GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: IBC SECTION: 2902.2

PROPONENT: DCA Construction Codes Team DATE: 12/10/2024

EMAIL: codes@dca.ga.gov

ADDRESS: _____

TELEPHONE NUMBER: _____ FAX NUMBER: _____

CHECK ONE: X Revise section to read as follows: ☐ Add new section to read as follows:

☐ Delete section and substitute the following: ☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:

*Delete exception #6 in Section [P] 2902.2 'Separate Facilities' to read as follows:

[P] 2902.2 Separate facilities.
Where plumbing fixtures are required, separate facilities shall be provided for each sex.
Exceptions:

1. Separate toilet facilities shall not be required for dwelling units and sleeping units.
2. Separate toilet facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or fewer.
3. Separate toilet facilities shall not be required in mercantile occupancies in which the maximum occupant load is 100 or fewer.
4. Separate toilet facilities shall not be required in business occupancies in which the maximum occupant load is 25 or fewer.
5. Separate toilet facilities shall not be required to be designated by sex where single-user toilet rooms are provided in accordance with Section 2902.1.2.
6. ~~Separate toilet facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by all persons regardless of sex and privacy is provided for water closets in accordance with Section 405.3.4 of the International Plumbing Code and for urinals in accordance with Section 405.3.5 of the International Plumbing Code.~~

REASON/INTENT:

To match the proposed IPC amendment if accepted.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

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Atlanta, Georgia 30329-2231

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 1

CODE: 2024 International Building Code SECTION: Chapter 35

PROPONENT: John Hutton, Structural Engineers Association of Georgia DATE: 12/6/2024

EMAIL: jhutton@uzuncase.com

ADDRESS: Uzun+Case, 1230 Peachtree St, NE, Atlanta, GA 30309

TELEPHONE NUMBER: (678)553-5216 FAX NUMBER: ( ) -

CHECK ONE: ☒ Revise section to read as follows: ☐ Add new section to read as follows:
☐ Delete section and substitute the following: ☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:

CHAPTER 35 REFERENCED STANDARDS

ACI

American Concrete Institute
38800 Country Club Drive
Farmington HillsMI48331-3439

318—~~19~~**25**
Building Code Requirements for Structural Concrete

REASON/INTENT:
This proposal is to adopt the newly published ACI 318-25 in lieu of ACI 318-19. The new version builds upon its predecessor while updating several of the significant changes in 318-19 to better align with long-standing industry practices that have had successful in-service performance.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:
This proposed amendment will reduce concrete construction costs while maintaining structural safety by refining specific requirements introduced in ACI 318-19. ACI 318-25 maintains the design requirements from ACI 318-14 and previous editions for several structural elements, including shallow foundations, pile caps, and retaining walls. These modifications prevent the need for thickening the noted concrete elements and the additional reinforcement that would have been required under ACI 318-19 specifications.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

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GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: IBC SECTION: 903.3.1.2

PROPONENT: DCA DATE: 2/3/2025

EMAIL: codes@dca.ga.gov

ADDRESS: _____

TELEPHONE NUMBER: _____ FAX NUMBER: _____

CHECK ONE:
☐ Revise section to read as follows:
☐ Add new section to read as follows:
☐ Delete section and substitute the following:
☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
*Revise section 903.3.1.2 to add the following line to read as follow:

[F] 903.3.1.2 NFPA 13R sprinkler systems.
~~Section 903.3.1.2 shall apply only as referenced by the NFPA standards.~~
Refer to the applicable codes and standards adopted by the Georgia Safety Fire Commissioner.

REASON/INTENT:

Section 903.3.1.2 is referenced by other sections in the code specifically section 903.2.8.2 and Section 903.2.8.3.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:

None

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

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GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: 2023 NFPA 70 SECTION: Definitions

PROPONENT: James Martin DATE: 12-11-2024

EMAIL: jmartin@romega.us

ADDRESS: 607 Broad Street Rome, Georgia 30161

TELEPHONE NUMBER: (706)236-4483 FAX NUMBER: ( ) -

CHECK ONE:
☒ Revise section to read as follows:
☒ Add new section to read as follows:
☐ Delete section and substitute the following:
☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
Add the definition of a townhouse to the NFPA 70.
Dwelling, One-Family. (One-Family Dwelling)
A building that consists solely of one dwelling unit.

TOWNHOUSE (ROW HOUSE). A single-family dwelling unit constructed in a group of three or more attached units. Each unit extends from foundation to roof, not more than three stories in height, with a separate means of egress, and with an open space/yard or public way on at least two sides. Each townhouse shall be considered a separate building with independent exterior walls and shall be separated by a 2-hour fire-resistance-rated wall assembly.

REASON/INTENT:
Clarification on feeder and service load calculations for townhouses. Townhouses are single family dwellings as defined and the NFPA 70 has them defined as a Multifamily Dwellings because the NFPA does not recognize townhouses as s single family dwelling.

FINANCIAL IMPACT OF PROPOSED AMENDMENT: Depends on how the townhouses are developed in rows.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

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GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: 2023 NFPA 70 SECTION: 210.8 (F)

PROPONENT: James Martin DATE: 12-11-2024

EMAIL: jmartin@romega.us

ADDRESS: 607 Broad Street Rome, Georgia 30161

TELEPHONE NUMBER: (706)236-4483 FAX NUMBER: ( ) -

CHECK ONE:
☐ Revise section to read as follows:
☐ Add new section to read as follows:
☐ Delete section and substitute the following:
☒ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:

(F) Outdoor Outlets.

For dwellings, all outdoor outlets, other than those covered in **210.8(A)**, Exception No. 1, including outlets installed in the following locations, and supplied by single-phase branch circuits rated 150 volts or less to ground, 50 amperes or less, shall be provided with GFCI protection:

(1) Garages that have floors located at or below grade level
(2) Accessory buildings
(3) Boathouses

If equipment supplied by an outlet covered under the requirements of this section is replaced, the outlet shall be supplied with GFCI protection.

Exception No. 1:

*GFCI protection shall not be required on lighting outlets other than those covered in **210.8(C)**.*

Exception No. 2:

GFCI protection shall not be required for listed HVAC equipment. ~~*This exception shall expire September 1, 2026.*~~

REASON/INTENT:

Nuisance trips of HVAC equipment.

FINANCIAL IMPACT OF PROPOSED AMENDMENT: None

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

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GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 1

CODE: 2023 National Electrical Code SECTION: Article 702

PROPONENT: Director Chris Stallings, GEMA DATE: 12/13/2025

EMAIL: Chris.Stallings@gema.ga.gov

ADDRESS: 935 United Avenue

TELEPHONE NUMBER: 404-635-7200 FAX NUMBER: ( ) -

CHECK ONE:
☐ Revise section to read as follows:
☒ Add new section to read as follows:
☐ Delete section and substitute the following:
☐ Delete without substitution:

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☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
Requesting an addition in the form of a Georgia Amendment to Article 702 of the National Electrical Code that reads:

Construction of critical facilities that include hospitals, nursing homes, and assisted living facilities, shall be enabled with adequate installation of transfer switches suitable for the connection of portable generators capable of suitably powering such facility.

REASON/INTENT:
As became evident during response to Hurricane Helene, critical healthcare facilities are not always wired with transfer switches. GEMA is able to provide emergency generators to such facilities, but the lack of wiring to support the generator take significant time and financial resources to get electricians on site, hindering to effectiveness of GEMA's response to the disaster. The amendment's intent is to impose the requirement on new construction of the limited list of facilities.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:
Estimated installation costs range between $1,000 and $3,000 per transfer switch, depending upon the size.

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GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: 2023 NEC SECTION: 210.8

PROPONENT: Home Builders Association of Georgia DATE: 12/13/24

EMAIL: ahackney@hbag.org

ADDRESS: 887 W. Marietta St. NW Unit T-105 Atlanta, GA 30318

TELEPHONE NUMBER: (404) 763 - 2453 FAX NUMBER: ( ) -

CHECK ONE:
- ☐ X Revise section to read as follows:
- ☐ Add new section to read as follows:
- ☐ Delete section and substitute the following:
- ☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
This amendment removes the requirement for receptacles serving 240-volt appliances to have GFCI protection when located in bathrooms, crawl spaces, basements, laundry areas, or within 6 feet of sinks, bathtubs, or showers. Prior to the 2020 NEC, this section only applied to receptacles up to 125 volts. This amendment also removes the requirement for GFCI coverage of specific 240-volt appliances which was added to the 2023 NEC.

Revise as follows:

210.8(A) Dwelling Units.
All 125-volt, single-phase, 15- and 20-ampere ~~through 250-volt~~ receptacles installed in the locations and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit interrupter protection for personnel.

(1) Bathrooms
(2) Garages and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use
(3) Outdoors
(4) Crawl spaces — at or below grade level
(5) Basements
(6) Kitchens
(7) Sinks — where receptacles are installed within 1.8 m (6 ft) from the top inside edge of the bowl of the sink
(8) Boathouses
(9) Bathtubs or shower stalls — where receptacles are installed within 1.8 m (6 ft) of the outside edge of the bathtub or shower stall
(10) Laundry areas
(11) Indoor damp and wet locations

[The exceptions remain unchanged.]

210.8(D) Specific Appliances.
GFCI protection shall be provided for the branch circuit or outlet supplying the following appliances rated 150 volts or less to ground and 60 amperes or less, single- or 3-phase:

