State Maps and Prescriptive Packages

April 2000

The State Maps and Prescriptive Packages contain supporting materials that are needed when using the Envelope and Mechanical Compliance Guides. Insulation and other building envelope requirements and some mechanical system requirements vary by climate. The State Maps divide the United States into 33 different climate zones at a county level. Zones are numbered from 1 through 19 (consistent with the IECC and MEC*check* climate zones) and have a, b, and c designations to reflect climate differences that affect cooling; e.g., cooling degree days and solar radiation. The climate maps are unchanged from Version 1.

To determine the climate zone to use with your building, locate the map for your state and identify the zone number from the legend or county list.

To determine insulation and other building envelope requirements, find the prescriptive package number corresponding to your climate zone. The *Envelope Compliance Guide* employs a package approach that requires all components in your design to meet or exceed the prescribed efficiency levels contained in the prescriptive package. If you find the prescriptive packages too constraining, consider using the COM*check-EZ* software, which allows tradeoffs among building envelope components.

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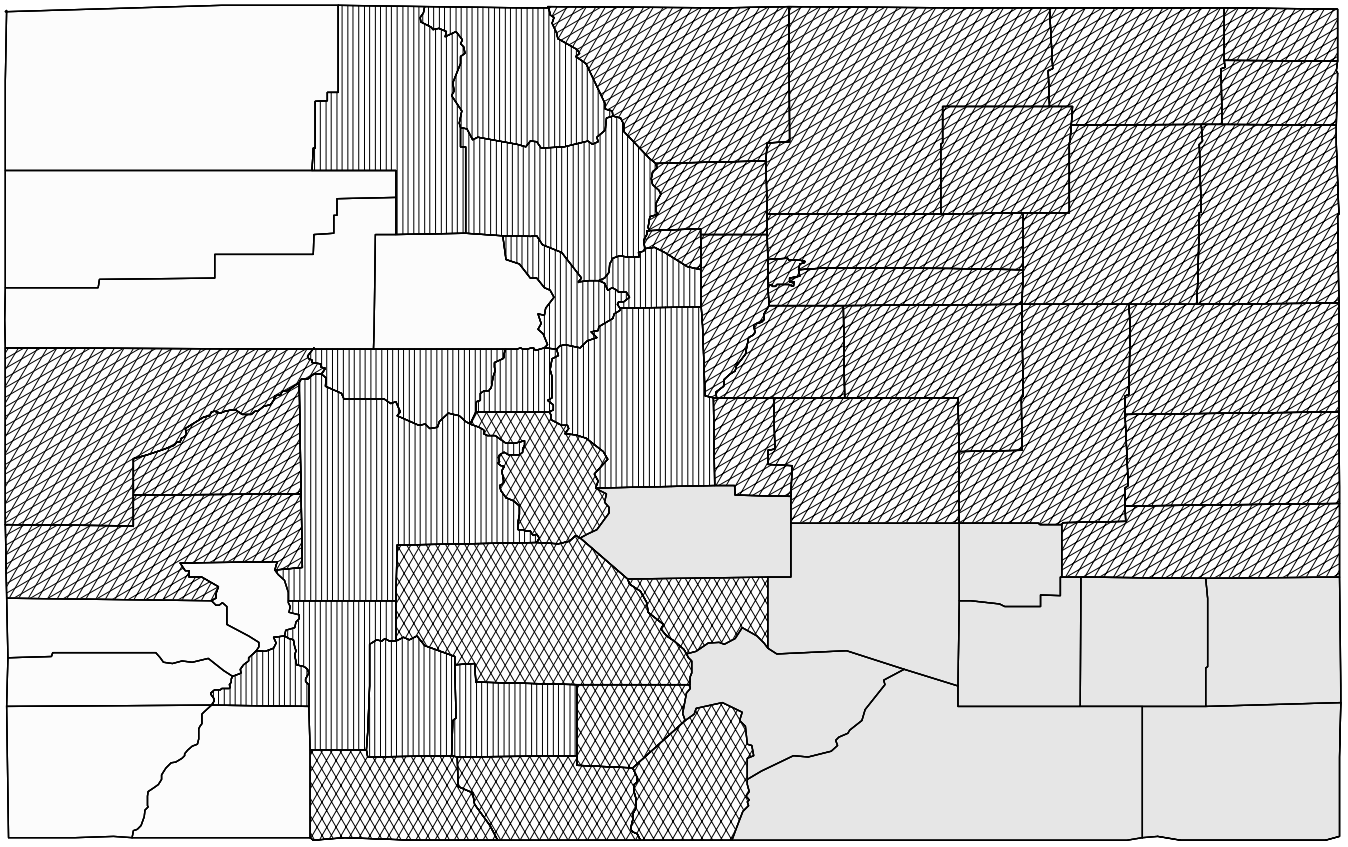
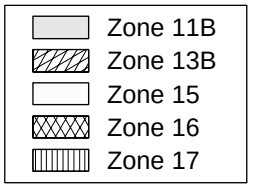


