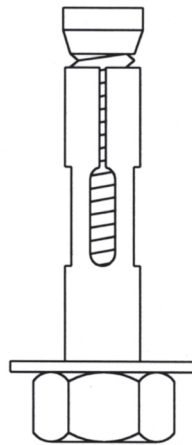


BOTTOM INSERTS - Hilti

As part of a program for evaluating various inserts used in Spancrete® hollowcore plank, a common brand of ½" diameter sleeve anchors were installed in the test plank bottom, directly under cores where the bottom thickness is 1-½ inches.



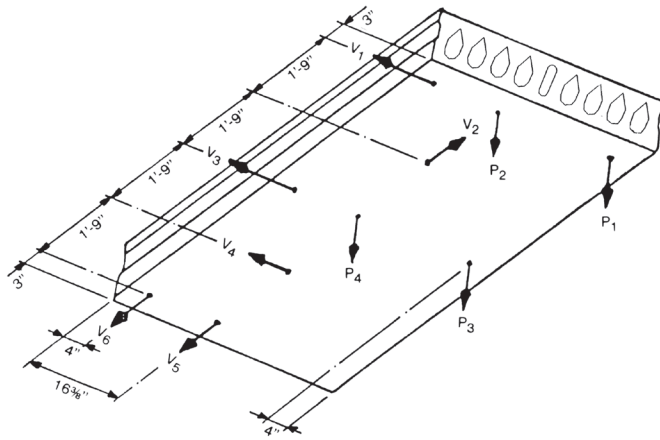
½" Ø x 3" HILTI
 CAT. NO. 336256

SLEEVE ANCHORS TESTED

CONCLUSIONS:

1. Drilled sleeve type inserts are an economical and acceptable way of fastening to a Spancrete plank.
2. It is critical that this type of anchor does not extend into the core, that the embedment be at least 1-½", and that the manufacturer's specified torques be used.
3. Holding power is reduced when insert is located near any plank edge and in thin concrete sections.
4. Test values must be reduced by appropriate strength reduction factors and safety factors to obtain working load values.

Research Notes are produced periodically by the SMA Technical Committee. SMA Research Notes are based on testing done for the Spancrete Manufacturers Association. The information contained in these Research Notes should be used by those experienced in structural design and should not replace sound engineering judgment.



BOTTOM EXPANSION BOLT TEST SETUP

1/2" Ø 3" HILTI ANCHOR

Load	Test #1	Mode*	Test #2	Mode*	Avg.	Low
P1	4.23 ^k	Conc.	4.04 ^k	Conc.	4.14 ^k	4.04 ^k
P2	4.19	Conc.	4.73	Conc.	4.46	4.19
P3	4.73	Conc.	5.53	Conc.	5.13	4.73
P4	-	-	4.63	Conc.	4.63	4.63
V1	2.92	Conc.	2.69	Conc.	2.81	2.69
V2	4.43	Steel	4.40	Steel	4.42	4.40
V3	4.39	Steel	4.47	Steel	4.43	4.39
V4	3.08	Conc.	4.51	Steel	3.80	3.08
V5	5.65	Conc.	3.96	Conc.	4.81	3.96
V6	2.25	Conc.	2.17	Conc.	2.21	2.17

*Failure mode

NOTE: Test values must be reduced by appropriate strength reduction factors and safety factors to obtain working load values.

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.
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EGYPT
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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

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