



Miami County Building Regulations

Option 1: THE OHIO HOME BUILDERS ALTERNATIVE ENERGY CODE COMPLIANCE OPTION

Based upon the 2019 Residential Code of Ohio, Section 1112, Ohio Home Builders Alternative Energy Code

Job address _____ Date _____

Applicant Name (please print) _____ Phone No. _____

Compliance path proposed: 1 2 Sunroom R-values on construction documents must match the chosen path option.

Insulation and Glazing Required by Component (Based upon Table 1112.2.1)									
Compliance Path	Maximum U-Factor		Minimum Insulation R-Value						
	Window and Glass Door	Skylight Glazing	Ceiling	Wood Frame Wall	Mass Wall ⁴	Floor ⁵	Basement Wall ²	Slab Perimeter ³	Crawlspace Wall ²
1	.32	.60	R-49	R-15 or R-13 + 3 ¹	R-13/17	R-30	R-10 / 13 4' depth	R-10 / 15 2' depth	R-10 / 13
2	.32	.60	R-49	R-13	R-13/17	R-30	R-10 / 13 4' depth	R-10 / 15 2' depth	R-10 / 13
Sun Room ⁶	.50	.75	R-24	R-13	R-13/17	R-30	R-10 / 13 4' depth	R-10 / 15 2' depth	R-10 / 13

Foot Notes:

1. Exterior wall R-value includes insulation in wall and exterior continuous sheathing. "13+3" means R-13 cavity insulation plus R-3 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. Submit manufacturer's insulation R-values for the sheathing if this option is used.
2. As an alternative to insulating floors over crawlspaces, crawlspace walls are permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished exterior grade level and then vertically and/or horizontally for at least an additional 24 inches (610 mm) below the exterior finished grade. Exposed earth in unvented crawl space foundations shall be covered with a continuous vapor retarder. All joints of the vapor retarder shall overlap by 6 inches and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached to the foundation wall and piers. R-10 means continuous insulation on the interior or exterior of the wall. R-13 refers to cavity insulation within the interior of the wall.
3. Slab perimeter insulation depth is 2 feet minimum, from the top of the slab on the inside or outside. Use R-15 for heated slabs. A heated slab is defined as a slab-on-grade construction in which the heating elements, hydronic tubing, or hot air distribution system is in contact with, or placed within or under the slab. Includes floor slabs less than 12" below grade. The top edge of the insulation shall be permitted to be cut at a 45-degree angle away from the exterior wall.
4. Mass walls for the purposes of this form shall be considered walls of concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick (other than brick veneer), earth (adobe, compressed earth block, rammed earth) and solid timber/logs. The second R-Value applies when more than half the insulation is on the interior of the mass wall.
5. May be less than R-30 if floor joist depth is insufficient, but must completely fill the framing cavity, R-19 minimum. Floor insulation must be installed to maintain permanent contact with the floor sheathing.
6. When using the >40% glazed category the sunroom must be thermally isolated from the rest of the house. New walls, doors and windows separating the sunroom from the conditioned space shall meet the building thermal envelope requirements. Sunroom glazing determination. Use this formula only if using sunroom guideline. To determine the percent of glass in the exterior wall envelope:

A = Gross exterior wall area, including window and door rough openings. A = _____ Sq. Ft.

B = Total area of windows, skylights and glass doors rough openings. B = _____ Sq. Ft.

Formula to determine percent of window area = $(B \div A) \times 100$

$$B \text{ _____} \div A \text{ _____} = \text{_____} \times 100 = \text{_____} \%$$

Example: 300 ÷ 600 = .5 x 100 = 50 %



Miami County Building Regulations

Option 2: 2013 RESIDENTIAL CODE OF OHIO SECTIONS 1101 THROUGH 1104

SUMMARY

Based upon 2013 RCO, Sections 1101-1104, Zone 5 Requirements, and the International Energy Conservation Code

