

IRC - Building



2025 GROUP B PROPOSED CHANGES TO THE I-CODES

Committee Action Hearings (CAH #2)
October 22 - 30, 2025
Huntington Convention Center
Cleveland, OH

Proposed Change as Submitted

Proponents: Thomas Bowles, representing USEPA (bowles.thomas@epa.gov); Jane Malone, representing Indoor Environments Association (janemalonedc@gmail.com); Kevin Stewart, Director, Environmental Health, representing American Lung Association (kevin.stewart@lung.org); Jonathan Wilson, representing National Center for Healthy Housing (jwilson@nchh.org); Joshua Kerber, Minnesota Department of Health, representing Minnesota Department of Health and CRCPD E25 Committee on Radon (joshua.kerber@state.mn.us); Ruth McBurney, representing Conference of Radiation Control Program Directors, Inc. (rmcburney@crcpd.org)

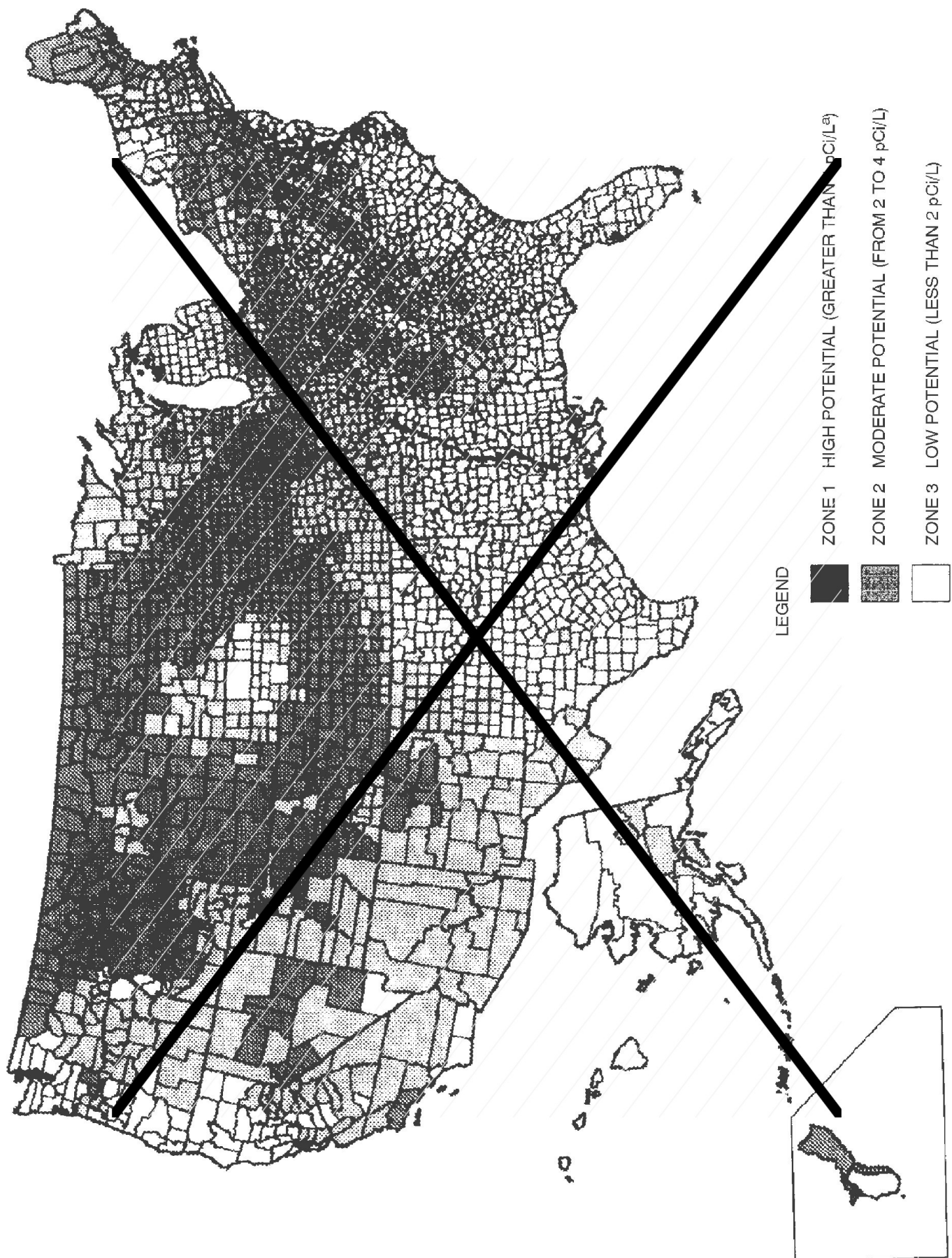
2024 International Residential Code

**APPENDIX BE
RADON CONTROL METHODS**

Revise as follows:

