

Exploring Folded Plate Design in Realized Works of Varied Scale and Materials

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Abstract

Folded plate behavior can be used very efficiently in structural design with various materials and scales of structures. In this paper, our recent explorative case studies in creative and innovative folded plate design and constructions will be presented in timber, concrete and steel folded plate structures. The examples are for school building roofs, an archeological protection roof, a floor systems in ecological architecture, and floors in a residential building. The projects vary in size from couple of hundred square meters to thousands, in coverage area. 5 projects in total will be presented. A timber-and-steel composite roof covered an ancient city ruins where archeological park protection required column-free, asymmetric, and flexible design for a roof. Solid Timber was used in two of the innovative folded plate architectural covers. Traditional steel-brick vaulted floors were replaced with concrete vaults in a similar concept for a residential multi-story building. And lastly a timber frame roof which resembles a classic gabled roof from exterior, was made into an effective beam-purlin folded structure with vertical attic posts removed to create a spacious teachers' room for the art studies building.