

Table 2-1 System 2 thermal modeling results – 3/8-inch steel stud wall

3-5/8" Steel-Framed Wall with Anchored Masonry Veneer, R-15 Batt Insulation, R-4.2/in - R-6/in Exterior Insulation					
Tie Type	Tie Penetration Area	Exterior Insulation Thickness	Nominal Insulation R-value (Cavity + Exterior Insulation)	3D Thermal Modeling Effective R-Value of System (ft ² ·F·hr/Btu)	
				Without Penetrations (Through Exterior Insulation)	With Masonry Tie Penetrations @ 16" x 16" O.C.
Plate Tie (L4ga)	0.05%	2"	15 + 8.4-12	19.4-22.9	17.7-20.3
		3"	15 + 12.6-18	23.4-29.0	20.9-24.9
		4"	15 + 16.8-24	27.7-35.2	24.4-29.6
Thermally Optimized Screw Tie	0.05%	2"	15 + 8.4-12	19.4-22.9	17.0-19.3
		3"	15 + 12.6-18	23.4-29.0	19.9-23.4
		4"	15 + 16.8-24	27.7-35.2	23.1-27.5

Table 2-2 System 2 concrete floor line thermal modeling results – 3/8-inch steel stud wall above and below

Concrete Slab Edge with Anchored Masonry			
Exterior Insulation Thickness	Nominal Exterior Insulation R-Value	3D Thermal Modeling Effective R-Value (ft ² ·F·hr/Btu)	
		Exterior Insulation (Without Penetrations)	Continuous Shelf Angle
2"	8.4-12	12.4-16.2	6.6-6.8
3"	12.6-18	16.8-22.3	7.2-7.3
4"	16.8-24	21.3-28.7	7.6-8.2

Table 2-3 System 2 prescriptive energy code compliance values excerpted from Table i-1 of the introductory chapter

Energy Code	OPAQUE ABOVE-GRADE WALL - THERMAL ENVELOPE REQUIREMENTS					
	2012 SEC Climate Zone 5 and Marine 4	2012 WSEC 5, 6 and Marine 4	2014 OEESC 5 and Marine 4	2012 IECC 5 and Marine 4	6	Group R
2	Steel-Framed Anchoed Masonry Veneer	All Other	All Other	All Other	All Other	All Other
		Group R	Group R	Group R	Group R	Group R
		R-13 + R-10ci U-0.055 (R-18.2)	R-13 + R-10ci U-0.055 (R-18.2)	R-13 + R-10ci U-0.064 (R-15.6)	R-13 + R-10ci U-0.064 (R-15.6)	R-13 + R-10ci U-0.064 (R-15.6)
		R-19 + R-8.5ci U-0.055 (R-18.2)	R-13 + R-8.5ci U-0.055 (R-18.2)	R-13 + R-7.5ci U-0.064 (R-15.6)	R-13 + R-7.5ci U-0.064 (R-15.6)	R-13 + R-7.5ci U-0.064 (R-15.6)
		R-13 + R-10ci U-0.055 (R-18.2)	R-13 + R-10ci U-0.055 (R-18.2)	R-13 + R-7.5ci U-0.064 (R-15.6)	R-13 + R-7.5ci U-0.064 (R-15.6)	R-13 + R-7.5ci U-0.064 (R-15.6)

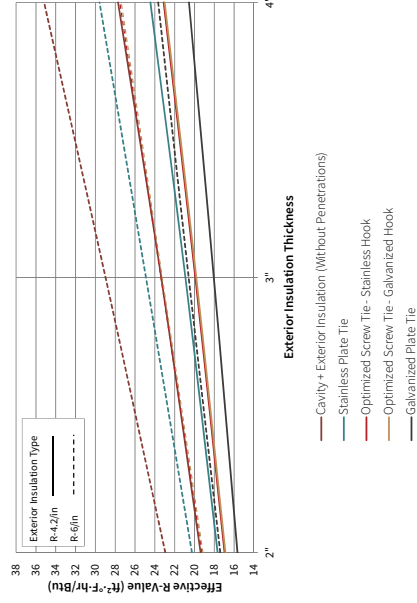


Fig. 2-15 System 2 (3/8-inch steel stud) effective R-value comparison of different tie types. A range of insulation R-value per inch is represented.

