

5" SlowStop Store Front Bollard
IBC 1607.8.3 Testing
21-MAY-2021

Purpose:

To confirm conformance to International Building Codes and anchoring strength of the SlowStop 5" Store Front Bollard 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. 3/4" Hilti KH-EZ anchors with a length of 4-1/2" were used to anchor the SlowStop 5" Store Front Bollard in the concrete. The SS5Y-42-SF Bollard has a base plate thickness 5/8", causing each anchor to have a 3.875" embedment in the concrete.



Figure 1 – Anchor Length



Figure 2 – Eyelet Height



Figure 3 – Bollard Rigging

A production SS5Y-42-SF SlowStop Store Front Bollard was installed in 3000-3500 psi 6" thick concrete. A hole was drilled in the bollard pipe to connect rigging to pull (in effect a push due to the connection point on the opposite side) the bollard 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 SS5Y-42-SF 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.



Figure 4 – Cement After Test

Conclusion:

Given the resulting data, it may be concluded that the SS5Y-42-SF is suitable to be used in residential slabs confirming conformance with IBC 1607.8.3 when the 5" SlowStop Store Front Bollard is anchored properly in 4" thick residential concrete.

