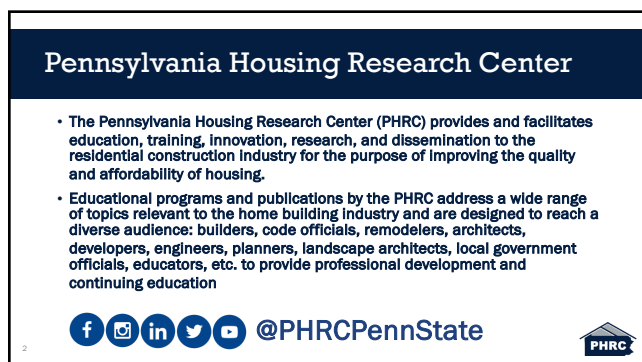


Mastering Exterior Insulation: Navigating PA's New UCC Code Requirements

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Penn State College of Engineering | PENNSYLVANIA HOUSING RESEARCH CENTER | NARI CEU Approved | UCC PREFERRED EDUCATION PROVIDER | PHRC


1



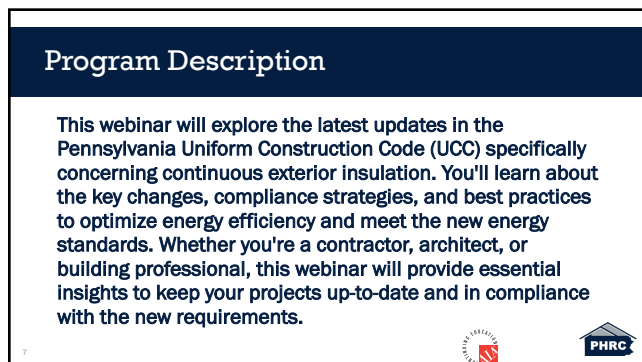
Pennsylvania Housing Research Center

- The Pennsylvania Housing Research Center (PHRC) provides and facilitates education, training, innovation, research, and dissemination to the residential construction industry for the purpose of improving the quality and affordability of housing.
- Educational programs and publications by the PHRC address a wide range of topics relevant to the home building industry and are designed to reach a diverse audience: builders, code officials, remodelers, architects, developers, engineers, planners, landscape architects, local government officials, educators, etc. to provide professional development and continuing education

 @PHRCPennState





2



Program Description

This webinar will explore the latest updates in the Pennsylvania Uniform Construction Code (UCC) specifically concerning continuous exterior insulation. You'll learn about the key changes, compliance strategies, and best practices to optimize energy efficiency and meet the new energy standards. Whether you're a contractor, architect, or building professional, this webinar will provide essential insights to keep your projects up-to-date and in compliance with the new requirements.

7

Learning Objectives

1. Understand UCC Code Changes for Pennsylvania.
2. Identify compliance strategies to meet the new UCC code changes for continuous insulation
3. Gain insights into the best practices for installing continuous insulation.
4. How does continuous insulation enhance energy efficiencies in a home.



8

Fundamental Questions

- What is the PA UCC?
- What is changing?
- When is it changing?
- Where do I go for more information?



9

What Is the PA UCC?

- **What is the PA Uniform Construction Code?**
 - Pennsylvania's statewide building code
- **How does the PA UCC relate to ICC codes?**
 - The PA UCC Administration and Enforcement regulation adopts ICC codes on a triennial basis, per Act 36 of 2017.
 - The previous adoption of the 2018 codes, with amendments, took effect on February 14, 2022.



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What Is the PA UCC? (Cont.)


• Are the ICC codes adopted word-for-word, or are amendments allowed?

- Two types of amendments will impact enforceable codes:

1. Statutory amendments


2. Amendments by the PA UCC Review & Advisory Council (RAC)


11

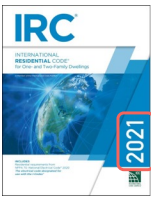


11


New “Base” Code








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12


PA UCC Residential Code Summary




+

Statutory Amendments

+



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3

When Is It Changing?

