Innovative Informative Educative

BEACON

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AIM BEYOND THE HORIZON

DEPARTMENT OF CIVIL ENGINEERING - BEAVERS ASSOCIATION

DR. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY

VISION AND MISSION OF THE INSTITUTION

VISION

We develop a globally competitive workforce and entrepreneurs

MISSION

Dr. Mahalingam College of Engineering and Technology, Pollachi endeavors to impart high quality, competency based technical education in Engineering and Technology to the younger generation with the required skills and abilities to face the challenging needs of the industry around the globe. This institution is also striving hard to attain a unique status in the international level by means of infrastructure, state-of-the-art computer facilities and techniques

VISION AND MISSION OF CIVIL DEPARTMENT

VISION

To develop Competent Civil Engineers to meet the infrastructure challenges of India and the world.

MISSION

- **To become one of the reputed departments offering Civil Engineering Program in the country.**
- **To produce excellent engineers to cope up with the changes through dynamic, innovative and flexible curriculum.**
- **To provide a conducive environment for teaching & learning and to develop leaders with effective communication skills.**
- **To conduct quality research driven by industry & societal needs and provide affordable engineering solutions.**

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO 1. Design the fundamental elements of civil engineering systems, system components and processes considering safety, quality and cost.

PSO 2. Able to plan and prepare design and construction documents such as specifications, contracts, engineering drawings and construction schedules.

PROGRAMME OUTCOMES (POs)

The graduates of Civil Engineering Programme will be able to:

PO1.Engineering knowledge: Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization in the field of Civil Engineering.

PO2. Problem analysis: Identify, formulate, analyse and solve complex problems in construction industries using principles of mathematics, natural sciences and engineering sciences.

PO3. Design/development of solutions: Design a solution for complex civil engineering problems and design system processes to meet specific needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: Conduct investigations of complex problems including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusion.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and sustainability: Understanding the impact of engineering solutions in social environment and demonstrate the knowledge for sustainable expansion.

PO8. Ethics: Apply ethical principles and commit to professional ethics and the norms of engineering practices.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10. Communication: Communicate with engineers and society to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions related to civil engineering professionals.

PO11. Project management and finance: Demonstrate and apply the knowledge of engineering and management principles to one's own work, as a team leader or a member to manage project in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the ability to engage in independent and life-long learning in the context of technological change.

The PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The Graduate will

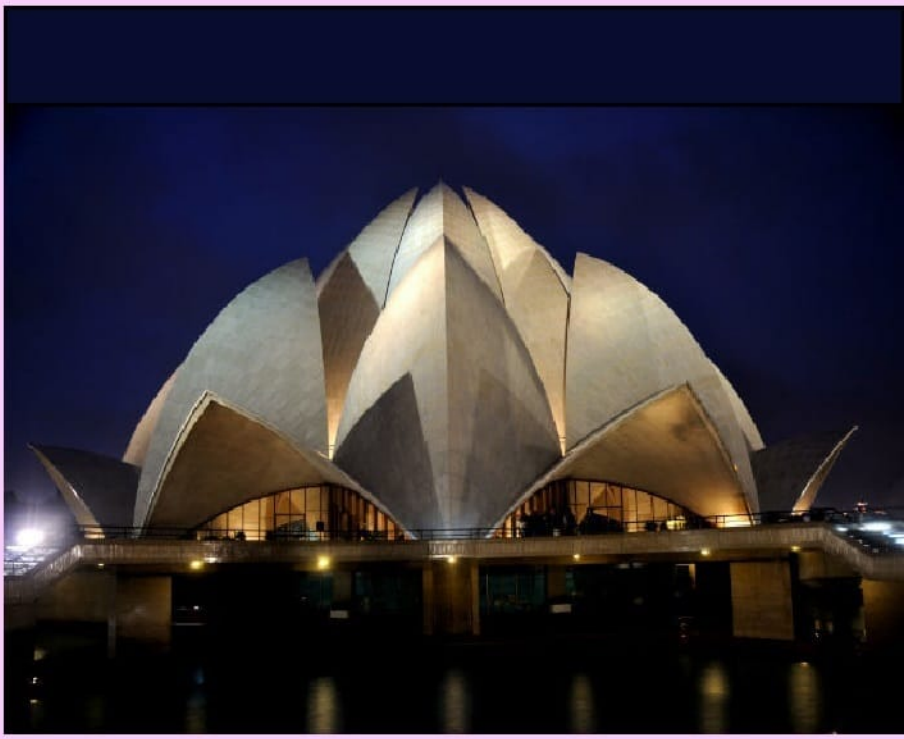
PEO 1 Technical Expertise: Have successful professional careers dealing with analysis, design and management of construction projects globally.