Job address _____ Date _____

Building Envelope Requirements									
Zone	Maximum		Minimum Insulation R-Value						
	Window and Glass Door U-Factor ⁴	Skylight Glazing U-Factor	Ceiling ⁹	Wood Frame Wall	Mass Wall ⁵	Floor ⁸	Basement Wall ^{6,7}	Slab Perimeter ³	Crawlspace Wall ^{2,6}
5	.35	.60	R-38	R-20 or R-13 + 5 ¹	R-13/17	R-30	R-10 / 13	R-10 / 15	R-10 / 13
Thermally Isolated Sunrooms (greater than 40% glazing). ^{10,11}									
5	.50	.75	R-24	R-13	R-13	R-30	R-10 / 13	R-10 / 15	R-10 / 13

1. Exterior wall R-value includes insulation in wall and exterior continuous sheathing. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2. Make sure the structure is capable of being insulated per this table and show the required R-values on the construction documents. For example, 2x4 walls will not hold R-19 batt insulation. Submit manufacturer's insulation R-values for the sheathing if this option is used. R-19 batt compressed into a 2x6 wall shall have a compressed rating of R-18
2. Per 1102.2.9: As an alternative to insulating floors over crawl spaces, crawl space walls shall be permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches (610 mm). Exposed earth in unvented crawl space foundations shall be covered with a continuous vapor retarder. All joints of the vapor retarder shall overlap by 6 inches and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches up the stem wall and shall be attached to the stem wall.
3. Slab perimeter insulation depth is 2 feet minimum, from the top of the slab. Use R-15 for heated slabs. A heated slab is defined as a slab-on-grade construction in which the heating elements, hydronic tubing, or hot air distribution system is in contact with, or placed within or under the slab.
4. Submit documentation from the manufacturer to verify window and glass door U-factors.
5. Mass walls for the purposes of this form shall be considered walls of concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick (other than brick veneer), earth (adobe, compressed earth block, rammed earth) and solid timber/logs. The second R-value applies when more than half the insulation is on the interior of the mass wall.
6. The first R-value applies to continuous insulation, the second to framing cavity insulation; either insulation meets the requirement.
7. 1102.2.7 Basement walls. Exterior walls associated with conditioned basements shall be insulated from the top of the basement wall down to 10 feet (3048 mm) below grade or to the basement floor, whichever is less. Walls associated with unconditioned basements shall meet this requirement unless the floor overhead is insulated in accordance with Sections 1102.1 and 1102.2.6.
8. May be less than R-30 if floor joist depth is insufficient, but must completely fill the framing cavity. R-19 minimum. Floor insulation shall be installed to maintain permanent contact with the underside of the subfloor decking.
9. Per 1102.2.1 in ceilings with attic spaces, R-30 shall be deemed to satisfy the requirement for R-38 wherever the full height of uncompressed R-30 insulation extends over the wall top plate at the eaves. Per 1102.2.2 in ceilings without attic spaces, when the design of the roof/ceiling assembly does not allow sufficient space for the required insulation, the minimum required insulation for such roof/ceiling assemblies shall be R-30. This reduction of insulation from the requirements shall be limited to 500 sq. ft. of ceiling area or twenty per cent of the total insulated ceiling area, whichever is less.
10. Per 1102.2.11, when using the >40% category the sunroom must be thermally isolated from the rest of the house. New walls, doors and windows separating the sunroom from the conditioned space shall meet the building thermal envelope requirements.
11. Sunroom glazing determination. Use this formula only if using sunroom requirements. Determine percent of glass in the exterior wall envelope:

A = Gross exterior wall area, including window and door rough openings. A = _____ Sq. Ft.

B = Total area of windows, skylights and glass doors rough openings. B = _____ Sq. Ft.

