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Spotlight on *Structures*

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Volume 46 of *Structures* (December 2022) is now available to read at www.sciencedirect.com/journal/structures/vol/46.

Editor-in-Chief, Leroy Gardner, has chosen a paper on reinforced concrete (RC) frames subjected to progressive collapse. The paper proposes refined configuration and calibration on compression bar force-slip springs of component-based models for RC frames.

The article will be available free of charge for six months.

Editor's Featured Article

Component-based joint model for RC frames with conventional and special detailing against progressive collapse

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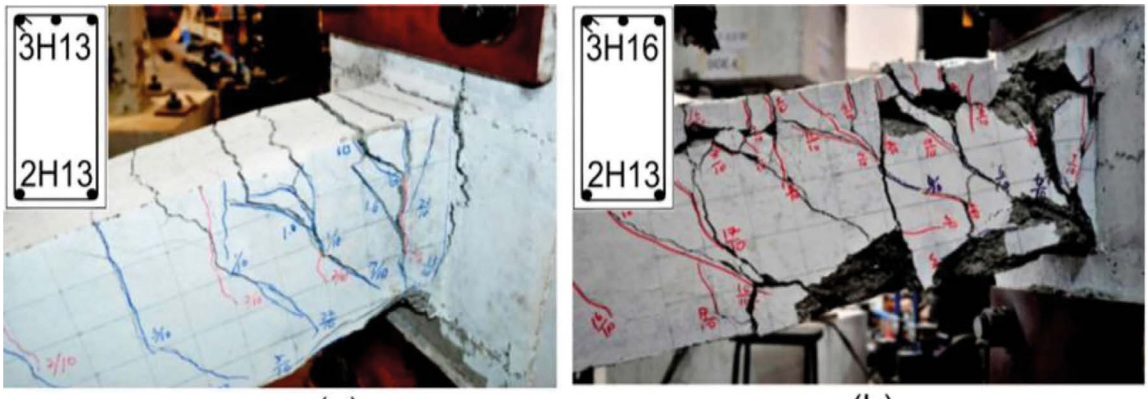
For reinforced concrete (RC) frames subjected to progressive collapse, severe damage is typically concentrated at beam-column connections or even joint panels. To accurately represent this type of local failure and the corresponding effect on progressive collapse resistance, component-based model (CBM) is employed. This paper proposes a refined configuration and calibration on compression bar force-slip springs of CBM for RC frames with conventional detailing at the joints and members. The compression springs account for varying neutral axis depth with applied loads to solve the issue of inaccurate prediction for progressive collapse resistance of RC structures due to over-/under-estimation of compression spring capacities by simplified methods in previous CBMs. In addition, the influence of joint location and tension–compression beam bar ratio on compression spring properties is also explored. Thereafter, the calibrated CBM is developed to simulate the RC frames with special detailing, including plastic hinge relocation (PHR) technique and additional bar layer (ABL) in the beam. It is shown that relocating plastic hinges further away from the joint interface results in a shorter effective beam length and a smaller ultimate deflection. The former increases flexural-compressive arch action and catenary action capacities, and the latter derives the recommendation of limiting the PHR to 1.5 times the effective beam depth. Providing an ABL significantly improves progressive collapse performance of RC frames. Finally, an alternative approach is proposed, in which an ABL is placed only at the support region, located at either the middle or the bottom quarter of the beam depth.

→| Read the full paper at **https://doi.org/10.1016/j.istruc.2022.10.032**



(a) (b)

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