

A NEW BREED OF SUSTAINABLE ULTRA-LIGHTWEIGHT AND ULTRA-SHALLOW STEEL-CONCRETE COMPOSITE FLOORING SYSTEMS: LCA AND LCC

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ABSTRACT

Sustainability and the reduction of CO₂ emission have taken an important attention in all industries. In particular, the construction industry is influenced due to the high use of materials and the large amount of waste generated. An enormous contribution to sustainable design can be made by changing the design of traditional members and systems and integrating new or under-developed materials from the initial stages. The aim of this study is to present a new composite flooring system which exercises the sustainability approach in the selection of its components. A comprehensive evaluation of the new flooring system and a detailed comparison with existing shallow flooring systems through Life Cycle Assessment (LCA) and Life Cycle Cost (LCC) is conducted. The comparison is performed based on three stages (production stage, transportation and end of life stage). It is found that the new proposed flooring system has a better performance than other shallow flooring systems in terms of energy consumption, carbon dioxide emissions and cost.

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