

# California Building Envelope Solutions

May 2017

# Attics

## 2016 Title 24 New Requirements

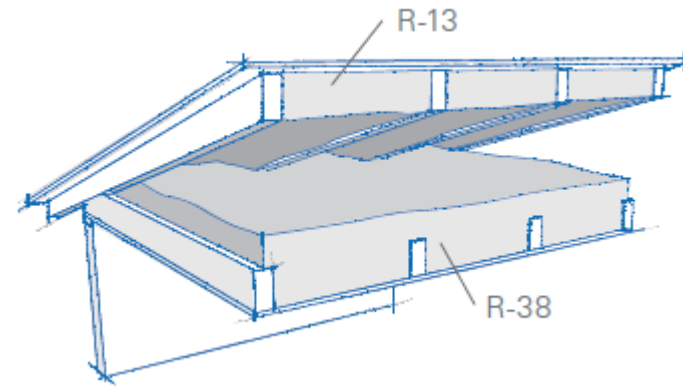
- Air handler & ducts in the attic

Option	Climate Zones	Duct insul, <5% leakage	Radiant barrier	Ceiling insulation	Roof deck insulation
Prescriptive A	2	R-8	X	R-38	
	3, 5-7	R-6	X	R-30	
	4, 8-15	R-8	X	R-38	R-6ci/R-8ci
Prescriptive B	4, 8-15	R-8		R-38	R-13/R-18
Performance	All	R-4.2			R-22 min.

# Attic Solutions

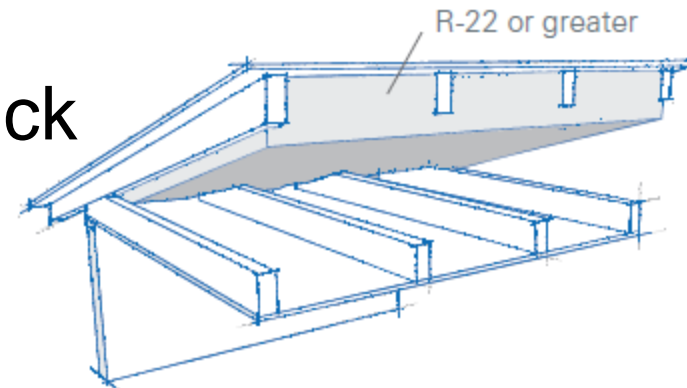
## Prescriptive Option B

- Vented attic, air-seal ceiling
- R-38 Climate Pro
- R-13 or R-18 FG batts below roof deck



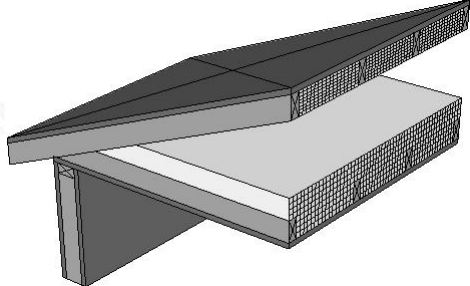








## Performance option

- Unvented attic, sealed roof deck
- $\geq$  R-22 Corbond SPF
- $\geq$  R-30 FG batts



# Attic Solutions

Product	Perf.	Cost	Labor	
Fiber glass – vented		\$		
UVA with fiber glass batts		\$		
Spray foam		\$\$\$		