- Phase-in period
 - “Where a design or construction contract was signed before the effective date [7/13/25] of regulations for a subsequent Uniform Construction Code or International Fuel Gas Code issued under this act, the permit may be issued under the Uniform Construction Code or International Fuel Gas Code in effect at the time the design or construction contract was signed if the permit is applied for within six months of the effective date of the regulation [1/12/26] or the period specified by a municipal ordinance, whichever is less.”

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Act 36 of 2017




14

When Is It Changing?

- Anticipated effective date for PA UCC code changes:

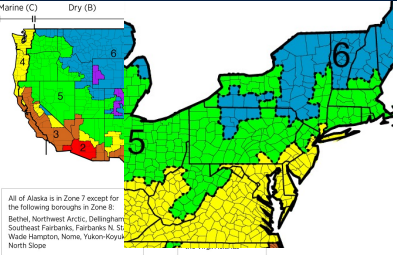
July 13, 2025

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15

2018 Climate Zone Map (3 Climate Zones in Pennsylvania)



16

Image Source: <https://www.pnh.gov/images/2018-climate-zone-map>



16

2018 IRC Table N1102.1.2

Table N1102.1.2 (R402.1.2)

INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT *

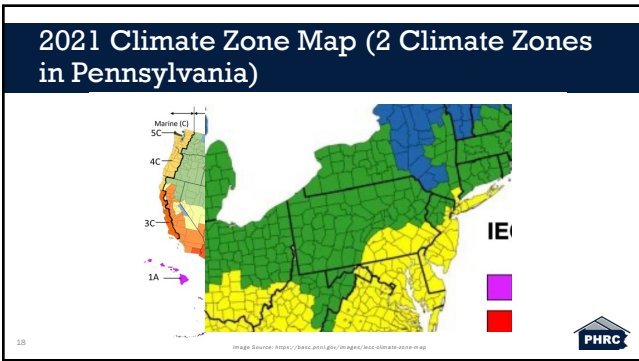
Climate Zone	Fenestration U-Factor	SKYLIGHT* U-FACTOR	GLAZED FENESTRATION SHGC**	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT* WALL R-VALUE	SLAB* R-VALUE & DEPTH	CRAWL SPACE* WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.55	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13 + 5"	8/13	19	5/13	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13 + 5"	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.30	0.55	NR	49	20 or 13 + 5"	13/17	30*	15/19	10, 2 ft	15/19
6	0.30	0.55	NR	49	20 + 5" or 13 + 10"	15/20	30*	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20 + 5" or 13 + 10"	19/21	38*	15/19	10, 4 ft	15/19

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Source: International Code Council (ICC), (2017), 2018 International Residential Code, Country Club Hill, IL

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2021 Table N1102.1.3 – Insulation and Fenestration Table

TABLE R402.1.3 (N1102.1.3)

INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT*

CLIMATE ZONE	FENESTRATION U-FACTOR*	SKYLIGHT* U-FACTOR	GLAZED FENESTRATION SHGC**	CEILING R-FACTOR	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT* WALL R-VALUE	SLAB* R-VALUE & DEPTH	CRAWL SPACE* WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.55	0.25	38	13	4/6	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13 + 5"	8/13	19	5/13	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13 + 5"	8/13	19	10/13	10, 2ft	10/13
5 and Marine 4	0.30	0.55	NR	49	20 + 5" or 13 + 10"	13/17	30*	15/19	10, 4ft or 15, 3ft	15/19
6	0.30	0.55	NR	49	20 + 5" or 13 + 10"	15/20	30*	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20 + 5" or 13 + 10"	19/21	38*	15/19	10, 4 ft	15/19

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Source: <https://www.iccsd.org/insulation-and-fenestration-requirements>

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What is CEI ?

Continuous Exterior Insulation (CI) is a layer of thermal insulation installed on the exterior side of a building's wall assembly, without any gaps or breaks (i.e., it's *continuous* across all structural members like studs and headers).

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Key Characteristics

- Installed on the outside of the building's structural frame.
- Covers studs, headers, sills, and other thermal bridges.
- Usually placed between the sheathing and cladding, or sometimes directly over framing.
- Helps eliminate thermal bridging (where heat escapes through framing elements that aren't insulated).

