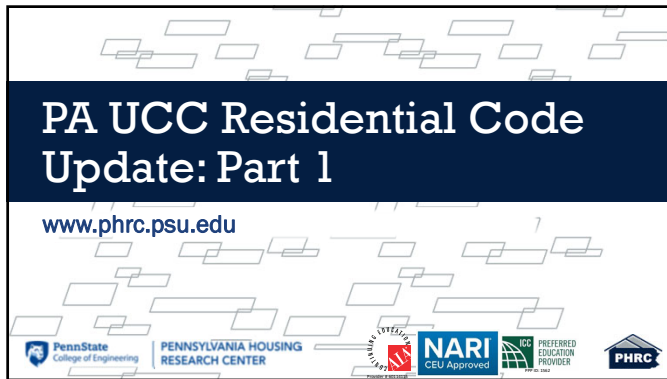




**PA UCC Residential Code Update: Part 1**

[www.phrc.psu.edu](http://www.phrc.psu.edu)







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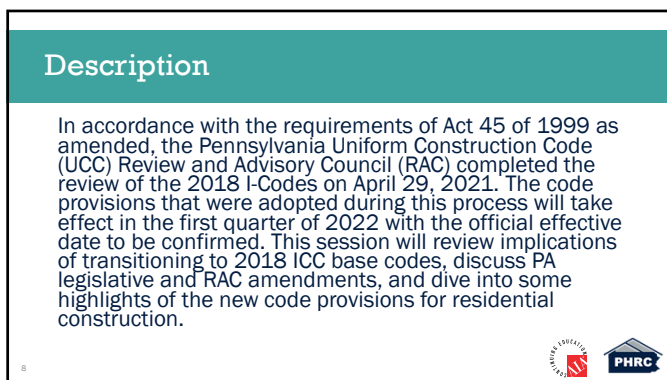
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### Description

In accordance with the requirements of Act 45 of 1999 as amended, the Pennsylvania Uniform Construction Code (UCC) Review and Advisory Council (RAC) completed the review of the 2018 I-Codes on April 29, 2021. The code provisions that were adopted during this process will take effect in the first quarter of 2022 with the official effective date to be confirmed. This session will review implications of transitioning to 2018 ICC base codes, discuss PA legislative and RAC amendments, and dive into some highlights of the new code provisions for residential construction.




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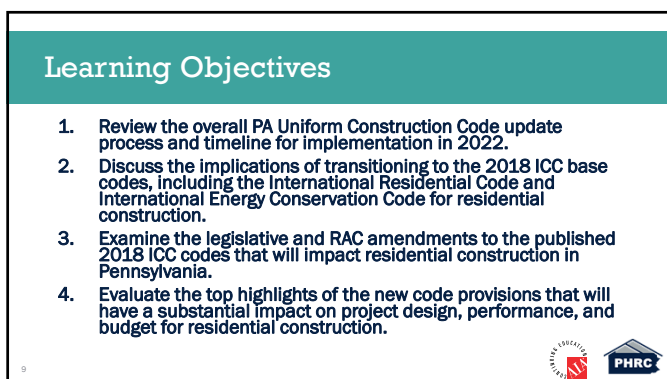
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### Learning Objectives

1. Review the overall PA Uniform Construction Code update process and timeline for implementation in 2022.
2. Discuss the implications of transitioning to the 2018 ICC base codes, including the International Residential Code and International Energy Conservation Code for residential construction.
3. Examine the legislative and RAC amendments to the published 2018 ICC codes that will impact residential construction in Pennsylvania.
4. Evaluate the top highlights of the new code provisions that will have a substantial impact on project design, performance, and budget for residential construction.




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## Fundamental Questions

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



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## What is the UCC?

- **What is the Uniform Construction Code?**
  - Pennsylvania's statewide building code
- **How does the UCC relate to ICC codes?**
  - The UCC Administration and Enforcement regulation adopts ICC codes on a triennial basis, per Act 36 of 2017.
  - The previous adoption of the 2015 codes, with amendments, took effect on October 1, 2018.



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## What is the UCC (continued)?

