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Can 6" CMU masonry be used to satisfy the impact resistance criteria in Florida?



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The FBC, 6th edition, Building, Section 1626.4.1 allows for 8" hollow masonry to meet the impact criteria for the HVHZ (Dade and Broward). Although there is no mention of 6" masonry 1626.4.4 allows for 2" of reinforced concrete to meet the requirements also.

Common sense would grant that solid grouted 6" masonry is going to perform better than 2" of poured concrete but again it is not mentioned directly.

That being said, FEMA P-320 Safe Room Const Plans specify 6" masonry with a #5 bar in a grouted cell at 16" o/c.

The more stringent FEMA P-361, Safe Rooms for Tornadoes and Hurricanes, 3rd Ed, March 2015 allows solid grouted 6" masonry with a #4 bar at 32" o/c.

As a side note, we plan to submit a code change to include solid grouted 6" masonry in the "deemed to comply" list under 1626.4 in the 7th Edition FBC. It is not currently listed simply because the issue of its use rarely comes up.

In summary, I can see no good reason why a building official would reject solid grouted 6" masonry as specified in P-361 as being acceptable for missile impact requirements in the HVHZ.

Additional Resources

[Safe Rooms for Tornadoes & Hurricanes](#)

[FEMA p-320 Safe Room Construction Plans Taking Shelter from the Storm: Building a Safe Room in Your Home or Small Business](#)



What are the "normal" strengths of masonry readily available in the Florida market?

There are generally two block strengths that are readily available to the structural designer. For the sake of simplicity I will call them "normal" and "high" strength. The strengths have changed dramatically since January 1st, 2018. The new strength values for masonry come from either the 2013 or the 2016 edition of the TMS 602 specifications section 1.4B.2.b.Table 2. The Florida Building Code, 6th Edition, references the 2016 TMS 602 but the strength values are the same in both editions (and will be in future editions).

The compressive strength of an individual block of "normal" strength is 2000 psi which can be used to build a wall with an $f'm=2000$ psi.

An individual "high" strength block would have a compressive strength of 3,250 psi and would result in a wall with an $f'm=2500$ psi. This "high" strength block is stocked on some yards but is readily available on demand from most manufactures with minimal delay and only a slight increase in cost.

Walls designed with an $f'm=2750$ psi require that the individual block unit has a compressive strength of 3900 psi. These block are available from manufactures throughout Florida but are going to result in longer lead times (because they are almost never stocked). You can expect significant additional cost and longer holding times after manufacture to make sure they will achieve the required strength.

I would not recommend specifying masonry with a compressive strength $f'm=3000$ psi. This strength requires an individual block with a strength of 4500 psi. This strength is closing on the natural limit of masonry produced with Florida

aggregate. If you require a masonry unit of this strength consult with your block supplier on cost and availability. You will most like find that you are going to be better off specifying a "normal" strength 12" wide unit which is available off the shelf everywhere.

Additional Resources

[Whitepaper: Increased Masonry Design Strength - Don Beers, PE, GC](#)



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