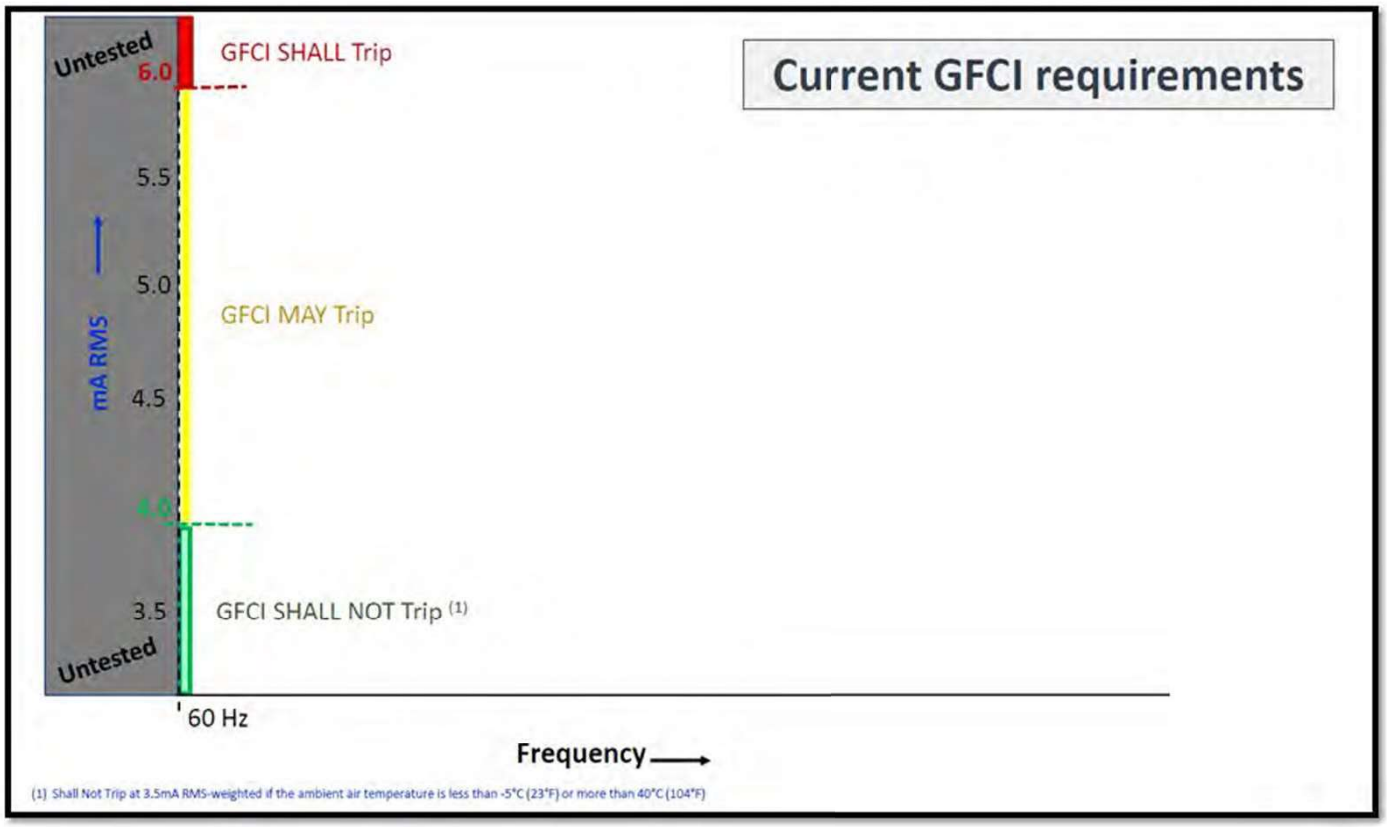
(1) Automotive vacuum machines
(2) Drinking water coolers and bottle fill stations
(3) High-pressure spray washing machines
(4) Tire inflation machines
(5) Vending machines
(6) Sump pumps
(7) Dishwashers
~~(8) Electric ranges~~
~~(9) Wall-mounted ovens~~
~~(10) Counter-mounted cooking units~~
~~(11) Clothes dryers~~
(12) Microwave ovens

REASON/INTENT:

The two main reasons for this amendment are the (1) incompatibility issues caused by requiring 240-volt appliances to be on a GFCI device and (2) the inadequate substantiation given when it was adopted into the model code.

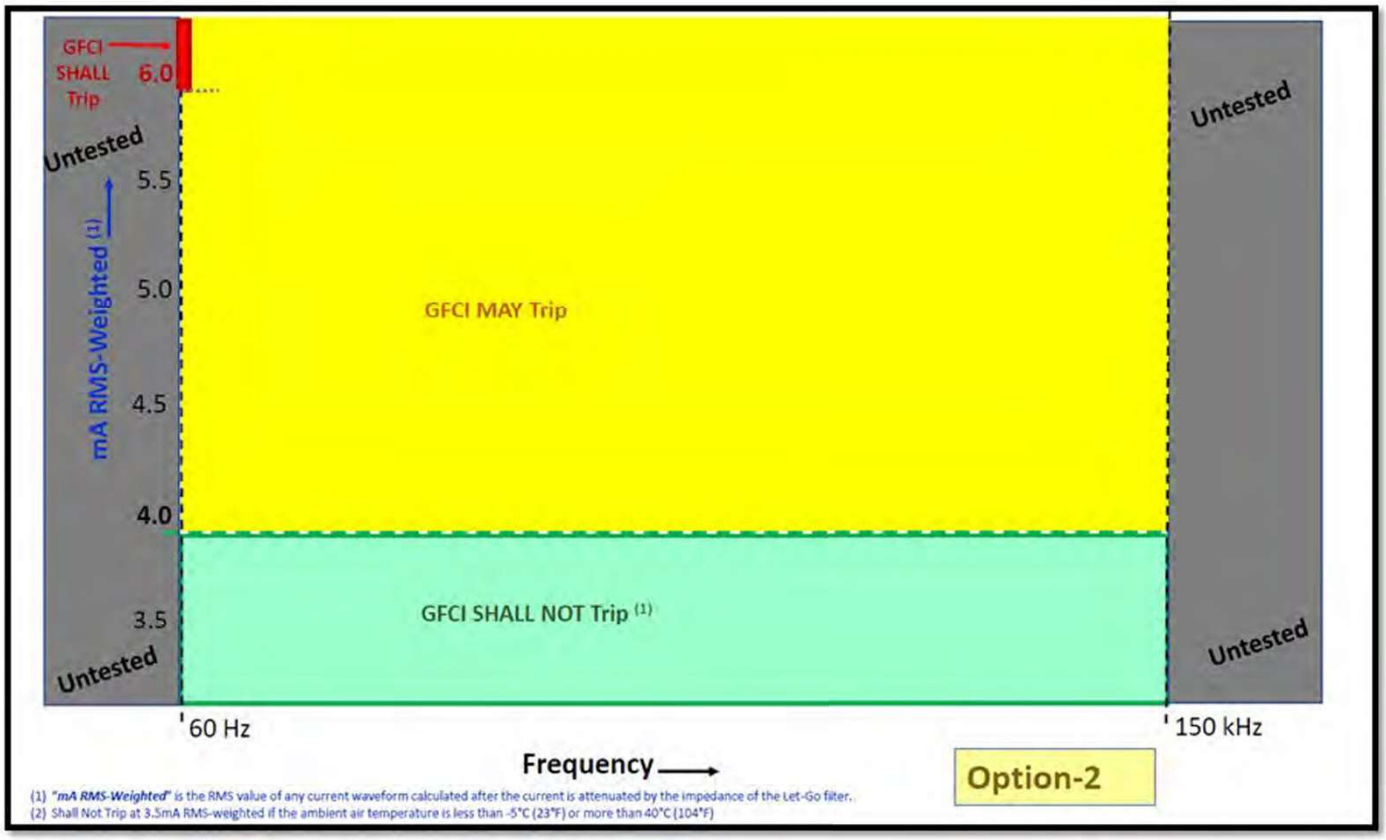
The change to this section now requires receptacles serving household ranges to be covered by a GFCI device. The Association of Home Appliance Manufacturers (AHAM) points out that when this code proposal was submitted to the NEC, it was not submitted to the relevant product safety standards for household appliances that plug into such outlets. As a result, no evaluation was conducted to evaluate issues of compatibility between these household appliances and GFCI devices, leading to nuisance tripping. For more information, see AHAM's white paper Nuisance Tripping of Ground-Fault Circuit Interrupters (GFCIs) for Appliances.

The GFCI was first introduced into the NEC when loads, such as appliances, in the home were operating on 60Hz electricity. Therefore, the GFCIs based their protection requirements on current measurements at 60Hz:



Virtually every modern AC electrical product has parts of the appliance that are operating at frequencies other than 60Hz. This is due to implementation of components like LED drivers, switched-mode power supplies, electrically commutated motors, and variable frequency drives. These components have been implemented to meet consumer demands but also to comply with mandatory energy efficiency regulations set by the U.S. Department of Energy and state regulators.

GFCIs need to be modernized. There are no existing requirements for how a GFCI shall react to frequencies above 60Hz. Even if appliances have minimal, safe levels of high frequency leakage current, GFCIs are tripping and disabling critical appliances. There is a UL 943 Task Group that is working to update the GFCI standard for modern electrical loads.



Until this update is published into UL 943 and made a compliance requirement, GFCI expansion in the NEC is premature.

Regarding the substantiation for this change in the model code, the unfortunate event used as the sole substantiation for the change involved an older stove with both an appliance manufacturing error as well as an installation error. This change goes beyond requiring belt and suspenders safety provisions, which were already in place.

The proposed requirement of GFCI protection for all 240-volt receptacles is too broad and not supported by the committee's substantiation. According to the NFPA article used to support the change, the appliance in question was "an older installation, one predating today's requirement to install an equipment grounding conductor in the branch circuit to the range". The tragedy was only possible with older wiring. This is another example that shows new construction and updated electrical systems do not constitute the same dangers as those in older homes, yet this requirement was not limited to homes with older wiring methods.

The committee contended that 240-volt receptacles presented similar hazards as 125-volt convenience receptacles and this is not true. 240-volt receptacles are installed behind the range or dryer without being readily accessible to the consumer. 240-volt appliances are plugged in and left for the operation of the appliance, but 125-volt receptacles are generally accessible to the consumer. If the consumer chose to, they could use a convenience receptacle for extension cords or other appliance use, whereas a 240volt receptacle is specific to that appliance.

Similar amendments have been adopted in Iowa, Oregon, South Dakota, and Utah, and the requirement for GFCI coverage on 240-volt receptacles has been postponed in some jurisdictions, as well.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:

In 2019, the cost of this change was calculated to be $272 for homes with two 240-volt appliances, such as an electric range and an electric dryer. Many homes also have additional appliances that would be affected, such as electric water heaters. Since the cost for 240-volt GFCI breakers was calculated, the cost of electronic devices has increased greatly due to global supply chain challenges.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: 2023 NEC SECTION: 210.8

PROPONENT: Home Builders Association of Georgia DATE: 12/13/24

EMAIL: ahackney@hbag.org

ADDRESS: 887 W. Marietta St. NW Unit T-105 Atlanta, GA 30318

TELEPHONE NUMBER: (4047632453) - FAX NUMBER: ( ) -

CHECK ONE: x☐ Revise section to read as follows; ☐ Add new section to read as follows; ☐ Delete section and substitute the following; ☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
This amendment limits the GFCI protection requirement to those that serve the countertop surfaces. It also removes the additional provision requiring GFCI protection in any area with a sink and permanent provisions for food preparation, beverage preparation, or cooking. Prior to the 2023 edition, this section only applied to kitchen receptacles serving the countertop surfaces but was expanded to include the entire kitchen. GFCI protection is still required for receptacles within six feet of a sink, whether or not provisions for food preparation are present.

Revise as follows:
210.8(A) Dwelling Units.
All 125-volt through 250-volt receptacles installed in the locations and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel.

(1) Bathrooms
(2) Garages and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use
(3) Outdoors
(4) Crawl spaces — at or below grade level
(5) Basements
(6) Kitchens — where the receptacles are installed to serve the countertop surfaces
~~(7) Areas with sinks and permanent provisions for food preparation, beverage preparation, or cooking~~
(8) Sinks — where receptacles are installed within 1.8 m (6 ft) from the top inside edge of the bowl of the sink
(9) Boathouses
(10) Bathtubs or shower stalls — where receptacles are installed within 1.8 m (6 ft) of the outside edge of the bathtub or shower stall

(11) Laundry areas
(12) Indoor damp and wet locations
[The exceptions remain unchanged.]