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21

Benefits of CEI

- **Reduces thermal bridging**, better energy performance
- **Improves envelope performance**, making a more comfortable home.
- **Moisture/Vapor management**, condensation mitigation.

22



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Reducing Thermal Bridging




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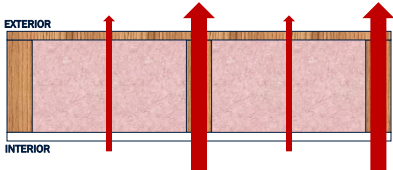
Thermal Bridging


- **Material with lower R-Value allowing heat to pass through assembly with much higher overall R-Value**
- **Example: Wood stud wall**
 - Insulation (cavity) = R-21
 - 2x6 stud ~ R-6.88

24

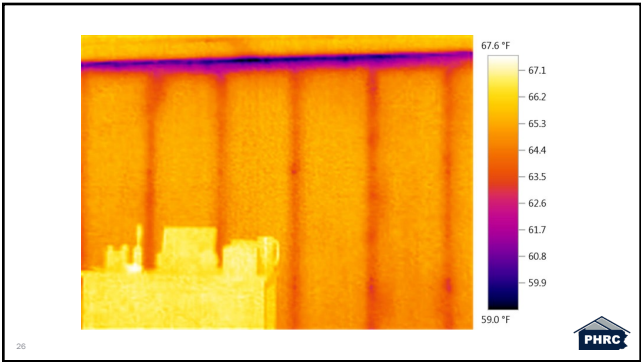
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Thermal Bridging



25

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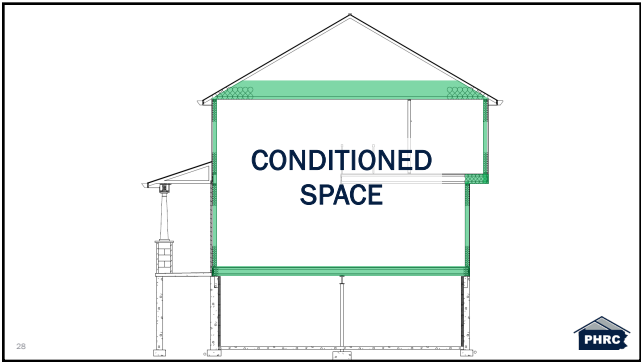


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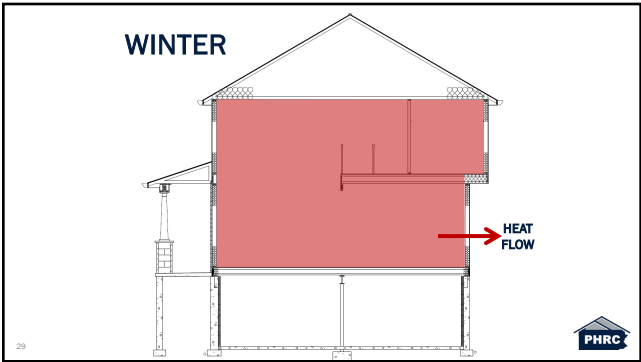
Heat Flow

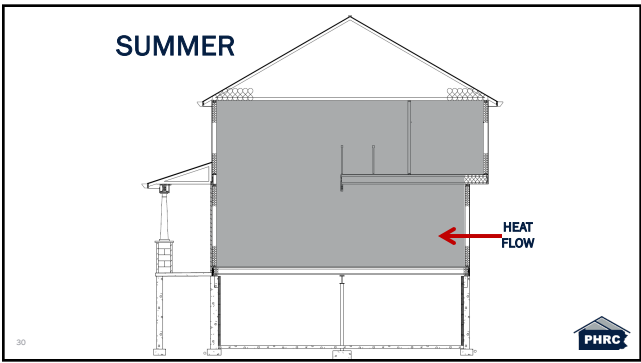
- From hot to cold (high concentration to low concentration)
- Conduction
 - Heat flow through a substance or material by direct contact
 - Conduction takes place within a single material or between materials in direct contact
- Convection
- Radiation

27



28





Conductive Heat Loss

• Can you stop heat flow?

