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SREE DATTHA INSTITUTE OF ENGINEERING AND SCIENCE, HYDERABAD

DEPARTMENT OF CIVIL ENGINEERING

EDITORIAL BOARD

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DEPARTMENT OF CIVIL ENGINEERING PROFILE

The department of **Civil Engineering** is one of the most important departments of **Sree Dattha Institute of Engineering and Science (SDES)**. This department was established in the year 2001 and is presently offering Bachelor's Degree in Civil Engineering. The present intake for the Bachelor's program is 120 students. The department carries out a periodic review of its curricula to ensure concurrency and keep abreast with latest technologies and developments in science and technology.

SEMINAR ON ESTIMATING OF ROAD BRIDGES AND STAIRCASE

This seminar was was organized by Civil Engineering Department on 17/02/17 by Mr. K C. Valli, Site Engineer at Imperial Constructions Pvt. Ltd, Hyderabad. Mr. K C Valli addressed our students at SDES and shared his knowledge with our students. He made the students to know the estimation of different types of bridges and also explained about the estimation of Tall structures. He helped students understand the real time construction field parameters and that helped many of the students in a lot of ways.

MR. K C VALLI SHARING HIS EXPERIENCE WITH THE STUDENTS OF SDES

SEMINAR ON GREEN BUILDING CONSTRUCTION

A green building is a building that, in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. Green buildings preserve precious natural resources and improve our quality of life. This seminar was organized by the Civil Engineering department, SDES on 07/03/17. The students were shown a power point presentation and that gave a clear knowledge of the topic to the students.

AN INTRODUCTION TO THE GREEN BUILDINGS WAS GIVEN TO THE STUDENTS OF SDES

SEMINAR ON SMART MATERIALS AND THEIR APPLICATIONS IN CIVIL ENGINEERING

This seminar was organized by Civil Engineering Department from 15/04/16 to 17/04/16 by Mr. Kiran Reddy, Assistant professor at Sri Indu College of Engineering & Technology, Hyderabad. Mr. Kiran Reddy addressed our students at SDES and shared his knowledge with our students. He made the students know the importance of smart materials and their applications in civil engineering with the real life examples that helped sudents gain a real time experience.

STUDENTS OF SDES ATTENDING THE SEMINAR

SEMINAR ON LOW COST HOUSING: CONSTRUCTION & ESTIMATION

This seminar was organized by Civil Engineering Department from 29/03/16 to 31/03/16 by Mr. G Satya Narayana, M. Sc (Applied Statistics), M.Tech(IT). Mr. G Satya Narayana garu addressed our students at SDES and shared his knowledge. He made the students know the advancement in "Low Cost Housing: Construction & Estimation".

MR. G SATYA NARAYANA GARU TEACHING THE STUDENTS ABOUT LOW COST HOUSING

INDUSTRIAL VISIT TO HMWS & SB AMBERPET

The III year students of civil engineering have been taken to "Hyderabad Metropolitan Water Supply & Sewerage Board" on 23/09/16 and they were made to understand the supply and quantity of water that is supplied throughout the Hyderabad city on a daily basis. It has really helped the students gain the practical knowledge.

STUDENTS AT HMWS & SB AMBERPET WERE SHOWN THE PROCESSING OF WATER TREATMENT BY THE EMPLOYEES

FACULTY CORNER

Article by:
D Sandhya, Assistant Professor, Department of Civil Engineering, SDES.

Title: Potholes: how engineers are working to fill in the gaps.

Introduction:
Potholes are a perennial problem. They are dangerous to road users, and the damage they cause to vehicles can be hugely expensive. The cost of repairing them is also vast. But still they appear, and reappear, in countless places. So why do these pesky crevices pose such a difficult challenge? And is there any light at the end of this pothole-filled tunnel? Potholes often begin as imperceptible microscopic cracks in the road surface. Bad weather, poor drainage and heavy traffic can all cause that surface to loosen and wear away. In 2017, more than 2m potholes were repaired on UK roads, at a cost of some £120m. At the moment, where and when these microscopic cracks will appear is hard to determine. But in the future it is likely that high precision measuring techniques will be able to predict the time and location that potholes will appear. To repair the road before potholes grow, machines will be installed into autonomous vehicles, cleaning out the damaged areas and filling them in again.

Self-healing roads:
In the meantime, the development of new types of road material, such as "self-healing" asphalt, something we are investigating at the Nottingham Transportation Engineering Centre, could reduce the necessary frequency of repairs – and hopefully help turn potholes into a distant memory.Asphalt roads are composed of mineral aggregates that give structural stability, and bitumen, a viscous liquid that binds the other materials together. When cracks appear in the road, bitumen drains into the cracks and fills them. The problem is that bitumen is a very viscous liquid at normal temperatures, and the healing of the cracks can take weeks. With regular traffic, the rate of crack growth may occur at a faster rate than they are filled – allowing potholes to form.To accelerate the "healing" of the road, we are exploring the addition of tiny capsules containing asphalt rejuvenators such as sunflower oil, or tall oil, a byproduct of paper production. (The inspiration for the capsules came from watching an episode of the Spanish version of the TV series Master Chef, in which a contestant used a technique to form spheres that resemble caviar when submerged in a liquid.)The idea is that when roads start to crack, the capsules break open and release the oil within, softening the surrounding asphalt. This helps the asphalt stick back together more swiftly, effectively filling in cracks and preventing small defects from deteriorating. With this idea, we expect to delay the first potholes by at least five years, reducing the need for maintenance and all the troubles that come from it, such as slow traffic and travel delays.