REASON/INTENT:
GFCIs have been an unmitigated success, contributing significantly to reducing deaths due to electrical shock. In just 25 years after GFCIs were introduced, accidental electrocutions in the United States were cut by more than half, even though electricity use more than doubled1. There is a clear relationship between the reduction in electrocutions and the increased use of GFCIs over the last 45 years as indicated in Figure 1 below. However, this success has relied on requiring the devices in locations where dangers exist which they can protect against.
GFCIs are shown to be effective where a corded product is plugged into a standard "convenience" receptacle in a wet or damp location. However, the expanded requirement is for areas of the kitchen where handheld electric devices will never come near the sink. The extent of a "kitchen" is very open to interpretation and may include any dining and living areas connected to it in today's popular open floor plans. Many additional receptacles are covered by this new requirement.
Over 80 percent of the incidents cited as reason for this change in the model code resulted from people attempting to repair, modify or install an appliance while plugged in and contact occurring with the energized elements within the particular appliance. The NEC should not mandate GFCI protection for all kitchen outlets due to the clearly unsafe practices of unqualified individuals.

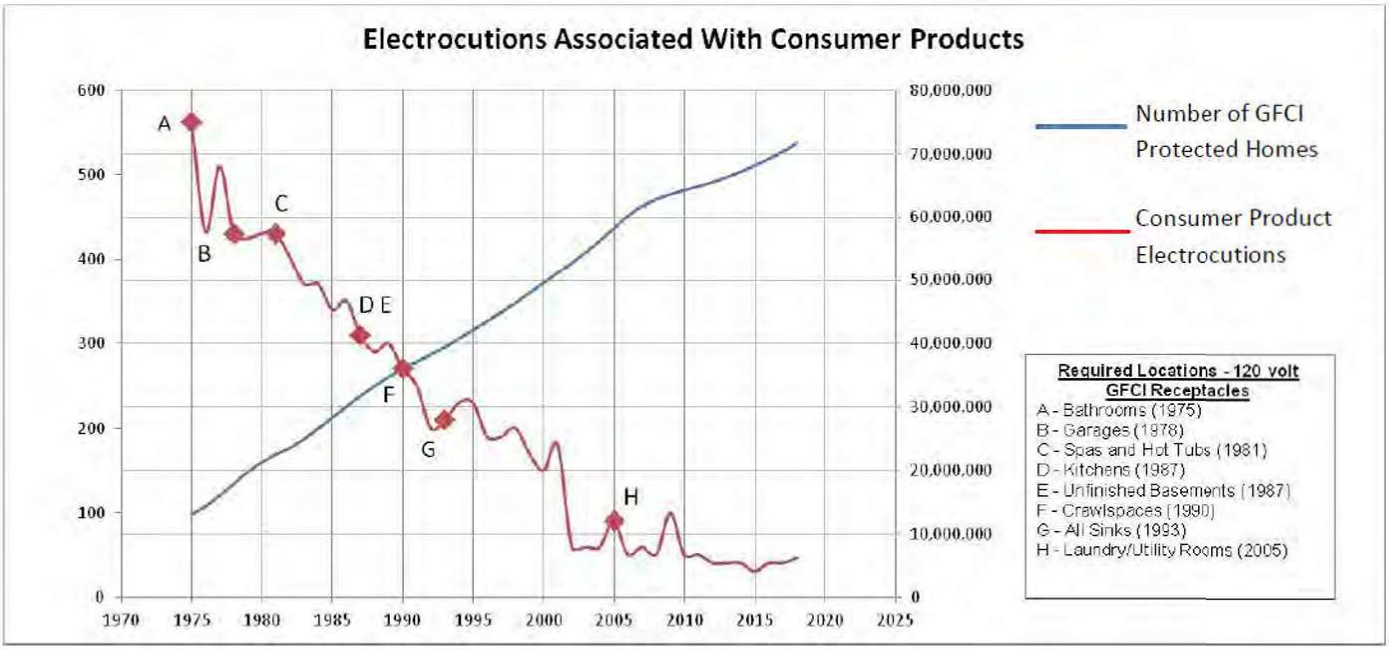


Figure 1: GFCI Protection in Homes Versus Electrocutions 1975 to 2018 (Source: A NEMA Ground Fault Personnel Protection Section Article entitled "GFCI Receptacles: Consumer Protection Personified" June 2020, Revision 2).
Footnotes: 1 "Know the Dangers in Your Older Home", February 2015 (page 5), Electrical Safety Foundation International.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:
The financial impact of this proposed amendment will vary from kitchen to kitchen based on how many electrical outlets are located there.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: 2023 NEC SECTION: 210.12

PROPONENT: Home Builders Association of Georgia DATE: 12/13/24

EMAIL: ahackney@hbag.org

ADDRESS: 887 W. Marietta St. NW Unit T-105 Atlanta, GA 30318

TELEPHONE NUMBER: (4047632453) - FAX NUMBER: ( ) -

CHECK ONE:
- [x] Revise section to read as follows:
- [ ] Add new section to read as follows:
- [ ] Delete section and substitute the following:
- [ ] Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

(DCA STAFF ONLY)
- [ ] Approve
- [ ] Approve as amended
- [ ] Disapprove
- [ ] Withdrawn

DESCRIPTION:
This amendment removes the requirement for AFCI devices to be installed in one- and two-family dwellings and townhouses.

Revise as follows:

210.12(B) Dwelling Units.
All 120-volt, single-phase, 10-, 15-, and 20-ampere branch circuits supplying outlets or devices installed in the following locations shall be protected by any of the means described in 210.12(A)(1) through (A)(6):
(1) Kitchens
(2) Family rooms
(3) Dining rooms
(4) Living rooms
(5) Parlors
(6) Libraries
(7) Dens
(8) Bedrooms
(9) Sunrooms
(10) Recreation rooms
(11) Closets
(12) Hallways
(13) Laundry areas
(14) Similar areas

Exception No. 1: AFCI protection shall not be required for an individual branch circuit supplying a fire alarm system installed in accordance with 760.41(B) or 760.121(B). The branch circuit shall be installed in a metal raceway, metal auxiliary gutter, steel-armored cable, or Type MC or Type AC cable meeting the applicable requirements of 250.118, with metal boxes, conduit bodies, and enclosures.

Exception No. 2: AFCI protection shall not be required for the individual branch circuit supplying an outlet for arc welding equipment in a dwelling unit until January 1, 2025.

Exception No. 3: AFCI protection shall not be required for one- and two-family dwellings and townhouses.

Informational Note No. 1: See NFPA 72-2022, National Fire Alarm and Signaling Code, 29.9.4(5), for information on secondary power source requirements for smoke alarms installed in dwelling units.

Informational Note No. 2: See 760.41(B) and 760.121(B) for power source requirements for fire alarm systems.

REASON/INTENT:
The list of locations within a dwelling requiring AFCIs was last expanded in the 2014 NEC. That change was substantiated by pointing to the decision to add them to the code in the 1990s. Since then, that original decision has not been revisited despite mounting evidence that these devices do not offer the benefits they were designed for.

AFCIs were first introduced in the 1999 edition of the National Electrical Code (NEC) with an effective date of Jan. 1, 2002. The approval of the code change was based on the U.S. Consumer Product Safety Commission (CPSC) report Revised Residential Fire Loss Estimates: 1980 –1998. However, the number of incidents cited at the time was nearly five times higher than in the later CPSC report 2010–2012 Residential Fire Loss Estimates (see Table 1). This significant change is not due to any effect from the slow rollout of AFCIs after 2002 which was limited to bedroom circuits until the 2008 NEC and only where the latest edition was adopted.

Table 1: Change in Electrical Distribution Fire Estimates

	CPSC Report 1980-1998	2015 CPSC Report 2010-2012	**Percentage of Original Estimate**
Total Estimated Fires Attended by the Fire Service (Annual Average)	47,000	9,600[†]	**20%**

[†] The properties that were included in the analysis were single/multifamily dwellings, any type of boarding houses, dormitories, sorority/fraternity houses, hotels/motels, and mobile and motor homes not in transit.

It is important to note that the lower number from the later report includes mobile (manufactured) homes and motor homes (RVs) that are not in transit. It is unclear to what extent these particular property types contribute to the overall number of fires, and the proposed exception does not exempt them.

Where the data showed that AFCIs would have a minimal benefit, the results were ignored. The resulting expected benefits led to AFCI requirements being included in the NEC, but they were overblown. Today, the data bears this out. AFCIs have now been protecting electrical systems in homes for two decades and that protection has grown to cover an extensive area of the home. If they were effective, one should reasonably expect to see fire data showing a steady decline in fires involving electrical wiring and related equipment. However, that is not the case.

The Fire Protection Research Foundation (FPRF), an affiliate of NFPA, concluded there is no practical method to collect relevant data in their report Residential Electrical Fire Problem: The Data Landscape. The FPRF investigated the available data in 2018 and concluded the following: "Unfortunately, there are inherent challenges and barriers to the effective collection of the applicable data. Traditional data collection approaches have shortcomings that make their ultimate value questionable (e.g., lack of detail and quality on fire department collected residential fire events). Further, not all existing datasets are openly accessible, is lacking specific important details, or is insufficient in quality." There is no known data indicating that the expansion of AFCI requirements in the NEC has resulted in a quantifiable reduction of residential fires due to electrical malfunctions.

The problems with the original rationale were so evident that even electrical manufacturers spoke against the proposal at the time. During the 1998 code development cycle comment period, manufacturers' representatives stated that a large body of information was available to support rejecting an AFCI mandate. The main issue: the electrical problems AFCIs are designed to prevent occur overwhelmingly in older dwellings.

The July 2021 issue of the U.S. Fire Administration's Topical Fire Report Series reported "A strong relationship between housing age and the rate of electrical fires has been observed, with **housing over 40 years old having the strongest association with electrical distribution fires** [emphasis added]." This finding is from the 1988 CPSC study, "Residential Electrical Distribution System Fires," so it is comparing homes that are now 80 years old with those that were new at the time of the study. No similar study has been made to compare the previous findings with homes built in the last four decades.

When the home was built is important: The median age of one- and two-family housing in the U.S. is 40 years. The share of housing units built before 1970 is 38%, and those built before 1950 is 18%. According to a study conducted by the U.S. Consumer Product Safety Commission, dwellings built before 1965 may still have fuses instead of circuit breakers, and those built before 1945 may still have knob and tube wiring.

No data is collected on the age of homes where fire occurs, and the vast majority of residential fires may occur in these older homes. **The CPSC study showed that 85% of fires of electrical origin occur in homes that are more than 20 years old at the time of the study.** This means that the bulk of these homes were wired in accordance with the 1965 or earlier editions of the NEC. Further, they were wired with products manufactured to product safety standards of a similar vintage. In the years since this study was produced, numerous changes have been made in both the NEC and product safety standards which mitigate against similar fires in newer homes—even as they age.

These older homes were also wired with a very limited number of receptacle outlets, resulting in extensive use of extension cords or improper alterations and additions to the original electrical system, both recognized fire hazards. In addition, they are more likely to have outdated appliances, space heaters or other characteristics that might lead to a greater risk of a fire starting. Newer homes have fire blocking, hardwired smoke alarms and egress windows installed to today's codes, all of which increase the chances of surviving a fire if one does start. **Even as homes built to today's residential code get older, they will continue to provide protection for families through their improved safety.**

It is clear that requiring AFCIs in new construction will not prevent all damage. This is due to the fact that AFCIs cannot prevent all fires and, more importantly, that electrical fires occur overwhelmingly in older houses. While questions regarding construction code requirements intended to increase the safety of homes cannot, and should not, be decided solely on the issue of cost, it is reasonable to ask if there is a demonstrated need for the requirement or if an acceptable level of safety can be achieved through other, less expensive means. The cost of an incremental increase in the margin of safety can be quite high.