$Q = U \times A \times \Delta T$

- Answer: **No**

- Conductive heat flow can be managed, but not eliminated

Therefore

- Thermal bridging can be managed, but not eliminated

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Managing Heat

- When a thermal gradient is present, heat flow cannot be stopped, but can be managed by installing thermal insulation
- Heat will always flow through path of least resistance

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Light-Frame Thermal Bridging

- Wood studs serve as primary thermal bridge in low-rise light-frame construction
 - Others: Slab edge, fenestration, mechanical penetrations, etc.
- Framing factor defines the proportion of framing in an insulated wall system (includes studs, jacks, kings, headers, top / bottom plates)
 - Typical framing factor = 25%

33



33

How Do We Manage Thermal Bridging?

1. Provide a thermal break

- Thermal Break Definition: An element of low conductivity placed between two conductive materials to limit heat flow
 - Source: DictionaryofConstruction.com
- Exterior foam insulation

2. Reduce the number of thermal bridge elements

- Advanced framing techniques
 - Reducing the framing factor to 20% or lower

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34

Moisture/Vapor Management

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Condensation in wall assembly

Outside Inside

0°F 70°F

Dewpoint (50% RH, 70°F)

Location of condensation and frost

Exterior sheathing

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Vapor Retarders & Continuous Insulation

38

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2021 IRC R702.7 – Vapor Retarders

- Vapor retarder materials shall be classified in accordance with Table R702.7(1). A vapor retarder shall be provided on the interior side of frame walls of the class indicated in Table R702.7(2), including compliance with Table R702.7(3) or R702.7(4) where applicable. An approved design using accepted engineering practice for hygrothermal analysis shall be permitted as an alternative. The climate zone shall be determined in accordance with Section N1101.7.
- Exception:
 - Basement walls
 - Below-grade portions of any wall
 - Construction where accumulation, condensation or freezing of moisture will not damage the materials.
 - A vapor retarder shall not be required in Climate Zones 1, 2 and 3.

39

Source: International Code Council (ICC), (2020), 2021 International Residential Code, Country Club Hill, IL




2021 IRC R702.7 – Vapor Retarders

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 - Below-grade portions of any wall
 - Construction where accumulation, condensation or freezing of moisture will not damage the materials.
 - A vapor retarder shall not be required in Climate Zones 1, 2 and 3.

40

Source: International Code Council (ICC), (2020), 2021 International Residential Code, Country Club Hill, IL




2021 IRC R702.7(1) – Vapor Retarder Materials and Classes

CLASS	ACCEPTABLE MATERIALS
I	Sheet polyethylene, vapor-retarded gypsum board or other approved materials with vapor-retarding test equal to 0.1.
II	Rigid foam thermoplastic, vapor-retarder panel or other approved materials applied in accordance with the manufacturer's installation instructions for a joint rating greater than 0.1 and less than or equal to 0.5.
III	Latex paint, enamel paint or other approved materials applied in accordance with the manufacturer's installation instructions for a joint rating greater than 0.5 and less than or equal to 1.0.

41

Source: International Code Council (ICC), (2020), 2021 International Residential Code, Country Club Hill, IL




2021 IRC R702.7 – Vapor Retarders

- Vapor retarder materials shall be classified in accordance with Table R702.7(1). **A vapor retarder shall be provided on the interior side of frame walls of the class indicated in Table R702.7(2), including compliance with Table R702.7(3) or R702.7(4) where applicable. An approved design using accepted engineering practice for hygrothermal analysis shall be permitted as an alternative. The climate zone shall be determined in accordance with Section N1101.7.**
- Exception:
 - Basement walls
 - Below-grade portions of any wall
 - Construction where accumulation, condensation or freezing of moisture will not damage the materials.
 - A vapor retarder shall not be required in Climate Zones 1, 2 and 3.

