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Seismic Performance of Precast Concrete Special Moment Frame with Dry Connection Details

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ABSTRACT

Dry mechanical splicing method is a key technique to enable fast-built construction by so-called self-sustaining system (SSS) during construction, which can be realized by no temporary support and minimized onsite jobs. However, traditional wet splicing methods are still dominantly adopted in the precast industries over the world. This study conducted the cyclic tensile material tests on mechanical splices to check its satisfactory performance as Type 2 mechanical splice specified in ACI 318-19 code. In addition, large scale precast concrete (PC) beam-column connection specimens with the dry mechanical splices and reinforced concrete (RC) control specimen as the special moment frame were fabricated and tested under lateral reversed cyclic loadings. Test results showed that the seismic performances of all the PC specimens were fully emulative to the RC specimen in terms of strength, stiffness, energy dissipation, drift capacity, and failure mode.

REFERENCES

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