- **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 UCC Review & Advisory Council (RAC)



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## Review: Code Review Process

- 8/31/2017 - ICC Officially Publishes 2018 ICC Family of Codes
- RAC Initiate PA Review of 2018 ICC Family of Codes (vote on items not changed to reviewed)
- RAC Opens Public Comment on 2018 ICC Family of Codes/Public Comment Closed
- TAC Committee Applications are Opened/TAC Committee Applications are Closed
- RAC Receives Public Comment and Assigns Comments to TAC's
- TAC Final Reports are Posted for Public Review
- Three (3) RAC Public Hearings (East/Harrisburg/West)
- Five (5) RAC Meetings to Deliberate
- 4/22/2021 - Draft Report Presented to the RAC
- 4/29/2021 - Final Report Approved by RAC
- 4/29/2021 - Final Report Submitted to Dept. L&I
- 1st 2022 - Quarter Go Live

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## What is Changing?



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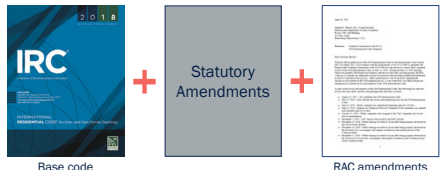
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## UCC Residential Code Summary



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## List of Statutory Amendments

- What are statutory amendments?
- Full list of statutory amendments to the UCC:
  - <https://www.dli.pa.gov/ucc/Pages/Regulations-and-Statutes.aspx>



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## Statutory Amendments

- **Act 13 of 2004:** Stairway tread & riser requirements
- **Act 92 of 2004:** Smoke alarm requirements
- **Act 108 of 2006:** Siding installation, lumber grading, & coal-fired boilers
- **Act 9 of 2007:** Concrete & masonry foundations
- **Act 1 of 2011:** Log walls, fire sprinklers, fire protection of floors, & wall bracing



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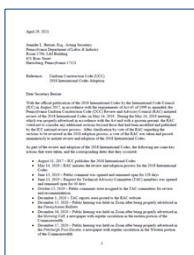
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## UCC RAC Report



<https://www.dli.pa.gov/ucc/Documents/ICC-Code-Review-2018-Final-Report.pdf>



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## What does the RAC Report Address?

- Code adoptions for all UCC codes
- Specific amendments resulting from RAC review process (with amended language included)
- Note: PHRC Webinar from June 3, 2021 covers this information in detail
  - [http://bit.ly/PHRCWebinar\\_PAUCC2018ICC](http://bit.ly/PHRCWebinar_PAUCC2018ICC)



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## When is it Changing?

- Anticipated effective date for UCC code changes:

**February 14, 2022**



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## When is it Changing?

- Phase-in period
  - "Where a design or construction contract was signed **before the effective date [2/14/22]** 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 or the period specified by a municipal ordinance, whichever is less."

[Act 36 of 2017](#)



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## More Questions & Clarification

- **What is defined as a contract?**
  - "design or construction contract"
- **Important dates:**
  - 2/14/22: Effective date of regulations
    - Contract signed on or after 2/14/22 is subject to new (2018) codes
  - 8/13/22: Last day of phase-in period



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## General Scenarios

- **Contract signed before 2/14/22**
  - Can apply for permit before 8/14/22 and be subject to previous (2015 base) UCC codes
  - If permit application submitted on or after 8/14/22, subject to new (2018 base) codes
- **Contract signed after 2/14/22**
  - Subject to new (2018 base) codes



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## Where Do I Go for More Information?

- **PA UCC RAC Report:**
  - <https://www.dli.pa.gov/ucc/Documents/ICC-Code-Review-2018-Final-Report.pdf>
- **2018 IRC**
  - <https://codes.iccsafe.org/content/IRC2018>
- **2018 IECC**
  - <https://codes.iccsafe.org/content/iecc2018>



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## UCC Energy Code Summary



Chapter 11

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Residential Provisions

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PA Alternative Residential Energy Provisions

Coming Soon!



