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Alternate Building Material Over Traditional For Energy Efficient Building

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Abstract

Better construction and use of buildings would influence 42% of final energy consumption, about 35% of our green house gas emissions and more than 50% of all extracted materials. It could also help to save upto 30% of water consumption. This paper plans and magnets conclusions about different aspects of the material efficiency of buildings and assesses the meaning of different building materials on the material efficiency. There search uses an extensive literature study and a case-study in order to assess: should the depletion of materials be ignored in the environmental or sustainability assessment of buildings, are the related effects on land use, energy use and/or harmful emissions significant, should related indicators be used to indicate the material efficiency of buildings, and what is the significance of scarce materials, compared to the use of other building materials. This research proposes that the material efficiency should emphasis on the important world-wide impacts of material efficiency; not on the individual factors of it. At present global warming and greenhouse gas emissions are among the biggest global problems on which material efficiency has a direct impact on. Therefore, this paper suggests that conservatory gas releases could be used as an pointer for material competence in building.

Index Terms: *material efficiency, resource efficiency, energy efficiency, building construction etc.*

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1. NEED/NECESSITY

The request for building materials has been unceasingly rising with the cumulative need for housing together in rural and town areas. The capitals used to manufacture construction resources affect the environment by exhausting natural resources, using energy, and freeing pollutants to the land, water. Profitable exploitation of traditional building materials by various industries has worse the situation. It has, so, become necessary to think over this problem seriously and to provide some sustainable solution to make the alternative materials available to solve the housing problem.

2. Low-E Windows

Glass is one of the most popular and multipurpose building materials used today, due in part to its constantly refining solar and thermal presentation. One way this performance is achieved is through the use of passive and solar control low-e coverings.

Low-E coatings have been industrialised to minimize the amount of infrared and infrared light that can pass through glass without co-operating the quantity of visible light that is transmitted. When heat or light energy is engrossed by glass, it is either shifted away by moving air or re-radiated by the glass surface. In general, highly reflective materials have a low emissivity and dull darker coloured materials have a high emissivity.

Fig1: Application ofLow-E coating glass for home

To use a simple similarity, low-e glass works the same way as a flask. A flask has a silver lining, which reflects the temperature of the drink it covers. The temperature is maintained because of the constant likeness that occurs, as well as the cloistering benefits that the air space provides between the inner and outside shells of the thermos, similar to an cloistering glass unit.

Since low-e glass is included of extremely thin layers of silver or other low emissivity materials, the same theory applies. The silver low-e coating reproduces the inner temperatures back inside, keeping the room warm or cold.

2.1 Benefits of low e windows

Installing windows containing Low-e glass in energy-efficient double or triple glazed units provides you with many benefits:

▪Improves the energy-efficiency of your home
▪Reduces the amount of energy you use
▪saves you money on your heating bills
▪more effective than single glazing or standard double glazing
▪Provide you with the quality and reassurance you would expect from a leading brand
▪Manufactured to the highest European quality standards
▪Available from window installers country wide in a range of frame types

3.Hollow Gypsum Boards & Block

Gypsum block is a massive light weight building material composed of solid gypsum, for building and erecting light weight fire-resistant non-load bearing interior walls, partition walls, cavity walls, skin walls and pillar casing indoors. Gypsum blocks are composed of gypsum plaster, water and in some cases additives like vegetable or wood fibre for greater strength. Partition walls made from gypsum blocks require no substructure for erection and gypsum adhesive is used as bonding agent, not standard mortar. Because of this fundamental difference, gypsum blocks shouldn't be confused with the thinner plaster board (also known as wall board or gypsum board) used for cladding stud walls.

Fig. 3: Construction of a non-load bearing partition wall of Gypsum Blocks

3.1 Following are the advantages of gypsum blocks

Economical: The dividing with plaster blocks is undoubtedly the most inexpensive system to create spaces. It's easy and fast applying and perfectly finished aspect requires no additional plaster layer, saving time and materials.

Creativity: The flexibility of separating with plaster blocks gives free re into your creativity. Height, thickness, plan alterations, form to new uses of the space, decoration you have the choice. In adding, due to the high resistance of our walls, fixing heavy objects can be done without special reinforcements.

Ecological: The plaster is a healthy and old-style material used since ancient times. Partition-walls made out of blocks of plaster are eager and, unlike other materials they provide no extra moisture in the building what assurances great comfort of living.

4.Foam Concrete Panels

Foam concrete, also known as foamed concrete, foamcrete, cellular frivolous concrete or reduced density concrete, is defined as a cement based slurry, with a minimum of 20% (per volume) foam entrained into the plastic mortar. As typically no coarse aggregate is used for production of foam concrete the correct term would be called mortar instead of concrete. The density is normally controlled by relieving fully or part of the fine collective with foam.

Foamed concrete classically consists of a slurry of cement and flyash or sand and water, although some suppliers recommend pure adhesive and water with the foaming agent for very frivolous mixes. The foam is created using a effervescing agent, mixed with water and air from a author. The foaming agent used must be able to crop air bubbles with a high level of constancy, resistant to the physical and chemical processes of mixing, placing and hardening.

Fig4:Foam Concrete Panels

4.1Few of the applications of foam concrete are

• Precast blocks
• Precast wall elements / panels
•Insulation roof screeds
• Sunken portion filling
• Trench reinstatement
• Sub-basein highways
• Filling of hollow blocks
• Prefabricated insulationboard

4.2 Some advantages of using Foam Concrete Panels

• Weight reduction of superstructure using foam concrete walls: less steel reinforcements required for slabs, columns, beams and foundation due to lesser load.
•Earthquake-resistant due to smaller weight of building

built using foam concrete walls in multi-storey buildings
•Suitable for buildings in hurricane, storm and flood affected areas as the harm caused by foam concrete walls
• Reduced cost of raw materials
• Environmentally-friendly/Energy savings
•Cost reduction for transportation and storage: Less raw materials, very efficient foam
• Faster construction using cast-in-situ application
•Improved thermal lagging
• Easy to use/ produce/ handle
•Low deal Just one simple machine required.
• High flowing capability: Can fill resonating spaces.
•Low water absorption

5.Fibre Cement Composite

Fibre cement is a composite building and construction material, used mainly in roofing and front products because of its strength and stability. One mutual use is in fibre cement siding on buildings.

Fig5: CorrugatedFibre cement roofing

In fibre cement there is a fibre reinforcement, which subsidises to making the fibre- cement material even stronger. Together with a carefully schedule production process, fibre cement makes it possible to develop strong and long-lasting construction materials. Today fibre cement is considered as a material physically suitable for construction products such as cladding and roofing. It is mainly due to its function, presentation and marketable value.

and roofs are nominal compared to conventional concrete based structures.

6. CONCLUSION

Selection of material will have to deal with "suitability" and "adequacy" within energy efficiency and environmental approaches for local conditions (social, economic, financial, institutional, environmental, etc.). Selection of alternate building materials can help better quality of structures, faster construction solutions and faster new economic development.

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