42

Source: International Code Council (ICC), (2020), 2021 International Residential Code, Country Club Hill, IL



42

2021 IRC R702.7(2) – Vapor Retarder Options


TABLE R702.7(2) VAPOR RETARDER OPTIONS

CLIMATE ZONE	VAPOR RETARDER CLASS		
	CLASS I*	CLASS II*	CLASS III
1, 2	Not Permitted	Not Permitted	Permitted
3, 4 except Marine 4	Not Permitted	Permitted†	Permitted
5, 6 except Marine 5	Permitted	Permitted	Permitted

* Class I vapor retarders shall have permeance greater than 1 unit after exposure to 85,000 hPa differential pressure for 96 hours and shall comply with 1.2. Class II vapor retarders shall have a permeance greater than 1 unit after exposure to 85,000 hPa differential pressure for 96 hours and shall comply with 1.2. Class III vapor retarders shall have a permeance greater than 1 unit after exposure to 85,000 hPa differential pressure for 96 hours and shall comply with 1.2. † Class II vapor retarders shall have a permeance greater than 1 unit after exposure to 85,000 hPa differential pressure for 96 hours and shall comply with 1.2. ‡ Class III vapor retarders shall have a permeance greater than 1 unit after exposure to 85,000 hPa differential pressure for 96 hours and shall comply with 1.2.

43

Source: International Code Council (ICC), (2020), 2021 International Residential Code, Country Club Hill, IL



43

2021 Table N1102.1.3 – Insulation and Fenestration Table


TABLE R402.1.3 (N1102.1.3)
INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT*

CLIMATE ZONE	FENESTRATION U-FACTOR†	SKYLIGHT† U-FACTOR	GLAZED FENESTRATION SHGC†‡	CEILING R-FACTOR	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT† WALL R-VALUE	SLAB† R-VALUE & DEPTH	CRAWL SPACE† WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.55	0.25	38	13	4/5	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13 + 9"	8/13	19	15/13"	0	5/13
4 except Marine 4	0.32	0.55	0.40	49	20 or 13 + 9"	8/13	19	10/13	10, 2ft	10/13
5 and Marine 4	0.30	0.55	NR	49	23 or 13 + 7.5" or 20 + 3.5"	13/17	30"	15/19	10, 4ft or 15, 3ft	15/19
6	0.30	0.55	NR	49	20 + 5" or 13 + 10"	15/20	30"	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20 + 5" or 13 + 10"	19/21	38"	15/19	10, 4 ft	15/19

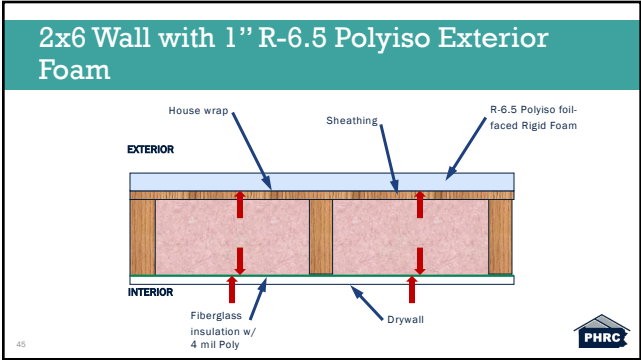
* Source: <https://www.iccsd.org/intersections/intersections>
† Permitted for use with 2x4 or 2x6 framing. ‡ Permitted for use with 2x4 or 2x6 framing.

44

Source: International Code Council (ICC), (2020), 2021 International Residential Code, Country Club Hill, IL



44



45

2021 IRC R702.7(2) – Vapor Retarder Options

TABLE R702.7(2) VAPOR RETARDER OPTIONS

CLIMATE ZONE	VAPOR RETARDER CLASS		
	CLASS I*	CLASS II*	CLASS III
1, 2	Not Permitted	Not Permitted	Permitted
3, 4 (except Marine 4)	Not Permitted	Permitted†	Permitted
5, 6, 7, 8, 9, 10	Permitted†	Permitted†	Not Permitted (See Table R702.7(3))

