

## ENGINEERING GUIDE

## No. 425 Wedge Inserts:

**TEST 1**

The inserts were cast flush with the surface of blocks 16" (406.4mm) x 16" (406.4mm) having a thickness of 10" (254mm). A short length of 1/2" (12.7mm) reinforcing bar was placed through the insert loop into the 3,000 psi concrete.

**PULLOUT TEST:**

Insert	Max. Load Lbs.	Failure
3/4	9,830 lbs	Concrete broke around insert body and cracked at reinforcing bar. Insert did not break.
3/4 Long	12,860 lbs	Lips along slot of insert broke. Concrete broke along side body. Insert did not pull out of concrete.

**SHEAR TEST:** The tests were made at the mid point of the slot of the insert. The load was applied 2" (50.8mm) out from the surface of the concrete.

Insert	Max. Load Lbs.	Failure
3/4"	7,600 lbs	Bolt slipped in slot 1/16" (1.5875mm)
	10,500 lbs	Bolt slipped in slot 3/16" (4.7625mm)
	10,960 lbs	Bolt slipped in slot 3/8" (9.525mm). No failure in insert or in concrete, but bolt was bending slightly.
	11,100 lbs	Maximum Load. Threads stripped on bolt.
3/4" Long	5,660 lbs	Bolt slipped in slot 1/16" (1.5875mm)
	7,140 lbs	Bolt slipped in slot 3/16" (4.7625mm)
	7,840 lbs	Bolt slipped in slot 3/8" (9.525mm). No failure in insert or in concrete, but bolt was bending slightly.
	19,150 lbs	Maximum Load. Bolt had slipped to bottom of slot and head sheared.

**TEST 2****SHEAR TEST:**

**METHOD OF TEST:** ASTM E 488-76 Shear Strength of Anchor in Concrete. Parallel to Concrete Face from top of Anchor. Concrete compressive strength was 5,860 psi. Concrete Fractured in all specimens, but insert did not fail.

Insert	Average
3/4"	7,230 lbs
3/4" Long	8,727 lbs

**TEST 3****PULLOUT TEST:**

**METHOD OF TEST:** ASTM E 488-76 Test for Strength of Anchors in Concrete. Concrete compressive strength was 6,040 psi.

Insert	Average
3/4"	5,633 lbs
3/4" Long	7,433 lbs

**TEST 4 - (3/4" Long Insert Only)**

One 3/4" Long insert was imbedded in the center of a 11-1/2" (292.1mm) x 20" (508mm) x 20" (508mm) concrete mold of 4,758 psi concrete. No additional reinforcement was used in the concrete or inserts.

The inserts were pulled to failure:

Specimen 1	11,030 lbs
Specimen 2	10,140 lbs