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A Key Note On Civil And Environmental Engineering

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Abstract:

Civil engineering is a professional branch of engineering discipline which deals with the design, construction and maintenance of the physical and naturally built environment which includes the works like roads, bridges, canals, dams, buildings etc. Environmental engineering deals with the treatment of chemical, biological, thermal waste, purification of water, air and the remediation of contaminated sites due to prior waste disposal or accidental contamination. Every engineer must know the concept of sustainable development and the particular application of construction materials in its related areas without affecting the green environment. The knowledge of Civil and Environmental Engineering focuses on interactions between human activities and the natural environment. Its mission is to use science, engineering and policy to improve quality of life and sustain environmental systems. This includes intelligent use of natural resources such as the raw materials, energy, and ecosystems needed to sustain modern society. The area of Civil and Environmental Engineering is especially concerned with:

- *Understanding of natural cycles, systems, and processes relevant to human activities*
- *Use of natural analogs for designing new materials, industrial processes, and infrastructure systems*
- *Development of new building and transportation technologies*
- *Advances in information infrastructure and logistics*
- *Creation of attractive and sustainable physical environments*

The main aim of this paper is to bring the awareness about the environment while constructing and to minimize the hazardous effect to the environment.

Key words: *Construction, Purposes of construction, Toxic or harmful gases, Protection of environment*

1. Introduction

All the things that surround us are known as environment. Environment to an engineer would mean a set of standards and recommendations that he must comply with and threshold the values that must not be exceeded. His technical solutions would be developed keeping in mind that the inevitable outputs as noise nuisance, waste or effluents should not hamper or effect the living and working conditions that he is designing or operating. But, environment would also mean that he should pay attention on safeguarding the natural resources by using as much as possible of the renewable energy sources and recycled materials, to achieve a long-lasting development which mainly focuses on the “Green and Sustainable Environment”.

2. Objective

This paper mainly focuses on the

- Changing role of engineers in designing any infrastructure in favour of the environment.
- Introduction of environmentally and ecologically conscious design for maintaining a friendly environment.
- Green infrastructure solutions amongst engineers by establishing a common language and standard of measurement.

- Awareness of the environmental impact of consultants design decision, in order to reduce the environmental impact of development.

3.Role Of Engineers In Changing The Design Of Infrastructure

It should be the aim of all the engineers to focus on the safety of the environment. Increasing demands for energy, drinking water, clean air, safe waste disposal, and transportation is gradually driving the environmental protection, alongside infrastructure development. Engineers have an important role to play and to achieve sustainable development. It is clearly no longer possible to be a professional engineer and ignore the challenges and opportunities that arise from the needs that achieve sustainable development. Engineers will have to be the initiator of development ensuring the conservation of the resource from supply through distribution, the issues of innovation, technology, design, management will be crucial for the engineer in meeting future challenges. Civil engineering projects and designs can have significant site-specific and cumulative impacts on our ecological balance and social systems if they are not correctly planned, designed and implemented. Thus when any design is being made it should be made such that the environment and ecological balance is not affected.

4.Implementation Of Green Technology On Different Civil Engineering Projects

Mainly Civil engineering designs and projects have significant site-specific and cumulative impacts on our ecological and social environment if they are not correctly planned, designed and implemented.

Relatively few designers have explored the transformative potential of ecological design and have preferred to remain unconcerned with the distributional impacts of design as they affect the health of humans and ecosystems. Infrastructure development has been focused mainly on financial issues and engineering aspects in the region. Mainly the environmental aspects and the eco-efficiency concept of various stages of infrastructure development have not been considered as much as they should have been. Infrastructure elements such as roads, water, sewage and storm water can result in loss of critical ecosystems and biodiversity. There is a need to create an eco-sensitive infrastructure design rating system that encourages and promotes the use of “softer” design solutions. Improvement in the awareness of eco-efficiency concepts is urgently needed among policy-makers, planners and decision-makers as this is an urgent need to save our environment.

5.Green Constructions

There are large amounts of materials and energy that are consumed during the construction and operation of an average building, the implementation of green technology in construction of buildings for more energy efficient and less impact on the natural environment reduces the impact on the environment. The world's population has grown exponentially since the Second World War, and there is currently pressure on available land and natural resources. As a result, we will eventually face the depletion of our most widely used source of energy, then on-renewable fossil fuels. There are many ways by which we can reduce consumption of these non-renewable resources, such as developing new types of vehicles, energy sources, recycled materials, and designing environmentally friendly buildings. These environmentally friendly constructions which focus on the green environment and sustainable development is known as “Green” buildings and the technology which helps to build these buildings is known as “Green Technology”. By this technology the amount of non-renewable resource can be protected and at the same time we can save the environment from different toxic or harmful substances.

6.Different Construction Materials Which Give Threat To The Environment

There are many toxic or harmful chemicals that threaten the environment. Out of these some of them are CO₂, CO, SO₂, NO, NO₂, etc. During the construction of any construction especially roads these types of gases are formed. The main thing that an engineer should focus is they must be conscious about the out coming gases that are likely to produce from the potential constructing materials. They should always be careful about how to minimize the effect of these gases in the environment and save the environment.

7.Different Sources Of Pollution

Traffic is undoubtedly one of the important sources of environmental and air pollution. It does not only have a harmful impact on health but also indirectly affect the quality of life by disturbing the eco-system, destroying our natural beauty, cultural inheritance, and many more. Despite of all the efforts and all kinds of recommendations to reduce, especially in large cities, both traffic flow and one of its first nuisances, i.e. the pollutant emissions, it may be expected for the next few decades that traffic will remain an important source of pollution. Therefore a lot of money has been invested in installing the monitoring equipment, developing data transmission networks and building supervision centers. The combustion of fuels in construction sites by different construction vehicles like gasoline, LPG, CNG, petrol, diesel etc., and engines produces a lot of toxic substances which affects the environment a lot. Depending on their concentration, their chemical stability and their adverse effects on the environment and human being the most relevant compounds in the exhaust gas are CO₂, CO, SO₂, NO, NO₂, etc. So we should always be careful about this aspect.

8. Conclusion

When any construction is done, the main thing that should be focused is balancing of the green environment from any hazardous effect or from any harmful gases. The measurements that may be taken to minimize the hazardous effect on the environment are:

- Concentration of the different pollutants in the construction sites.
- Proper utilization of the natural resources.
- Wind velocity and its direction.
- Alarm-signals of smoke and fire detectors.
- There should be proper filtration process of the harmful gases.
- The materials used should be eco-friendly.

If all these aspects are kept in consideration while designing and constructing then the hazardous effect to the green environment can be prevented and minimized, we can keep our environment green and at the same time balance of the ecosystem and sustainable development can also be achieved.

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