There are a variety of ways to introduce and teach construction technology studies to full-time UGs. Formal lectures supported by small group tutorials and recommended textbooks remain the mainstay for the majority of construction and civil engineering courses.However, 'critical thinking'and 'contextual engagement'with the topic arguably requires aholistic teaching strategy. This may include frequent site visits, guest lectures, small group work, graduate mentoring and/or contextual learning via carefully designed continuous assessment coursework.Alternative strategies for teaching construction technology have received academic interest (Pan 2010), most notably the educational value, benefit and challenges of construction site visits (Bather 2013). In stark contrast, the scholarly value and academic utility of construction/civil engineering magazines and journals has been largely ignored.This is surprising; many mainstream construction/civil engineering publications arguably provide a convenient and readily accessible conduit between the fundamental principles of construction technology (the theory) and 'live'and 'innovative'applications (the practice).Nowadays, holistic teaching strategies and encouraging on-going student engagement arguably extends beyond the basic principles, processes and practice of construction technology per se. In addition to the 'technological fit', there is also consideration of a'social-fit'. Introducing and persuading students to read and engage with mainstream construction/civil engineering publications would arguably assist with the process of'anticipatory socialization'(Sang et al. 2009). This would include familiarization with the language, customs, traditions and wider institutional norms that would later support industry integration, personal affinity and critical thinking. In short, construction/civil engineering magazines and journals provide readers with an insight in to the culture and context of industry 'membership'. Interestingly, the notion of anticipatory socialization is frequently overlooked in traditional educational frameworks but is becoming increasingly.

According to the Local Government Association, road repair bills in England and Wales could soon reach £14 billion, dwarfing the £4.4 billion highways budget of councils. Another solution being investigated at Brunel University – which could save a fortune – is the use of infrared heat to make repairs cheaper and longer-lasting.Wet weather, combined with cycles of freezing and thawing, dramatically accelerates pothole development – and many repairs fail prematurely. This is because the traditional way to repair potholes with heat is to inject them with boiling hot asphalt. But if the road is cold, the temperature of the repair material falls significantly, creating weaker bonds with the surrounding material. Some new "repaired" patches can start to show deterioration within a few months. on increase the performance of asphalt patch repair, the Pavement and Ground Engineering Research Group at Brunel has developed the Controlled Pothole Repair System (CPRS). This new method uses a portable infrared heating machine to preheat the road surface (and the area below) before making the repair.

Article by:
Mr. Md. Aliuddin, III - A , Department of Civil Engineering, SDES.

Title: Fungi can help concrete heal its own cracks.

Introduction:
Infrastructure supports and facilitates our daily lives – think of the roads we drive on, the bridges and tunnels that help transport people and freight, the office buildings where we work and the dams that provide the water we drink. But it's no secret that American infrastructure is aging and in desperate need of rehabilitation.Concrete structures, in particular, suffer from serious deterioration. Cracks are very common due to various chemical and physical phenomena that occur during everyday use. Concrete shrinks as it dries, which can cause cracks. It can crack when there's movement underneath or thanks to freeze/thaw cycles over the course of the seasons. Simply putting too much weight on it can cause fractures. Even worse, the steel bars embedded in concrete as reinforcement can corrode over time.Very tiny cracks can be quite harmful because they provide an easy route in for liquids and gasses – and the harmful substances they might contain. For instance, micro-cracks can allow water and oxygen to infiltrate and then corrode the steel, leading to structural failure. Even a slender breach just the width of a hair can allow enough water in to undermine the concrete's integrity.

But continuous maintenance and repair work is difficult because it usually requires an enormous amount of labor and investment.So since 2013, Engineers have been trying to figure out how these harmful cracks could heal themselves without human intervention. The idea was originally inspired by the amazing ability of the human body to heal itself of cuts, bruises and broken bones. A person takes in nutrients which the body uses to produce new substitutes to heal damaged tissues. In the same way, can we provide necessary products to concrete to fill in cracks when damage happens? 20 different species of fungi in order to find one that could withstand the harsh conditions in concrete. It is found that as calcium hydroxide from concrete dissolved in water, the pH of our fungal growth medium increased from a close-to-neutral original value of 6.5 all the way to a very alkaline 13.0. Of all the fungi we tested, only T. reesei could survive this environment. Despite the drastic pH increase, its spores germinated into threadlike hyphal mycelium and grew equally well with or without concrete.

T. reesei is eco-friendly and non pathogenic, posing no known risk to human health. Despite its widespread presence in tropical soils, there are no reports of adverse effects in aquatic or terrestrial plants or animals. In fact, T. reesei has a long history of safe use in industrial-scale production of carbohydrase enzymes, such as cellulase, which plays an important role in fermentation processes during wine making. Of course, researchers will need to conduct a thorough assessment to investigate any possible immediate and long-term effects on the environment and human health prior to its use as a healing agent in concrete infrastructure. We still don't fully understand this very young but promising biological repair technique. Concrete is a harsh environment for the fungus: very high pH values, relatively small pore sizes, severe moisture deficit, high temperatures in summer and low temperatures in winter, limited nutrient availability and possible exposure to ultraviolet rays from sunlight. All of these factors dramatically influence the fungi's metabolic activities and make them vulnerable to death.Our research is still in the initial stage and there's a long way to go to make self-healing concrete practical and cost-effective. But the scope of American infrastructure's challenges makes exploring creative solutions like this one worthwhile.