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## PA Alternative Residential Energy Provisions

- **Compliance allowed by UCC Title 34, Chapter 403**
- **Intent:**
  - simpler to build to and easier to enforce
  - more rational and flexible
  - focused on Pennsylvania in terms of climatic and other conditions; and,
  - equivalent to the provisions of the International Energy Conservation Code (IECC)
- **Prescriptive (vs. requiring modeling)**
- **Allows trade-offs**



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## PA Alternative

- **Will the PA Alternative Residential Energy Provisions be updated?**
- **When will this be available?**



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## What are the Big Changes?

1. Stucco & stone wall assemblies
2. Insulation & fenestration requirements
3. Blower door testing target

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## 1. Stucco & Stone Assemblies

- Exterior plaster provisions in the IRC were heavily modified in the 2021 version.
- These provisions were adopted by the UCC RAC to be included with the 2018 code adoption.

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## Note on Section References

- When a specific section is referenced in provisions that were adopted by the RAC out of an alternative non-2018 ICC code, and the referenced section is not one of the specifically adopted sections, refer to the **base code**.

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## 2021 IRC R703.7 Exterior Plaster (Stucco)

- Installation of exterior plaster shall be in compliance with ASTM C926-2018B, ASTM C1063-2018B and the provisions of this code.

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<https://www.dli.pa.gov/uzr/Documents/ICC-Code-Review-2018-Final-Report.pdf>


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## 2021 IRC R703.7.1 Lath

- Lath and lath attachments shall be of corrosion-resistant materials in accordance with ASTM C1063-2018B. Expanded metal, welded wire, or woven wire lath shall be attached to wood framing members or furring. Where the exterior plaster is serving as wall bracing in accordance with [Table R602.10.4](#), the lath shall be attached directly to framing. The lath shall be attached with 1-1/2-inch-long (38 mm), 11-gage nails having a 7/16-inch (11.1 mm) head, or 7/8-inch-long (22.2 mm), 16-gage staples, spaced not more than 7 inches (178 mm) on center along framing members or furring and not more than 24 inches (610 mm) on center between framing members or furring, or as otherwise approved. Additional fastening between wood framing members shall not be prohibited. Lath attachments to cold-formed steel framing or to masonry, stone, or concrete substrates shall be in accordance with ASTM C1063-2018B. Where lath is installed directly over foam sheathing, lath connections shall also be in accordance with [Section R703.15](#), [R703.16](#) or [R703.17](#). Where lath is attached to furring installed over foam sheathing, the furring connections shall be in accordance with [Section R703.15](#), [R703.16](#) or [R703.17](#).

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<https://www.dli.pa.gov/uzr/Documents/ICC-Code-Review-2018-Final-Report.pdf>


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## 2021 IRC R703.7.1 Lath

- Exception: Lath is not required over masonry, cast-in-place concrete, precast concrete or stone substrates prepared in accordance with ASTM C1063-2018B.

- **703.7.1.1 Furring.** Where provided, furring shall consist of wood furring strips not less than 1 inch by 2 inches (25 mm by 51 mm), minimum 3/4-inch (19 mm) metal channels, or self-furring lath, and shall be installed in accordance with ASTM C1063-2018B. Furring shall be spaced not greater than 24 inches (600 mm) on center and, where installed over wood or cold-formed steel framing, shall be fastened into framing members.

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<https://www.dli.pa.gov/uzr/Documents/ICC-Code-Review-2018-Final-Report.pdf>


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## 2021 IRC R703.7.2 Plaster

- Plastering with cement plaster shall be in accordance with ASTM C926-2018B. Cement materials shall be in accordance with one of the following:
  - Masonry cement conforming to ASTM C91-2018A, Type M, S or N.
  - Portland cement conforming to ASTM C150-2018, Type I, II or III.
  - Blended hydraulic cement conforming to ASTM C595-2018, Type IP, IS (< 70), IL, or IT (S < 70).
  - Hydraulic cement conforming to ASTM C1157-11, Type GU, HE, HS, HS or MH.
  - Plastic (stucco) cement conforming to ASTM C1328-12.
- Plaster shall be not less than three coats where applied over metal lath or wire lath and shall be not less than two coats where applied over masonry, concrete, pressure preservative-treated wood or decay-resistant wood as specified in Section R317.4 or gypsum backing. If the plaster surface is completely covered by veneer or other facing material or is completely concealed, plaster application need be only two coats, provided the total thickness is as set forth in Table R702.1(1).
- On wood-frame construction with an on-grade floor slab system, exterior plaster shall be applied to cover, but not extend below, lath, paper and screed.
- The proportion of aggregate to cementitious materials shall be as set forth in Table R702.1(3).