PEO 2 Lifelong learning: Exhibit attitude, professionalism, ability to communicate with team members and adapt to the latest trends by engaging themselves in continuous learning.

PEO 3 Ethics: Ethically apply their engineering knowledge and skills considering, societal, economic and environmental factors.

INTERESTING FACTS ABOUT LOTUS TEMPLE

The Bahai Lotus temple was designed by Iranian architect Fariborz Sahba in the shape of a lotus as it is common to several religions including Hinduism and Buddhism. He has won several international awards for this brilliant piece of work including the awards from the GlobArt Academy, Institution of Structural Engineers and more. It also gained recognition in several publications in the world like the Encyclopedia Britannia and Guinness World Records. There have been stamps of the Lotus Temple, books and even musical compositions created to showcase its beauty and grandeur.



The temple was completed in 1986 and is one of the most visited places in the world. There are nine sides to the temple formed by 27 marble petals, arranged in groups of three. The nine doors lead to a central prayer hall that has a capacity of 2500 people and is about 40m high. The floor inside the central hall is also made of marble. The marble used comes from Greece, from the Penteli Mountain. Many other Bahai Houses of Worship were

It is in line with the teachings of the Bahai faith believing in the Oneness of God, the Oneness of Religions, and the Oneness of Mankind. As such, people of all religions and races are welcome in the temple as it is a place to worship the creator of the universe and not one particular deity. There is no idol to be worshipped and people of any faith, case, creed are welcome inside. Even though everyone is welcome, no ritualistic ceremonies can be performed inside the Lotus Temple nor can anyone deliver sermons. However, you can chant or read scriptures of Bahai and other faiths too, in any language. You can even set them to music by choirs but you cannot play any musical instrument inside the temple. The Bahai community offers four activities called the core activities for those who are interested in the Bahai way of life. These activities are Children's' Classes, Junior Youth Classes, Devotional Meetings and Study Circles.

R DIVYA DHARSINI (13BCE057)

THE RUSKY BRIDGE CONSTRUTION

The long central span of the Bridge has established a new record in the world bridge building practice. The bridge will have the second highest pylons after the Millau Viaduct and the longest cable stays.

The design of the bridge crossing has been done on the basis of the following primary factors:

Shortest coast-to-coast distance in the bridge crossing loca-tion 1460 m. Navigable channel depth is up to 50 m.

The locality of the bridge crossing construction site is char-acterized by severe climate conditions: temperatures vary from -31°C to 37°C, storm wind velocity of up to 36 m/s.

- Bridge roadway breadth: 23.8 m
- Number of driving lanes: 4 (two in each direction)
- Under clearance: 70 m
- Number of bridge towers: 2
- Pylons' height: 320.9 m
- Number of cable stays: 168

THE RUSKY BRIDGE CONSTRUTION

Introduction

The Russky Bridge is a bridge built across the Eastern Bosphorus strait, to serve the Asia-Pacific Eco-nomic Cooperation that took place in Vladivostok in 2012. The bridge connects the mainland part of the city (Nazimov peninsula) with Russky Island, where the main activities of the summit are to take place. The bridge was completed in July 2012 and opened by Russian Prime Minister Dmitry Medvedev. On September 3, 2012, the bridge was officially given its name.

