

Code Evaluation on Web-Shear Capacity of Prestressed Hollow-Core Slabs

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Abstract : Prestressed hollow-core slabs (HCS) are structurally optimized precast units with light-weight hollowed-sections and very economical due to the mass production by a unique production method. They have been thus widely used in the precast concrete constructions in many countries all around the world. It is, however, difficult to provide shear reinforcement in HCS units produced by the extrusion method, and thus all the shear forces should be resisted solely by concrete webs in the HCS units. This means that, for the HCS units, it is very important to estimate the contribution of web concrete to the shear resistance accurately. In design codes, however, the shear strengths for HCS units are estimated by the same equations that are used for typical prestressed concrete members, which were determined from the calibrations to experimental results of conventional prestressed concrete members other than HCS units. In this study, therefore, shear test results of HCS members with a wide range of influential variables were collected, and the shear strength equations in design codes were thoroughly examined by comparing to the experimental results in the shear database of HCS members. Acknowledgement: This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Science, ICT & Future Planning(NRF-2016R1A2B2010277).

Keywords : hollow-core, web-shear, precast concrete, prestress, capacity

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