

عنوان مقاله:

Structural Behavior of Axially Loaded Composite Concrete-steel Plate Shear Walls

محل انتشار:

ماهنامه بین المللی مهندسی، دوره 32، شماره 11 (سال: 1398)

تعداد صفحات اصل مقاله: 11

نویسندگان:

Jinan Laftah Abbas - Civil Engineering Department, University of Baghdad, Baghdad, Iraq - Civil Engineering Department, University of Diyala, Diyala, Iraq

Abbas AbdulMajeed Allawi - Civil Engineering Department, University of Baghdad, Baghdad, Iraq

خلاصه مقاله:

composite concrete-steel plate shear walls are the most critical resisting structural members that resist lateral and axial loads. This type of wall consisting of two steel faceplates presenting the outer skin, infill concrete and shear connectors which are used to provide the composite action of the steel faceplates with infill concrete in order to increase the strength and to reduce the local buckling of steel faceplates. The experimental investigation of composite concrete - steel plate shear walls under axial loads is presented in this research. The aim of this study is to evaluate the effect of concrete compressive strength and the thickness of the wall on the axial capacity, lateral displacement and axial shortening of the walls. The obtained results indicate that the increase in compressive strength of concrete enhances the ultimate axial load capacity of the wall and it should have an effect on crushing strength of the composite wall which can affect the failure loads of the composite walls. In addition, the concrete strength increased by enlarging the thickness of wall from 55mm to 70mm and this is because the concrete participation leads to large assistance to avoid relatively steel plate from premature buckling as well as, the concrete plays an important role in avoiding instability of steel plate. Thus, the failure load, lateral displacement at top and mid-height of the wall as well as the axial shortening at failure load increased by increasing the compressive strength and increasing the wall thickness of the wall. The failure of the composite walls was started by local buckling of the steel plates, cracking and crushing of the concrete infill in the top region of the composite wall.

کلمات کلیدی:

Axial load, Composite Concrete-steel Plate Shear Walls, Failure mode, lateral displacement, Shortening

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/962710>

