



Filling in the voids

Volume #6

Topping, take 2

CORESLAB[®]
STRUCTURES
(ORLANDO) INC.

11041 Rocket Blvd., Orlando, FL 32824
Ph: (407) 855-3190 Fax: (407) 855-6870
www.coreslab.com

A while back we made available an article about hollow core and topping design which was a fairly general overview of the topic and some of the issues surrounding it. In the summer of 2013 the PCI Journal published a research paper concerning one very specific aspect of hollow core topping design, interfacial shear strength.

From the abstract of *Hollow-core slabs with cast-in-place concrete toppings: A study of interfacial shear strength*:

Precast concrete hollow-core slabs are often constructed with a cast-in-place concrete topping on site. Common construction practice includes applying cementitious grout between hollow-core units as a bonding agent. The cast-in-place concrete topping may contribute to the strength and stiffness of the hollow-core slabs if composite action is developed. The strength of the interface between the hollow-core units and the cast-in-place concrete topping largely depends on the surface condition of the slabs because it is not feasible to provide transverse reinforcement in these elements.

The research presented in this paper primarily includes testing of two types of hollow-core units (dry mix and wet mix) to determine the interfacial shear strength between the units and the cast-in-place concrete toppings. Tests were conducted using push-off specimens designed to generate shear stresses at the interface. A parametric study is also conducted to identify the governing failure mode of topped hollow-core slabs as a function of span length.

We really appreciated the thorough approach taken by the authors who not only tested hollow core manufactured by different casting methods but also with different surface finishes. Periodically we are asked about bond and the surface condition of the plank we produce and we plan to use their research paper to answer some of those questions. Download a copy from PCI.org at PCI_Journal/2013/Summer/JL-13-SUMMER-12.pdf.

Please feel free to get in touch with us if Coreslab Structures (Orlando) Inc. can assist you on your next project allowing you to make a more informed choice about prestressed hollow core concrete plank and structural concrete topping.