An Investigation of Optimal Rural Building Designs for All Earthquake Zones of Turkey

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This experiment was conducted to determine which cost-effective building design is best suited for resisting earthquakes in rural areas of Turkey. Turkey lies on multiple fault lines and is incredibly susceptible to earthquakes. The government has set out a multibillion dollar plan to retrofit old buildings in earthquake prone areas to better protect the population from damage. They hope to meet their goal within twenty years, but it will focus heavily on major cities, such as Istanbul and Ankara, and not as much on rural areas. This experiment was designed to target those areas. Five different adobe-based building designs were used and four of each were constructed. They were then tested on a shake table to determine how well they resisted earthquakes. The results were examined to determine which design was best suited for the rural areas of Turkey. It was concluded that a house covered in a mesh-like substance was the best cost-effective design to implement. However, since mesh may not be readily available in all areas, the second most effective design, a timber laced masonry design native to Turkey called himis, was suggested as a substitute since it also resisted earthquakes well.

Awards Won:

Acoustical Society of America: Second Award of $500