

## DIAPHRAGM SHEAR ON UNTOPPED SPANCRETE® HOLLOWCORE DECKS

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Two phases of tests were conducted to determine the longitudinal shear capacity of grouted keyways when a Spancrete deck is used as a diaphragm without topping. The grout placed in the keyways was a 3:1 sand-cement mix with sufficient water added to make it flowable. The grout strength was a minimum of 2500 psi at the time of testing.

The first phase consisted of tests conducted on two simple span plank decks to establish a reliable value for the diaphragm design shear strength of the grout key. A masonry bond beam served as both bearing support and tensile tie. The second phase consisted of four tests designed to impart direct shear on the grout key. These were conducted on a plank setup modeled as the last two slabs in a simple span diaphragm. Both test arrangements are shown on the reverse side.

### CONCLUSIONS:

1. An untopped Spancrete deck will function satisfactorily as a diaphragm.
2. The keyway longitudinal shear capacity may be taken as  $V_n = 0.04 f'_{cg} ht \leq 120 ht$   
 where  $f'_{cg}$  = grout strength  
 $h$  = depth of diaphragm  
 $t$  = effective depth of grout
3. For detailed assistance in diaphragm analysis and design, consult the "PCI Design Handbook for Precast and Prestressed Concrete" or the "PCI Manual for the Design of Hollow Core Slabs."