BE101.1 General. This appendix contains requirements for new construction in jurisdictions where radon-resistant construction is required. ~~Inclusion of this appendix by jurisdiction shall be determined through the use of locally available data or determination of Zone 1 designation in Figure AF101.1 and Table AF101.1.~~

Delete without substitution:



- a. pCi/L stands for picocuries per liter of radon gas. The US Environmental Protection Agency (EPA) recommends that homes that measure 4 pCi/L and greater be mitigated.

The EPA and the US Geological Survey have evaluated the radon potential in the United States and have developed a map of radon zones designed to assist building officials in deciding whether radon resistant features are applicable in new construction.

The map assigns each of the 3,141 counties in the United States to one of three zones based on radon potential. Each zone designation reflects the average short term radon measurement that can be expected to be measured in a *building* without the implementation of radon control methods. The radon zone designation of highest priority is Zone 1. Table BE101.1 lists the Zone 1 counties illustrated on the map. More detailed information can be obtained from state specific booklets (EPA 401-R-93-021 through 070) available through the State Radon Offices or from the EPA Regional Offices.

FIGURE BE101.1 EPA MAP OF RADON ZONES

TABLE BE101.1 HIGH RADON POTENTIAL (ZONE 1) COUNTIES^a

Reason:

The EPA map and Zone 1 county list are based in part on a 1993 survey that measured radon in 5694 homes, less than two per each of the 3141 counties in the US. As more recent data have been compiled by states and the US Centers for Disease Control and Prevention, it is evident that more counties' have homes that exceed the EPA action level.

Radon Zone 1 counties are defined as having a predicted year-round average indoor radon screening level in the lowest livable area of a structure greater than or equal to four picocuries per liter of air (pCi/L). Relying on an average radon level does not address the full range of risk within a given county. Levels greater than 4 have been found in 85% of US counties tested.

Restricting localities as to when or how they may include the appendix("shall be determined through") can cause this appendix to conflict with local authority.

While opponents may suggest otherwise, deleting the county information does not impose a requirement for adoption in Zones 2 and 3. Appendix BE will remain an optional appendix that is only in effect where the jurisdiction has adopted it.

The purpose of the EPA radon zone map, since its inception, has been to show potential of risk not ACTUAL risk. While it is still a useful tool, the map unintentionally creates a false sense of security for those in Zone 2 and Zone 3 that risk in those areas is non-existent. The fact remains that radon is found in all zones and to truly protect against radon you need to test regardless of zone.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact: Removing a reference will have no impact on cost. Appendix BE is an optional requirement that can be adopted by a jurisdiction.

RB274-25

Public Hearing Results (CAH1)

Committee Action CAH1:

Disapproved

Committee Reason: This proposal was disapproved. The committee agreed with the deletion of the maps. A jurisdiction should decide if a radon control method is required. However, the committee attempted to make modifications to revise the language in RE101.1 and ended up with conflicting modifications. Rather than continue to work on this question, the committee request the proponent to come back in CAH2. (Vote: 9-1)

RB274-25

Individual Consideration Agenda

Comment 1:

IRC: BE101.1

Proponents: Thomas Bowles, representing USEPA (bowles.thomas@epa.gov); Kimberly Steves, CRCPD, representing Self (kimssteves@gmail.com); Jane Malone, representing Indoor Environments Association (janemalonedc@gmail.com); Joshua Kerber, Minnesota Department of Health, representing Minnesota Department of Health and CRCPD E25 Committee on Radon (joshua.kerber@state.mn.us); Jonathan Wilson, representing National Center for Healthy Housing (jwilson@nchh.org); Kevin Stewart, Director, Environmental Health, representing American Lung Association (kevin.stewart@lung.org); Ruth McBurney, representing Conference of Radiation Control Program Directors, Inc. (rmcburney@crcpd.org) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Residential Code

APPENDIX BE RADON CONTROL METHODS

BE101.1 General. This appendix contains requirements for new construction ~~in jurisdictions where radon-resistant construction is required.~~

Reason: The Committee agreed to this modification before disapproving the entire proposal due to conflicting amendments. We ask for reconsideration.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact: This does not impact the cost in a home.

