

Chapter 8 – Thermal Performance

Thermal Modeling Results: Interior-Insulated Single-Wythe CMU

The modeled system includes an 8-inch medium-weight CMU block and eight configurations of interior insulation as depicted graphically in Fig. 8-23. Interior wall framing is provided by galvanized steel studs at 16-inches on-center, including a top and bottom track. Options 1, 3, and 4 were modeled with the wall framing offset from the CMU wall structure to allow clearance for a continuous insulation layer. The remaining options were modeled with wall framing tight to the CMU wall structure. Cavity insulation is either R-15 batt insulation or R-6/1-inch insulation, such as CCSPF. Continuous insulation is either R-5 or R-6/1-inch, typical R-values for either rigid XPS or CCSPF insulation respectively.

Table 8-11 Interior-insulated single-wythe CMU wall thermal modeling results

CMU Wall with Interior Insulation			
Insulation Option	Interior Insulation Thickness	Nominal Insulation R-Value *	3D Thermal Modeling Effective R-Value of System (ft ² ·°F·hr/Btu)
1	2"	12 cavity	7.2
2	4"	12 cavity + 12 ci	23.4
3	1"	5 ci	8.1
4	2"	12 ci	15.2
5	4"	24 ci	27.2
6	4"	24 cavity	9.1
7	2"	15 cavity + 10 ci	22.2
8	3"	15 cavity + 15 ci	27.3

*ci = continuous insulation

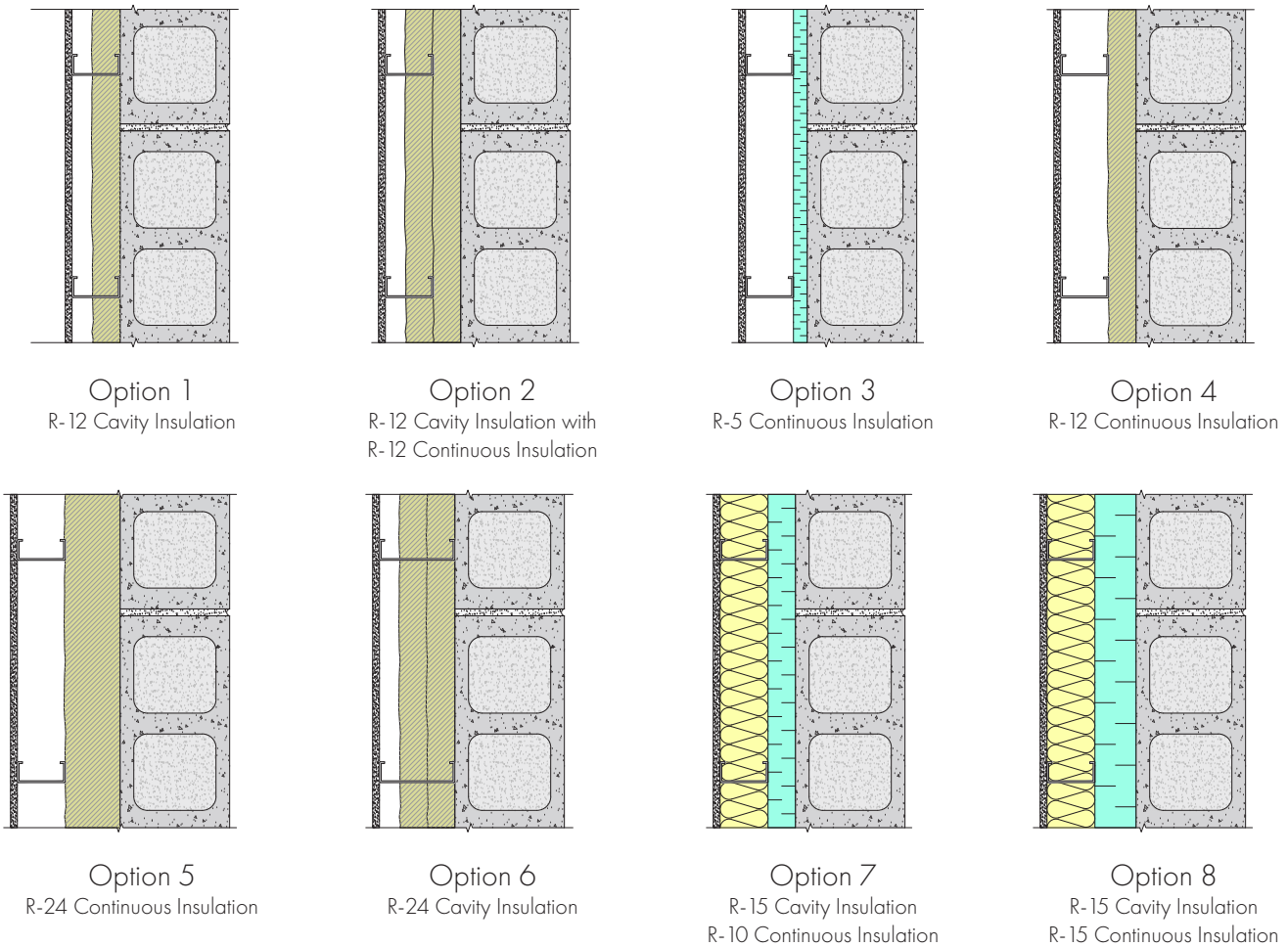


Fig. 8-23 Modeled insulation options for the interior insulated single-wythe CMU