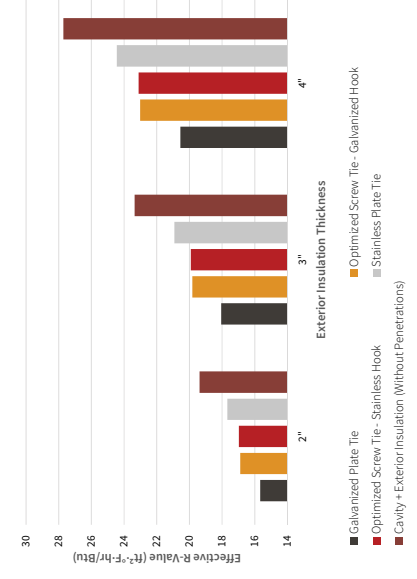


Fig. 2-14 System 2 (3/8-inch steel stud) effective R-value modeling results for R-4.2/inch exterior insulation, various insulation thicknesses and various tie types

Table 2-4 System 2 thermal modeling results – 6-inch steel stud wall

Tie Type	Tie Penetration Area	Exterior Insulation Thickness	System Nominal Insulation R-value (Cavity + Exterior Insulation)	3D Thermal Modeling Effective R-Value of System (ft ² ·F·hr/Btu)	
				Without Penetrations (Through Exterior Insulation)	With Masonry Tie Penetrations @ 16" x 16" O.C.
Plate Tie (1.4 ga)	0.05%	2"	21 + 8.4–12	20.4–24.4	18.7–21.6
		3"	21 + 12.6–18	24.7–30.4	22.3–26.3
		4"	21 + 16.8–24	29.1–36.6	25.8–31.0
Thermally Optimized Screw Tie	0.05%	2"	21 + 8.4–12	20.4–24.4	18.0–20.6
		3"	21 + 12.6–18	24.7–30.4	21.2–24.7
		4"	21 + 16.8–24	29.1–36.6	24.4–28.9

Table 2-5 System 2 concrete floor line thermal modeling results – 6-inch steel stud wall above and below

Exterior Insulation Depth	Concrete Slab Edge with Anchored Masonry and 3			Continuous Shelf Angle
	System Nominal Exterior Insulation R-Value	Cavity + Exterior Insulation (Without Penetrations)	Standoff Shelf Angle	
2"	8.4–12	12.8–16.6	5.9–6.4	3.9–4.1
3"	12.6–18	17.2–22.7	6.8–7.3	4.0–4.3
4"	16.8–24	21.7–29.1	7.6–8.2	4.2–4.5

Table 2-6 System 2 prescriptive energy code compliance values excerpted from Table i-1 of the introductory chapter

Energy Code	OPAQUE ABOVE-GRADE WALL – THERMAL ENVELOPE REQUIREMENTS						
	2012 SEC Climate Zone 5 and Marine 4	2012 WSEC 5, 6 and Marine 4	2014 OEESC 5 and Marine 4	2015 IECC 5 and Marine 4	2015 IECC 6	2015 IECC 6	
Guide Assembly #	Classification	All Other	Group R	All Other	Group R	All Other	Group R
2 Steel-Framed Wall with Anchored Masonry Veneer	R-13 + R-10c1	R-19 + R-8.5c1	R-13 + R-10c1	R-13 + R-7.5c1	R-13 + R-7.5c1	R-13 + R-7.5c1	R-13 + R-7.5c1
	U-0.055 (R-18.2)	U-0.055 (R-18.2)	U-0.055 (R-18.2)	U-0.064 (R-15.6)	U-0.064 (R-15.6)	U-0.064 (R-15.6)	U-0.064 (R-15.6)

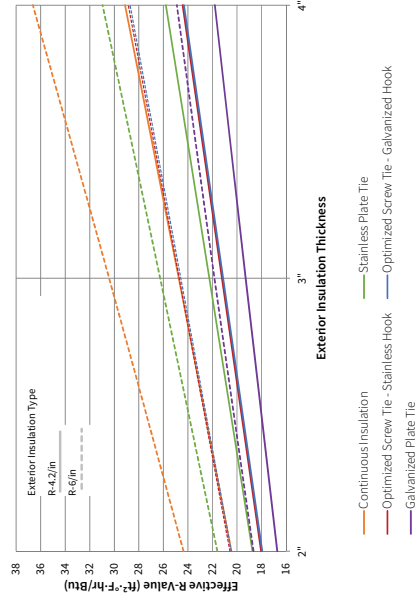


Fig. 2-16 System 2 effective (6-inch steel stud) R-value comparison of different tie types. A range of insulation R-value per inch is represented.

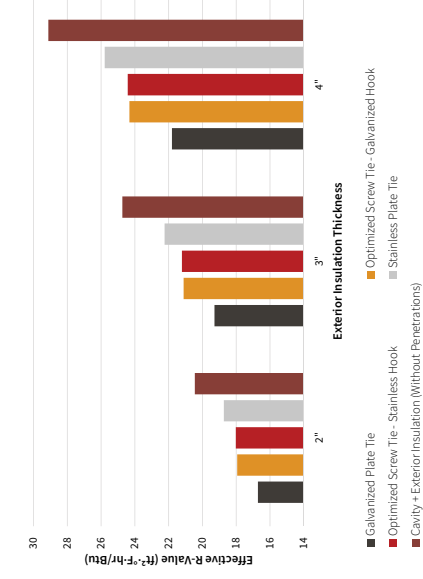


Fig. 2-17 System 2 (6-inch steel stud) effective R-value modeling results for R-4.2/inch exterior insulation, various insulation thicknesses and various tie types