* Glass and other materials with vapor permeance greater than 1 perm are permitted in Climate Zones 3, 4, 5, 6, 7, 8, 9, and 10. Permeance shall be based on the interior side of the vapor retarder.
† Glass and other materials with vapor permeance greater than 1 perm are permitted in Climate Zones 3, 4, 5, 6, 7, 8, 9, and 10. Permeance shall be based on the exterior side of the vapor retarder.
‡ Glass and other materials with vapor permeance greater than 1 perm are permitted in Climate Zones 3, 4, 5, 6, 7, 8, 9, and 10. Permeance shall be based on the exterior side of the vapor retarder.
§ Glass and other materials with vapor permeance greater than 1 perm are permitted in Climate Zones 3, 4, 5, 6, 7, 8, 9, and 10. Permeance shall be based on the exterior side of the vapor retarder.
¶ Glass and other materials with vapor permeance greater than 1 perm are permitted in Climate Zones 3, 4, 5, 6, 7, 8, 9, and 10. Permeance shall be based on the exterior side of the vapor retarder.
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Source: International Code Council (ICC), (2020), 2021 International Residential Code, Country Club Hill, IL.

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2021 IRC R702.7 – Vapor Retarders

Vapor retarder materials shall be classified in accordance with Table R702.7(1). A vapor retarder shall be provided on the interior side of frame walls of the class indicated in Table R702.7(2), **including compliance with Table R702.7(3) or R702.7(4) where applicable. An approved design using accepted engineering practice for hygrothermal analysis shall be permitted as an alternative. The climate zone shall be determined in accordance with Section N1101.7.**

- Exception:
 - Basement walls
 - Below-grade portions of any wall
 - Construction where accumulation, condensation or freezing of moisture will not damage the materials.
 - A vapor retarder shall not be required in Climate Zones 1, 2 and 3.

Source: International Code Council (ICC), (2020), 2021 International Residential Code, Country Club Hill, IL.

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2021 IRC R702.7(3) – Class III Vapor Retarders for CZ5

TABLE R702.7(3) CLASS III VAPOR RETARDERS

III

5

Vented cladding over wood structural panels.

Vented cladding over fiberboard.

Vented cladding over gypsum.

Continuous insulation with R-value ≥ 5 over 2×4 wall.

Continuous insulation with R-value ≥ 7.5 over 2×6 wall.

a. Vented cladding shall include vinyl, polypropylene, or horizontal aluminum siding, brick veneer with a clear airspace as specified in Table R701.8.6(1), and other non-vented claddings.

b. The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class III vapor retarders. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of Chapter 11.

4 except Marine

0.32

0.55

0.40

49

20 or 13 + 8"

25 or 13 + 7.5" or 20 + 3.8"

8/13

19

10/13

10, 2ft

10/13

5 and Marine 4

0.30

0.55

NR

49

20 or 13 + 8"

25 or 13 + 7.5" or 20 + 3.8"

13/17

30^b

15/19

10, 4ft or 15, 3ft

15/19

48

Source: International Code Council (ICC). (2020). 2021 International Residential Code, County Club #61, IL.

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2021 IRC R702.7(4) – Continuous Insulation with Class II Vapor Retarder

TABLE R702.7(4) CONTINUOUS INSULATION WITH CLASS II VAPOR RETARDER

4, 5 and 6

Continuous insulation with R-value ≥ 3 over 2×4 wall.

Continuous insulation with R-value ≥ 5 over 2×6 wall.

a. The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class II vapor retarders. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of Chapter 11.

4 except Marine

0.32

0.55

0.40

49

20 or 13 + 8"

25 or 13 + 7.5" or 20 + 3.8"

8/13

19

10/13

10, 2ft

10/13

5 and Marine 4

0.30

0.55

NR

49

20 or 13 + 8"

25 or 13 + 7.5" or 20 + 3.8"

13/17

30^b

15/19

10, 4ft or 15, 3ft

15/19

49

Source: International Code Council (ICC). (2020). 2021 International Residential Code, County Club #61, IL.

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Vapor Drive in Winter

House wrap

Cold / Dry

Sheathing

EXTERIOR

INTERIOR

Fiberglass insulation w/ kraft facing (Class II)

Drywall

Warm / Humid

50

Source: International Code Council (ICC). (2020). 2021 International Residential Code, County Club #61, IL.