Overview Of The Bridge

The bridge to the Russky Island is the world's largest cable-stayed bridge. It has the following specifications and dimensions:

- Bridge footprint: 60+72+3x84+1104+3x84+72+60 m
- Storm wind velocity: 36 m/s
- Storm wave height: Up to 6 m
- Ice formation in winter: Up to 70 cm thick
- Total bridge length: 1885.53 m
- Total length incl. trestles: 3100 m
- Central channel span length: 1104 m
- Bridge width: 29.5 m

THE RUSKY BRIDGE CONSTRUTION

Following are the key aspects of pylon construction in the Russky Bridge:

1. The piles will be driven as deep as 77 m below ground, and on the island side the 120 auger piles will be piled under each of the two 320-m high bridge towers.

2. The pylons will be concreted using custom self-climbing forms in pours of 4.5 m. A crane will be used on the first three pours, afterwards the formwork will start unaided moving through the hydraulic mo-tion of modular elements.

3. The pylons will be A-shaped, therefore, the use of standard forms will not be feasible. An individual set of forms has been arranged for each bridge tower.

4. Transition between section types will be carried out at summer levels at the elevations of 66.26 m and 191.48 m.

5. The use of self-climbing forms will make it possible to achieve better quality and decrease the time of con-struction of cast-in-situ reinforced concrete structures by half as much again.

6. Cable stays anchorage zone starts at the elevation of 197.5 m. The installation of cable stay pairs and casting of bridge tower bodies will be carried out simultaneously, dramatically reducing the construc-tion period.

P GANESAN (12BCE013)
M HARISH BALAJI (12BCE018)

FACULTY CONTRIBUTION

Dr.R.Venkatasubramani Professor/ Civil	Guest Lecture on "Modern Techniques for Site Investigations"	Kongunadu College of Engineering and Technology, Erode
Dr.G.Jaisankar HOD / Civil Mr. S. Syed Masoodhu AP/Civil	Intra Department Beavers Model Making	Dr.MCET, Pollachi
Ms.R.Gayathri Prabha AP/Civil	Inauguration of ICI Students Chapter And Seminar on "Challenges in Making Durable Concrete"	Dr.MCET, Pollachi
Mr. S. Syed Masoodhu, AP	One Week STTP on Geotechnical Investigation practices	CIT, Coimbatore
Mr. S. Krishnakumar, AP Ms. M. Ranjitham, AP Ms. P. Sathyabama, AP	Four Weeks Workshop on "Use of ICT in education for online and blended learning"	Dr.MCET, Pollachi

STUDENTS ACHIEVEMENTS

S.Chandrasekar	Carri Cature	First
AL.Meyyammai	Workshop	Participated
M.Sandhiya	Workshop	Participated
S.Omprakash	Carri Cature	First
K.Manoj	Paper Presentation	Partcipiated
L.Anandraj	Survey Hunt	Partcipiated
P.Aravindh	Paper Presentation	Participated
C.Vinayagamoorthy	Model Making	Participated
A.Aravindth Siddarth	Detour	Participated
Praveen Kishore.C	Sarvekshan	First
M.Pravin Kumar	Intelligent Engineer	Second
Samsudeen.M.F	Technominds	Participated
R.M.Deepak	Paper Presentation	Participated

What is an Environmental Impact Assessment?

An Environmental Impact Assessment is a formal method of judging the impact that any new developmental project would have on the environment and its constituents. This can include changes that the project would create in the physical aspects of existing geography, chemical changes to the atmosphere including air and water, biological changes that affect plant, animal and human life, cultural impact of a project on the society in the area, and other socio-economic effects that the project can have.

Such an assessment allows problems to be foreseen, so that the design and planning of the projects is modified to reduce any negative effects. It is now fashionable to build green buildings which have a positive effect on the environment.

There is historical precedent for the now mandatory Environmental Impact Assessments (EIA). Past efforts by governments have resulted in bans on activities that caused noxious odors, garbage dumps were positioned at places far away from habitation, and commercial activities were restricted to town centers.

Objectives of Environmental Impact Assessment

The objective of an EIA is to predict the environmental impact project would have on all aspects of the environment. Once this is done, a study has to be made to see if the impacts can be reduced in any way. The project has then to be modified to suit the local environment and all predictions and likely options presented to decision makers for final decisions gain a better understanding of EIA by understanding how any typical project can affect the environment of a particular area.