Mandating costly incremental increases in safety will only protect those who can afford them and will often decrease safety for those who cannot. Families who cannot qualify to purchase homes due to the increased costs from mandatory code requirements such as AFCIs will have to live in housing that is less safe, because that housing was built to less stringent code requirements.

From 1980 to 2015, data shows there has been a significant drop in the number of reported fires, injuries and fatalities in the United States. During that time period the number of fires has dropped by 50 percent and fatalities have dropped by about the same margin, even as the population increased. The decline was sharpest during the 1980s before AFCIs were introduced. This further supports the importance of encouraging homeowners to move up to newer homes without the added burden of increased regulation.

Similar amendments have been adopted in Indiana, Michigan, and Utah. In all, nineteen states have amended the code to reduce AFCI requirements.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:
Higher regulatory costs have real consequences for working American families. These regulations end up pushing the price of housing beyond the means of many teachers, police officers, firefighters and other middle-class workers. Nationally, for every $1,000 increase in the price of a home, about 140,500 households are priced out of the market for a median-priced new home. (These households would qualify for the mortgage before the price increase, but not afterward.) The added cost of $300-$400 for AFCIs may not sound like much when compared to the overall cost of a home, but this is only one of many regulations which adds cost for new homebuyers. Every $859 increase in construction costs adds an additional $1,000 to the final price of the home.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: 2023 NEC SECTION: 210.52(C)

PROPONENT: Home Builders Association of Georgia DATE: 12/13/24

EMAIL: ahackney@hbag.org

ADDRESS: 887 W. Marietta St. NW Unit T-105 Atlanta, GA 30318

TELEPHONE NUMBER: (4047632453) - FAX NUMBER: ( ) -

CHECK ONE:
- [x] Revise section to read as follows:
- [ ] Add new section to read as follows:
- [ ] Delete section and substitute the following:
- [ ] Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

(DCA STAFF ONLY) ☐ Approve ☐ Approve as amended ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
This amendment removes the requirement for provisions for a future receptacle to be provided if no receptacle on the island or peninsula is installed and reinstates the requirement for at least one receptacle at each island or peninsula from the 2017 edition. It also reinstates the exception allowing receptacles to be installed below the countertop where installed on certain islands and peninsulas and where installed for accessibility for people with disabilities.

Revise as follows:

210.52(C)(2) Island and Peninsular Countertops and Work Surfaces.
~~Receptacle outlets, if installed to serve an island or peninsular countertop or work surface, shall be installed in accordance with 210.52(C)(3). If a receptacle outlet is not provided to serve an island or peninsular countertop or work surface, provisions shall be provided at the island or peninsula for future addition of a receptacle outlet to serve the island or peninsular countertop or work surface.~~

At least one receptacle shall be installed at each island and peninsular countertop space with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater. A peninsular countertop is measured from the connected perpendicular wall.

210.52(C)(3) Receptacle Outlet Location.
Receptacle outlets shall be located in one or more of the following:

(1) On or above, but not more than 500 mm (20 in.) above, a countertop or work surface
(2) In a countertop using receptacle outlet assemblies listed for use in countertops

(3) In a work surface using receptacle outlet assemblies listed for use in work surfaces or listed for use in countertops

Receptacle outlets rendered not readily accessible by appliances fastened in place, appliance garages, sinks, or rangetops as covered in 210.52(C)(1), Exception No. 1, or appliances occupying assigned spaces shall not be considered as these required outlets.

Exception: To comply with the following conditions (1) and (2), receptacle outlets shall be permitted to be mounted not more than 300 mm (12 in.) below the countertop or work surface. Receptacles mounted below a countertop or work surface in accordance with this exception shall not be located where the countertop or work surface extends more than 150 mm (6 in.) beyond its support base.

(1) Construction for the physically impaired

(2) On island and peninsular countertops or work surface where the surface is flat across its entire surface (no backsplashes, dividers, etc.) and there are no means to mount a receptacle within 500 mm (20 in.) above the countertop or work surface, such as an overhead cabinet

Informational Note No. 1: See 406.5(E) for installation of receptacles in countertops and 406.5(F) for installation of receptacles in work surfaces. See 380.10 for installation of multioutlet assemblies.

Informational Note No. 2: See Informative Annex J and ANSI/ICC A117.1-2009, *Standard on Accessible and Usable Buildings and Facilities*, for additional information.

REASON/INTENT:

There is inadequate justification to prohibit receptacles below the countertop or work surface. It is important to remember that the NEC is a minimum code, and its requirements should reflect that. Data from the U.S. Consumer Protection Safety Commission was presented as support for this change. However, the incidents recorded by the CPSC does not specifically indicate that receptacles below the countertops of islands and peninsulas were the cause. There is also no proof that the changes made to the 2023 NEC will be beneficial.

The ultimate responsibility during the use of electrical appliances falls upon the user. To that end, appliance manufacturers have taken measures to address the concern. Manufacturers of cooking appliances already include multiple warnings in their instruction manuals. Below are examples from a single instruction manual of one appliance.

- “Close supervision is necessary when any appliance is used by or near children.”
- “Do not let cord hang over edge of table or counter or touch hot surfaces.”
- “Use deep fryer only on a clean, dry, level, stable, and heat-resistant surface, away from countertop edge.”
- “Close supervision is necessary when any appliance is used by or near children. Hot oil can cause serious and painful burns.”

Most notably, manufacturers have already addressed the issue through innovations, such as magnetic cords that are designed to detach easily from the appliance if pulled. This design feature would prove effective in all circumstances, including all of the existing receptacles located below the countertop.

Surprisingly, the proposed change does not actually prohibit all receptacles from being installed below a countertop on an island or peninsula, and therefore, will have limited effect. There are two reasons for this. First, only receptacles installed “to serve” an island or peninsular countertop or work surface would need to be installed in the areas specified by 210.52(C)(4). Convenience receptacles (at the standard height of 18 inches above finished floor) installed in an island or peninsula do not serve the countertop or work surface, and therefore, would be allowed. Secondly, this provision is located under Part III. of article 210 titled Required Outlets (beginning at Section 210.50). Because this section only applies to required outlets, additional outlets would be allowed below the countertop as usual.

The reason given during the panel meeting for the new requirement under 210.52(C)(2) was that it would be too difficult to install a receptacle in an island or peninsula on a slab-on-grade floor after the home was completed. However, over a third of all new single-family homes are built over either a basement or a crawl space (source: https://eyeonhousing.org/2021/08/65-of-new-single-family-homesused-slab-foundationin-2020/). In these cases, it would be possible to access the island or peninsula from below if a future receptacle were to be installed. Requiring all homes to meet the proposed text is too restrictive. There is also concern about how inspectors may enforce this provision differently. "Provisions shall be provided" is a very open requirement and can lead to differing guidance from no additional work needed (such as when there is access from below) to providing a powered circuit terminating in an electrical box. Requirements that are open to interpretation can be enforced much more strictly than those that clearly state what is intended—adding unnecessary costs to the homeowner.

This is yet another major change to the NEC with possible unintended consequences; adopting it can conceivably result in problems requiring future changes. These constant changes lead to confusion among all users of the code.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:
The cost difference in the required outlets is around $135.00 versus a regular outlet. The requirement also requires drilling into the countertop and modifying the drawer underneath at an additional cost of $125.00. Removing this requirement would result in cost savings of at least $250.00 for the homeowner.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE _____ OF _____

CODE: 2024 IRC SECTION: R318.7.5

PROPONENT: Home Builders Association of Georgia DATE: 12/13/24

EMAIL: ahackney@hbag.org

ADDRESS: 887 W. Marietta St. NW Unit T-105 Atlanta, GA 30318

TELEPHONE NUMBER: (4047632453) - FAX NUMBER: ( ) -

CHECK ONE:
- [x] Revise section to read as follows:
- [ ] Add new section to read as follows:
- [ ] Delete section and substitute the following:
- [ ] Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
This amendment revises the 2024 Internal Residential Code to coincide with the stair geometry to 8inch riser by 9-inch tread depth as found in the UBC.

Revise as follows:
R318.7.5 Stair treads and risers. Stair treads and risers shall meet the requirements of this section. For the purposes of this section, dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners.

R318.7.5.1 Risers. The riser height shall be not more than 8-inches (210 mm) ~~7 3/4 inches (196 mm)~~. The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8-inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted provided that the openings located more than 30 inches (762 mm), as measured vertically, to the floor or grade below do not permit the passage of a 4-inchdiameter (102 mm) sphere.
Exceptions:
1. The opening between adjacent treads is not limited on spiral stairways.
2. The riser height of spiral stairways shall be in accordance with Section R318.7.11.1.

R318.4.5.2 Treads. The tread depth shall be not less than 9-inches (229mm) ~~10 inches (254 mm)~~. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8-inch (9.5 mm).

REASON/INTENT:

This amendment retains the stair geometry requirements allowed under the Uniform Building Code (UBC). This amendment allows the continued use of the 8" x 9" geometry, the dimensions still accepted by many state and local jurisdictions across the country. In fact, many adopt stair geometry requirements of 8 1⁄4" x 9".

The 8" x 9" geometry has always adequately provided for occupant safety in residential occupancies. No sound documentation or data has ever been presented demonstrating it is any less safe or a contributing factor in accidental residential falls than a stair geometry of 7-3⁄4" x 10" or other even more stringent geometries.

The safety benefits of the 7-3⁄4" riser and 10" tread stair geometry are technically unsubstantiated and are not practical in many home designs. The studies provided point generically to stairways in homes where falls occurred requiring emergency room visits or a doctor's care, without breaking down further the specific condition or age of the stairs where a fall may have occurred, or other conditions affecting usability of a stairway such as lighting, presence of a handrail, or lack of consistent stairway geometry.

In one state that adopted the 7-3/4" X 10" geometry, builders found their entire catalogue of stock plans were rendered obsolete and required extensive redesign to accommodate the changed stairway geometry. Where the footprint of the house must be redesigned or increased to accommodate the additional space needed, efficient space design and adequately sized living spaces are sacrificed without any demonstrated gain. This can lead to an economic hardship on first-time home buyers of smaller homes, and in particular for construction on smaller lots, infill projects, and townhomes.

As outlined in Section R101.3 of the International Residential Code (IRC), the intent of the code is to provide minimum requirements for occupant safety and health. There is adequate substantiation to show that 8-inch x 9 inch geometry provides this minimum level of occupant safety.

This is an alternative amendment to accommodate those jurisdictions accustomed to or that wish to retain the use of past UBC requirements of an 8-inch maximum riser height and a 9-inch minimum tread depth.

Prior to changes in 1996 BOCA and 1995 CABO One-and-Two Family Building Code, stair geometry requirements were set at an 8-1⁄4 inch maximum for risers and a 9-inch minimum tread depth.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:
Changing these requirements could result in using 30 less square feet for stairs, and that space could be used for other purposes, or saved altogether, resulting in a significant financial savings to the homeowner.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 2

CODE: 2024 IRC SECTION: R305.1

PROPONENT: Brian Stults DATE: 12/11/2024

EMAIL: Bstults@flameproof.com

ADDRESS: 1200 Soth Lake St Montgomery, IL 60538

TELEPHONE NUMBER: _____ FAX NUMBER: _____

CHECK ONE:
☐ X Revise section to read as follows:
☐ Add new section to read as follows:
☐ Delete section and substitute the following:
☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
R305.1 Subterranean termite control methods.
In areas subject to damage from termites as indicated by Table R301.2, protection shall be by at least two ~~one, or a combination,~~ of the following methods:

1.Chemical termiticide treatment in accordance with Section R305.2.

