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Spotlight on *Structures*

Editor's Featured Article

The Featured Article for Volume 77 of *Structures* is now available. Associate Editor, Hossein Derakhshan, has selected a paper on the infill wall stiffness effects on seismic performance of reinforced concrete frame structures.

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Experimental analysis of infill wall stiffness effects on seismic performance of reinforced concrete frame structures using shaking table tests

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This study investigates the effect of low infill wall stiffness on the seismic collapse behaviour of reinforced concrete (RC) frame structures. A 1:4 scaled model of an exterior corridor-type RC frame, based on the teaching building at Xuankou Middle School (located in the high-intensity seismic zone affected by the 2008 Wenchuan Earthquake) was developed and tested using shaking table experiments. To further assess structural performance, six infill wall stiffness configurations were analysed through Incremental Dynamic Analysis (IDA) utilising ABAQUS software. The key results are summarised as follows:

1) The lateral stiffness of the axis constrained by half-height infill walls at the model's base was 3.71–5.85 times greater than the other axes, concentrating approximately 69% of the total base shear force on this axis;
2) IDA results demonstrated that the stiffness-uniform model exhibited superior collapse resistance, with its collapse-level ground motion intensity increased by 47.15–60.58% relative to non-uniform models (Models E and F). Notably, when uniaxial stiffness exceeded the average by more than 30%, the probability of collapse increased significantly (1.00%~27.25%) and the collapse margin ratio (CMR) dropped below the safety threshold of 2.0;
3) The restraining effect of infill wall stiffness on column end moments was quantitatively evaluated, highlighting the recommendation to limit the stiffness disparity between axes to no more than 30% for improved seismic resilience. While the scaled model may underestimate nonlinear material behaviour due to size effects, the results concerning stiffness-induced shear redistribution remain broadly applicable to the seismic design of RC frame structures.

→| Read the full paper at **https://doi.org/10.1016/j.istruc.2025.109108**

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