Zone	County	Zone	County
13B	Adams	15	La Plata
16	Alamosa	17	Lake
13B	Arapahoe	13B	Larimer
16	Archuleta	11B	Las Animas
11B	Baca	13B	Lincoln
11B	Bent	13B	Logan
13B	Boulder	13B	Mesa
16	Chaffee	17	Mineral
13B	Cheyenne	15	Moffat
17	Clear Creek	15	Montezuma
16	Conejos	13B	Montrose
16	Costilla	13B	Morgan
11B	Crowley	11B	Otero
16	Custer	15	Ouray
13B	Delta	17	Park
13B	Denver	13B	Phillips
15	Dolores	17	Pitkin
13B	Douglas	11B	Prowers
15	Eagle	11B	Pueblo
13B	El Paso	15	Rio Blanco
13B	Elbert	17	Rio Grande
11B	Fremont	17	Routt
15	Garfield	16	Saguache
13B	Gilpin	17	San Juan
17	Grand	15	San Miguel
17	Gunnison	13B	Sedgwick
17	Hinsdale	17	Summit
11B	Huerfano	13B	Teller
17	Jackson	13B	Washington
13B	Jefferson	13B	Weld
13B	Kiowa	13B	Yuma
13B	Kit Carson		



COMcheck-EZ™ Prescriptive Packages Climate Zone 11b

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)				Medium Fenestration Area (10%-25% Window-Wall Ratio)				High Fenestration Area (25%-40% Window-Wall Ratio)				Very High Fenestration Area (40%-50% Window-Wall Ratio)			
Walls (a,b)	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing
Framed *Minimum Cavity R-Value (c)*	NA		11	11	NA		11	11	NA		11	11	NA		13	11
Any Spacing *Minimum Continuous R-Value (d)*	NA		0	0	NA		0	0	NA		0	0	NA		3	0
CMU, 8 in. or greater *Minimum Cavity R-Value*	NA		11	11	NA		11	11	NA		11	11	NA		11	11
with Integral Insulation(e) *Minimum Continuous R-Value*	5		0	0	5		0	0	5		0	0	5		0	0
All Other *Minimum Cavity R-Value*	NA		11	11	NA		11	11	NA		11	11	NA		11	11
Masonry Walls(f) *Minimum Continuous R-Value*	5		0	0	5		0	0	5		0	0	5		0	0
Windows	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection
Maximum Solar Heat Gain Coefficient	Any		Any	Any	0.5		0.6	0.7	0.4		0.5	0.6	0.3		0.4	0.5
Maximum U-Factor	Any		Any	Any	0.6		0.6	0.6	0.5		0.5	0.5	0.5		0.5	0.5
Skylight (Limit 3% of Roof Area)																
Maximum U-Factor			0.8				0.8				0.8				0.8	
Roof	Continuous Insulation	or		Roof Cavity Insulation	Continuous Insulation	or		Roof Cavity Insulation	Continuous Insulation	or		Roof Cavity Insulation	Continuous Insulation	or		Roof Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	18			25	19			25	23			30	23			30
Nonwood Joist/Truss *Minimum R-Value*	19			25	20			25	24			30	24			30
Concrete Slab or Deck *Minimum R-Value*	18			NA	19			NA	23			NA	23			NA
Metal Purlin with Thermal Break *Minimum R-Value*	19			30	20			30	24			X	24			30
Metal Purlin without Thermal Break *Minimum R-Value*	19			X	20			X	24			X	24			38
Floor	Continuous Insulation	or		Cavity Insulation	Continuous Insulation	or		Cavity Insulation	Continuous Insulation	or		Cavity Insulation	Continuous Insulation	or		Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	14			19	14			19	14			19	14			19
Nonwood Joist/Truss *Minimum R-Value*	15			19	15			19	15			19	15			19
Concrete Slab or Deck *Minimum R-Value*	15			NA	15			NA	15			NA	15			NA
Slab Edge or Basement Walls	Insulation				Insulation				Insulation				Insulation			
Minimum R-Value	0				0				8				8			