# Walls

Climate zones 5 & 6, Max U-0.065

Climate zones 1-4, 7-16, Max U-0.051

Cladding Type	Framing	Cavity insulation	Continuous insulation	U-value
3-coat stucco or siding	2x4, 16" o.c.	R-13 FG or 3.5" Corbond oc SPF	1.5" JM AP Foil	0.050
		3.1" Corbond III	1" JM AP Foil	0.049
		R-15 FG	0.75" JM AP Foil	0.065
	2x6, 16" o.c.	R-19 FG or 5.5" Corbond oc SPF	0.85"	0.051
		R-21 FG or 3" Corbond III	0.75"	0.051
		1.5" Corbond III + R-13 FG	0.625"	0.043
		2" Corbond III + R-13 FG	0.5"	0.051
		R-19 FG	0.75"	0.051
	2x6 Adv. Framing	R-21 FG or 5.5" Corbond oc SPF	0.625"	0.049
		R-23 FG (Spider or BIBS) or 3.25" Corbond III	0.5"	0.050
		2" Corbond III + R-13 FG	None	0.051
		R-15 FG or 2.4" Corbond III		0.065
1-coat stucco	2x4, 16" o.c.	R-15 FG or 2.4" Corbond III		0.065
	2x6, 16" o.c.	R-21 FG or 1.5" Corbond III + R-13 FG or 5.5" Corbond oc SPF	Assumes R-4 from 1" EPS	0.051-0.046
	2x6 Adv.			0.047-0.040



# Wall Systems

## Cavity insulation

Product Type	Thickness	R-values
Fiber glass batts	3½", 5½"	13, 15 19, 21
JM Spider® Plus	3½", 5½"	14 - 23
JM Corbond® oc SPF	3½", 5½"	13.3, 20.9
JM Corbond III®	3"+	21+ (R-7/inch)

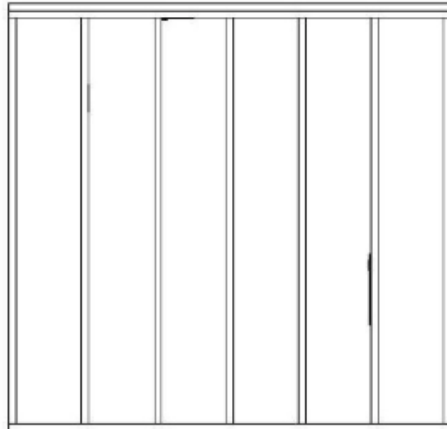
**JM Corbond III + Spider Plus or batts =  
effective hybrid option**



# High Performance Walls - Fiberglass

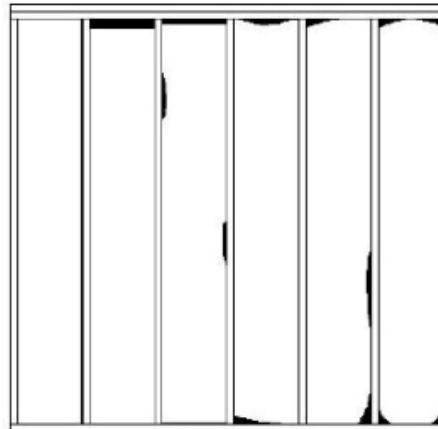
## Cavity insulation install considerations

- Batts
- Spray-in



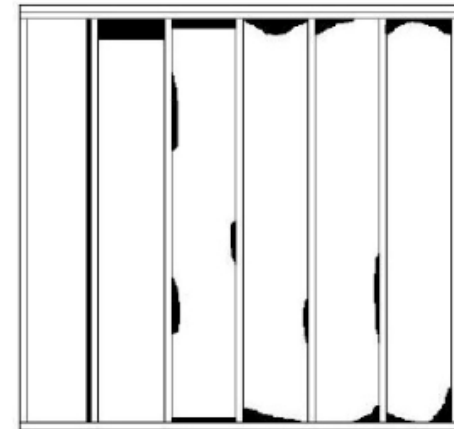
Grade I

VS



Grade II

OR



Grade III

**Need Grade I Installation for QII**

# High Performance Walls - SPF

## Cavity insulation install considerations

- Corbond® oc SPF
- Corbond® III
- Manufactured on-site
  - Training is critical
- Safety
  - Occupancy
  - PPE
- Install process
  - Weather
  - Equipment
  - Thickness





# High Performance Walls - CI

## Continuous insulation

- AP™ Foil-Faced Foam Sheathing
  - Taped for WRB & air barrier
  - Can resist lateral wind loads
  - Thicknesses up to 4½” available
- JM Corbond III® can be exterior CI if fully sheathed



