

عنوان مقاله:

Lateral Load Carrying Capacity of Concrete-filled Cold-formed Steel Shear Wall

محل انتشار:

ماهنامه بین المللی مهندسی، دوره 35، شماره 1 (سال: 1401)

تعداد صفحات اصل مقاله: 11

نویسندگان:

G. Sijwal - *Department of Civil Engineering, Faculty of Engineering, Kasetsart University, Bangkok, Thailand*

P. Pradhan - *Department of Civil Engineering, School of Engineering, Kathmandu University, Budol, Dhulikhel, Nepal*
School of Engineering, Manmohan Technical University, Morang, Nepal

K. Phuvoravan - *Department of Civil Engineering, Faculty of Engineering, Kasetsart University, Bangkok, Thailand*

خلاصه مقاله:

A new type of innovative composite shear wall (concrete-filled cold-formed steel shear wall or CFCSW) is proposed, composed of cold-formed channel sections arc-welded together by ۲۰ mm length of welds and filled with concrete. The main study of the CFCSW focuses on the overall behavior, ultimate load capacity, stiffness and ductility. Three specimens of CFCSW with an aspect ratio of ۱.۰ are tested under lateral monotonic load. Three-dimensional finite element models are developed and benchmarked with the experimental results. The validated models are used to carry out parametric studies to determine the influence of the parameters on the performance of the CFCSW. The parameters are the height, steel plate thickness, weld spacing and concrete thickness of the CFCSW. The experimental and finite element modeling results indicate that increasing the weld spacing from ۱۰۵ mm to ۲۱۱ mm improves the stiffness, ductility and load carrying capacity, and similarly, providing holes inside the wall increases the stiffness, ductility and peak strength of the CFCSW. The ultimate capacity of the CFCSW is most influenced by .changing the height of the wall and least influenced by varying the concrete thickness of the wall

کلمات کلیدی:

Concrete-filled cold-formed steel shear wall (CFCSW), monotonic load, Experimental Investigation, non-linear finite element analysis, Parametric Studies

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1437819>

