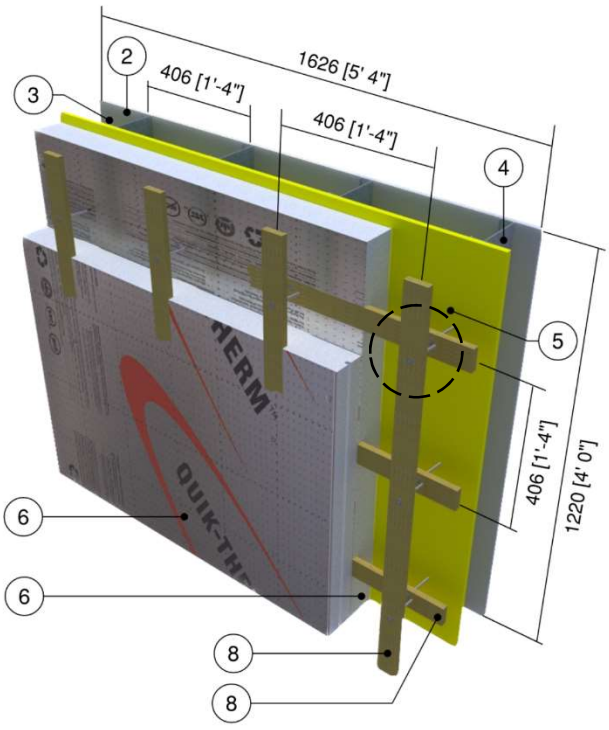
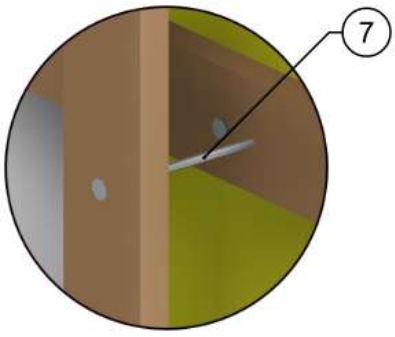
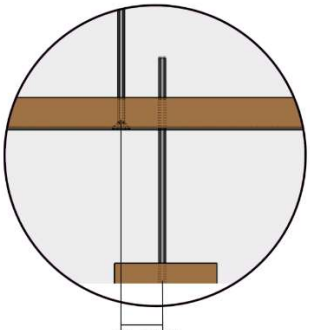
Detail 5.1.157

Exterior Insulated 6” x 1 5/8” Steel Stud (16” o.c.) Wall Assembly with Quik-Therm Matrix Insulation System – Clear Wall





Fastener Position Detail



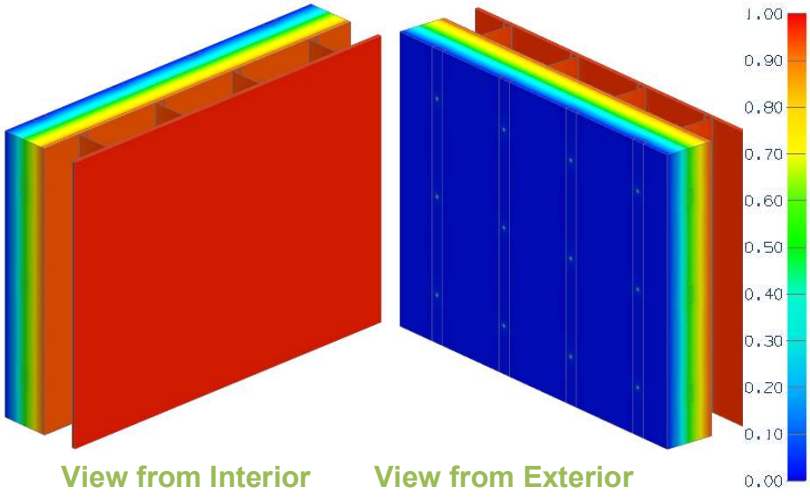
1in (25.4mm) – 6in (152mm)

ID	Component	Thickness Inches (mm)	Conductivity Btu·in / ft²·hr·°F (W/m K)	Nominal Resistance hr·ft²·°F/Btu (m²K/W)	Density lb/ft³ (kg/m³)	Specific Heat Btu/lb·°F (J/kg K)
1	Interior Film[1]	-	-	R-0.7 (0.12 RSI)	-	-
2	Gypsum Board	5/8 (16)	1.1 (0.16)	R-0.6 (0.10 RSI)	50 (800)	0.26 (1090)
3	Air in Stud Cavity	6 (152.4)	–	R-0.9 (0.16 RSI)	0.075 (1.2)	0.24 (1000)
4	6” x 1 5/8” Steel Studs	18 ga.	430 (62)	–	489 (7830)	0.12 (500)
5	Exterior Sheathing	5/8 (16)	1.1 (0.16)	R-0.6 (0.10 RSI)	50 (800)	0.26 (1090)
6	Air Dry Connect Insulation Panels	Varies	0.24 (0.035)	R-8.4 to R-25.1 (1.47 to 4.42 RSI)	-	-
7	#12 Fasteners	0.2(4.4) ⌀	430 (62)	–	489 (7830)	0.12 (500)
8	3/4" x 3” Wooden Battens	3/4 (19)	0.694 (0.10)	–	31 (500)	0.45 (1880)
9	Exterior Film[1]	-	-	R-0.7 (0.12 RSI)	-	-

[1] Value selected from table 1, p. 26.1 of 2009 ASHRAE Handbook – Fundamentals depending on surface orientation

Detail 5.1.157

Exterior Insulated 6” x 1 5/8” Steel Stud (16” o.c.) Wall Assembly with Quik-Therm Matrix Insulation System – Clear Wall



View from Interior View from Exterior

Thermal Performance Indicators

Assembly 1D (Nominal) R-Value	R_{1D}	R-3.4 (0.60 RSI) + exterior insulation
Transmittance / Resistance	U_o, R_o	U- and R-values for overall assembly

Nominal (1D) vs. Assembly Performance Indicators

Exterior Insulation 1D R-Value (RSI)	R_{1D} $ft^2 \cdot hr \cdot {}^oF$ / Btu (m^2 K / W)	1” Fastener Offset Spacing		6” Fastener Offset Spacing	
		R_o $ft^2 \cdot hr \cdot {}^oF$ / Btu (m^2 K / W)	U_o Btu/ft^2 $\cdot hr \cdot {}^oF$ (W/m^2 K)	R_o $ft^2 \cdot hr \cdot {}^oF$ / Btu (m^2 K / W)	U_o Btu/ft^2 $\cdot hr \cdot {}^oF$ (W/m^2 K)
R-16.8 (2.94)	R-20.2 (3.54)	R-19.0 (3.35)	0.053 (0.299)	R-19.0 (3.35)	0.053 (0.298)
R-25.1 (4.42)	R-28.5 (5.02)	R-26.9 (4.74)	0.037 (0.211)	R-27.0 (4.76)*	0.037 (0.210)*
R-33.4 (5.89)	R-36.8 (6.49)	R-34.7 (6.11)	0.029 (0.164)	R-34.9 (6.14)*	0.029 (0.163)*
R-41.8 (7.36)	R-45.2 (7.96)	R-42.4 (7.46)	0.024 (0.134)	R-42.5 (7.49)*	0.024 (0.133)*
R-50.2 (8.83)	R-53.6 (9.43)	R-49.9 (8.79)	0.020 (0.114)	R-50.2 (8.83)	0.020 (0.113)

*Results were interpolated