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Spotlight on *Structures*

Editor's Featured Article

Associate Editor, Ashraf Ashour, has chosen a paper on an investigation into the seismic performance of a novel cast-in-place system as the Featured Article for Volume 82 of *Structures*.

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Experimental investigation on the seismic performance of pre-tensioned prestressed precast integral cast-in-place frames

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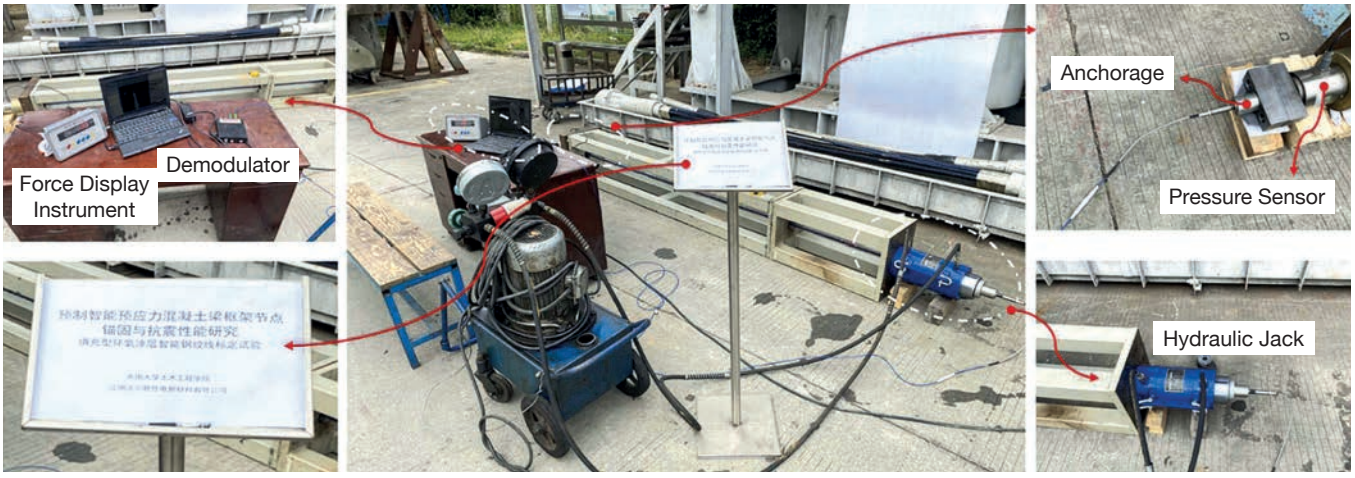
This paper presents the test results on the seismic performance of a novel pre-tensioned prestressed precast integral cast-in-place structural (PPPICS) system, which employs a hooked steel strands group anchoring technology for beam-column component connection, surpassing the limits of current building codes. Under constant axial compression and lateral cyclic loading conditions, low-cycle reversed tests were conducted on two single-story, single-span frames, each with different beam-column connection reinforcement configurations. Self-sensing steel strands were introduced into the precast prestressed concrete beams to monitor the internal prestress variations at different stages such as precast prestressed beam fabrication and low-cycle reversed loading tests. The test results revealed that (i) The bearing capacity of both frames ceased to increase significantly once the concrete at the ends of the precast beams was crushed and damaged, eventually leading to plastic hinge failure in the column base area. Currently, the beam ends of the PPPICS system frame are over-reinforcement, resulting in an excessive bearing capacity at these locations, making it difficult to achieve the seismic design principle of 'strong columns and weak beams'. (ii) Compared to the mixed reinforcement beam-column connection, the full-hooked steel strand reinforcement form more effectively enhances the initial stiffness and bearing capacity of the frame structure. However, since both frames experienced plastic hinge failure at the column base, no significant differences were observed between the two in terms of ductility and energy dissipation. (iii) By employing self-sensing steel strands, the variations in prestress within the frame structure can be monitored in real time, providing valuable insights for enhancing the intelligent sensing performance of the PPPICS system.

→| Read the full paper at **https://doi.org/10.1016/j.istruc.2025.110559**



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