

عنوان مقاله:

The Effects of Filling the Rectangular Hollow Steel Tube Beam with Concrete: An Experimental Case Study

محل انتشار:

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نویسندگان:

Ahmed W. Al Zand - *Department of Civil and Structural Engineering, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia*

Emad Hosseinpour
Wadhah M Tawfeeq

خلاصه مقاله:

In order to understand further the influence of using the concrete-filled steel tube (CFST) composite beams in the modern structural projects, the flexural and energy absorption capacities of simply supported rectangular hollow steel tube (HST) beams filled with normal concrete was investigated in this study. Eight downscale specimens (HST and CFST beams) were tested experimentally under static four-point bending, where these beams have varied tube section classifications (Class ۱ and ۳) and lengths. Generally, the results confirmed that both of the moment and the energy absorption capacities of hollow steel tube beams were significantly improved when filled with concrete, specifically for those with section Class ۳. However, this improvement ratio reduced gradually with increasing of tube's thickness (Class ۱) and/or beam's length. In order to understand further the influence of using the concrete-filled steel tube (CFST) composite beams in the modern structural projects, the flexural and energy absorption capacities of simply supported rectangular hollow steel tube (HST) beams filled with normal concrete was investigated in this study. Eight downscale specimens (HST and CFST beams) were tested experimentally under static four-point bending, where these beams have varied tube section classifications (Class ۱ and ۳) and lengths. Generally, the results confirmed that both of the moment and the energy absorption capacities of hollow steel tube beams were significantly improved when filled with concrete, specifically for those with section Class ۳. However, this improvement ratio reduced gradually with increasing of tube's thickness (Class ۱) and/or beam's length.

کلمات کلیدی:

CFST beam, HST beam, Flexural improvement, Energy absorption

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