

**TABLE 1312.3.1(1)
ENVELOPE PRESCRIPTIVE PATH, OTHER BUILDINGS – CLIMATE ZONE 1**

COMPONENT ¹	COMPLIANCE CRITERIA
Windows¹ Maximum overall thermal transmittance Maximum overall SHGC	U-0.460 ² or Fixed: Double-glazed with minimum 0.5 inch airspace between panes, thermal break frame, and a low emissivity coating of 0.20 or less. Curtainwall/storefront & operable: Double glazed with minimum 0.5 inch airspace between panes, thermal break frame, and a low emissivity coating of 0.50 or less. SHGC-0.40 ^{2, 3, 4}
Doors, with and without glazing, maximum overall thermal transmittance⁵	U-0.850 ² or Doors with glazing: Double-glazed doors with minimum 0.5 inch air space between panes and a low emissivity coating of 0.10 or less.
Opaque overhead doors, maximum overall thermal transmittance	U-200 ² or insulated to a min R-5, measured at center-of-panel
Skylights and glazed smoke vents⁶ Manufactured, maximum overall thermal transmittance Manufactured, maximum overall SHGC Site-assembled glazing, maximum overall thermal transmittance Site-assembled glazing, maximum overall SHGC	U-1.17 or Double glazed with minimum 0.5 inch airspace between panes, thermal break frame, and a low emissivity coating not greater than 0.05. SHGC-0.40 ^{2, 3, 4} U-0.69 or Double glazed with minimum 0.5 inch airspace between panes, thermal break frame, and a low emissivity coating not greater than 0.20. SHGC-0.40 ^{2, 3, 4}

ASSEMBLY	MAXIMUM ASSEMBLY FACTOR		MINIMUM INSULATION R-VALUE
Floors, over unconditioned spaces Wood joist/framing Steel framing >4' on-center. and other Concrete slab above-grade ⁷	U-0.034 U-0.038 U-0.083	or or or	R-30 R-30 9 c.i. ⁸
Concrete slab-on-grade Unheated slab Heated slab ⁹	NR F-0.56	or	NR R-7.5
Roofs¹⁰ Continuous insulation Engineered metal building Attic, non-continuous and other	U-0.048 U-0.055 U-0.035	or or or	R-20 c.i. ⁸ R-13+13+5 thermal blocks R-38
Walls⁷ Masonry or concrete, with interior insulation-steel frame Masonry or concrete, with interior insulation-wood frame Masonry or concrete, with continuous exterior insulation ¹¹ Framed ¹² Wood Steel Engineered metal building Other Below-grade walls	U-0.083 U-0.083 U-0.104 U-0.083 U-0.083 U-0.084 U-0.088 C-0.146 ¹⁵	or or or or or or or or	R-13+4 c.i. ⁸ R-15 R-9.5 c.i. ⁸ R-15 ¹³ R-13+4 c.i. ^{8, 14} R-19 R-10 c.i. ⁸ R-5 c.i. exterior ⁸

For SI: 1 inch = 25.4 mm.

¹ [The glazing fraction installed in exterior walls shall not exceed 30% in order to comply with this prescriptive path.](#) Percent of glazing fraction for windows is based on total exterior window area divided by the total exterior wall area including demising walls. [For exterior window area up to 40 percent, see 1311.2 for an Optional Compliance Approach.](#)

- 2 Windows and doors that are contained within an unconditioned vestibule are exempt from U-factor and solar heat gain coefficient requirements.
- 3 The solar heat gain coefficient is an overall value of the fenestration assembly.
- 4 Street-level windows for retail display or compliance with local planning ordinance are exempt from solar heat gain coefficient requirements.
- 5 Where a fire-rated door is required, it is exempt from U-factor.
- 6 Maximum skylight area = 5 percent of total roof area. Manufactured skylights are installed on an insulated curb. Site-assembled glazing is integrated into the roof assembly and not on installed on a curb. Percent area for skylights is based on total skylight and glazed smoke vent rough frame area divided by the total roof area.
- 7 The exterior perimeter of all above grade floors shall be insulated to the same value as the exterior wall above that floor.
- 8 Continuous insulation (c.i.) is insulation applied so the R-value specified is uncompressed and uninterrupted by framing across the entire surface.
- 9 Insulation is required at the slab-edge perimeter and underneath the entire slab per 1312.7.
- 10 Opaque smoke vents are exempt from U-factor requirements.
- 11 Minimum weight of masonry and concrete walls = for this category shall be at least 45 lbs./ft² (220 kg/m²) of wall face area.
- 12 Batt insulation installed in metal or wood framed walls with continuous exterior insulation shall be installed in substantial contact with exterior sheathing. Batt insulation installed in metal or wood framed walls without continuous exterior insulation shall be insulated to the full depth of the cavity, up to 6 inches (150 mm) in depth.
- 13 R-8.5 continuous exterior insulation shall be permitted when wall has no cavity insulation.
- 14 R-9.5 continuous exterior insulation shall be permitted when wall has no cavity insulation.
- 15 A C-factor of 0.110 can be achieved with an assembly that is furred-out on the interior side with 2x4 steel framed-framing, with R-13 batt insulation.

