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Experimental and numerical studies on the drop impact resistance of prestressed concrete plates

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**Highlights**

- Drop impact resistance and energy absorption characteristics of prestressed and non prestressed concrete plates were studied
- Numerical simulations were performed for inducing prestress and for reproducing the drop weight impact response
- Reinforced concrete plates experienced flexural and shear cracks of relatively high density
- Prestressed concrete plates developed shear cracks along with a major tensile crack in the direction of prestress
- Numerical simulations fairly accurately reproduced the peak impact and reaction forces, and the pattern of damage

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