Comment (CAH2)# 1607

Proposed Change as Submitted

Proponents: Joshua Kerber, Minnesota Department of Health, representing Minnesota Department of Health and CRCPD E25 Committee on Radon (joshua.kerber@state.mn.us); Jane Malone, representing Indoor Environments Association (janemalonedc@gmail.com); Thomas Bowles, representing USEPA (bowles.thomas@epa.gov); Kevin Stewart, Director, Environmental Health, representing American Lung Association (kevin.stewart@lung.org); Jonathan Wilson, representing National Center for Healthy Housing (jwilson@nchh.org); Ruth McBurney, representing Conference of Radiation Control Program Directors, Inc. (rmcburney@crcpd.org)

2024 International Residential Code**APPENDIX BE
RADON CONTROL METHODS****Revise as follows:**

BE103.6.1 Vent pipe. A minimum 3-inch-diameter (76 mm) ABS, PVC or equivalent gastight pipe shall be embedded vertically into the subslab aggregate or other permeable material before the slab is cast. A “T” fitting or equivalent method shall be used to ensure that the pipe opening remains within the subslab permeable material, and not less than 5 feet (1524 mm) of perforated pipe or geotextile matting shall be connected to each of the horizontal openings of the tee fitting. Alternatively, the 3-inch (76 mm) pipe shall be inserted directly into an interior perimeter *drain tile loop* or through a sealed sump cover where the sump is exposed to the subslab aggregate or connected to it through a drainage system. The pipe shall be extended up through the building floors, and terminate not less than 12 inches (305 mm) above the surface of the roof in a location not less than 10 feet (3048 mm) away from any window or other opening into the *conditioned spaces* of the *building* that is less than 2 feet (610 mm) below the exhaust point, and 10 feet (3048 mm) from any window or other opening in adjoining or adjacent *buildings*. Above ground pipe material shall comply with Section P3002.1.

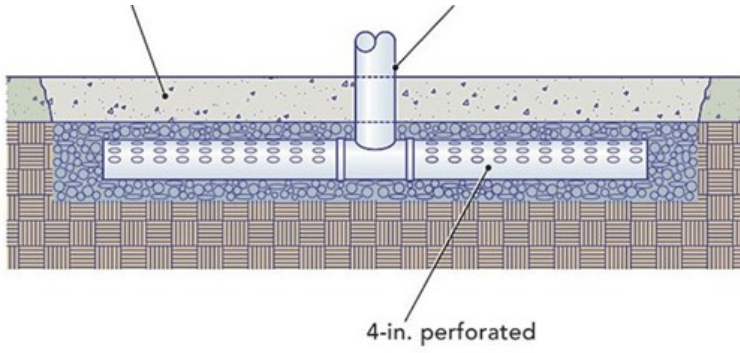
BE103.5.3 Vent pipe. A plumbing tee or other *approved* connection shall be inserted horizontally beneath the sheeting and connected to a 3- or 4-inch-diameter (76 or 102 mm) fitting with a vertical vent pipe installed through the sheeting, and not less than 5 feet (1524 mm) of perforated pipe or geotextile matting shall be connected to each of the horizontal openings of the tee fitting. The vent pipe shall be extended up through the building floors, and terminate not less than 12 inches (305 mm) above the roof in a location not less than 10 feet (3048 mm) away from any window or other opening into the *conditioned spaces* of the *building* that is less than 2 feet (610 mm) below the exhaust point, and 10 feet (3048 mm) from any window or other opening in adjoining or adjacent *buildings*. Above ground pipe material shall comply with Section P3002.1.

Reason:

This proposal provides a soil gas collector and keeps open the horizontal openings in the tee fitting for both sub-slab and sub-membrane (crawl space) installations. The tee fitting is a suction point through which radon gas is pulled from below the building into the vertical vent pipe. If no pipe is present to protect the side openings in the tee fitting from filling with concrete (when the slab is cast) or aggregate, the above ground pipe cannot vent radon from below the structure to the outside.

This proposal also clarifies that the material requirement shall be consistent with Chapter 30.

Attaching five foot long perforated piping to tee fittings is required by the USEPA recommended CCAH 2020 Rev 5/23 for both sub-slab and sub-membrane systems.