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<https://www.dli.pa.gov/uzr/Documents/ICC-Code-Review-2018-Final-Report.pdf>


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## 2015 IRC R703.7.3 Water-Resistive Barriers

- Water-resistive barriers shall be installed as required in Section R703.2 and, where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing (installed in accordance with Section R703.4) intended to drain to the water-resistive barrier is directed between the layers.
  - Exception: Where the water-resistive barrier that is applied over wood-based sheathing has a water resistance equal to or greater than that of 60-minute Grade D paper and is separated from the stucco by an intervening, substantially nonwater-absorbing layer or designed drainage space.

36

Source: International Code Council (ICC), (2014), 2015 International Residential Code, Country Club Hill, IL



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## 2021 IRC R703.7.3 Water-Resistive Barriers

- Water-resistive barriers shall be installed as required in Section R703.2 and, where applied over wood-based sheathing, shall comply with Section R703.7.3.1 or R703.7.3.2.

**\*R703.2 = 2018 provisions**

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<https://www.dli.pa.gov/uzr/Documents/ICC-Code-Review-2018-Final-Report.pdf>


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## 2018 IRC R703.2 Water-Resistive Barrier

- One layer of No. 15 asphalt felt, free from holes and breaks, complying with ASTM D226 for Type 1 felt or other approved water-resistive barrier shall be applied over studs or sheathing of all exterior walls. No.15 asphalt felt shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm). Where joints occur, felt shall be lapped not less than 6 inches (152 mm). Other approved materials shall be installed in accordance with the water-resistive barrier manufacturer's installation instructions. The No. 15 asphalt felt or other approved water-resistive barrier material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1.

38

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



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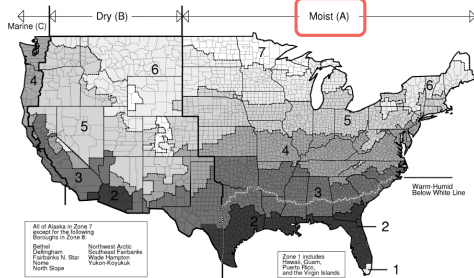
## 2021 IRC R703.7.3.1 Dry Climates

- In Dry (B) climate zones indicated in Figure N1101.7, water-resistive barriers shall comply with one of the following:
  - The water-resistive barrier shall be two layers of 10-minute Grade D paper or have a water resistance equal to or greater than two layers of a water-resistive barrier complying with ASTM E2556-10, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane. Flashing installed in accordance with Section R703.4 and intended to drain to the water-resistive barrier shall be directed between the layers.
  - The water-resistive barrier shall be 60-minute Grade D paper or have a water resistance equal to or greater than one layer of a water-resistive barrier complying with ASTM E2556-10, Type II. The water-resistive barrier shall be separated from the stucco by a layer of foam plastic insulating sheathing or other non-water-absorbing layer, or a designed drainage space.

39

<https://www.icl.pa.gov/icc/Documents/ICC-Code-Review-2018-Final-Report.pdf>


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



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## 2021 IRC R703.7.3.2 Moist or Marine Climates

- In the Moist (A) or Marine (C) climate zones indicated in Figure N1101.7, water-resistive barriers shall comply with one of the following:

1. In addition to complying with Section R703.7.3.1, a space or drainage material not less than 3/16 inch (5 mm) in depth shall be added to the exterior side of the water-resistive barrier.
2. In addition to complying with Section R703.7.3.1, Item 2, drainage on the exterior of the water-resistive barrier shall have a drainage efficiency of not less than 90 percent, as measured in accordance with ASTM E2273-2018 or Annex A2 of ASTM E2925-17.