The alignment of the road may require that certain lands have to be leveled or new embankments created. Cutting of the land and the new embankments would affect the geography of the area and probably upset its drainage pattern. This would require re-planning existing methods of treating the run-off and could cause existing watercourses to be modified. The new road may require the removal of existing green cover and this could affect the living conditions in that area. The traffic going through that area can cause pollution problems from vehicles which also includes an increase in sound pollution. The emissions from the vehicles can affect already existing atmospheric pollutants which in turn could affect human health, animal health and affect greenery in the area. The road may affect existing structures in the area which may have to be removed and can cause changes in the economic wellbeing of the persons who are using those structures.

For any environmental impact assessment, complete data on all these aspects as they are at present has to be made so that any changes can be reasonably judged to existing standards required for good living. The deterioration or increase in these living standards has then to be highlighted by the EIA before any final decision on the project can be undertaken.Before a building can be built, an environmental impact assessment needs to be performed to determine how the endeavor will affect the environment. This allows planners to make their projects more environmentally friendly and acceptable to all involved.

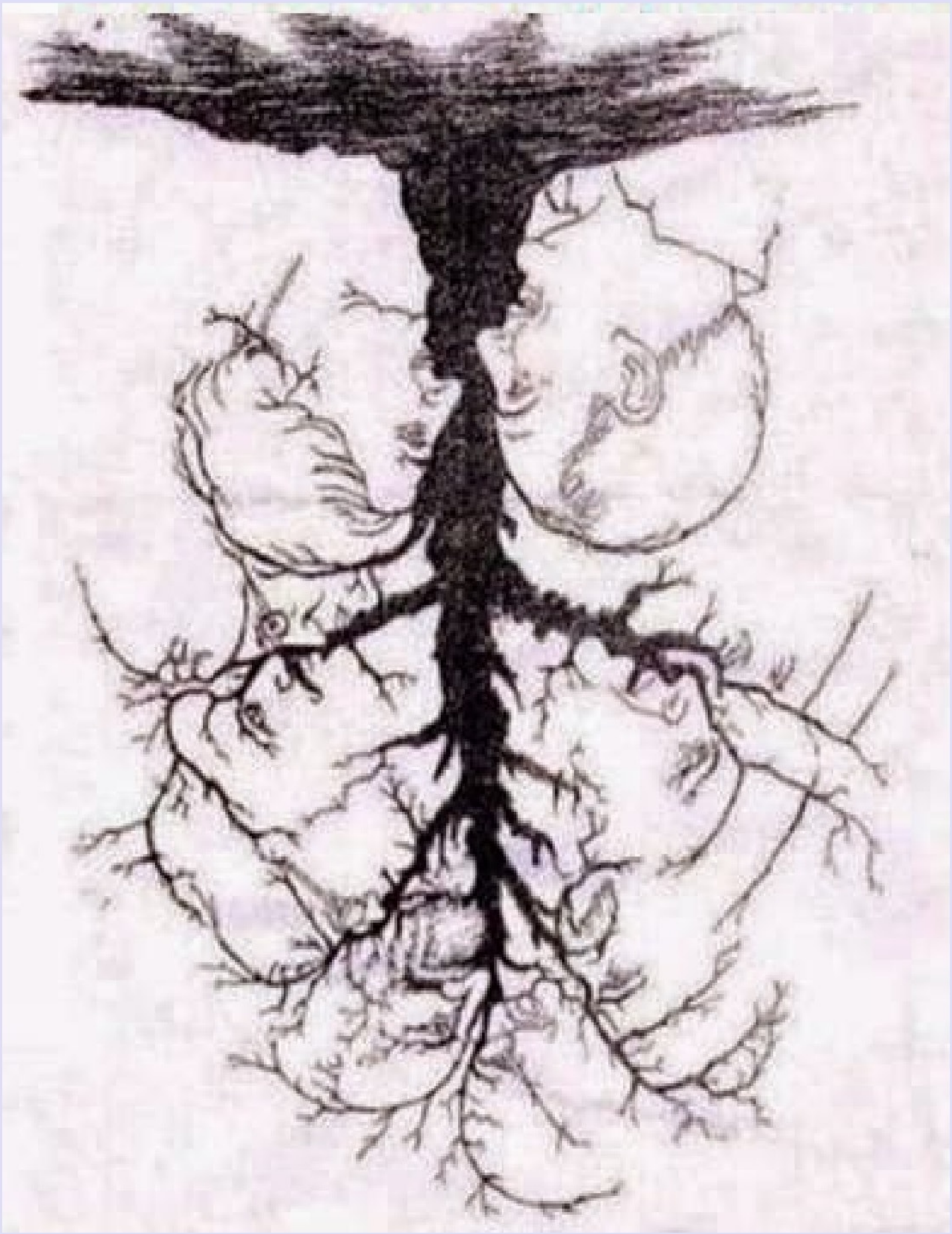
K S KARTHIKA (14BCE008)

