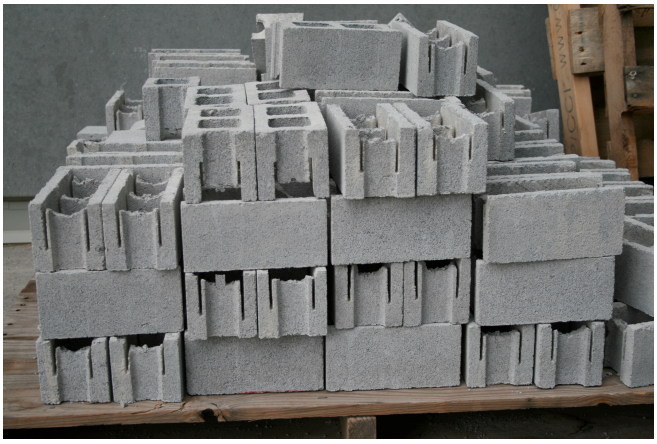
At the University of Calgary, there is a considerable effort being put into understanding the shear strength of masonry and how to predict it accurately. Ahmed Oan has tested 66 wallettes 1.6 m long by 1.4 m high and found the shear strength depends on the axial load, but not the amount of reinforcement. The reinforcement comes into play once the masonry has cracked and the steel is stretched. Thus the reinforcement affects the post-cracking behavior. In a wall where the reinforcement is anchored to a base beam or slab, the total strength will therefore consist of the strength of the masonry in the wall and the strength of the connection of the reinforcement to the base beam or slab. Ahmed has also shown that the typical method of placing bed joint reinforcement in the masonry – laying the reinforcement on the blocks and then applying mortar – produces the same strength as placing some mortar, then laying the reinforcement and placing more mortar to complete the bed joint.

Some of Ahmed Oan's walls curing in the lab.

The shear strength of partially grouted walls has come under scrutiny after I tested three walls in Australia and demonstrated that both the Canadian and Australian codes overestimated the strength considerably. Amir Hamedzadeh is building walls from half-size units supplied by CCMPA (some have also been shipped to Australia). He is examining how the method of test affects the resulting strength, how the size of the specimen affects the strength and how combining hollow "panels" between the reinforced cores affects behavior (the reinforcement can be spaced as widely as 2.4 m, so there can be sizeable sections of hollow masonry between the reinforced cores).

Walls from half-size units curing



Half size blocks cut to resemble knock-out blocks