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Evaluation of Anchorage Performance of Large Diameter Headed Bar by Exterior Beam Column Joint Tests.

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Introduction

Generally, a conventional standard hook is used for the reinforcement's anchorage. However, this results in steel congestion, and it makes fabrication and construction difficult. Using a headed bar offers a potential solution for these problems and may also ease fabrication, construction and concrete placement. But, in current design code of the headed bar, it had limitation about the yield strength of rebar and the diameter of rebar etc. It hard to use the large diameter headed bar in the reinforced concrete structure.

This paper presents the cyclic responses of eight reinforced concrete exterior beam-column joints, which are anchored with large diameter headed bars or hooked bars. The specimen variables are anchorage detail, anchorage length, side cover thickness of concrete, transverse reinforcement, and failure mode of joints. Structural performance of the beam-column joints is evaluated and compared with each other.

The behaviour of joints with headed bars are as good as, or better than those companion joints with 90-degree hooked bars. The test results show that the large diameter headed bar has enough anchorage capacity in the exterior beam-column joints. Test results show side cover of concrete improved the anchorage capacity of the bars and transverse reinforcement enhanced the anchorage capacity and ductility of joints.