2.Termite-baiting system installed and maintained in accordance with the label.

3.Pressure-preservative-treated wood in accordance with the provisions of Section R304.1.

4.Naturally durable termite-resistant wood.

5.Physical barriers in accordance with Section R305.3 and used in locations as specified in Section R304.1.

6.Cold-formed steel framing in accordance with Sections R505.2.1 and R603.2.1.

REASON/INTENT:
Subterranean termites cost the American public over one billion dollars each year to repair the damage they cause and to hire termite control companies to treat infested structures. This issue could be mitigated by using common building practices to stop infestations.

FINANCIAL IMPACT OF PROPOSED AMENDMENT: None.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM INSTRUCTION SHEET

1. Do not complete the line entitled "Item No._____".
2. Use a separate form for each proposed code amendment.
3. "Sheet ____ of _____" indicates the number of sheets for each individual proposed code amendment, not the number of sheets for all the amendments submitted.
4. Identify the code and code section that is the subject of the proposed amendment.
5. The proponent's name, address, telephone number and fax number must be filled out completely.
6. Be sure to indicate the type of recommended action in the space referred to as "Check One".
7. If the proposed amendment revises the language of the code section, deletes the entire code section, or deletes the entire code section and offers substitute language, include the language of the present code section and line through the language to be deleted and underline the language of the proposed amendment.
8. Under the "Reason" section, provide the reasoning behind the proposed code amendment. The reason should be clear and concise. Test reports, standards or other supporting information and documentation may be submitted with the proposed amendment and must be attached to the amendment form.
9. **A Statement of Financial Impact must accompany all proposed code amendments.** The statement should be clear and concise. Test reports, standards or other supporting information and documentation may be submitted with the proposed amendment and must be attached to the amendment form.
10. **All proposed amendments must be typed and completed in full and the original submitted to the Codes and Industrialized Buildings Section of the Department of Community Affairs NO LATER THAN DECEMBER 15TH.** The proposed code change shall be submitted for review to the State Codes Advisory Committee at their quarterly meeting in January. An incomplete form will be sent back to the

proponent for completion. An amendment submitted after the submittal deadline date will be returned to the proponent.

11. The proponent will be notified when the proposed amendment will be considered by the State Codes Advisory Committee.

12. Information concerning submittal of code amendments, including deadline dates for submittal, can be obtained by contacting the Codes and Industrialized Buildings Section at (404) 679-3118. All proposed code amendments should be submitted to:

The Department of Community Affairs
Codes and Industrialized Buildings Section
60 Executive Park South, NE
Atlanta, Georgia 30329-2231

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 1

CODE: 2024 IRC SECTION: R305.2

PROPONENT: Brian Stults DATE: 12/11/24

EMAIL: bstults@flameproof.com

ADDRESS: 1200 South Lake St Montgomery, Il 60538

TELEPHONE NUMBER: _____ FAX NUMBER: _____

CHECK ONE:
☐ X Revise section to read as follows:
☐ Add new section to read as follows:
☐ Delete section and substitute the following:
☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
R305.2 Chemical termiticide treatment.
Chemical termiticide treatment shall include soil treatment, ~~or~~ field-applied wood treatment, or factory applied wood treatment. The concentration, rate of application and method of treatment of the chemical termiticide shall be in strict accordance with the termiticide label.

REASON/INTENT:
Currently there are factory applied wood treatment applications on the market using the same termicides as used for field applied. This code change would allow for this method to be used as an alternative to soil treatment or field applied treatment.

FINANCIAL IMPACT OF PROPOSED AMENDMENT: None. Provides alternative methods.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM INSTRUCTION SHEET

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9. **A Statement of Financial Impact must accompany all proposed code amendments.** The statement should be clear and concise. Test reports, standards or other supporting information and documentation may be submitted with the proposed amendment and must be attached to the amendment form.

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The Department of Community Affairs
Codes and Industrialized Buildings Section
60 Executive Park South, NE
Atlanta, Georgia 30329-2231

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 2

CODE: Georgia State Minimum Standard Energy Code SECTION: R403.3

PROPONENT: Amelia Godfrey, Mike Barcik, Shawn Mullins DATE: December 11, 2024

EMAIL: agodfrey@southface.org, mbarcik@southface.org, shawn.mullins@owenscorning.com

ADDRESS: 241 Pine St NE, Atlanta GA, 30308

TELEPHONE NUMBER: (404)604-3664 FAX NUMBER: ( ) -

CHECK ONE: ☐ Revise section to read as follows; ☐ Delete section and substitute the following; ☒ Add new section to read as follows; ☐ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:

Southface and Owens Corning propose the following changes to Section R403.3 the Georgia State Minimum Standard Energy Code to include the addition of new sections that codify locating HVAC duct systems within conditioned space by burying them with insulation. Buried and encapsulated HVAC ductwork has been a tested and verified energy efficiency improvement for systems located in unconditioned attics since 2013.

The updates proposed here are contextually consistent with the 2018 and 2021 IECC, with slight modifications to better align with current Georgia code sections and/or for simplification purposes based on Georgia's climate zones. Southface and Owens Corning propose incorporating this enhanced language into the existing Georgia State Minimum Standard Energy Code, Section R4303.3:

R403.3.7 Duct Systems Located in Conditioned Space (Optional)

For *duct systems* to be considered inside a *conditioned space*, the *space conditioning equipment* shall be located completely on the conditioned side of the *building thermal envelope*. The *ductwork* shall comply with Section R403.3 and the following as applicable:

1. The *ductwork* shall be located completely on the conditioned side of the *building thermal envelope*.
2. *Ductwork* in ventilated attic spaces or unvented attics with vapor diffusion ports shall be buried within ceiling insulation in accordance with R403.3 and shall comply with the following:
   2.1. The air handler is located completely within the *continuous air barrier* and within the *building thermal envelope*.
   2.2. The *ductwork* leakage, as measured either by a rough-in test of the supply and return ductwork or a post-construction *duct system* leakage test to outside the *building thermal envelope* in accordance with Section R403.3.3, shall not exceed 1.5 cubic feet per minute (42.5 L/min) per 100 square feet (9.29 m2)

of *conditioned floor area* served by the *duct system* and shall comply with total leakage requirements of R403.3.4.

2.3. The ceiling insulation R-value installed against and above the insulated *ductwork* shall be greater than or equal to the proposed ceiling insulation R-value, less the R-value of the insulation on the *ductwork*.

REASON/INTENT:

The proposed new text to Section R403.3 Ducts to the current Georgia State Minimum Standard Energy Code will provide for more flexibility and options to builders and designers who want to achieve the benefits of HVAC ductwork inside conditioned space. Adding this language sets clear guidance to HVAC designers and homebuilders on proper installation of buried ductwork and defines ductwork within conditioned space. This measure is applicable to new construction and retrofits of existing homes or HVAC systems.

Without this guidance in place, homes are at risk of experimental HVAC duct installations that risk creating moisture concerns that could compromise building components and produce indoor air quality concerns. Including this language in the Georgia Energy Code allows for better education for homebuilders, contractors, building inspectors, and consumers.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:

This proposed language is intended to provide new optional guidance for HVAC ductwork installations in new and existing residential construction. Since it is not proposed to be mandatory, the regulatory cost to the state and local jurisdictions is $0.

The financial benefits to this new language are the energy and utility cost savings that would be made available to building residents. The U.S Department of Energy Building Technologies Office has conducted research and monitoring on buried and encapsulated ductwork since the early 2000's, with a Building America Top Innovations brief published in 2013 highlighting this strategy.

Unconditioned attics are poor environments for HVAC systems and their ductwork. The extreme temperatures in these spaces, which may reach 120˚F or higher during summer months and near freezing during winters, creates a poor environment for effective delivery of cooled and heated air to the living space. Multiple studies have found the thermal losses of poorly insulated HVAC ducts in attics to range between 10-45%, with factors impacting these losses to include location of the ducts within the attic, existing duct insulation R-value and coverage, and HVAC duct air leakage rates.

DOE has identified that buried and encapsulated ducts are a viable and cost-effective measure for improving the total efficiency of HVAC systems located in unconditioned attics, with achievable energy savings of 8-20% that provide a direct benefit to building occupants. This method of bringing HVAC systems effectively into conditioned space without re-designing traditional unconditioned attics is cost-effective when compared to insulated rooflines or re-designing a home to route systems 100% inside of conditioned space.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM INSTRUCTION SHEET

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GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 2

CODE: Georgia State Minimum Standard Energy Code SECTION: R403.3

PROPONENT: Amelia Godfrey, Mike Barcik, Shawn Mullins DATE: December 11, 2024

EMAIL: agodfrey@southface.org, mbarcik@southface.org, shawn.mullins@owenscorning.com

ADDRESS: 241 Pine St NE, Atlanta GA, 30308

TELEPHONE NUMBER: (404)604-3664 FAX NUMBER: ( ) -

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DESCRIPTION:
Southface and Owens Corning propose the following changes to Section R403.3 the Georgia State Minimum Standard Energy Code to include the addition of new sections that codify locating HVAC duct systems within conditioned space by burying them with insulation. Buried and encapsulated HVAC ductwork has been a tested and verified energy efficiency improvement for systems located in unconditioned attics since 2013.

The updates proposed here are contextually consistent with the 2018 and 2021 IECC, with slight modifications to better align with current Georgia code sections and/or for simplification purposes based on Georgia's climate zones. Southface and Owens Corning propose incorporating this enhanced language into the existing Georgia State Minimum Standard Energy Code, Section R4303.3.

R403.3.8 Ductwork Buried Within Ceiling Insulation (Optional)

Where supply and return ductwork is partially or completely buried in ceiling insulation, such ductwork shall comply with the following:

1. The supply and return ductwork shall be insulated with not less than R-8 insulation.
2. At all points along the ductwork, the ceiling insulation R-value against and above the top of the insulated ductwork shall be not less than R-19.
3. In Climate Zones 2A and 3A the supply ductwork shall be completely buried within ceiling insulation, insulated to an R-value of not less than R-13 and in compliance with the vapor retarder requirements of Section 604.11 of the International Mechanical Code or Section M1601.4.6 of the International Residential Code, as applicable.

Exception 1: Sections of the supply ductwork that are less than 3 feet (914 mm) from the supply outlet.

Exception 2: In Climate Zones 2A and 3A where installed in an unvented attic with vapor diffusion ports, the supply ductwork shall be completely buried within the insulation in the ceiling assembly at the floor of the attic, insulated to an R-value of not less than R-8 and in compliance with the vapor retarder requirements of Section 604.11 of the International Mechanical Code or Section M1601.4.6 of the International Residential Code, as applicable.

REASON/INTENT:

The proposed new text to Section R403.3 Ducts to the current Georgia State Minimum Standard Energy Code will provide for more flexibility and options to builders and designers who want to achieve the benefits of HVAC ductwork inside conditioned space. Adding this language sets clear guidance to HVAC designers and homebuilders on proper installation of buried ductwork. This measure is applicable to new construction and retrofits of existing homes or HVAC systems.