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2021 Table N1102.1.3 – Insulation and Fenestration Table

TABLE R402.1.3 (N1102.1.3)
INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT*

CLIMATE ZONE	FENESTRATION U-FACTOR ^a	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{c,d}	CEILING R-FACTOR	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE ^e	FLOOR R-VALUE	BASEMENT ^f WALL R-VALUE	SLAB ^g R-VALUE & DEPTH	CRAWL SPACE ^h WALL R-VALUE
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2	0.40	0.65	0.25	38	13	4/5	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13 + 5"	8/13	19	5/13 ⁱ	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13 + 5"	8/13	19	10/13	10, 2ft	10/13
5 and Marine 4	0.30	0.55	NR	49	23 or 13 + 7.5" or 20 + 3.5"	13/17	30 ^f	15/19	10, 4ft or 15, 3ft	15/19
6	0.30	0.55	NR	49	20 + 5" or 13 + 10"	15/20	30 ^f	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20 + 5" or 13 + 10"	19/21	38 ^f	15/19	10, 4 ft	15/19

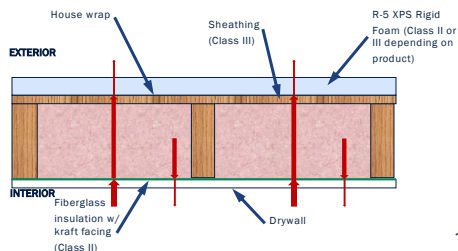
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Source: <https://www.phrc.org/Portals/0/2021%20Energy%20Code%20Book.pdf>



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2x6 Wall with 1" R-5 XPS



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More Restrictive Throttle

- 1" Rigid XPS = 1.5 perm max/inch; Class III
- Kraft faced batt insulation = 1 perm; Class II
- House wrap = 11-54 perm; Vapor Open

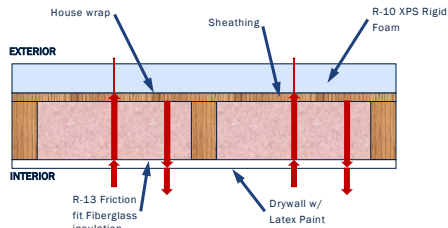
Is this good?
Remember "Throttle"
Code Compliant?

53



53

2x4 Wall with 2" R-10 XPS Exterior Foam



54

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Potential for Double Class II Vapor Retarder

- 2" R-10 Rigid XPS = .7 perm max./Inch; Class II
- R-13 Friction Fit batt insulation = N/A
- Drywall with Latex Paint = 6 perm; Class III
- House wrap = 11-54 perm; Vapor Open

Is this good?

Remember "Throttle"

>1/3 (R-7.6) of the total insulation is on the exterior which can reduce the risk of condensation

55

55

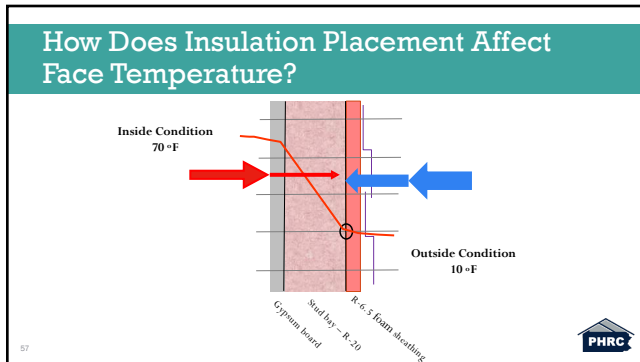
Drying Potential

- Assuming an assembly will get wet, will it be able to dry?

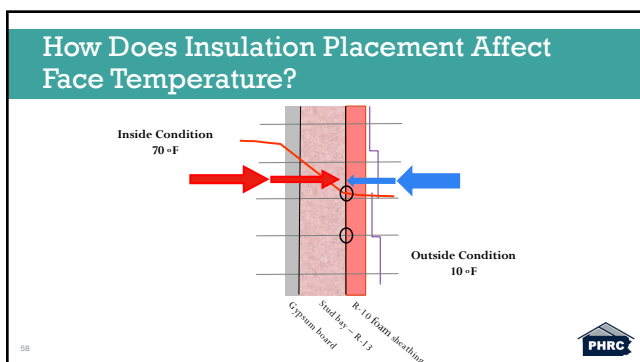
- Through proper source control, occupant behavior, and assembly design, all building assemblies *must be designed so that they can dry* to the interior, exterior, or both.

