GREEN CONSTRUCTION AND SUSTAINABILITY USING MODIFIED EXPANDED POLYSTYRENE (EPS) INSULATION

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ABSTRACT

The construction industry has been developing rapidly owing to population rise and rapid urbanization. Construction is one of the main energy consumers in society, and it has made significant contributions to energy consumption and environmental impact. Green construction and sustainability are picking up momentum as more building owners demand high-performance, earth-friendly construction methods, and materials. Energy consumption in a building is the greatest environmental impact on the environment in the future. Using EPS hollow blocks as building materials can significantly decrease energy consumption. This construction method presents a cost-effective and practical design procedure for residential buildings that reduce construction cost without sacrificing reliability, energy efficiency, or durability.

Insulating concrete EPS hollow blocks can be constructed of rigid polystyrene foam insulation, a composite of cement and foam insulation, or other suitable insulating material that can act as forms for cast-in-place concrete. The EPS units remain in place after the concrete is cured to provide added insulation. This type of construction system is capable to resist the applied loads, providing energy efficiency, reducing construction time and cost, and reducing outside noise. All these attributes lead to a more durable form of construction in residential and commercial construction.

This presentation shows the application of a special design system proposed by the author for sustainable construction using expanded polystyrene (EPS) units with cast-in-place concrete in a real project.