Without this guidance in place, homes are at risk of experimental HVAC duct installations that risk creating moisture concerns that could compromise building components and produce indoor air quality concerns. Including this language in the Georgia Energy Code allows for better education for homebuilders, contractors, building inspectors, and consumers.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:

This proposed language is intended to provide new optional guidance for HVAC ductwork installations in new and existing residential construction. Since it is not proposed to be mandatory, the regulatory cost to the state and local jurisdictions is $0.

The financial benefits to this new language are the energy and utility cost savings that would be made available to building residents. The U.S Department of Energy Building Technologies Office has conducted research and monitoring on buried and encapsulated ductwork since the early 2000's, with a Building America Top Innovations brief published in 2013 highlighting this strategy.

Unconditioned attics are poor environments for HVAC systems and their ductwork. The extreme temperatures in these spaces, which may reach 120˚F or higher during summer months and near freezing during winters, creates a poor environment for effective delivery of cooled and heated air to the living space. Multiple studies have found the thermal losses of poorly insulated HVAC ducts in attics to range between 10-45%, with factors impacting these losses to include location of the ducts within the attic, existing duct insulation R-value and coverage, and HVAC duct air leakage rates.

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GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 2

CODE: Georgia State Minimum Standard Energy Code SECTION: R403.3

PROPONENT: Amelia Godfrey, Mike Barcik, Shawn Mullins DATE: December 11, 2024

EMAIL: agodfrey@southface.org; mbarcik@southface.org; shawn.mullins@owenscorning.com

ADDRESS: 241 Pine St NE, Atlanta GA, 30308

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The updates proposed here are contextually consistent with the 2018 and 2021 IECC, with slight modifications to better align with current Georgia code sections and/or for simplification purposes based on Georgia's climate zones. Southface and Owens Corning propose incorporating this enhanced language into the existing Georgia State Minimum Standard Energy Code, Section R4303.3:

R403.3.9 *R*-value of Deeply Buried Ducts (Optional)

Where complying using Section R405, the sections of ductwork that are installed in accordance with Section R403.3 surrounded with blown-in attic insulation having an *R*-value of R-30 or greater, and located such that the top of the ductwork is not less than 3.5 inches (89 mm) below the top of the insulation and covered by a minimum R-19, the ductwork insulation R-value of the ductwork shall be considered the combined R-value of the ductwork insulation plus the ceiling insulation above the ductwork.

REASON/INTENT:

The proposed new text to Section R403.3 Ducts to the current Georgia State Minimum Standard Energy Code will provide for more flexibility and options to builders and designers who want to achieve the benefits of HVAC ductwork inside conditioned space. Adding this language sets clear guidance to HVAC designers and homebuilders on proper installation of buried ductwork and defines ductwork within conditioned space. This measure is applicable to new construction and retrofits of existing homes or HVAC systems.

Without this guidance in place, homes are at risk of experimental HVAC duct installations that risk creating moisture concerns that could compromise building components and produce indoor air quality concerns. Including this language in the Georgia Energy Code allows for better education for homebuilders, contractors, building inspectors, and consumers.

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GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 3

CODE: International Mechanical Code SECTION: 1109.3.2

PROPONENT: Greg Johnson DATE: 12-07-2024

EMAIL: gjohnsonconsulting@gmail.com

ADDRESS: 4748 Copper Circle; Woodbury MN 55129

TELEPHONE NUMBER: 651-235-1215 FAX NUMBER: _____

CHECK X Revise section to read as follows: _____

_____ _____

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

1109.3.2 Shaft ventilation.

~~Refrigerant~~ Required refrigerant pipe shafts with systems using Group A2L or B2L refrigerant shall be naturally or mechanically ventilated. Refrigerant pipe shafts with one or more systems using any Group A2, A3, B2 or B3 refrigerant shall be continuously mechanically ventilated and shall include a refrigerant detector. The shaft ventilation exhaust outlet shall comply with Section 501.3.1. Naturally ventilated shafts shall have a pipe, duct or conduit not less than 4 inches (102 mm) in diameter that connects to the lowest point of the shaft and extends to the outdoors. The pipe, duct or conduit shall be level or pitched downward to the outdoors. Mechanically ventilated shafts shall have a minimum airflow velocity in accordance with Table 1109.3.2. The mechanical ventilation shall be continuously operated or activated by a refrigerant detector. Systems utilizing a refrigerant detector shall activate the mechanical ventilation at a maximum refrigerant concentration of 25 percent of the lower flammable limit of the refrigerant. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate. The shaft shall not be required to be ventilated for double-wall refrigerant pipe where the interstitial space of the double-wall pipe is vented to the outdoors.

REASON/INTENT:

This is a companion proposal to a proposal to amend IMC Section 1109.2.5 to allow exception 2 for all refrigerants as is permitted by ASHRAE 15-2022, *Safety Standard for Refrigeration Systems,* and will be permitted by the 2027 IMC (M75-24 is on the consent agenda for the 2027 IMC). If that proposal is accepted many refrigerant pipe shafts for A2L refrigerants would no longer be required because the maximum amount of refrigerant that could be released would be within the safe release limits specified by the IMC in Table 1103.1.

Where no shaft is required, A2L refrigerant piping could be run through stud cavities as permitted by Sec. 1109.2.2. (Note that Sec. 1109.3 requires that A2L piping systems comply with the provisions of Sec. 1109.3.1 for protection against physical damage).

If a shaft is not required, but the designer chooses to run A2L refrigerant piping in a shaft anyway for ease of construction, the requirements of Sec. 1109.3.2 should not apply. A refrigerant leak in a non-required shaft would be no more hazardous than a refrigerant leak in a stud cavity. If the stud cavity would not require ventilation and drainage, then a non-required shaft should not require ventilation and drainage.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:

The cost burden of providing ventilated and drained shafts is considerable; multifamily designers say some developers estimate $250K to provide these shafts in a 300-unit multifamily building.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

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GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 5

CODE: International Mechanical Code SECTION: 1109.3.2

PROPONENT: Greg Johnson DATE: 12-07-2024

EMAIL: gjohnsonconsulting@gmail.com

ADDRESS: 4748 Copper Circle; Woodbury MN 55129

TELEPHONE NUMBER: 651-235-1215 FAX NUMBER: _____

CHECK X Revise section to read as follows: _____

_____ _____

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

1109.3.2 Shaft ventilation.

Refrigerant pipe shafts with systems using Group A2L or B2L refrigerant shall be naturally or mechanically ventilated. Refrigerant pipe shafts with one or more systems using any Group A2, A3, B2 or B3 refrigerant shall be continuously mechanically ventilated and shall include a refrigerant detector. The shaft ventilation exhaust outlet shall comply with Section 501.3.1. Naturally ventilated shafts shall have a pipe, duct or conduit not less than 4 inches (102 mm) in diameter that connects to the lowest point of the shaft and extends to the outdoors. The pipe, duct or conduit shall be level or pitched downward to the outdoors. Mechanically ventilated shafts shall have a minimum airflow velocity in accordance with Table 1109.3.2. The mechanical ventilation shall be continuously operated or activated by a refrigerant detector. Systems utilizing a refrigerant detector shall activate the mechanical ventilation at a maximum refrigerant concentration of 25 percent of the lower flammable limit of the refrigerant. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate. The shaft shall not be required to be ventilated for double-wall refrigerant pipe where the interstitial space of the double-wall pipe is vented to the outdoors. For refrigeration systems used in residential occupancies serving only a single dwelling unit or sleeping unit, shaft ventilation shall not be required where the pipe or tube is continuous without fittings in the shaft.

REASON/INTENT:

The proposed language is taken from code change M62-24 which passed the ICC's IMC hearing committee by 13-1 and which received no public comments. M62-24 is therefore on the consent agenda for the 2027 IMC and will be the content of the 2027 IMC. M62 is appended.

This language is also consistent with provisions addressing shaft ventilation in Section 8.5.2.2 of ASHRAE 15.2-2022, *Safety Standard for Refrigeration Systems in Residential Applications* and Addendum a to ASHRAE 15-2024, *Safety Standard for Refrigeration Systems.*

There is almost no chance of refrigerant piping without connections leaking refrigerant into the shaft where it is located. As such there is almost no chance of a need to ventilate the shaft, particularly since this allowance is limited to piping serving a single unit, meaning a limited quantity of A2L refrigerant which could potentially be released.

Given the limited hazard, it is unwarranted to require the expense of ventilating shafts with low volume, continuous A2L refrigerant piping.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:

The cost burden of providing ventilated and drained shafts is considerable; multifamily designers say some developers estimate $250K to provide these shafts in a 300-unit multifamily building.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

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10. **All proposed amendments must be typed and completed in full and the original submitted to the Codes and Industrialized Buildings Section of the Department of Community Affairs NO LATER THAN DECEMBER 15TH.** The proposed code change shall be submitted for review to the State Codes Advisory Committee at their quarterly meeting in January. An incomplete form will be sent back to the proponent for completion. An amendment submitted after the submittal deadline date will be returned to the proponent.

11. The proponent will be notified when the proposed amendment will be considered by the State Codes Advisory Committee.

12. Information concerning submittal of code amendments, including deadline dates for submittal, can be obtained by contacting the Codes and Industrialized Buildings Section at (404) 679-3118. All proposed code amendments should be submitted to:

The Department of Community Affairs
Codes and Industrialized Buildings Section
60 Executive Park South, NE
Atlanta, Georgia 30329-2231

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 10

CODE: International Mechanical Code SECTION: 1109.2.5

PROPONENT: Greg Johnson DATE: 12-07-2024

EMAIL: gjohnsonconsulting@gmail.com

ADDRESS: 4748 Copper Circle; Woodbury MN 55129

TELEPHONE NUMBER: 651-235-1215 FAX NUMBER: _____

CHECK X Revise section to read as follows: _____

_____ _____

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION: revise IMC as follows:

1109.2.5 Refrigerant pipe shafts.

Refrigerant piping that penetrates two or more floor/ceiling assemblies shall be enclosed in a fire-resistance-rated shaft enclosure. The fire-resistance-rated shaft enclosure shall comply with Section 713 of the *International Building Code*.

Exceptions:

1. *Refrigeration* systems using R-718 refrigerant (water).
2. Piping in a direct refrigeration system ~~using Group A1 refrigerant~~ where the refrigerant quantity does not exceed the limits of Table 1103.1 for the smallest occupied space through which the piping passes.
3. Piping located on the exterior of the *building* where vented to the outdoors.

REASON/INTENT:

There is a significant problem with the shaft requirements of the 2021 and 2024 International Mechanical Code (IMC) for refrigerant piping which - according to the original proponent at the ICC - unintentionally codified a provision that requires ventilated and drained fire-resistance rated shafts for Group A2L refrigerant piping - regardless of the quantity of refrigerant in the piping - where the piping penetrates two or more floor/ceiling assemblies.