Bibliography:

CCAH 2020 Rev. 05/23 *Reducing Radon in New Construction of 1 & 2 Family Dwellings and Townhouses*

<https://standards.aarst.org/CCAH-2020-0523/index.html#zoom=z>

US Environmental Protection Agency - *Current Standards of Practice*

<https://www.epa.gov/radon/radon-standards-practice>

Cost Impact: Increase

Estimated Immediate Cost Impact:

The typical cost for a ten-foot long perforated pipe with a four-inch diameter is \$16-20. This pipe will be cut in half and each half attached to a horizontal opening in the tee fitting.

Estimated Immediate Cost Impact Justification (methodology and variables):

Pricing Research 1-10-25

<https://www.homedepot.com/p/Advanced-Drainage-Systems-4-in-x-10-ft-Triplewall-Perforated-Drain-Pipe-4520010/100191022> \$19.99

<https://www.lowes.com/pd/ADS-4-in-x-10-ft-Corrugated-Perforated-Pipe/3221925> \$16.90-19.88

<https://www.menards.com/main/plumbing/pipe-fittings/pvc-pipe-fittings/poly-3-wall-reg-4x-10-perforated-sewer-and-drain-pipe-4-6-8-astm-f810/04tw10pf3-lb/p-1444424878508-c-8571.htm> \$15.99

Public Hearing Results (CAH1)

Committee Action CAH1:

Disapproved

Committee Reason: The proposal was disapproved. The pipe comes in 10 foot pieces. A 5 foot length is a random choice, that would require the 10 foot pipe to be cut exactly in half. Allowing a length such as 4 feet minimum would improve compliance options. There were questions about how the Geotech mat would be installed 'connected' to the horizontal opening. (Vote: 6-4)

Individual Consideration Agenda

Comment 1:

IRC: BE103.6.1, BE103.5.3

Proponents: Joshua Kerber, Minnesota Department of Health, representing Minnesota Department of Health and CRCPD E25 Committee on Radon (joshua.kerber@state.mn.us); Kevin Stewart, Director, Environmental Health, representing American Lung Association (kevin.stewart@lung.org); Jonathan Wilson, representing National Center for Healthy Housing (jwilson@nchh.org); Jane Malone, representing Indoor Environments Association (janemalonedc@gmail.com); Thomas Bowles, representing USEPA (bowles.thomas@epa.gov); Ruth McBurney, representing Conference of Radiation Control Program Directors, Inc. (rmcburney@crcpd.org); Kimberly Steves, CRCPD, representing Self (kimssteves@gmail.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Residential Code

APPENDIX BE RADON CONTROL METHODS

BE103.6.1 Vent pipe. A minimum 3-inch-diameter (76 mm) ABS, PVC or equivalent gastight pipe shall be embedded vertically into the subslab aggregate or other permeable material before the slab is cast. A "T" fitting or equivalent method shall be used to ensure that the pipe opening remains within the subslab permeable material, and not less than ~~5 feet (1524 mm)~~ 4 feet 6 inches (1372 mm) of perforated pipe or geotextile matting shall be connected to each of the horizontal openings of the fitting. Alternatively, the 3-inch (76 mm) pipe shall be inserted directly into an interior perimeter *drain tile loop* or through a sealed sump cover where the sump is exposed to the subslab aggregate or connected to it through a drainage system. The pipe shall be extended up through the building floors, and terminate not less than 12 inches (305 mm) above the surface of the roof in a location not less than 10 feet (3048 mm) away from any window or other opening into the *conditioned spaces* of the *building* that is less than 2 feet (610 mm) below the exhaust point, and 10 feet (3048 mm) from any window or other opening in adjoining or adjacent *buildings*. Above ground pipe material shall comply with Section P3002.1.

BE103.5.3 Vent pipe. A plumbing tee or other *approved* connection shall be inserted horizontally beneath the sheeting and connected to a 3- or 4-inch-diameter (76 or 102 mm) fitting with a vertical vent pipe installed through the sheeting, and not less than ~~5 feet (1524 mm)~~ 4

feet 6 inches (1372 mm) of perforated pipe or geotextile matting shall be connected to each of the horizontal openings of the fitting. The vent pipe shall be extended up through the building floors, and terminate not less than 12 inches (305 mm) above the roof in a location not less than 10 feet (3048 mm) away from any window or other opening into the *conditioned spaces* of the *building* that is less than 2 feet (610 mm) below the exhaust point, and 10 feet (3048 mm) from any window or other opening in adjoining or adjacent *buildings*. Above ground pipe material shall comply with Section P3002.1.

