Sustainable Building

Sustainable building is the practice of building homes and other structures to increase the efficiency with which the structures use certain resources, such as water, energy, and other materials, while simultaneously reducing the negative impact of the structures on human health and the environment. Read on to find out more about sustainable building in civil engineering.

Sustainable building employs a number of practices, including:

— Efficient design,
— Efficient site selection,
— Efficient construction,
— Efficient operation,
— Efficient maintenance, and, when necessary
— Efficient removal

Sustainable building results are designed to reduce the overall impact on the environment and human health that the process of crafting buildings can have. This is achieved by making efficient use of water, energy, natural resources, and manmade resources, protecting the health of occupants, reducing waste, improving employee productivity, reducing pollution and emissions, and reducing the amount of environmental degradation caused by an entire building project. Sustainable building and green building, or natural building, follow the same basic concept; however, natural building generally comes on a much smaller scale, making use primarily of natural materials available locally, rather than focusing on improving efficiency to decrease waste. Three other commonly used terms for this concept are green architecture, green construction, and sustainable construction.

The green building movement has two primary integral parts: sustainable development and sustainability as a whole. There are numerous reasons why these are vital parts of the overall process, including:

1. A great reduction in operating costs because productivity is increased and fewer resources like energy and water are used during the building process.

2. A significant improvement to the health of the public and occupants of the given building thanks to an improvement in air quality.

3. A significant reduction in environmental impacts through a number of benefits including a lessening of storm runoff water and heat island effects.

People that practice sustainable building processes often seek not only to achieve ecological harmony but also to achieve aesthetic harmony between natural environments and the structures found within them. Sustainable buildings are designed to aesthetically match traditionally built construction, and in many cases these two different types of building are completely indistinguishable.

One of the most important intentions behind the concept of sustainable building is to create a reduction of the overall impact that construction creates on the environment. Buildings generally account for a large amount of land use as well as for the consumption of a large amount of water and energy and the large scale alteration of the atmosphere. In the United States alone, in a single year, more than 2,000,000 acres worth of wetlands, wildlife habitats, and open spaces are developed — that is, mown down and reconfigured for the sake of construction and building. This figure is a large part of why sustainable building is becoming so popular, because despite these figures, there are plenty of ways that sustainable building can reduce the environmental impact on our planet without forcing us to go out of our ways in the building process.

It is really easy for people to grossly underestimate the environmental impact that is placed on our earth during the building process. It is sadly just as easy to grossly overestimate the costs associated with sustainable building and other green construction methods. According to a recent survey that was conducted by the World Business Council of Sustainable Development, many people often overestimate sustainable building cost differences by as much as 300% because while they are commonly cited by some as climbing as high as 17% or more above traditional construction costs, the true additional cost is really only around five percent in excess of the cost for traditional construction methods.

There are numerous sustainable building practices, most combining a variety of different techniques that can reduce or

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eliminate negative impacts created by building. Sustainable building is capable of emphasizing the advantages that come with using renewable resources, which may include photovoltaic solar, passive solar, and active solar energy; rain gardens; rain water runoff reduction techniques; and green roofs. Numerous other techniques are also employed, including the use of concrete to enhance how ground water is replenished. Implementing sustainable building techniques on either a small or large scale is less about combining a random jumble of techniques for sustainability and more about creating a complete solution that caters to the entire lifecycle of the building from the planning phase to its eventual removal.

There are a number of natural materials and resources that are used in sustainable building, including rapidly renewable resources such as:

— Bamboo,
— Dimension stone,
— Recycled metal,
— Recycled stone,
— Straw, and
— Sustainably managed lumber

Some other sustainable building products that are non-toxic in nature and also renewable, reusable, or recyclable include but are not limited to the following:

— Baked earth,
— Calcium sand stone,
— Clay grain,
— Clay,
— Coconut,
— Cork,
— Flax linen,
— Linoleum,
— Paper flake panels,
— Rammed earth,
— Seagrass,
— Sheep's wool,
— Sisal,
— Trass,
— Vermiculite, and
— Wood fiber plates

By significantly decreasing the amount of waste that is created during the construction process, along with reducing the environmental impact that is created through construction, sustainable building has become a truly cost-effective way to make positive environmental changes. Construction does not need to be as harmful to the environment as it has been in the past, and sustainable building is showing us this. Although there is a bit of an increase in cost over traditional means of construction, sustainable building is becoming the better and more advantageous choice for construction companies, civil engineers, and other building designers who want to create new homes and buildings without creating such a negative impact on the environment.

Sustainable building is quickly becoming the new standard in all construction in the United States as well as in numerous other developing countries around the globe. While the cost for sustainable building is often slightly more than for traditional construction, this five percent increase in construction costs is certainly worthwhile considering the environmental implications. The future for sustainable building is bright, and civil engineers who work to make names for themselves in this quickly growing industry will surely prosper as sustainable building becomes the norm.