Notes:

(a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.

(b) Where values are shown for both cavity and continuous insulation, both requirements must be met.

(c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.

(d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undimished by compression or bridging.

(e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

(f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft2 or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.

COMcheck-EZ™ Prescriptive Packages Climate Zone 13b

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)			Medium Fenestration Area (10%-25% Window-Wall Ratio)			High Fenestration Area (25%-40% Window-Wall Ratio)			Very High Fenestration Area (40%-50% Window-Wall Ratio)		
Walls (a,b)	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing
Framed *Minimum Cavity R-Value (c)*	NA	13	11	NA	13	11	NA	13	11	NA	13	13
Any Spacing *Minimum Continuous R-Value (d)*	NA	0	0	NA	0	0	NA	0	0	NA	7	3
CMU, 8 in. or greater *Minimum Cavity R-Value*	NA	11	11	NA	11	11	NA	11	11	NA	11	11
with Integral Insulation(e) *Minimum Continuous R-Value*	5	0	0	5	0	0	5	0	0	5	0	0
All Other *Minimum Cavity R-Value*	NA	11	11	NA	11	11	NA	11	11	NA	11	11
Masonry Walls(f) *Minimum Continuous R-Value*	5	0	0	5	0	0	5	0	0	5	0	0
Windows	No Projection	[3].25 Projection	[3].5 Projection	No Projection	[3].25 Projection	[3].5 Projection	No Projection	[3].25 Projection	[3].5 Projection	No Projection	[3].25 Projection	[3].5 Projection
Maximum Solar Heat Gain Coefficient	Any	Any	Any	0.5	0.6	0.7	0.4	0.5	0.6	0.4	0.5	0.6
Maximum U-Factor	Any	Any	Any	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
Skylight (Limit 3% of Roof Area)												
Maximum U-Factor		0.8			0.8			0.8			0.8	
Roof	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	18		25	19		25	23		30	23		30
Nonwood Joist/Truss *Minimum R-Value*	19		25	20		25	24		30	24		30
Concrete Slab or Deck *Minimum R-Value*	18		NA	19		NA	23		NA	23		NA
Metal Purlin with Thermal Break *Minimum R-Value*	19		30	20		30	24		X	24		38
Metal Purlin without Thermal Break *Minimum R-Value*	19		X	20		X	24		X	24		49
Floor	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	17		19	17		19	17		19	17		19
Nonwood Joist/Truss *Minimum R-Value*	17		25	17		25	17		25	17		25
Concrete Slab or Deck *Minimum R-Value*	17		NA	17		NA	17		NA	17		NA
Slab Edge or Basement Walls	Insulation			Insulation			Insulation			Insulation		
Minimum R-Value	0			0			8			8		

Notes:

(a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.

(b) Where values are shown for both cavity and continuous insulation, both requirements must be met.

(c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.

(d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undimished by compression or bridging.

(e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

(f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft2 or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.