ASSOCIATION ACTIVITIES

TOPIC	RESOURCE PERSON
Seminar on "Emerging role of nanotechnology in sustainability in energy and Environment"	Dr. Martin Mkandawire, Industrial Research Chair in Minewater Management
Imparaval Rovers –Engineers Day event	Dr. G. Jaisankar, Professor & Head/ Civil, MCET
Student Talent Enhancement Program(STEP) for 2nd years	Dr. G.S. Venkatasubramani, Proprietor, M/s S.G.Structural Engineer, Coimbatore. Er. S. Kalirajan, Head – Special Initiative (Nuclear), L&T Construction, Chennai. Er. R. Sudhakar, Proprietor and Chief Consultant, Dimensions, Coimbatore.
Student Talent Enhancement Program (STEP) for 1st years	Er. R. Sudhakar, Proprietor and Chief Consultant, Dimensions, Coimbatore. Mr. Arun Prasath, Project Control & Planning Manager, India Sistemas (Oman Branch)

Answer

NINE



Risks in green Building Construction

With the numerous documented advantages and rewards of green construction, building green has certainly become an expectation rather than an exception in the industry. However, despite the many pros of sustainable construction practices, green building doesn't come without legal and financial risks. With the majority of the nation's builders now participating in at least some aspect of green building, it's important to be aware of the risks and to plan ahead in order to mitigate them.

Common Risks

The most common risks associated with green construction occur when products and systems don't perform as promoted, buildings don't earn the desired level of green certification, or projects fail to meet budget and schedule parameters. Unfortunately, each of these situations can pose legal and/or financial risks.

One of the biggest emerging risks in green construction stems from the proliferation of new products and systems. With a lack of field testing and empirical data to support long-term performance, energy savings, and return-on-investment (ROI) claims, these products can pose a risk to all parties involved in the construction process.

When using new and untried technology, Shari Shapiro, an accredited LEED professional and associate with Cozen O'Conner, advises that builders obtain an explicit waiver from the client acknowledging expectations and potential risks. "Legal claims could follow if a product or system fails to perform as expected due to poor design or requires unforeseen maintenance expenses over time," she says.

In addition, prior to incorporating new technology, architects and builders should make sure that they fully understand it and its systematic impact within the home, have researched the warranty and liability position of the manufacturer, and have educated themselves, as well as their contractors and subcontractors, on proper installation procedures. It is also important to be realistic about performance expectations and to avoid overpromising or misleading the client when it comes to the measurable benefits or cost savings of green products and systems.

P S SHARAN ADHITHA (14BCE012)

GENERAL METHODS OF SOLID WASTE MANAGEMENT

Landfills

Landfills, being simple and economical, are globally the most commonsystem of waste disposal. It involes the burial of waaste materials. Landfills that are not properly designed or managed may create several environmental hazards and diseases due to the dispersion of garbage by wind, the attraction of rats, and other similar reasons.

Landfills are normally developed in unused pits located at a distance from the developed areas so that its harmful effects can be avoided. The waste accumulated in the landfill is reduced in size by compaction to permit maximum storage of waste, and is enclosed to avoid rats or mice. Some landfills include systems for the extraction of gas that is used for the generation of electricity.

It is essential that the landfills do not pollute the surface water or the ground water, and this is ensured by lining the landfill, compaction of the upper layer, and selection of sites that are not subjected to floods. Leakage from landfill waste can be minimized by solidification with cement or asphalt.

