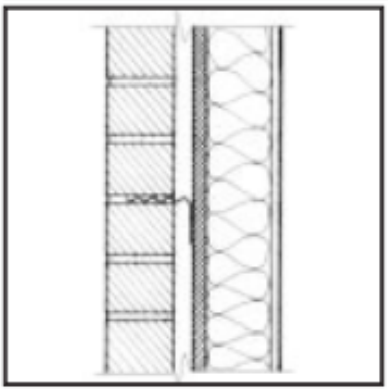
MASONRY ADVISORY COUNCIL

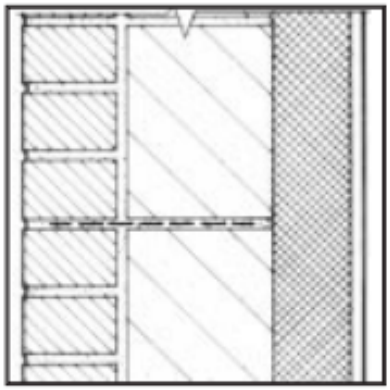
Sample R-Value Calculations

Brick Veneer On Wood Frame (residential and single family usage)



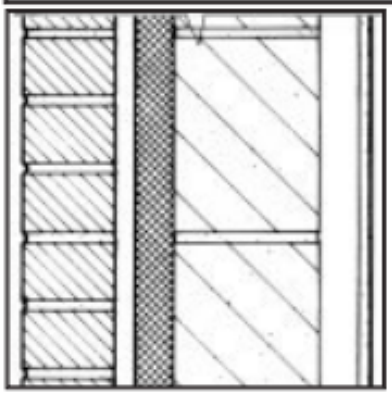
R of the outside air film	0.17
R of a 4" Brick	0.44
R of 1" reflective air space	2.89
R of 3/4" polyisocyanurate	5.60
R of 3 1/2" batt insulation	11.00
R of 1/2" drywall	0.45
R of the inside air film	0.68
R of the total wall	21.23
U of the wall	0.047

Solid Loadbearing Masonry Wall (midrise and multifamily usage)



R of the outside air film	0.17
R of a 4" Brick	0.44
R of 6" Block	1.25
R of 3" expanded polystyrene	12.00
R of 1/2" drywall	0.45
R of the inside air film	0.68
R of the total wall	14.99
U of the wall	0.066

Brick and Block Cavity Wall (Quality construction for schools, Commercial/industrial, multifamily and high rises)



If you were designing the wall shown on the left. A wall composed of a 3 5/8"" brick, 3/4" air space, an unknown thickness of an unspecified type of rigid insulation, a 5 5/8" block, 1 1/2" furring for 1/2" plaster or dry-wall. What insulation would you select? The insulation that gives you the best dollar value for the R-value desired. The table below lists the thickness and type of insulation, the walls R - value, and the approximate cost of the insulation per square foot.

Use the examples above and the material properties on the next page to figure the R-Value of any wall system

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PROPERTIES OF MATERIALS

Material	R - value per inch of thickness	R - value for thickness listed
4” Clay Brick		0.44
4” Block (115#/ ft³) = 72% solid		1.19
6” Block (115#/ ft³) = 59% solid		1.25
8” Block (115#/ ft³) = 54% solid		1.45
10” Block (115#/ ft²) = 52% solid		1.55
12” Block (115#/ ft²) = 48% solid		1.65
6” Block (115#/ ft²) = 59% solid/filled with perlite		3.95
8” Block (115#/ ft²) = 54% solid/filled with perlite		4.65
10” Block (115#/ ft²) = 52% solid/ filled with perlite		5.65
12” Block (115#/ ft²) = 48% solid/ filled with perlite		7.05
1” Polyisocyanurate	8.0	
1” Extruded polystyrene	5.0	
1” Expanded polystyrene	4.0	
1” of Perlite	2.70	
Exterior air film (winter)		0.17
Interior air film		0.68
Dead air space (3/ 4” to 4”) (winter)		0.97
3/ 4” reflective air space		2.89
1/ 2” drywall		0.45
3 1/ 2” Batt (R - 11)		11.00
3 5/ 8” (R - 13)		13.00
1 1/ 2” (R - 5)		5.00
6” Batt (R - 19)		19.00
6 1/ 2” Batt (R - 22)		22.00
9” Batt (R - 30)		30.00
12” Batt (R - 38)		38.00