COMcheck-EZ™ Prescriptive Packages Climate Zone 15

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)				Medium Fenestration Area (10%-25% Window-Wall Ratio)				High Fenestration Area (25%-40% Window-Wall Ratio)				Very High Fenestration Area (40%-50% Window-Wall Ratio)			
Walls (a,b)	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing
Framed *Minimum Cavity R-Value (c)*	NA		13	11	NA		13	11	NA		13	11	NA		13	13
Any Spacing *Minimum Continuous R-Value (d)*	NA		3	0	NA		3	0	NA		3	0	NA		7	4
CMU, 8 in. or greater *Minimum Cavity R-Value*	NA		11	11	NA		11	11	NA		11	11	NA		13	11
with Integral Insulation(e) *Minimum Continuous R-Value*	5		0	0	5		0	0	5		0	0	5		0	0
All Other *Minimum Cavity R-Value*	NA		11	11	NA		11	11	NA		13	11	NA		13	11
Masonry Walls(f) *Minimum Continuous R-Value*	5		0	0	5		0	0	6		0	0	6		3	0
Windows	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection
Maximum Solar Heat Gain Coefficient	Any		Any	Any	0.5		0.6	0.7	0.5		0.6	0.7	0.4		0.5	0.7
Maximum U-Factor	0.7		0.7	0.7	0.5		0.5	0.5	0.4		0.4	0.4	0.4		0.4	0.4
Skylight (Limit 3% of Roof Area)																
Maximum U-Factor	0.6				0.6				0.6				0.6			
Roof	Continuous Insulation	or	Roof Cavity Insulation		Continuous Insulation	or	Roof Cavity Insulation		Continuous Insulation	or	Roof Cavity Insulation		Continuous Insulation	or	Roof Cavity Insulation	
All-Wood Joist/Truss *Minimum R-Value*	19		25		19		25		23		30		23		30	
Nonwood Joist/Truss *Minimum R-Value*	20		25		20		25		24		30		24		30	
Concrete Slab or Deck *Minimum R-Value*	19		NA		19		NA		23		NA		23		NA	
Metal Purlin with Thermal Break *Minimum R-Value*	20		30		20		30		24		X		24		38	
Metal Purlin without Thermal Break *Minimum R-Value*	20		X		20		X		24		X		24		NA	
Floor	Continuous Insulation	or	Cavity Insulation		Continuous Insulation	or	Cavity Insulation		Continuous Insulation	or	Cavity Insulation		Continuous Insulation	or	Cavity Insulation	
All-Wood Joist/Truss *Minimum R-Value*	22		25		22		25		22		25		22		25	
Nonwood Joist/Truss *Minimum R-Value*	23		30		23		30		23		30		23		30	
Concrete Slab or Deck *Minimum R-Value*	22		NA		22		NA		22		NA		22		NA	
Slab Edge or Basement Walls	Insulation				Insulation				Insulation				Insulation			
Minimum R-Value	0				8				8				8			

Notes:

(a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.

(b) Where values are shown for both cavity and continuous insulation, both requirements must be met.

(c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.

(d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undimished by compression or bridging.

(e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

(f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft2 or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.

COMcheck-EZ™ Prescriptive Packages Climate Zone 16

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)			Medium Fenestration Area (10%-25% Window-Wall Ratio)			High Fenestration Area (25%-40% Window-Wall Ratio)			Very High Fenestration Area (40%-50% Window-Wall Ratio)		
Walls (a,b)	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing
Framed *Minimum Cavity R-Value (c)*	NA	13	11	NA	13	11	NA	13	13	NA	13	13
Any Spacing *Minimum Continuous R-Value (d)*	NA	3	0	NA	3	0	NA	3	0	NA	14	7
CMU, 8 in. or greater *Minimum Cavity R-Value*	NA	11	11	NA	11	11	NA	13	11	NA	13	13
with Integral Insulation(e) *Minimum Continuous R-Value*	5	0	0	5	0	0	6	0	0	10	3	0
All Other *Minimum Cavity R-Value*	NA	11	11	NA	13	11	NA	13	13	NA	13	13
Masonry Walls(f) *Minimum Continuous R-Value*	5	0	0	9	3	0	9	3	0	9	3	3
Windows	No Projection	[3].25 Projection	[3].5 Projection	No Projection	[3].25 Projection	[3].5 Projection	No Projection	[3].25 Projection	[3].5 Projection	No Projection	[3].25 Projection	[3].5 Projection
Maximum Solar Heat Gain Coefficient	0.7	Any	Any	0.7	Any	Any	0.5	0.6	0.7	0.4	0.5	0.7
Maximum U-Factor	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Skylight (Limit 3% of Roof Area)												
Maximum U-Factor		0.6			0.6			0.6			0.6	
Roof	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	19		25	23		30	23		30	23		30
Nonwood Joist/Truss *Minimum R-Value*	20		25	24		30	24		30	24		30
Concrete Slab or Deck *Minimum R-Value*	19		NA	23		NA	23		NA	23		NA
Metal Purlin with Thermal Break *Minimum R-Value*	20		30	24		X	24		X	24		38
Metal Purlin without Thermal Break *Minimum R-Value*	20		X	24		X	24		X	24		NA
Floor	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	22		25	22		25	22		25	22		25
Nonwood Joist/Truss *Minimum R-Value*	23		30	23		30	23		30	23		30
Concrete Slab or Deck *Minimum R-Value*	22		NA	22		NA	22		NA	22		NA
Slab Edge or Basement Walls	Insulation			Insulation			Insulation			Insulation		
Minimum R-Value	8			8			8			8		

