

HAITI BLOCKS TESTING - DENSITY AND COMPRESSIVE STRENGTH
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1. Density Testing

Testing Performed at the BCIT Materials Lab on May 20, 2010

To find the density, the dry weight and submerged weight of both blocks were found. In both cases when the blocks were submerged, there were some bubbles. For Block C the bubbles were minimal. For Block D, the bubbles were substantial for the first 3 minutes. Two submerged weights were recorded. Table 1 shows density calculation based on the immediate submerged weight, and Table 2 shows density calculation based on submerged weight after 5 minutes.

*Table 1. Density Testing Using **Immediate** Submerged Weight*

Name	Dry Weight (g)	Submerged Weight (g)	Volume (ml)	Density (g/ml)
Block C (Haiti)	13,127	7,782	5,345	2.45
Block D (Michel)	13,882	7,799	6,083	2.28

*Table 2. Density Testing Using Submerged Weight **After Five Minutes***

Name	Dry Weight (g)	Submerged Weight (g)	Volume (ml)	Density (g/ml)
Block C (Haiti)	13,127	7,785	5,342	2.46
Block D (Michel)	13,882	8,186	5,696	2.43

2. Compressive Strength

Casting date : April 8, 2010

Testing date: May 21, 2010 (at 43 days)

Testing Equipment: Forney Universal Testing Machine 400 kips capacity

Table 3. Compressive Strength

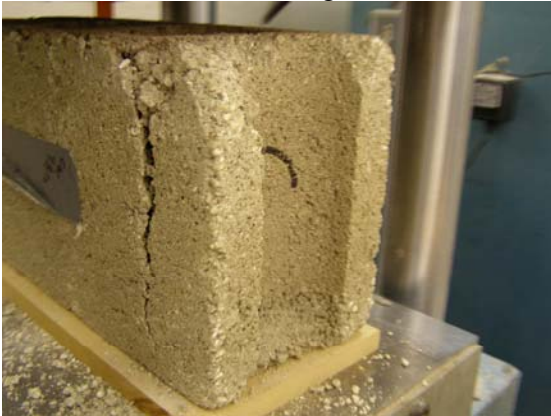
Name	Max Load lbs	Area in ²	Compressive strength psi (MPa)	Observations
Block C (Haiti)	47,624	46.9	1,015 (7.0)	One face shell along the long side of the block buckled (40,000 lbs load reached in 52 sec)
Block D (Michel)	10,494	49.8	213 (1.5)	One corner crushed, with significant vertical crack along the block height (10,000 lbs load reached in 23 sec)

Compression Testing - Photos

Block C - compressive strength 1,015 psi (7.0 MPa)



Block C before the testing (note fibreboard capping)



Block C at failure (note a major vertical crack propagating from the top)



Delamination of the face shell and crushing of the web between two hollow cores

Block D - compressive strength 213 psi (1.5 MPa)



Block D before the testing



Block D at failure (note vertical crack at the right end of the block and crushing at the base)

