Abstract

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Comparative study of traditional and modern building techniques in Siwa Oasis, Egypt: Case study: Affordable residential building using appropriate building technique

Egyptian Oases are still the most varied in the world, each one has a special character. Siwa Oasis is a place of magic and quietness with a unique ecology. This research tends to show the problems associated with the traditional construction technique in Siwa oasis due to the weakness of the available building materials such as Karshif particles and silt mortar which do not have an appropriate strength and rain resistance. On the other hand the modern building technique which is used in the building nowadays is not only unsuitable with the oasis unique architectural character but also has a negative impact on environment and cultural heritage. This research paper discusses the environmental impact of construction and the preservation of vernacular techniques of construction as the heritage of Siwa oasis. So, it presents a proposed construction technique using a durable structure system with enhanced local materials to be able to survive a long period of time and conserve the unique character of Siwa Oasis. In addition, the proposed architectural design of affordable residential building is compared with the traditional and modern building techniques through their strength, thermal insulation and cost. The comparison outcome shows the advantages of the proposed architectural design and its reinforced concrete structural system which using Karshif particles as exterior walls to be an eco-friendly enclosure with the surrounding environment and create a pleasant indoor environmental quality for inhabitants.