Notes:

(a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.

(b) Where values are shown for both cavity and continuous insulation, both requirements must be met.

(c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.

(d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undimished by compression or bridging.

(e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

(f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft2 or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.

COMcheck-EZ™ Prescriptive Packages Climate Zone 17

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)				Medium Fenestration Area (10%-25% Window-Wall Ratio)				High Fenestration Area (25%-40% Window-Wall Ratio)				Very High Fenestration Area (40%-50% Window-Wall Ratio)			
Walls (a,b)	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing
Framed *Minimum Cavity R-Value (c)*	NA		13	13	NA		13	13	NA		13	13	NA		13	13
Any Spacing *Minimum Continuous R-Value (d)*	NA		3	0	NA		3	0	NA		4	3	NA		14	14
CMU, 8 in. or greater *Minimum Cavity R-Value*	NA		13	11	NA		13	11	NA		13	13	NA		13	13
with Integral Insulation(e) *Minimum Continuous R-Value*	6		0	0	6		0	0	10		4	3	14		10	7
All Other *Minimum Cavity R-Value*	NA		13	11	NA		13	13	NA		13	13	NA		13	13
Masonry Walls(f) *Minimum Continuous R-Value*	6		0	0	9		3	0	10		4	3	14		10	7
Windows	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection
Maximum Solar Heat Gain Coefficient	0.7		Any	Any	0.7		Any	Any	0.7(g)		Any(g)	Any(g)	0.4		0.5	0.7
Maximum U-Factor	0.5		0.5	0.5	0.4		0.4	0.4	0.4		0.4	0.4	0.4		0.4	0.4
Skylight (Limit 3% of Roof Area)																
Maximum U-Factor			0.6				0.6				0.6				0.6	
Roof	Continuous Insulation	or	Roof Cavity Insulation		Continuous Insulation	or	Roof Cavity Insulation		Continuous Insulation	or	Roof Cavity Insulation		Continuous Insulation	or	Roof Cavity Insulation	
All-Wood Joist/Truss *Minimum R-Value*	23		30		23		30		23		30		23		30	
Nonwood Joist/Truss *Minimum R-Value*	24		30		24		30		24		30		24		30	
Concrete Slab or Deck *Minimum R-Value*	23		NA		23		NA		23		NA		23		NA	
Metal Purlin with Thermal Break *Minimum R-Value*	24		X		24		X		24		X		24		38	
Metal Purlin without Thermal Break *Minimum R-Value*	24		X		24		X		24		X		24		NA	
Floor	Continuous Insulation	or	Cavity Insulation		Continuous Insulation	or	Cavity Insulation		Continuous Insulation	or	Cavity Insulation		Continuous Insulation	or	Cavity Insulation	
All-Wood Joist/Truss *Minimum R-Value*	22		25		22		25		22		25		22		25	
Nonwood Joist/Truss *Minimum R-Value*	23		30		23		30		23		30		23		30	
Concrete Slab or Deck *Minimum R-Value*	22		NA		22		NA		22		NA		22		NA	
Slab Edge or Basement Walls	Insulation				Insulation				Insulation				Insulation			
Minimum R-Value	8				8				8				8			

Notes:

(a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.

(b) Where values are shown for both cavity and continuous insulation, both requirements must be met.

(c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.

(d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undimished by compression or bridging.

(e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

(f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft2 or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

(g) For buildings over 3 stories in height, the maximum SHGC shall be 0.60.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.