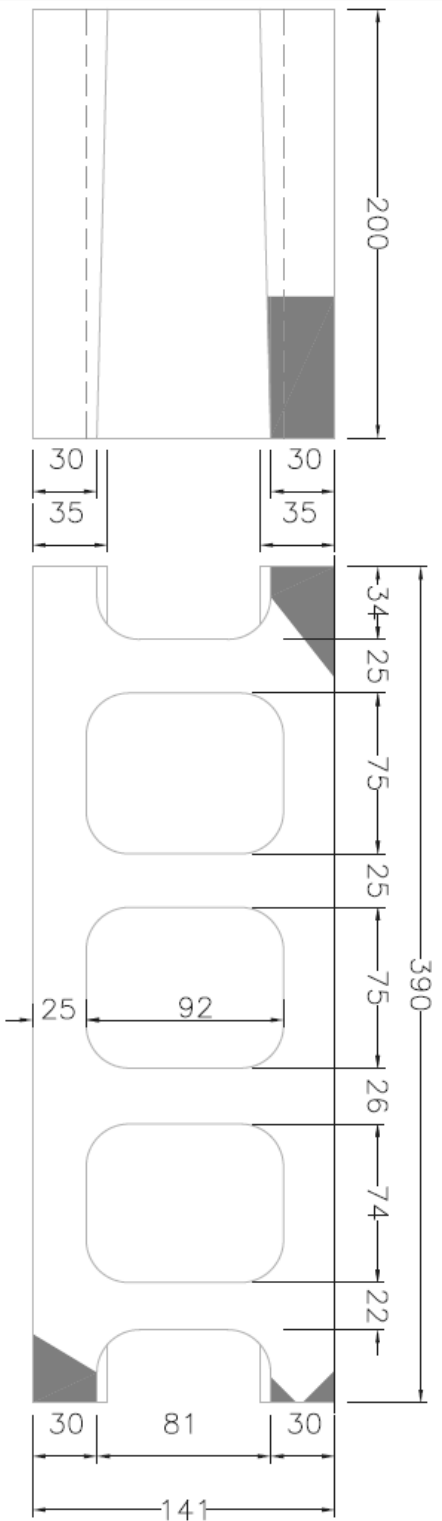


Damage at the rear side of the block, showing cracking in the web

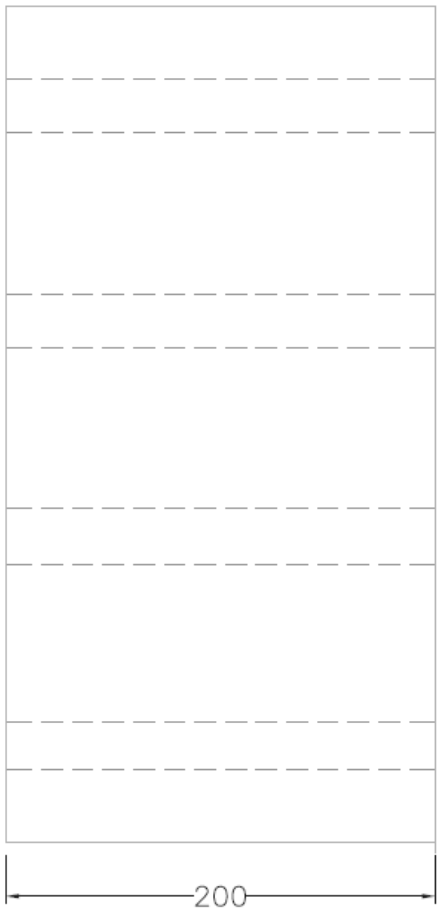
Haiti blocks and Canadian blocks



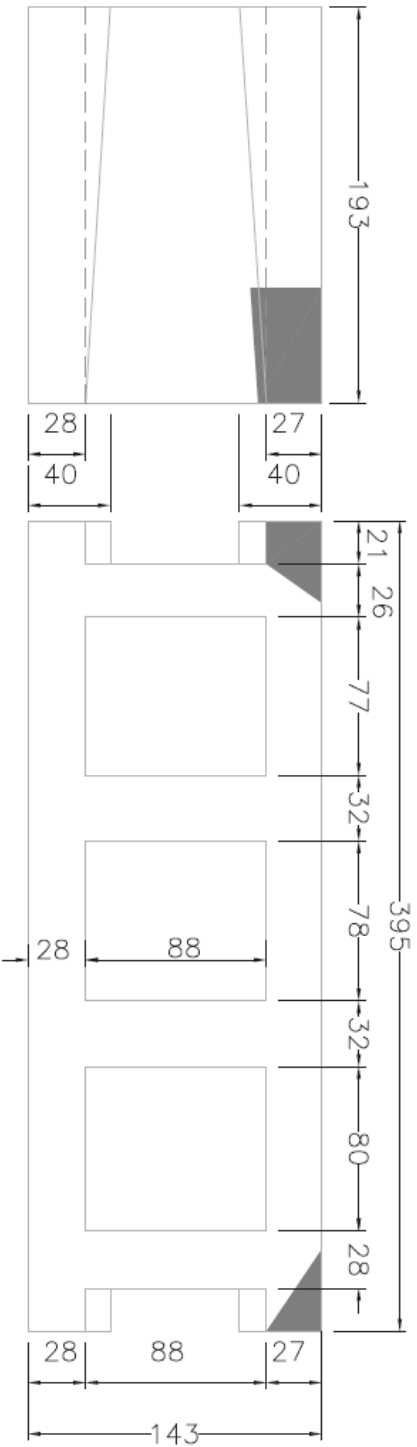
Haiti blocks C and D (6 inch thick), and a Canadian block (8 inch thick)
(from left to right)



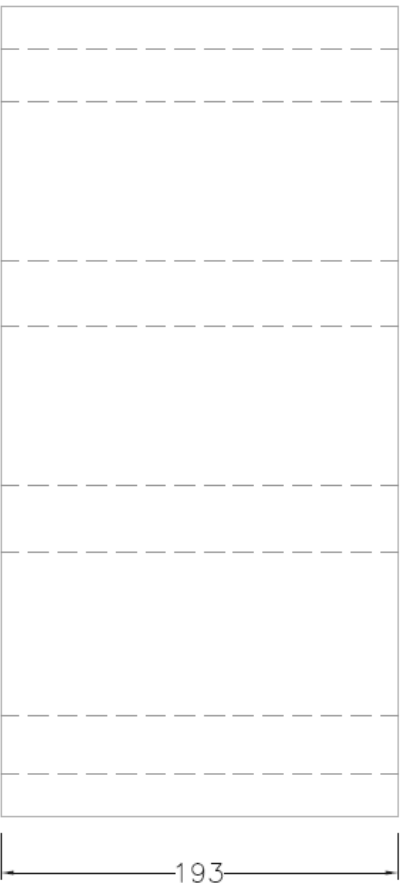
Mass: 13,127g
Submerged Mass: 7,782g
Volume: 5,345ml
Density: 2.45g/ml
Maximum Load: 47,624lbs
Surface Area: 46.9in²
PSI: 1015 PSI
MPa: 7.0MPa



PROJECT:	HAITI BLOCKS			LOCATION:	SW3 1650, BCIT MATERIALS LAB			DWG NO:	1		
TITLE:	BLOCK C (HAITI)			DR BY:	MJC	CH BY:	MJC	DATE:	MAY 2010	SCALE:	3:1



Mass: 13,882g
Submerged Mass: 7,799g
Volume: 6,083ml
Density: 2.28g/ml
Maximum Load: 10,494lbs
Surface Area: 49.8in²
PST: 213 PST
MPa: 1.5MPa



PROJECT:	HAITI BLOCKS			LOCATION:	SW3 1650, BCIT MATERIALS LAB		DWG NO:	2			
TITLE:	BLOCK D (MICHEL)			DR BY:	MJC	CH BY:	MJC	DATE:	MAY 2010	SCALE:	3:1