**TABLE 1312.3.1(2)
ENVELOPE PRESCRIPTIVE PATH, OTHER BUILDINGS – CLIMATE ZONE 2**

COMPONENT ¹	COMPLIANCE CRITERIA
Windows¹ Maximum overall thermal transmittance Maximum overall SHGC	U-0.460 ² or Fixed: Double-glazed with minimum 0.5 inch airspace between panes, thermal break frame, and a low emissivity coating of 0.20 or less. Curtainwall/storefront & operable: Double glazed with minimum 0.5 inch airspace between panes, thermal break frame, and a low emissivity coating of 0.50 or less. SHGC-0.40 ^{2, 3, 4}
Doors, with and without glazing, maximum overall thermal transmittance ⁵	U-0.850 ² or Doors with glazing: Double-glazed doors with minimum 0.5 inch air space between panes and a low emissivity coating of 0.10 or less.
Opaque overhead doors, maximum overall thermal transmittance	U-200 ² or insulated to a min R-5, measured at center-of-panel
Skylights and glazed smoke vents⁶ Manufactured, maximum overall thermal transmittance Manufactured, maximum overall SHGC Site-assembled glazing, maximum overall thermal transmittance Site-assembled glazing, maximum overall SHGC	U-1.17 or Double glazed with minimum 0.5 inch airspace between panes, thermal break frame, and a low emissivity coating not greater than 0.05. SHGC-0.40 ^{2, 3, 4} U-0.69 or Double glazed with minimum 0.5 inch airspace between panes, thermal break frame, and a low emissivity coating not greater than 0.20. SHGC-0.40 ^{2, 3, 4}

ASSEMBLY	MAXIMUM ASSEMBLY FACTOR		MINIMUM INSULATION R-VALUE
Floors, over unconditioned spaces	Wood joist/framing	U-0.034	or R-30
	Steel framing >4' on-center, and other	U-0.038	or R-30
	Concrete slab above-grade ⁷	U-0.083	or 9 c.i. ⁸
Concrete slab-on-grade	Unheated slab	NR	NR
	Heated slab ⁹	F-0.56	or R-7.5
Roofs¹⁰	Continuous insulation	U-0.048	or R-20 c.i. ⁸
	Engineered metal building	U-0.055	or R-13+13+5 thermal blocks
	Attic, non-continuous and other	U-0.035	or R-38
Walls⁷	Masonry or concrete, with interior insulation-steel frame	U-0.069	or R-13+4 c.i. ⁸
	Masonry or concrete, with interior insulation-wood frame	U-0.063	or R-15
	Masonry or concrete, with continuous exterior insulation ¹¹	U-0.090	or R-9.5 c.i. ⁸
	Framed ¹²		
	Wood	U-0.063	or R-15 ¹³
	Steel	U-0.069	or R-13+4 c.i. ^{8, 14}
	Engineered metal building	U-0.072	or R-21+5 c.i. ⁸
	Other	U-0.075	or R-12 c.i. ⁸
Below-grade walls	C-0.110 ¹⁵	or R-7.5 c.i. exterior ⁸	

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- ¹ [The glazing fraction installed in exterior walls shall not exceed 30% in order to comply with this prescriptive path.](#) Percent of glazing fraction for windows is based on total exterior window area divided by the total exterior wall area including demising walls. [For exterior window area up to 40 percent, see 1311.2 for an Optional Compliance Approach.](#)
- ² Windows and doors that are contained within an unconditioned vestibule are exempt from U-factor and solar heat gain coefficient requirements.
- ³ The solar heat gain coefficient is an overall value of the fenestration assembly.
- ⁴ Street-level windows for retail display or compliance with local planning ordinance are exempt from solar heat gain coefficient requirements.
- ⁵ [Where a fire-rated door is required, it is exempt from U-factor.](#)
- ⁶ Maximum skylight area = 5 percent of total roof area. Manufactured skylights are installed on an insulated curb. Site-assembled glazing is integrated into the roof assembly and not on installed on a curb. Percent area for skylights is based on total skylight and glazed smoke vent rough frame area divided by the total roof area.
- ⁷ The exterior perimeter of all above grade floors shall be insulated to the same value as the exterior wall above that floor.
- ⁸ Continuous insulation (c.i.) is insulation applied so the R-value specified is uncompressed and uninterrupted by framing across the entire surface.
- ⁹ Insulation is required at the slab-edge perimeter and underneath the entire slab per 1312.7.
- ¹⁰ Opaque smoke vents are exempt from U-factor requirements.
- ¹¹ Minimum weight of masonry and concrete walls = for this category shall be at least 45 lbs./ft² (220 kg/m²) of wall face area.
- ¹² Batt insulation installed in metal or wood framed walls with continuous exterior insulation shall be installed in substantial contact with exterior sheathing. Batt insulation installed in metal or wood framed walls without continuous exterior insulation shall be insulated to the full depth of the cavity, up to 6 inches (150 mm) in depth.
- ¹³ [R-8.5 continuous exterior insulation shall be permitted when wall has no cavity insulation.](#)
- ¹⁴ [R-9.5 continuous exterior insulation shall be permitted when wall has no cavity insulation.](#)
- ¹⁵ A C-factor of 0.110 can be achieved with an assembly that is [furred-out on the interior side with 2x4 steel framed-framing.](#) with R-13 batt insulation.