

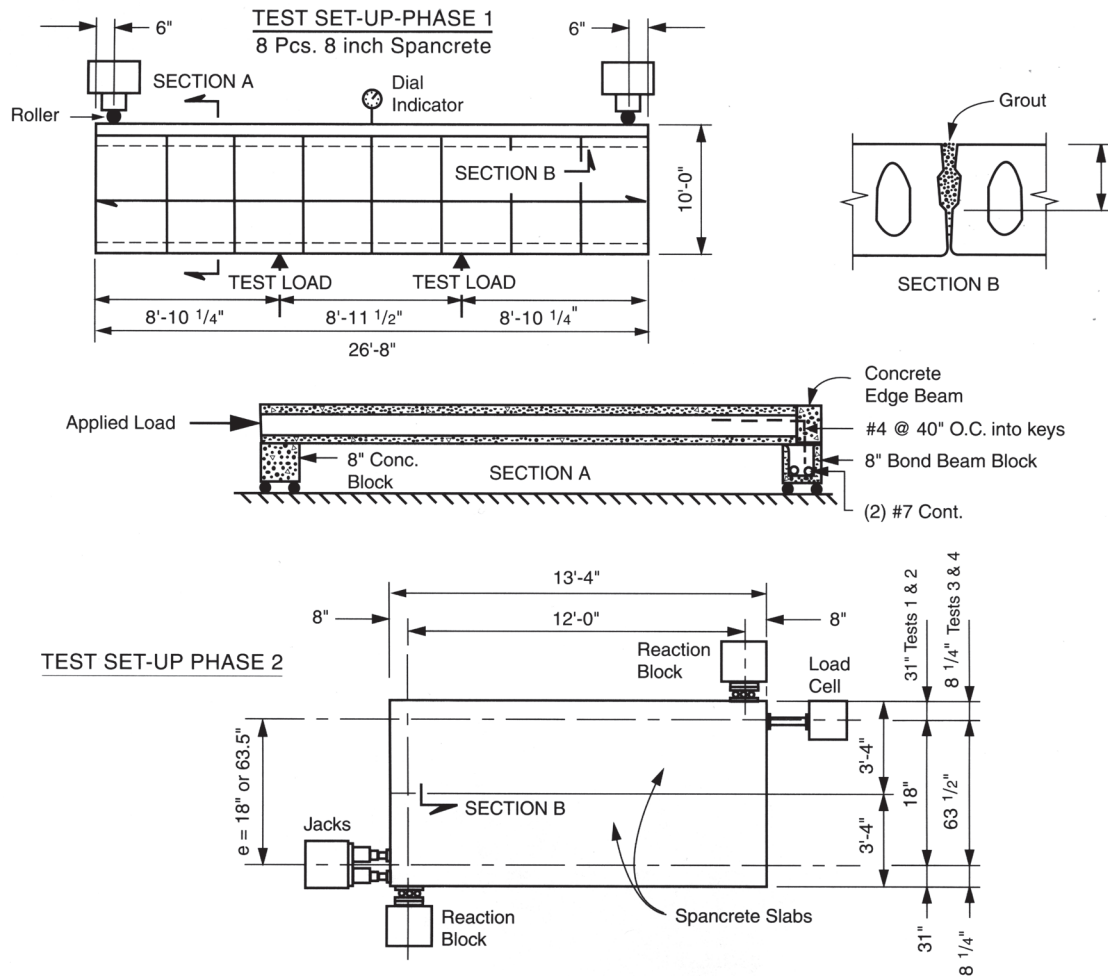
DIAPHRAGM SHEAR ON UNTOPPED SPANCRETE® HOLLOWCORE DECKS

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."



Note: This research was done using 40" wide, 8" thick Standard Spancrete® hollowcore. However, this concept applies to all Spancrete cross sections.

MIDWEST

Hanson Structural
Precast Midwest, Inc.
Maple Grove, Minnesota

Spancrete, Inc.
Green Bay, Wisconsin

Spancrete Industries, Inc.
Waukesha, Wisconsin

Spancrete of Illinois, Inc.
Arlington Heights, Illinois

Wells Concrete
Wells, Minnesota

WEST
Hanson Structural
Precast Pacific, Inc.
Irwindale, California

KIE-CON
Division of Kiewit Pacific Co.
Anitoch, California

Owell Precast
Sandy, Utah

SOUTHWEST
Manco Structures, Ltd.
Schertz, Texas

SOUTH
Cement Industries, Inc.
Fort Myers, Florida

Florida Precast Industries, Inc.
Sebring, Florida

EAST
Mid-Atlantic Precast, LLC.
King George, Virginia

EGYPT
Samcrete Egypt
Ahram, Giza

MEXICO
ITISA
Mexico City, Mexico

Spancrete Noreste
Monterrey, Mexico

CROATIA
Mucic & Co
Dugopolje, Croatia

CARIBBEAN
Preconco Limited
Barbados, West Indies

TURKEY
Yapi-Merkezi
Camlica-Istanbul, Turkey

UAE
Hi-Tech Concrete
Products LLC
Abu Dhabi, UAE

MACHINE MANUFACTURER
Spancrete Machinery Corporation
N16 W23415 Stoneridge Drive
Waukesha, WI 53188
Telephone: 414-290-9000
Fax: 414-290-9130
www.spancrete-machinery.com

SPANCRETE IS ALSO MANUFACTURED IN:

- | | |
|-----------|-------------|
| Armenia | Ireland |
| China | Japan |
| Denmark | Russia |
| Guatemala | South Korea |
| Hungary | Switzerland |

Spancrete® hollowcore is a registered trademark