

Application Research on Large Profiled Statues of Steel-Concrete Composite Shear Wall

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Abstract : Twin steel plates-concrete composite shear walls are composed of a pair of steel plate layers and a concrete layer sandwiched between them, which have the characteristics of both reinforced concrete shear walls and steel plate shear walls. Twin steel plates-composite shear walls contain very high ultimate bearing capacity and ductility, which have great potential to be applied in the super high-rise buildings and special structures. In this paper, we analyzed the basic characteristics and stress mechanism of the twin steel plates-composite shear walls. Specifically, we analyzed the effects of the steel plate thickness, wall thickness and concrete strength on the bearing capacity of the twin steel plates-composite shear walls. The analysis results indicate that the initial shear stiffness and ultimate shear-carrying capacity is not significantly affected by the thickness of concrete wall but by the class of concrete, both factors significantly impact the shear distribution of the shear walls in ultimate shear-carrying capacity. The technique of twin steel plates-composite shear walls has been successfully applied in the construction of a 88-meter Huge Statue of Buddha located in Hunan Province, China. The analysis results and engineering experiences showed that the twin steel plates-composite shear walls have great potential for future research and applications.

Keywords : twin steel plates-concrete composite shear wall, huge statue of Buddha, shear capacity, initial lateral stiffness, overturning moment bearing

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