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<https://www.dli.pa.gov/uzr/Documents/ICC-Code-Review-2018-Final-Report.pdf>


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## What is a Rainscreen?

- A rainscreen is a **system** that provides an air space within a wall assembly to promote drainage and drying of that assembly

- Accelerates the evaporation of undrained moisture behind exterior cladding
- Helps to dry wall that accumulates moisture seasonally

- Common rainscreen products / systems

- Furring strips
- Three-dimensional mesh

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## Types of Rainscreen Systems



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## How is Stone Impacted?

- **R703.12 Adhered masonry veneer installation**
- **R703.12.3 Water-resistive barrier.**
  - A water-resistive barrier shall be installed as required by Section R703.2 and shall comply with the requirements of **Section R703.7.3.**

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## 2021 IRC R703.7.3.2 Moist or Marine Climates

- **In the Moist (A) or Marine (C) climate zones indicated in Figure N1101.7, water-resistive barriers shall comply with one of the following:**
  1. In addition to complying with Section R703.7.3.1, a space or drainage material not less than 3/16 inch (5 mm) in depth shall be added to the exterior side of the water-resistive barrier.
  2. In addition to complying with Section R703.7.3.1, Item 2, drainage on the exterior of the water-resistive barrier shall have a drainage efficiency of not less than 90 percent, as measured in accordance with ASTM E2273-2018 or Annex A2 of ASTM E2925-17.

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<https://www.dli.pa.gov/our/Documents/ICC-Code-Review-2018-Final-Report.pdf>



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## Note on Stone Installation

- **The National Concrete Masonry Association (NCMA) published an installation guide for adhered manufactured stone veneer.**
  - [https://ncma.org/wp-content/uploads/2020/08/MSV\\_InstallationGuide\\_5thEd\\_4thPrinting.pdf](https://ncma.org/wp-content/uploads/2020/08/MSV_InstallationGuide_5thEd_4thPrinting.pdf)
- **This guide is used by many adhered manufactured stone veneer manufacturers for installation recommendations.**

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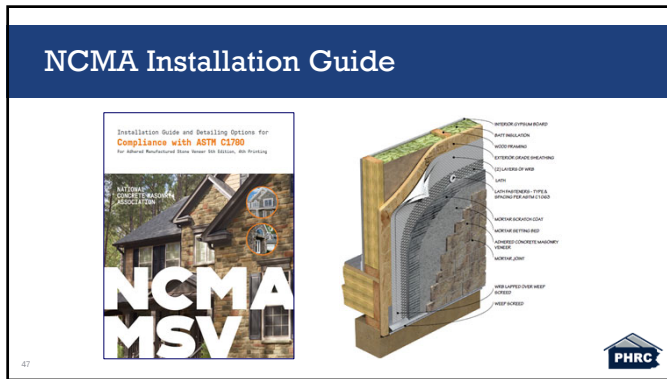
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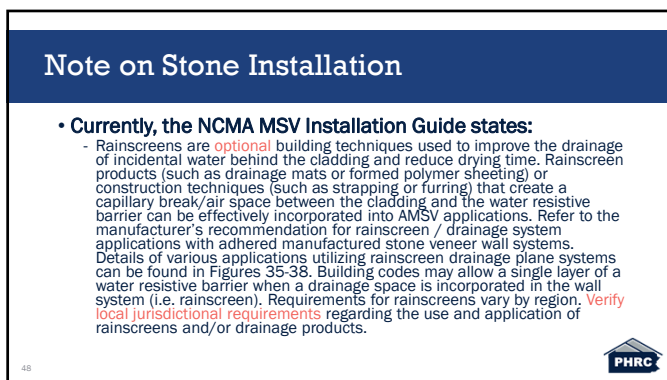
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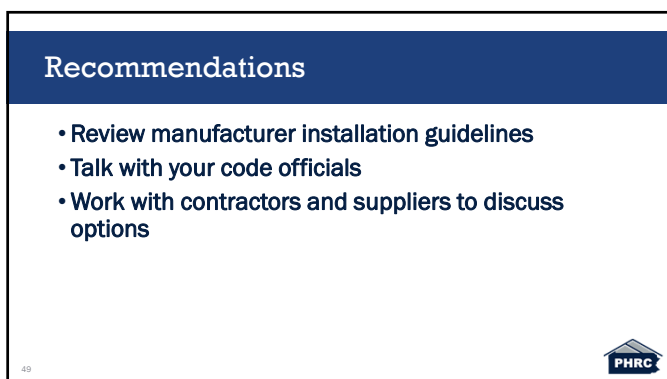
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## Stucco & Stone Webinar

