

Passive House New Construction

Slab (from inside to out)

4" concrete slab
8" Type IX (9) EPS
Total R-value: 45

Basement Walls (from inside to out)

Intumescent paint (as a thermal barrier)
8" water-based closed cell spray foam (e.g. Icynene MD-C-200)
Existing foundation
Total R-value: 50

Note: I'm operating under the assumption that there's an existing fieldstone foundation. If so, then spray foam is the best option for insulating it. If it's a smooth poured concrete wall, then we can use rigid foil-faced polyiso (w/seams taped) and avoid the need for a thermal barrier.

Front facade (from inside to out)

Gyp board
Empty 2x3 chase
8" water-based closed cell spray foam (e.g. Icynene MD-C-200)
Brick
Total R-value: 54

Side/Rear facade (from inside to out)

Gyp board
14" double stud wall - two 2x4 walls spaced 7" apart, all filled with dense-packed cellulose
ZIP sheathing system
Cladding over furring
Total R-value: 49

Roof

Gyp board
12" TJI w/ dense-packed cellulose
ZIP sheathing system
6" polyiso insulation
Finished roof (either membrane or sheathing+underlayment+roofing)
Total R-value: 82

Windows

Schuco FW 50+.SI Curtainwall system (frame U-0.123)
Schuco AWS 90+SI Windows (frame U-0.176)
Glass: U-0.105; SHGC - 0.50
(obviously there are lots of other window options)

Enerphit

Slab (from inside to out)

4" concrete slab

4" Type IX (9) EPS

Total R-value: 19

Basement Walls (from inside to out)

Intumescent paint (as a thermal barrier)

4" water-based closed cell spray foam (e.g. Icynene MD-C-200)

Existing foundation

Total R-value: 26

Front facade (from inside to out)

Gyp board

Empty 2x3 chase

6" water-based closed cell spray foam (e.g. Icynene MD-C-200)

Brick

Total R-value: 42

Side/Rear facade (from inside to out)

Gyp board

14" double stud wall - two 2x4 walls spaced 7" apart, all filled with dense-packed cellulose

ZIP sheathing system

Cladding over furring

Total R-value: 38

Roof

Gyp board

12" TJI w/ dense-packed cellulose

ZIP sheathing system

4" polyiso insulation

Finished roof (either membrane or sheathing+underlayment+roofing)

Total R-value: 69

Windows

Schuco FW 50+.SI Curtainwall system (frame U-0.123)

Schuco AWS 90+SI Windows (frame U-0.176)

Glass: U-0.105; SHGC - 0.50