Regarding Exception 2, IMC Table 1103.1, *Refrigerant Classification, Amount and OEL* provides limits for the quantity of refrigerant that can be released to the atmosphere without creating a fire or human health hazard. IMC Table 1103.1 is duplicated from ASHRAE Standard 34, *Designation and Safety Classification of Refrigerants* Table 4-1, *Refrigerant Data and Safety Classifications.*

Restricting the shaft exception to systems using Group A1 refrigerants is inconsistent with the safe limits premise of IMC Table 1103.1 and Standard 34, Table 4-1. There is no need to restrict the use of any refrigerant provided the release of which does not exceed the tabular safety limits.

This interpretation is supported by the provisions of Exception b of Section 9.12.1.5 of ASHRAE 15-2022, *Safety Standard for Refrigeration Systems* which says*:*

"9.12.1.5.1 Shaft Alternative. *A* ***shaft enclosure shall not be required*** *for the refrigerant piping for any of the following refrigerating systems:*

a. Systems using R-718 (water) refrigerant
b. Piping in a high-probability system ***where the refrigerant concentration does not exceed the amounts shown in ASHRAE Standard 34****, Table 4-1 or 4-2, for the smallest occupied space through which the piping passes* ***<emphasis added>***
c. Piping located on the exterior of the building where vented to the outdoors"

Research of past editions of ASHRAE 15 shows that the exception (shaft alternative) for limited concentrations of refrigerant has applied to all refrigerants and not just A1 refrigerants since at least 1994.

Code change M75-24 (appended) makes the same amendment as this proposal. It has been heard and passed unanimously by the IMC hearing committee and received no public comments. Under ICC's process M75-24 is now on the consent agenda for the 2027 IMC; in other words, this proposal is requesting that the refrigerant pipe shaft exception of the 2027 IMC be adopted instead of that of the 2021 or 2024 IMC.

An engineering analysis by Julius Ballanco, P.E., is appended to this request. Mr. Ballanco was the proponent of the code change that introduced the language being asked to be amended. Mr. Ballanco explains that restricting Exception 2 of IMC Section 1109.2.5 to only A-1 refrigerants was an unintended result of a working draft document being codified and that the exception should be applied to all refrigerants and Group A2L, particularly.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:

The cost burden of providing these unnecessary shafts is considerable; multifamily designers say some developers estimate $250K to provide these shafts in a 300-unit multifamily building.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM INSTRUCTION SHEET

1. Do not complete the line entitled "Item No._____".
2. Use a separate form for each proposed code amendment.
3. "Sheet ____ of _____" indicates the number of sheets for each individual proposed code amendment, not the number of sheets for all the amendments submitted.
4. Identify the code and code section that is the subject of the proposed amendment.
5. The proponent's name, address, telephone number and fax number must be filled out completely.
6. Be sure to indicate the type of recommended action in the space referred to as "Check One".
7. If the proposed amendment revises the language of the code section, deletes the entire code section, or deletes the entire code section and offers substitute language, include the language of the present code section and line through the language to be deleted and underline the language of the proposed amendment.
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proponent for completion. An amendment submitted after the submittal deadline date will be returned to the proponent.

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The Department of Community Affairs
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60 Executive Park South, NE
Atlanta, Georgia 30329-2231

M62-24

IMC®: CHAPTER 11, SECTION 1101, 1101.1, 1101.1.1, 1107.4, 1107.5, 1109.2.7, 1109.3.2, ASHRAE Chapter 15 (New)

Proponents: Emily Toto, ASHRAE, ASHRAE (etoto@ashrae.org)

2024 International Mechanical Code

CHAPTER 11
REFRIGERATION

SECTION 1101
GENERAL

1101.1 Scope. This chapter shall govern the design, installation, construction and repair of *refrigeration systems* . Permanently installed refrigerant storage systems and other components shall be considered as part of the *refrigeration system* to which they are attached.

Revise as follows:

1101.1.1 Refrigerants other than ammonia. *Refrigeration systems* using a refrigerant other than ammonia shall comply with this chapter, the International Fire Code, and either ASHRAE 15 or ASHRAE 15.2, as applicable~~and the *International Fire Code*~~. *Refrigeration systems* containing carbon dioxide as the refrigerant shall also comply with IIAR CO2 .

1107.4 Piping materials standards. Refrigerant pipe shall conform to one or more of the standards *listed* in Table 1107.4. For refrigeration systems used in residential occupancies serving only a single dwelling unit or sleeping unit, refrigerant piping and tubing shall be limited to aluminum, copper, and copper alloy. The exterior of the pipe shall be protected from corrosion and degradation.

1107.5 Pipe fittings. Refrigerant pipe fittings shall be *approved* for installation with the piping materials to be installed, and shall conform to one of more of the standards listed in Table 1107.5 or shall be *listed* and *labeled* as complying with UL 207. For refrigeration systems used in residential occupancies serving only a single dwelling unit or sleeping unit, refrigerant fittings shall be limited to aluminum, copper, copper alloys, stainless steel, and steel.

1109.2.7 Pipe identification. Refrigerant pipe located in areas other than the room or space where the refrigerating *equipment* is located shall be identified. The pipe identification shall be located at intervals not exceeding 20 feet (6096 mm) on the refrigerant piping or pipe insulation. The minimum height of lettering of the identification label shall be $^{1}/_{2}$ inch (12.7 mm). The identification shall indicate the *refrigerant designation* and safety group classification of refrigerant used in the piping system. For Group A2L and B2L refrigerants, the identification shall also include the following statement: “WARNING—Risk of Fire. Flammable Refrigerant.” For Group A2, A3, B2 and B3 refrigerants, the identification shall also include the following statement: “DANGER—Risk of Fire or Explosion. Flammable Refrigerant.” For any Group B refrigerant, the identification shall also include the following statement: “DANGER—Toxic Refrigerant.”

Exception: For refrigeration systems used in residential occupancies serving only a single dwelling unit or sleeping unit pipe identification shall not be required.

1109.3.2 Shaft ventilation. Refrigerant pipe shafts with systems using Group A2L or B2L refrigerant shall be naturally or mechanically ventilated. Refrigerant pipe shafts with one or more systems using any Group A2, A3, B2 or B3 refrigerant shall be continuously mechanically ventilated and shall include a refrigerant detector. The shaft ventilation exhaust outlet shall comply with Section 501.3.1. Naturally ventilated shafts shall have a pipe, duct or conduit not less than 4 inches (102 mm) in diameter that connects to the lowest point of the shaft and extends to the outdoors. The pipe, duct or conduit shall be level or pitched downward to the outdoors. Mechanically ventilated shafts shall have a minimum airflow velocity in accordance with Table 1109.3.2. The mechanical ventilation shall be continuously operated or activated by a refrigerant detector. Systems utilizing a refrigerant detector shall activate the mechanical ventilation at a maximum refrigerant concentration of 25 percent of the lower flammable limit of the refrigerant. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate. The shaft shall not

be required to be ventilated for double-wall refrigerant pipe where the interstitial space of the double-wall pipe is vented to the outdoors. For refrigeration systems used in residential occupancies serving only a single dwelling unit or sleeping unit, shaft ventilation shall not be required where the pipe or tube is continuous without fittings in the shaft.

Add new standard(s) as follows:

15.2-2022 Safety Standard for Refrigeration Systems in Residential Applications

Reason: This code change proposal adds the reference to ASHRAE 15.2, the installation standard for residential air conditioning systems used for a single dwelling or sleeping unit. This addition addresses a gap created in the Code when ASHRAE 15 split its scope between standards 15 and 15.2. As some systems covered by the scope of ASHRAE 15.2 are also covered by the IMC, its inclusion within the IMC is necessary.With the separation between ASHRAE 15 and ASHRAE 15.2, there were certain changes that impact the refrigerant piping requirements. For residential systems, the piping material is limited to aluminum, copper, and copper alloy pipe or tube. The fitting requirements are similar material requirements with the addition of stainless steel and steel.

Pipe identification is not required for piping system regulated by ASHRAE 15.2. The reason for this is that the refrigerant piping is obvious not needing to be individually identified. Whereas in commercial buildings there are often multiple piping systems where the type of piping system is not obvious.

For shaft ventilation, there is an allowance in residential systems to eliminate the ventilation of the shaft when the piping system is continuous without fittings in the shaft. This provision was added to the end of the section.

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:

The inclusion of ASHRAE 15.2 into the IMC is editorial in nature, and as such will not impact the cost of construction. Changes to piping for ASHRAE 15.2 may actually reduce the cost of construction, by not requiring shaft ventilation when no joints are present in the shaft.

Staff Analysis: A review of the standard proposed for inclusion in the code, ASHREA 15.2 Safety Standard for Refrigeration Systems in Residential Applications, with regard to some of the key ICC criteria for referenced standards (Section 4.6 of CP#28) will be posted on the ICC website on or before March 18, 2024.

M75-24

IMC®: 1109.2.5

Proponents: Greg Johnson, Johnson & Associates Consulting Services, National Multifamily Housing Council (gjohnsonconsulting@gmail.com); Vladimir G. Kochkin, National Association of Home Builders - NAHB, NAHB (vkochkin@nahb.org); Andrew Klein, A S Klein Engineering, PLLC, BOMA International (andrew@asklein.com); Emily Toto, ASHRAE, ASHRAE (etoto@ashrae.org)

2024 International Mechanical Code

Revise as follows:

1109.2.5 Refrigerant pipe shafts. Refrigerant piping that penetrates two or more floor/ceiling assemblies shall be enclosed in a fire-resistance-rated shaft enclosure. The fire-resistance-rated shaft enclosure shall comply with Section 713 of the International Building Code.

Exceptions:

1. *Refrigeration* systems using R-718 refrigerant (water).
2. Piping in a direct refrigeration system ~~using Group A1 refrigerant~~ where the refrigerant quantity does not exceed the limits of Table 1103.1 for the smallest occupied space through which the piping passes.
3. Piping located on the exterior of the *building* where vented to the outdoors.

Reason: JOHNSON: This will make the IMC consistent with Section 9.12.1.5 of ASHRAE 15-2022. Note that IMC Section 1109.2.2 still requires piping protection, either within building elements or protective enclosures.

TOTO: This section was added to the IMC before the completion of the changes to ASHRAE 15. ASHRAE 15 removed the limitation in exception 2 as applying only to Group A1 refrigerants. It was determined that any refrigerant meeting the limitations of Table 1103.1 are safe to install without a shaft enclosure. This modification is consistent with ASHRAE 15-2022.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

JOHNSON: Costs are estimated to be reduced by roughly $1,000 per piping run per floor of an R-2 multifamily building.
TOTO: This may reduce the cost of construction by eliminating the shaft requirements for all refrigerants that do not exceed the safe limitations in the code. $22,400 estimated avoided total cost per mechanical room.