Reason:

The committee was supportive of the concept but disapproved the proposal under the theory that an inexact half cut of a 10' pipe would cause a code violation for the shorter length. The public comment proposes requiring installation of a minimum of 4.5' perforated pipe on each side of the tee fitting to avoid this.

There were questions about how the geotextile mat would be installed or connected to the horizontal opening. These connections are made using fittings provided by the geotextile mat manufacturer.

Bibliography:

CCAH2020Rev.05/23 *Reducing Radon in New Construction of 1 & 2 Family Dwellings and Townhouses*

<https://standards.aarst.org/CCAH-2020-0523/index.html#zoom=z>

US Environmental Protection Agency - *Current Standards of Practice* <https://www.epa.gov/radon/radon-standards-practice>

Cost Impact: Increase

Estimated Immediate Cost Impact:

The typical cost for a ten-foot long perforated pipe with a four-inch diameter is \$16-20. This pipe will be cut in half and each half attached to a horizontal opening in the tee fitting.

Estimated Immediate Cost Impact Justification (methodology and variables):

Pricing Research 1-10-25

<https://www.homedepot.com/p/Advanced-Drainage-Systems-4-in-x-10-ft-Triple-wall-Perforated-Drain-Pipe-4520010/100191022> \$19.99 <https://www.lowes.com/pd/ADS-4-in-x-10-ft-Corrugated-Perforated-Pipe/3221925> \$16.90-19.88 <https://www.menards.com/main/plumbing/pipe-fittings/pvc-pipe-fittings/poly-3-wall-reg-4x-10-perforated-sewer-and-drain-pipe-4-6-8-astm-f810/04tw10pf3-lb/p-1444424878508-c-8571.htm> \$15.99

Comment (CAH2)# 1444

Proposed Change as Submitted

Proponents: Joshua Kerber, Minnesota Department of Health, representing Minnesota Department of Health and CRCPD E25 Committee on Radon (joshua.kerber@state.mn.us); Thomas Bowles, representing USEPA (bowles.thomas@epa.gov); Jonathan Wilson, representing National Center for Healthy Housing (jwilson@nchh.org); Kevin Stewart, Director, Environmental Health, representing American Lung Association (kevin.stewart@lung.org); Jane Malone, representing Indoor Environments Association (janemalonedc@gmail.com); Ruth McBurney, representing Conference of Radiation Control Program Directors, Inc. (rmcburney@crcpd.org)

2024 International Residential Code**APPENDIX BE
RADON CONTROL METHODS****Revise as follows:**

BE103.8 Vent pipe accessibility. Radon vent pipes shall be accessible for future fan installation through an *attic* or other area outside the *habitable space*. The pipe shall be centered in an unobstructed cylindrical space having a height of not less than 36 inches (914 mm) and a diameter of not less than 21 inches (533 mm) in the location where the fan would be installed.

Exception: The radon vent pipe need not be accessible ~~in~~ within an *attic* space where an *approved roof top* electrical supply is provided for future use on the roof top or other area outside the habitable space.

Reason:

This change reserves adequate space in the attic for future installation of a radon fan. This language allows for easier system activation as it requires ample working room to install a fan and eliminate the abandonment of existing vent pipes that are inaccessible due to their location in an outside wall or near the gable end of a house. This is a common field failure where the pipe is run too close to the eave or outside walls. If the existing pipe system needs to be abandoned, then an additional roof penetration will be necessary and the old penetration closed and sealed.

Similar language has been part of the Minnesota Building Code (MN Code 1303.2402 subpart 5 (D)) for over a decade and has allowed for many thousands of passive radon control systems to be installed with far fewer complaints from contractors needing to add a fan. The proposed language solved one of the most common complaints our radon program would receive from our radon contractors. Having to spend less time installing the fan because of these new yet simple accessibility requirements ultimately saves fan installation costs. This language also appears in the USEPA Recommended CCAH 2020 Rev 5/2023.