Incineration

After landfills, incineration is the most widely used method to eliminate the solid, liquid, and gaseous waste. Hazardous air contaminants are released by the burning of waste, due to which there are serious public concerns regarding environmental pollution.

The combustion is generally not complete in an incinerator, due to which the gaseous emissions contain micro-pollutants that are not safe for the area near the incinerator. In countries where adequate space is not available for landfills, incineration is more practicable.

Recycling

Recycling is probably the most ideal way of managing wasate, but it can be costly and difficult to implement. There are numerous products that can be recycled instead of thrown away including aluminum and steel

cans, glass bottles, paper, and scrap metal. It is becoming more popular to complete this process and successful marketing is making recycled materials more likely to be purchased. In the long run, recycling can save money and resources as well as keep the environment cleaner.

Why is it important?

Waste management is important because improperly stored refuse can cause health, safety and economic problems. All living organisms create waste, but humans create far more waste than other species. To prevent damaging the Earth's ecosystems and maintain a high quality of life for the planet's inhabitants, humans must manage and store their waste efficiently and safely.

Human beings have been practicing primitive waste management techniques for thousands of years. Early humans simply dug a hole and buried their refuse and trash. This was an effective technique for these early people because their population was relatively small, and they did not produce as much garbage as modern humans do. Burying the trash helps to prevent bugs and rodents from becoming a nuisance and spreading diseases.

In the modern world, humans cannot simply bury their trash. While primitive humans produced very little waste, and that which was produced would biodegrade quickly, modern humans produce large amounts of waste, much of which is not biodegradable. Additionally, many types of garbage may be damaging to the soil, ground water and surrounding habitat. To address this problem, modern waste management professionals place garbage in lined holes and use bacteria to help facilitate rapid decomposition of the garbage.

THINGS TO KNOW BY A SITE ENGINEER

.Minimum thickness of slab is 125 mm

.% Water absorption should not be more than 15

.Dimension tolerance for cubes + – 2 mm

Compressive strength of Bricks is 3.5 N /mm2

.Maximum Free fall of concrete allowed is 1.50 m

In soil filling as per IS code for every 100 sqm 3 sample for core .cutting test should be taken

Electrical conduits shall not run in column

Earth work excavation for basement above 3 m should be stepped form

Any back filling shall be compacted 95% of dry density at the optimum moisture content and in layers not more than 200mm for filling above structure and 300 mm for no structure

F soling is specified the soling stones shall be laid at 45° to 60° inclination (and not vertical) with interstices filled with sand or moorum

A set of cube tests shall be carried out for each 30 cum of concrete / each levels of casting / each batch
.of cement

Water cement ratio for different grades of concrete shall not exceed 0.45 for M20 and above and 0.50 For M10 / M15 contractor

For concrete grades M20 and above approved admixture shall .be used as per mix design requirements

Cement shall be stored in dry places on a raised platform about 200mm above floor level and 300mm away from walls. Bags to be stacked not more than 10 bags high in such a manner that it is adequately protected from moisture and contamination

Samples from fresh concrete shall be taken and at least a set of 6 cubes of 150mm shall be prepared and
cured. 3 Cubes each at 7 days and 28 days shall be tested for compressive strength. The test results
should be submitted to engineer for approval. If results are unsatisfactory necessary action/rectification/remedial meas-.ures has to be exercised

.Cement shall be tested for its setting
.The initial setting time shall not be less than 30 minutes .1
.The final setting time shall not be more than 10 hours .2

Slump IS 456
Lightly reinforced 25 – 75 mm
Heavily reinforced 75 – 100 mm
Trench fill (insitu & Tremie) 100 – 150 mm (For Tremie no need of (vibrator

Curing Days Required
Super Sulphate cement : 7 days
Ordinary Portland cement OPC : 10 days
Minerals and Admixture added cement : 14 days

Cube Samples
.M3 : 1 No 5 – 1
M3 : 2 No's 15 – 6
M3 : 3 No's 30 – 16
M3 : 4 No's 50 – 31
.Above 50 M3 : 4 + 1 No of addition sample for each 50 M3

EDIORIAL TEAM

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