Thickness	R-values
½”, ⅝”, ¾”, 0.85”	2.7, 3.5, 4.4, 5.0
1”, 1½”, 1.65”	6.0, 9.3, 10.0

# High Performance Walls

## Continuous insulation install considerations

- $< 1\frac{1}{2}$ " , direct cladding attachment may be OK
- $\geq 1\frac{1}{2}$ " , furring recommended
- Windows may need buck or Thermal Buck

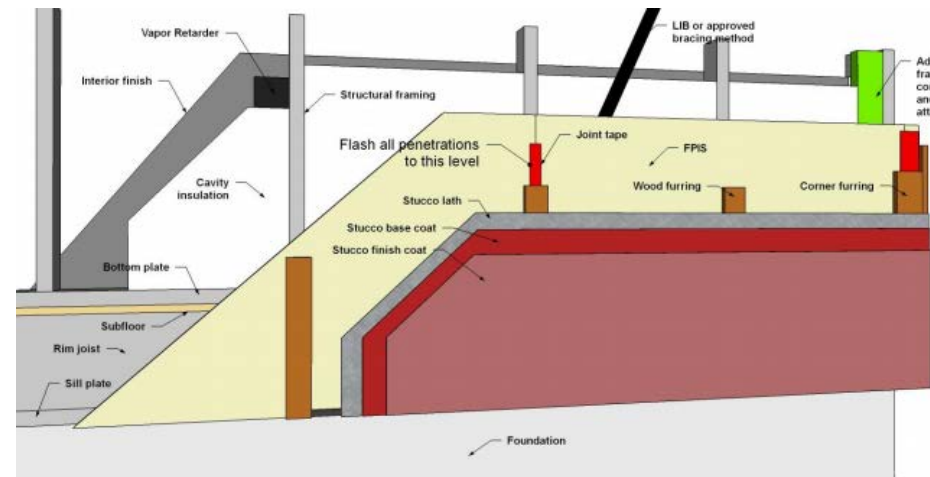
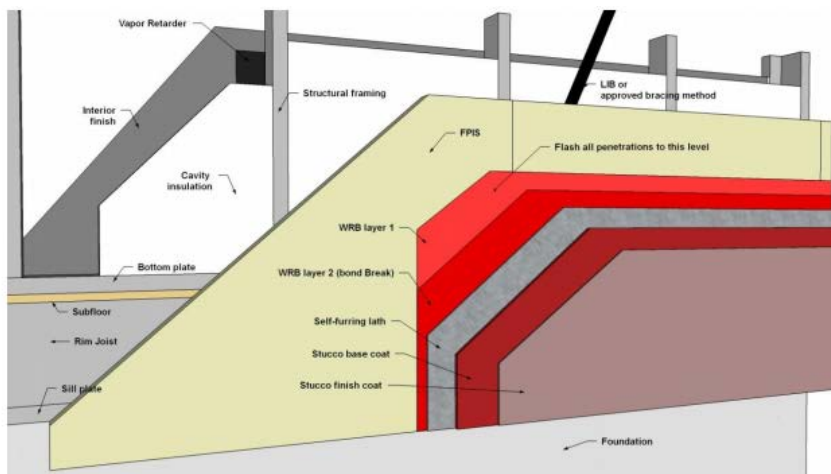


Image credit: Construction Details for the Use of Foam Plastic Insulating Sheathing in Light-Frame Construction, report DRR 1205-05

Decide where WRB layer is



# Summary

Many insulation options for attics & walls

- Attics
  - Vented prescriptive options
  - Unvented performance options
- Walls
  - Fiberglass or spray foam + foam sheathing for most
  - Install quality is still critical
  - Foam sheathing may be the largest learning curve
- Leverage your resources!

**JM is your complete source for insulation systems for your homes**





**Francis (JR) Babineau, PE**

Building Scientist

Corporate R&D

[Francis.Babineau@jm.com](mailto:Francis.Babineau@jm.com) | 303-978-3611