Bibliography:

Minnesota State Building Code 1303.2402 Subpart 5 (D):

<https://www.revisor.mn.gov/rules/1303.2402/>

CAAH 2020 Rev. 05/23 *Reducing Radon in New Construction of 1 & 2 Family Dwellings and Townhouses*

<https://standards.aarst.org/CAAH-2020-0523/index.html#zoom=z>

US Environmental Protection Agency - *Current Standards of Practice*

<https://www.epa.gov/radon/radon-standards-practice>

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal defines a volume of space in an attic location where a radon fan can be installed, if necessary. No new material costs are

added, however, the defined volume space requirement assists with proper pipe layout design to facilitate any future fan installation. This can lead to future costs savings for the occupant.

RB278-25

Public Hearing Results (CAH1)

Committee Action CAH1:

Disapproved

Committee Reason: This proposal was disapproved. This appendix should not require items which may or may not be needed sometime in the future. The requirement for centering does not allow for the pipe to be strapped to a wall or truss for stability. Requiring centering could end up requiring elbows instead of going straight out; which decreases effectiveness. This could also affect roof framing to get space in the attic for a future fan. (Vote: 10-0)

RB278-25

Individual Consideration Agenda

Comment 1:

IRC: BE103.8

Proponents: Joshua Kerber, Minnesota Department of Health, representing Minnesota Department of Health and CRCPD E25 Committee on Radon (joshua.kerber@state.mn.us); Kevin Stewart, Director, Environmental Health, representing American Lung Association (kevin.stewart@lung.org); Jonathan Wilson, representing National Center for Healthy Housing (jwilson@nchh.org); Jane Malone, representing Indoor Environments Association (janemalonedc@gmail.com); Thomas Bowles, representing USEPA (bowles.thomas@epa.gov); Ruth McBurney, representing Conference of Radiation Control Program Directors, Inc.; Kimberly Steves, CRCPD, representing Self (kimssteves@gmail.com) requests As Modified by Committee (AMC2)

Modify as follows:

2024 International Residential Code

APPENDIX BE RADON CONTROL METHODS

BE103.8 Vent pipe accessibility. Radon vent pipes shall be accessible for future fan installation through an *attic* or other area outside the *habitable space*. The pipe shall be ~~centered~~ located in an unobstructed cylindrical space having a height of not less than 36 inches (914 mm) and a diameter of not less than 21 inches (533 mm) in the location where the fan would be installed.

Exception: The radon vent pipe need not be accessible within an *attic* space where an *approved* electrical supply is provided for future use on the roof top or other area outside the habitable space.

Reason:

Concerns were raised about the term "centered" so it has been modified to "located" to address the concern. Adding elbows to these radon-ready systems does not decrease their effectiveness because the amount of airflow inside the pipe is very small. Elbows are allowed on these pipe runs and it is unreasonable to expect a straight stack from the subslab through all the floors of the building and through the roof. Allowing for space for a fan should not effect roof framing.

This change reserves adequate space in the attic for future installation of a radon fan. This language allows for easier system activation as it requires ample working room to install a fan and eliminate the abandonment of existing vent pipes that are inaccessible due to their location in an outside wall or near the gable end of a house. This is a common field failure where the pipe is run too close to the eave or outside walls. If the existing pipe system needs to be abandoned, then an additional roof penetration will be necessary and the old penetration closed and sealed.

Similar language has been part of the Minnesota Building Code (MN Code 1303.2402 subpart 5 (D)) for over a decade and has allowed for many thousands of passive radon control systems to be installed with far fewer complaints from contractors needing to add a fan. The proposed language solved one of the most common complaints our radon program would receive from our radon contractors. Having to spend less time installing the fan because of these new yet simple accessibility requirements ultimately saves fan installation costs. This language also appears in the USEPA Recommended CCAH 2020 Rev 5/2023.

Bibliography:

MinnesotaStateBuildingCode1303.2402Subpart5(D):<https://www.revisor.mn.gov/rules/1303.2402/>

CCA2020Rev.05/23ReducingRadoninNewConstructionof1&2FamilyDwellingsandTownhouses

<https://standards.aarst.org/CCA2020-0523/index.html#zoom=zUS>

Environmental Protection Agency - *Current Standards of Practice*<https://www.epa.gov/radon/radon-standards-practice>

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal defines a volume of space in an attic location where a radon fan can be installed, if necessary. No new material costs are added, however, the defined volume space requirement assists with proper pipe layout design to facilitate any future fan installation.

This can lead to future costs savings for the occupant.

Comment (CAH2)# 1574