Can Lucknow monuments survive quake?

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Kanpur: In a startling revelation, a study conducted by IIT-Kanpur has pointed out that the 17th-century Lucknow monsoon monuments like Rumi Darwaza, Imambara, Naubatkhana, Dilkusha, Kohli and Moosa Bagh face a serious threat to their survival from a strong earthquake.

The Lucknow monuments built using thin ‘lakhauri’ (burnt clay bricks) and lime-crushed brick ‘surkhi’ (aggregate) mortars were “seismically evaluated” by Prof Durgesh P Rai of IIT-Kanpur, a period of over three years. His research has found that the monuments are likely to face a significant threat from earthquakes.

The study, published in the recent edition of Current Science, has found that the monuments, especially those built using thin ‘lakhauri’ bricks, are prone to critical damage in a strong earthquake. The study was conducted by the Archaeological Survey of India (ASI) and the Indian Institute of Technology (IIT) Kanpur.

Prof Rai said, “The study was conducted to evaluate the seismic performance of the monuments in Lucknow. The study was conducted using various methods, including architectural surveys, geophysical surveys, and laboratory tests.”

The study also highlighted the need for further research and development of new construction techniques to ensure the safety of these monuments.

The study primarily aims at:

- Characterization of materials used in Lucknow monuments, such as ‘lakhauri’ bricks, lime-crushed mortar and plaster and masonry assemblages, to understand their seismic behavior.
- Seismic evaluation of the half-sphere structure of Rumi Darwaza by comparing its response to present-day seismic load carrying capacity with the expected seismic demand.
- Development of new construction techniques to increase the seismic performance of the existing monuments.

The study has identified several areas for further research, including the development of new construction techniques and the evaluation of the long-term performance of the monuments.

The study has been welcomed by the ASI and the Lucknow Archaeological Society, which have praised the work for its contribution to the understanding of the seismic behavior of Lucknow monuments.