Formula to determine percent of window area = $(B \div A) \times 100$

$$B \text{ _____ } \div A \text{ _____ } = \text{ _____ } \times 100 = \text{ _____ } \%$$

Example: 300 ÷ 600 = .5 x 100 = 50 %



Miami County Building Regulations

Option 3: 2019 RESIDENTIAL CODE OF OHIO SECTIONS 1101 THROUGH 1104 SUMMARY

Based upon 2019 RCO, Sections 1101-1104, and the 2018 International Energy Conservation Code

Job address _____ Date _____

Applicants Name (please print) _____ Phone No. _____

Building Envelope Requirements									
Zone for Miami Co.	Maximum		Minimum Insulation R-Value						
	Window and Glass Door U-Factor	Skylight Glazing U-Factor	Ceiling ⁸	Wood Frame Wall	Mass Wall ⁴	Floor ⁷	Basement Wall ^{5,6}	Slab Perimeter ³	Crawlspace Wall ^{2,5}
5	.35	.55	R-49	R-20 or R-13 + 5 ¹	R-13/17	R-30	R-10 / 13	R-10 / 15	R-10 / 13
Thermally Isolated Sunrooms (greater than 40% glazing). ^{10,11}									
5	.50	.75	R-24	R-13	R-13	R-30	R-10 / 13	R-10 / 15	R-10 / 13

Foot Notes:

1. Exterior wall R-value includes insulation in wall and exterior continuous sheathing. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. Where Section 1102.1.2 requires continuous insulation on exterior walls and structural sheathing covers 40 percent or less of the gross area of all exterior walls, the required continuous insulation R-value shall be permitted to be reduced by an amount necessary, but not more than R-3, to result in a consistent total sheathing thickness on areas of the walls covered by structural sheathing.
2. Per 1102.2.11: As an alternative to insulating floors over crawl spaces, crawl space walls shall be permitted to be insulated when the crawl space is not vented to the outside. Crawl space wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches (610 mm). Exposed earth in unvented crawl space foundations shall be covered with a continuous vapor retarder. All joints of the vapor retarder shall overlap by 6 inches and be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches up and attached to foundation wall and piers.
3. Slab perimeter insulation depth is 2 feet minimum, from the top of the slab. Use R-15 for heated slabs. A heated slab is defined as a slab-on-grade construction in which the heating elements, hydronic tubing, or hot air distribution system is in contact with, or placed within or under the slab.
4. Mass walls for the purposes of this form shall be considered walls of concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick (other than brick veneer), earth (adobe, compressed earth block, rammed earth) and solid timber/logs. The second R-value applies when more than half the insulation is on the interior of the mass wall.
5. The first R-value applies to continuous insulation, the second to framing cavity insulation; either insulation meets the requirement.
6. 1102.2.7 Basement walls. Exterior walls associated with conditioned basements shall be insulated from the top of the basement wall down to 10 feet (3048 mm) below grade or to the basement floor, whichever is less. Walls associated with unconditioned basements shall meet this requirement unless the floor overhead is insulated in accordance with Sections 1102.1.2 and 1102.2.8.
7. May be less than R-30 if floor joist depth is insufficient, but must completely fill the framing cavity. R-19 minimum. Floor insulation shall be installed to maintain permanent contact with the underside of the subfloor decking. Exception: As an alternative, the floor framing-cavity insulation shall be in contact with the topside of sheathing or continuous insulation installed on the bottom side of floor framing where combined with insulation that meets or exceeds the minimum wood frame wall R-value in Table 1102.1.2 and that extends from the bottom to the top of all perimeter floor framing members.
8. Where Section 1102.1.2 requires R-49 insulation in the ceiling, installing R-38 insulation over 100 percent of the ceiling area requiring insulation shall satisfy the requirement for R-49 insulation wherever the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves.
9. Per 1102.2.11, when using the >40% category the sunroom must be thermally isolated from the rest of the house. New walls, doors and windows separating the sunroom from the conditioned space shall meet the building thermal envelope requirements.
10. Sunroom glazing determination. Use this formula only if using sunroom requirements. Determine percent of glass in the exterior wall envelope:

A = Gross exterior wall area, including window and door rough openings. A = _____ Sq. Ft.
 B = Total area of windows, skylights and glass doors rough openings. B = _____ Sq. Ft.

Formula to determine percent of window area = (B ÷ A) x 100

$$B \div A = \quad \div \quad = \quad \div \quad \times 100 = \quad \%$$

Example: 300 ÷ 600 = .5 x 100 = 50 %