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Shear Strengthening Effect of Core-filling Concrete in Hollow-Core Slabs Manufactured by Extrusion Method

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ABSTRACT

Hollow-core slabs (HCSs) have thin webs and thus are vulnerable to shear forces. To strengthen the web-shear capacity of HCS, core-filling method is widely applied in construction sites; however, some test results that causes concerns about the shear strengthening effect of core-filling concrete was reported. This study presents web-shear tests of HCSs reinforced with topping and core-filling concretes. The shear behavior of HCSs with and without shear-strengthening, including crack patterns and composite performance between HCS and cast-in-place concrete, has been compared and discussed in a comprehensive manner. It was found that the shear-strengthening effect significantly improved when core-filling concrete was cast simultaneously with topping slab and stirrups.

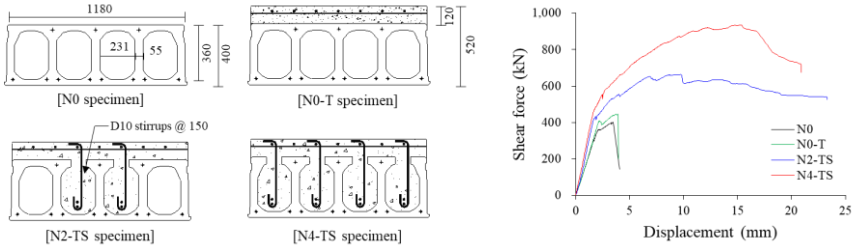

Fig. 1 Comparison of shear behavior of HCSs with and without strengthening

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