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The Textile Block System: Structural analysis and alternative seismic upgrading to IBC 2003

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Abstract: The Textile Block System is a unique architectural system created by Frank Lloyd Wright in the early 1920s. His first four textile block houses in California have deteriorated dramatically due to seismic and environmental stresses, and previous interventions to preserve them have unfortunately not been completely successful. This study therefore aims to analyze the history, materials and methods of construction of these houses, and explore effective preservation strategies to comply with safety requirements. The allowable stress design method (ASD) is used to calculate whether or not the Freeman House was built to withstand lateral stresses and load, and if not, which techniques can be used to preserve the artistic and structural integrity of the house. This study shows that the concrete block materials and construction methods used were not optimal, and provides recommendations for how the textile block houses can be strengthened and upgraded to current seismic codes.

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