

## Missile Impact Test – Concrete Masonry Wall

Please Note: This Technical Note is developed to clarify the Missile Impact Test in regards to concrete masonry construction.

The following items are therefore set forth:

### Background

First, an explanation of the "Historic context" of the missile impact test method utilized will be reviewed.

1. Jim McDonald at Texas Tech University – Lubbock, Texas originally developed the currently adopted FLORIDA missile impact test to simulate the performance in Tornado conditions. In doing this the BLOCK wall became the STANDARD of performance.
2. Other assemblies were judged in comparison to the impact resistance of the concrete masonry (block wall).
3. Therefore, the block is the standard and since it is the standard or base line, it should not need to be tested.

Secondly, we address the test.

1. To test under the most adverse or severe conditions. We spaced the vertical rebars and grouted cell at six (6) feet apart. The horizontal bond beam was placed an 8'8" high (the highest capacity of the test frame at the University of Florida).
2. It was determined that few, if any, walls would be designed and built with vertical rebar spacing in excess of 6ft. apart.

Thirdly, we address the Florida Standard.

1. As a matter of record the wall was impacted in accordance with the legacy SBCCI standard 12-99.
2. On the back side is a copy the University of Florida report showing that the wall passed the missile impact test criteria.

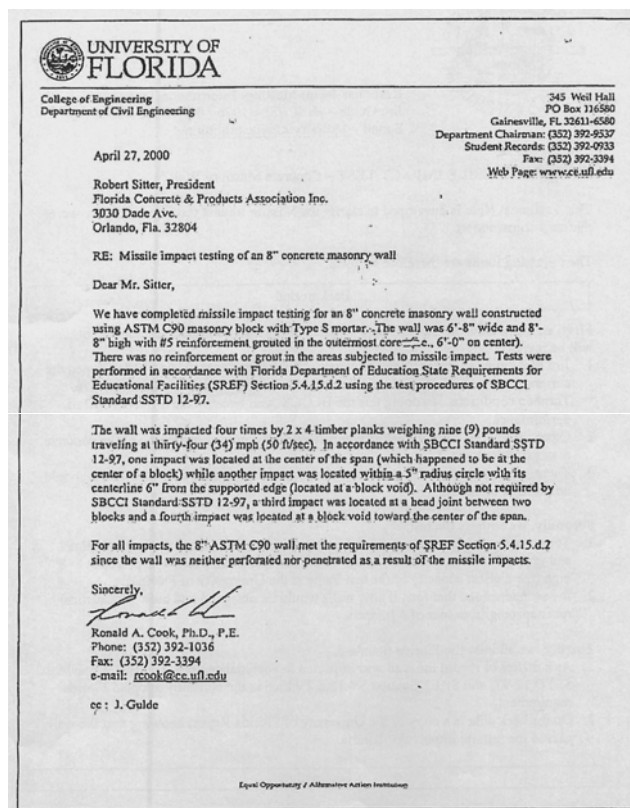
### Summation

The 8" Concrete Masonry Wall is the Standard of Comparison.

The 7th Edition FBC accepts 8" hollow masonry as "deemed to comply" with the missile impact requirements.

### 1626.4 Construction assemblies deemed to comply with Section 1626.

1. Exterior concrete masonry walls of minimum nominal 8-inch (203 mm) thickness, constructed in accordance with Chapter 21 (High-Velocity Hurricane Zones) of this code.





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April 27, 2000

Robert Sitter, President  
Florida Concrete & Products Association Inc.  
3030 Dade Ave.  
Orlando, Fla. 32804

RE: Missile impact testing of an 8" concrete masonry wall

Dear Mr. Sitter,

We have completed missile impact testing for an 8" concrete masonry wall constructed using ASTM C90 masonry block with Type S mortar. The wall was 6'-8" wide and 8'-8" high with #5 reinforcement grouted in the outermost core (i.e., 6'-0" on center). There was no reinforcement or grout in the areas subjected to missile impact. Tests were performed in accordance with Florida Department of Education State Requirements for Educational Facilities (SREF) Section 5.4.15.d.2 using the test procedures of SBCCI Standard SSTD 12-97.

The wall was impacted four times by 2 x 4 timber planks weighing nine (9) pounds traveling at thirty-four (34) mph (50 ft/sec). In accordance with SBCCI Standard SSTD 12-97, one impact was located at the center of the span (which happened to be at the center of a block) while another impact was located within a 5" radius circle with its centerline 6" from the supported edge (located at a block void). Although not required by SBCCI Standard SSTD 12-97, a third impact was located at a head joint between two blocks and a fourth impact was located at a block void toward the center of the span.

For all impacts, the 8" ASTM C90 wall met the requirements of SREF Section 5.4.15.d.2 since the wall was neither perforated nor penetrated as a result of the missile impacts.

Sincerely,

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