3” SlowStop IronFlex Horseshoe
IBC 1607.8.3 Testing
21-MAY-2021

Purpose:

To confirm conformance to International Building Codes and anchoring strength of the SlowStop 3” IronFlex Horseshoe when installed with anchors with an embedment less than 4”.

Experiment Design:

Shortened Hilti KH-EZ anchors were used to simulate pull out resistance in 4” residential concrete slab. 5/8" Hilti KH-EZ anchors with a length of 4” were used to anchor the SlowStop 3” IronFlex Horseshoe in the concrete. The SS3Y-27-HS unit has a base plate thickness 1/2”, causing each anchor to have a 3.5” embedment in the concrete.

Figure 1 – Anchor Length

Figure 2 – Pipe Height

Figure 3 – Horseshoe Rigging

A production SS3Y-27-HS SlowStop 3” IronFlex Horseshoe was installed in 3000-3500 psi 6” thick concrete. A strap was attached at the mid-point of the 3” horizontal pipe to connect the rigging to pull (in effect a push due to the connection point on the opposite side) the Horseshoe with 6,500 pounds of force using a lever chain hoist. An S type load cell was rigged in line with the pulling force in order to measure actual force.

Results:

The SS3Y-27-HS was held at approximately 6,500 pounds of force for 5 minutes. The resulting concrete after the test was left unmarred with no signs of spalling or cracking near the critical anchors of either of the 3” Pedestals.

Figure 4 – Cement After Test

Conclusion:

Given the resulting data, it may be concluded that the SS3Y-27-HS is suitable to be used in residential slabs confirming conformance with IBC 1607.8.3 when the SlowStop 3” IronFlex Horseshoe is anchored properly in 4” thick residential concrete.

APPENDIX A – Load Cell Calibration Certificates

S-Type Pull Force

OMEGA ENGINEERING INC.

LOAD CELL
FINAL CALIBRATION

0.00 - 10000.00 LBS
Excitation 10.000 vdc

Job: WHM0030957 Serial: 381452
Model: LCCD-10K Tested By: ED
Date: 5/22/2019 Temperature Range: +0 to +150 F
Calibrated: 0.00 - 10000.00 LBS Specfile: LCCD

Force LBS	Unit Data mVdc	Normalized Data
0.00	- 0.070	0.000
5000.00	14.939	15.009
10000.00	29.950	30.020
5000.00	14.947	15.017
0.00	- 0.070	0.000

Balance	- 0.070	mVdc
Sensitivity	30.020	mVdc
In Resist	447.00	Ohms
Out Resist	352.30	Ohms
59K Shunt	14.913	mVdc

Change at 0.00 LBS (-INPUT to -OUTPUT)

Calibration Factors:
Sensitivity = 3.002 mV/V 59K Shunt = 1.491 mV/V

ELECTRICAL LEAKAGE: PASS
ELECTRICAL WIRING/CONNECTOR: RED = +EXCITATION
BLACK = -EXCITATION
GREEN = +OUTPUT
WHITE = -OUTPUT

This Calibration was performed using Instruments and Standards that are traceable to the United States National Institute of Standards Technology.

S/N	Description	Range	Reference	Cal Cert
177438-A	20K LB LOAD STD TEN	0 - 10000.00 LBS	C-2740	C-2740
3146A20228	34401A DMM OUT	Unit Under Test	C-2404	WCS44931L
US36107898	34401A DMM STD	Pressure Monitor	C-3006	WCS41717L

Q.A. Representative : Ed Buchanan Jr Date: 5/22/2019

This transducer is tested to & meets published specifications. After final calibration our products are stored in a controlled stock room & considered in bonded storage. Depending on environment & severity of use factory calibration is recommended every one to three years after initial service installation date.
COMMENTS: FINAL TEST IN TENSION.

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