### Adapting Stucco & Stone Assemblies to Changing Codes

January 11, 2022

1:00pm



50

## 2. Insulation & Fenestration Requirements

- 2018 Table N1102.1.2 (R402.1.2) was adopted and effectively reset some of the modifications made during the 2015 review process

- Note: amendment was made to fenestration requirement in Climate Zone 3, which does not apply to Pennsylvania



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## 2015 IRC Table N1102.1.2

Table N1102.1.2 (R402.1.2)  
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT \*

| Climate Zone       | Fenestration<br>U-FACTOR | SKYLIGHT*<br>U-FACTOR | GLAZED<br>FENESTRATION<br>N SHGC** | CEILING R-<br>VALUE | WOOD FRAME<br>WALL R-VALUE†         | MASS WALL R-<br>VALUE | FLOOR R-<br>VALUE | BASEMENT†<br>WALL R-VALUE | SLAB† R-<br>VALUE &<br>DEPTH | CRAWL SPACE†<br>WALL R-VALUE |
|--------------------|--------------------------|-----------------------|------------------------------------|---------------------|-------------------------------------|-----------------------|-------------------|---------------------------|------------------------------|------------------------------|
| 1                  | NR                       | 0.75                  | 0.25                               | 30                  | 13                                  | 3/4                   | 13                | 0                         | 0                            | 0                            |
| 2                  | 0.40                     | 0.65                  | 0.25                               | 38                  | 13                                  | 4/6                   | 13                | 0                         | 0                            | 0                            |
| 3                  | 0.35                     | 0.55                  | 0.25                               | 38                  | 20 or 13 + 9"                       | 8/13                  | 19                | 5/13'                     | 0                            | 5/13                         |
| 4 except<br>Marine | 0.35                     | 0.55                  | 0.40                               | 49                  | 20 or 13 + 9"                       | 8/13                  | 19                | 10/13                     | 10, 2 ft                     | 10/13                        |
| 5 and Marine<br>4  | 0.32                     | 0.55                  | NR                                 | 49                  | 20 or 13 + 9"                       | 13/17                 | 30*               | 15/19                     | 10, 2 ft                     | 15/19                        |
| 6                  | 0.32                     | 0.55                  | NR                                 | 49                  | 20 + 5 or 13 +<br>10" or 16 + 15.5" | 15/20                 | 30*               | 15/19                     | 10, 4 ft                     | 15/19                        |
| 7 and 8            | 0.32                     | 0.55                  | NR                                 | 49                  | 20 + 5 or 13 +<br>10"               | 19/21                 | 38*               | 15/19                     | 10, 4 ft                     | 15/19                        |



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## Air Sealing Webinar

### Adapting to Tighter Enclosures through Scopes of Work

November 9, 2021

1:00pm



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## What's Next? Part 2!

### PA UCC Residential Code Update: Part 2

October 12, 2021

1:00pm



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## Recommendation: Getting Started

- Review the 2018 IRC & IECC online
  - Consider investing in additional ICC resources
- Print copy of RAC report
- Review statutory amendments



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## Where Do I Go for More Information?

- **PA UCC RAC Report:**

- <https://www.dli.pa.gov/ucc/Documents/ICC-Code-Review-2018-Final-Report.pdf>

- **2018 IRC**

- <https://codes.iccsafe.org/content/IRC2018>

- **2018 IECC**

- <https://codes.iccsafe.org/content/iecc2018>



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## Questions?

[www.phrc.psu.edu](http://www.phrc.psu.edu)



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## PA UCC Residential Code Update: Part 1

[www.phrc.psu.edu](http://www.phrc.psu.edu)



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