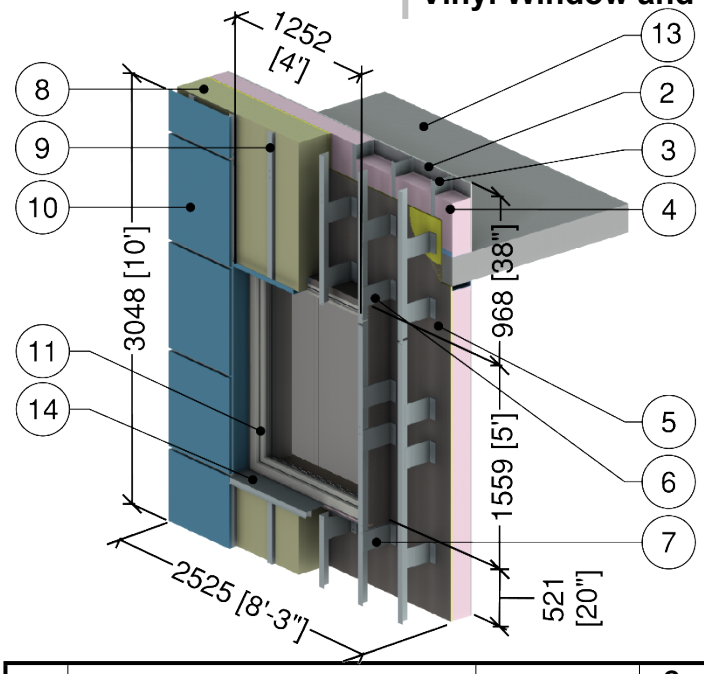
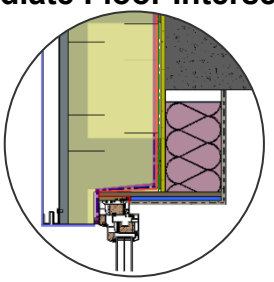
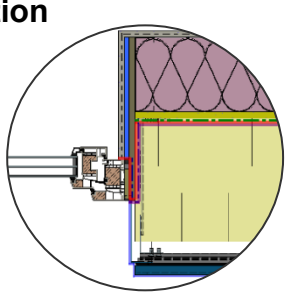
Detail 5.3.23

Exterior and Interior Insulated 6” x 1 5/8” Steel Stud (16” o.c.) Wall Assembly with FRP and Thermally Broken Vertical Brackets and Rail System Supporting Metal Cladding with Aerogel Insulation Blanket and R-19 Batt in Stud Cavity– Triple Glazed Vinyl Window and Intermediate Floor Intersection

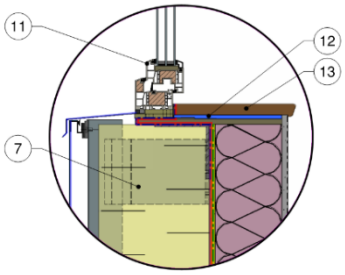




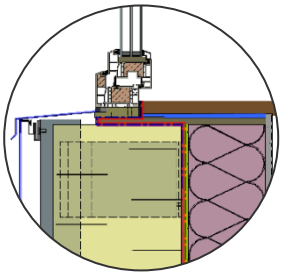
Head Detail



Jamb Detail



Scenario A - With Support Bracket



Scenario B - Without Support Bracket

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-0.6 to R-1.1 (0.11 to 0.20 RSI)	-	-
2	Gypsum Board	1/2" (13)	1.1 (0.16)	R-0.5 (0.08 RSI)	50 (800)	0.26 (1090)
3	6” x 1 5/8” Steel Studs with Tracks	18 Gauge	430 (62)	-	489 (7830)	0.12 (500)
4	Fiberglass Batt Insulation	6” (152)	0.32 (0.046)	R-19 (3.35 RSI)	0.9 (14)	0.17 (710)
5	Exterior Sheathing	1/2" (13)	1.1 (0.16)	R-0.5 (0.08 RSI)	50 (800)	0.26 (1090)
6	FRP Bracket	-	4.85 (0.7)	-	110 (1760)	-
7	Aluminum Bracket	-	1110 (160)	-	171 (2739)	0.22 (900)
8	Exterior Mineral Wool Insulation	10” (254)	0.24 (0.034)	R-42 (7.40 RSI)	4.5 (72)	0.20 (850)
9	Vertical Aluminum L-Rail	0.09” (2.2)	1110 (160)	-	171 (2739)	0.22 (900)
10	Metal Cladding with 1/2" vented airspace incorporated into exterior heat transfer coefficient					
11	5’ (1.5m) x 4’ (1.2m) Vinyl window: thermally broke, triple glazed IGU[2] U_{IGU} = 0.13 BTU/hr·ft²·°F (0.72 W/m²K)					
12	Aerogel Insulation Blanket	3/8” (10)	0.10 (0.014)	R-4.1 (0.71 RSI)	12.5 (200)	-
13	Wood Liner	1/2" (13)	0.69 (0.10)	-	31 (500)	0.45 (1880)
14	Concrete Slab	8” (203)	12.5 (1.8)	-	140 (2250)	0.20 (850)
15	Aluminum Flashing	18 Gauge	1110 (160)	-	171 (2739)	0.21 (900)
16	Exterior Film[1]	-	-	R-0.2 to R-0.7 (0.03 to 0.12 RSI)	-	-

[1] Value selected from table 1, p. 26.1 of 2009 ASHRAE Handbook – Fundamentals depending on surface orientation
[2] The thermal conductivity of air spaces was found using ISO 100077-2