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What material should you use for CEI?

How will the addition of CEI affect your current wall assembly detail?

- Window details
- Siding details
- Ability to be exposed to the elements before degrading.
- Difficulty of installation
- cost

Determine your project goals for CEI and how it's characteristics will affect your project.

- R-Value
- Permiability
- Air-barrier
- Water control
- Fire rating
- Health and Environmental


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Common Materials Used for CEI

- Rigid foam boards (e.g., XPS, EPS, polyiso)
- Mineral wool boards
- High-performance insulated sheathing (like ZIP R-sheathing)

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Extruded Polystyrene (XPS)

- **Common uses**
 - Sheathing
 - Under-slab insulation
- **Typical thermal resistance:** R-5 per inch
- **Vapor permeability:** 1.1 perms (Class III vapor retarder)
- **Durability**
 - Avoid prolonged exposure to UV
 - Matrix is stronger than EPS beads. More forgiving on the jobsite.

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Expanded Polystyrene (EPS)

- **Common uses**
 - Insulated concrete forms
 - Insulated concrete block
 - SIPs
- **Typical thermal resistance:** R-4 per inch
- **Vapor permeability:** 5 perms (Class III vapor retarder)
- **Durability**
 - Avoid prolonged exposure to UV
 - Requires care when cutting and handling (fragile edges)


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Polyisocyanurate (ISO) (Polyiso)

- **Common uses**
 - Sheathing
- **Typical thermal resistance:** R-6.5 per inch
- **Vapor permeability:**
 - < 1.0 perms with fiberglass facing (Class II vapor retarder)
 - 0.03 perms with foil facing (Class I vapor retarder)
 - Class III vapor retarder on interior of wall assembly? R601.3.1
- **Durability**
 - Facing can be more resistant to UV
 - Matrix is stronger than EPS beads. More forgiving on the jobsite.




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Note: Vapor permeability varies with material thickness. Values listed are based on 1 inch.




Wood-Fiber Board

- **Common uses**
 - Exterior continuous insulation
- **Typical thermal resistance:** R 3.7 per inch
- **Vapor permeability:**
 - Just Like Mineral wool board insulation Woo-Fiber Board, when used in an exterior wall, is generally considered highly vapor-permeable.
- **Sustainable Product:**
 - Wood fiber boards are made from waste wood, and is a carbon negative product.
 - Uses far, fewer potentially harmful chemicals that are found in other forms of board insulation.




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Note: Vapor permeability varies with material thickness. Values listed are based on 1 inch.




Rigid Mineral Wool Insulation Board

- **Common uses**
 - Exterior continuous insulation
- **Typical thermal resistance:** R 4-5 per inch
- **Vapor permeability:**
 - Mineral wool board insulation, when used in an exterior wall, is generally considered highly vapor-permeable, with a permeability rating of around 30 to 35 perms
- **Fire and Pest Resistant:**
 - It's a non-combustible material that offers excellent fire protection.
 - Mineral is not appealing to pests like termites.



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Note: Vapor permeability varies with material thickness. Values listed are based on 1 inch.





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Installation Details

- Is your continuous exterior insulation part of your fore Control layers, air, water, vapor, thermal.
- What type of window are you going to be installing? Flanged or flangeless.
- Pre-planning your details for any penetrations within your building envelope.

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CEI with a Flanged Window

Flanged windows are the most common and best known style of windows installed in residential construction. There are some additional steps involved with prepping the wall assembly for installation.

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Flangeless Windows

- The less common type of window installation is the flangeless windows. The benefit to these is they don't have to be installed on the very exterior side of your window opening they can be set deeper into the wall cavity.

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“Innie” Window Sill Detail

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“Innie” Window Head Detail

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