe in "future", because I want to make my "present" into "history"
-M.Hari Shankar Das

ENDEAVOUR BY HOD



The main motto of our department is to provide quality education. The process of learning is extremely important in life. What you learn, how you learn and where you learn play a crucial role in developing ones intellectual capability, besides career. I am proud to see that the students and faculty of our department have put in appreciable effort into creating this newsletter. This newsletter highlights the academic and non academic activities of both faculty and students of the Department of Civil Engineering.

I congratulate the editorial team for their brilliant and original efforts. I wish all the students and faculty a great academic career.

Prof. S.P. Sangeetha
Head of The Department, Civil

BE A SUCCESSFUL LEADER

Role of Civil Engineer

You can feel proud to be a Civil Engineer, as you are a creative artist to make architectural wonders out of basic materials namely cement, sand, brick, Jelly and steel. Any establishment or an industry need, buildings first. Hence Civil Engineer has a major role to play in countries economy development to provide infrastructural facilities. When you can feel the importance of your contribution to the society you must be equally concerned about your moral responsibility and legal liability in delivering buildings with required quality standards.

Responsibility of Civil Engineer

When a software engineer fail to write error free software coding, they are not punished under law Instead, the computer itself gives him warning showing the syntax errors highlighting in distinct colour and demand the software engineer to correct it. Added to it, the program could not be executed unless all errors are corrected. Even after that the software Testing Engineer will enhance the quality and finally a perfectly written computer coding is permitted to be executed.

But on the other hand if this happens to be distress in a building built by a Civil Engineer, he is legally prosecuted and his professional status becomes a question mark thereafter. Hence, you have to be a skilled person with excellent knowledge in Civil Engineering, if you want to be successful leader documenting your action. As civil Engineer you have to prepare documentary evidence for all your works proving the quality standards adopted by you. Here are some check lists where you can prove yourself as a successful leader.

1. The basic materials to be used like cement, sand, Jelly, brick, steel are to be tested for their strength and durability.
2. The concrete you are laying should be tested while it is wet for its workability and flow standards.
3. Concrete cube tests for 7th day and 28th day strength are to be conducted.
4. Photographs of steel reinforcement pattern provided in columns, beams and slabs are to be recorded.
5. Date of casting and date of de-shuttering must be recorded.
6. If needed load test must be conducted to ensure the load carrying capacity of beams, columns, slabs, piles etc.,

Success is yours

To sum up a Civil Engineer has to be 100% quality conscious in discharging his duty and to record his quality work by way of lab testing reports for every project and for every days work. When the majority of land mass of our country is seismically vulnerable, we Civil Engineers have legal responsibility to adopt proper Earthquake resistant detailing. We should be aware that we are responsible for the safety of thousands of people, who occupy the buildings designed or constructed by us. Wish every final year student all success in professional life.

Dr.A.Prabakaran,

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