Estimated Immediate Cost Impact Justification (methodology and variables):

JOHNSON: Lineal feet of shaft-wall system avoided estimated to be 20 feet. Height of ceiling estimated to be 9 feet. Cost of installed shaft system estimated to be $7.00 per square foot. 20 X 9 X $7 = $960. $960 was rounded to $1,000.
TOTO: This change provides a lower cost alternative to the installation of a pipe shaft. Assumed area of avoided shaft wall system = 10 ft high X 40 lineal ft ($ sided enclosure) = 400 sf of shaft wall area. Assume shaft liner wall board is $34 per sf (kamcoboston.com), assume shaft framing materials are $8 per sf (schillings.com), assume $4 per sf labor (forbes.com), = $56 per sf for installed shaft wall without finishing. $56 per sf X 400 sf = **$22,400 estimated avoided total cost per mechanical room.**

Estimated Life Cycle Cost Impact:

JOHNSON: N/A

Estimated Life Cycle Cost Impact Justification (methodology and variables):

JOHNSON: N/A

JB ENGINEERING AND CODE CONSULTING, P.C.
1661 Cardinal Drive • Munster, IN 46321
Phone: 219-922-6171 • Cellular: 219-689-1699
E-Mail: JBEngineer@aol.com

JULIUS A. BALLANCO, P.E.
President

July 10, 2024

Refrigerant Piping Connecting (or Passing Through) Multiple Floor Levels
Based on ASHRAE 15 with a Reference to the ICC International Mechanical Code

Executive Summary: Where refrigerant piping passes through different floor levels in a building, design professionals have the option of locating the piping in a fire-resistance rated pipe shaft, or within the building elements with each floor/ceiling penetration properly protected.

The 2021 and 2024 editions of the ICC International Mechanical Code have a limitation on refrigeration systems using Group A1 refrigerants for exceptions to the pipe shaft requirements. This limitation was only proposed, but not accepted, by ASHRAE 15. The limitation is being removed in the 2027 edition of the Mechanical Code. Code Officials should accept the allowance of the exceptions for any system, in accordance with alternative approval.

Pipe Shaft Option: When refrigerant piping is located in a pipe shaft, the Building Code regulates the fire-resistant rating of the shaft. Shafts that connect three stories or less must be 1 hour fire-resistance rated. Shafts connecting four or more stories must be 2-hour fire-resistance rated. Every pipe penetration of the shaft wall, whether horizontal or vertical, must be protected with a through penetration pipe protection to maintain the fire-resistance rating of the shaft.

When the refrigerant piping contains a Group A2L refrigerant, the pipe shaft must be ventilated. The ventilation can either be by natural or mechanical means. If natural ventilation is selected, a 4-inch round duct or pipe must be at the base of the shaft and open to the outdoors. There must also be an opening at the top of the shaft, to allow the free flow of air for natural ventilation.

If the shaft is mechanically ventilated, a refrigerant detector is required at the base of the shaft to detect any leaking refrigerant, thus activating the mechanical ventilation. The ventilation rate is based on the inside area of the shaft. ASHRAE 15 specifies the ventilation rate for the given size of the shaft.

Penetration Protection Option: Piping is typically enclosed within the building elements. Refrigerant piping may also be enclosed within the building elements. Where the refrigerant piping passes through a floor/ceiling assembly, the annular space around the pipe must be protected with a through penetration protection means. This is typically accomplished with a fire rated caulking material.

If the refrigerant piping passes through a fire-resistance rated wall assembly, the annular space must be protected with a through penetration protection means. The through penetration protection must be the same or higher rating than the wall assembly.

Substantiation Detailing the Executive Summary

The refrigerant piping requirements in the 2022 edition of ASHRAE 15 have been completely rewritten. The new requirements were developed by the Refrigerant Piping Working Group of SSPC 15. Many of the piping requirements remain the same as previous editions of the standard, merely coordinated into a new format.

One of the issues that appears confusing is the installation of refrigerant piping between multiple floors, specifically three or more floors. Section 9.12.1.5 states, in part, "*Refrigerant piping that penetrates two or more floor/ceiling assemblies shall be enclosed in a fire-resistance-rated shaft enclosure. The fire-resistance-rated shaft enclosure shall comply with the requirements of the building code."*

The following section, 9.12.1.5.1, lists alternatives to installing refrigerant piping in a fire-resistance rated shaft. The second item listed for shaft alternatives states, "*Piping in a high-probability system where the refrigerant concentration does not exceed the amounts shown in ASHRAE Standard 34[3], Table 4-1 or 4-2, for the smallest occupied space through which the piping passes*."

While both Section 9.12.1.5 and 9.12.1.5.1 appear to be new requirements, they are actually a rewrite of Section 8.10.3 of the 2019 and prior editions of ASHRAE 15. Rather than including exceptions to the shaft requirements, the new Section 9.12.1.5.1 uses the term, "shaft alternative." In effect, shaft alternatives are exceptions to the shaft requirements.

The requirement for a pipe shaft dates back to when the Building Code mandated pipe shafts where piping extended three or more stories in a building. The 1984 BOCA Building Code had the following statement in Section 1410.4:

Section 1410.4 Ducts and pipe shafts: *In all buildings other than buildings of Use Group R-3, vertical pipes arranged in groups of two or more which penetrate two or more floors and occupy and area of more than 1 square foot …. shall be enclosed by construction having a fireresistance rating specified in Table 401.*

It should be noted that Use Group R-3 is the classification for one- and two-family dwellings.

Section 9.12.2.2 of ASHRAE 15 specifies requirements to ventilate a pipe shaft where refrigerant piping using Group A2L refrigerants is used. Shaft ventilation can be accomplished by either natural or mechanical means. For natural ventilation, Item a of Section 9.12.2.2 requires a minimum of a 4-inch diameter pipe, duct, or conduit at the lowest point of the shaft and open to the outdoors. A means of make up air must be at the top of the shaft.

Mechanical ventilation, identified in Item b of Section 9.12.2.2, is based on the area of the pipe shaft. Table 9-12 specifies the minimum ventilation rate. A pipe shaft of 20 square inches or less requires a minimum of 100 cfm of ventilation. A pipe shaft greater than 20 square inches, and less than or equal to 250 square inches, requires a minimum of 200 cfm of ventilation.

A pipe shaft remains an option for enclosing refrigerant piping. The ICC International Building Code has the following requirement for a shaft fire-resistance rating:

713.4 Fire-resistance rating. *Shaft enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more, and not less than 1 hour where connecting less than four stories. The number of stories connected by the shaft enclosure shall include any basements but not any mezzanines. Shaft enclosures shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours. Shaft enclosures shall meet the requirements of Section 703.2.1.1.*

By 1987, all of the model building codes were revised to remove the mandatory requirement for a pipe shaft. A pipe shaft was still permitted as an optional design, however, the building codes added extensive pipe penetration requirements for floor/ceiling penetrations when a pipe shaft is not installed. Those requirements remain in the current ICC International Building Code. Section 714 specifies penetration protection requirements. When a through penetration firestop system is used to protect the annular space, the system must be tested to ASTM E814 or UL 1479.

There are special exceptions for penetrations of copper and steel pipe 6 inches in diameter or less. When passing through concrete or masonry, the annular space can be filled with mortar, provided the penetration does not allow the passage of smoke or flame.

Item b in Section 9.12.1.5.1 of ASHRAE 15 is consistent with the International Building Code allowance for multi-floor piping with penetration protection rather than a pipe shaft. ASHRAE 15 directs the user to the Building Code to determine the requirements for penetration protection.

When utilizing Item b in Section 9.12.1.5.1, the design professional must perform an analysis of the potential leak of refrigerant into the smallest space in which the piping passes. The 2022 edition of ASHRAE 15 added new requirements for analyzing potential refrigerant leaks. This included the addition of effective dispersal volume charge (EDVC), as well as, effective dispersal volume (EDV). Section 7.2.3.1.1 added exempted spaces when determining the EDV. The section reads, "*The areas that contain only continuous refrigerant piping, or contain only joints and connections that have been tested in accordance with Section 9.13, are exempt from the effective dispersal volume calculation unless these areas are part of connected spaces per Section 7.2.3.2*."

Section 9.13, referenced in the exempted spaces section, is the new robust testing requirements for field installed refrigerant piping. Testing is required for all field installed refrigerant piping, hence, if the piping installation complies with ASHRAE 15, spaces containing only the piping, including joints and connections, are exempt from the EDV calculations.

Where the refrigerant piping, connecting three or more stories, is not located in a fire-resistance rated shaft, Item b of Section 9.12.1.5.1 requires an analysis of the leak potential into the spaces in which the piping passes through. However, Section 7.2.3.2 exempts spaces from the EDV calculation if the space only contains tested refrigerant piping, joints, and connections. When installed in such a manner, the International Building Code requires all pipe penetrations of floor/ceiling assemblies to be properly protected.

ICC International Mechanical Code: At the time the ASHRAE SSPC 15 Refrigerant Piping Working Group began rewriting the refrigerant piping requirements in ASHRAE 15, it was noted that the refrigerant piping requirements in the 2018 edition of the ICC International Mechanical Code were woefully inadequate. A code change was submitted, using an early draft of the changes to the refrigerant piping requirements in

ASHRAE 15. Included in that early draft were the refrigerant pipe shaft provisions listed as Section 1109.2.5. Rather than shaft alternatives, the code change listed exceptions to a refrigerant pipe shaft section.

The second exception in the proposed code change added a limitation as only being applicable to refrigeration systems using Group A1 refrigerants. The exception reads:

2. Piping in a direct system using Group A1 refrigerant where the refrigerant quantity does not exceed the limits of Table 1103.1 for the smallest occupied space through which the piping passes.

This limitation for systems using Group A1 refrigerants was part of a very large code change. Most of the emphasis and review were of the other sections in the proposed change. Exception 2 was not identified in the code change substantiation, nor was it discussed during testimony on the code change.

SSPC 15 Refrigerant Piping Working Group had nine revisions to the original draft of the piping requirements. During those revisions, the limitation for shaft alternatives to only systems using Group A1 refrigerants was removed. There was no technical justification for limiting the shaft alternative to a single group of refrigerants. With the anticipated increased use of Group A2L refrigerants, it was noted that the shaft alternative must also apply to these refrigeration systems.

When the exception to Section 1109.2.5 was added to the 2021 ICC International Mechanical Code, the code became inconsistent with ASHRAE 15. The 2019 edition of ASHRAE 15 did not include the update from the Refrigerant Piping Working Group, however, the standard always permitted the shaft exception for a system using any refrigerant.

The final approval of the refrigerant piping rewrite to ASHRAE 15 occurred in the early part of 2022, after the final consideration of code changes to the 2024 ICC International Mechanical Code. In accordance with ASHRAE policy, a code change could not be submitted to ICC to correct exception 2 to Section 1109.2.5 since the piping change had not been accepted by ASHRAE.

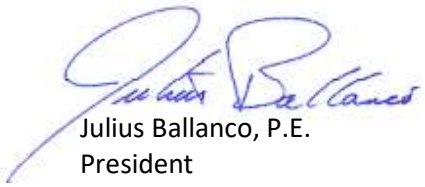
The 2022 edition of ASHRAE 15, which is referenced in the 2024 edition of the ICC International Mechanical Code, updated the refrigerant piping requirements. The shaft alternatives allowable for all refrigerants was included in the 2022 edition of ASHRAE 15. Thus, there is a conflict between the Mechanical Code and the referenced standards regarding the exception or alternative to refrigerant pipe shafts.

The SSPC 15 Code Change Working Group noted this conflict and proposed a change, M75-24, to the 2027 edition of the ICC International Mechanical Code to remove the limitation applying to only Group A1 refrigerants. Code change M75-24, sponsored by ASHRAE and others, was unanimously approved by the Mechanical Code Committee. The result of this code change will make the Mechanical Code consistent with ASHRAE 15 regarding the allowance of the exception, or shaft alternative, being applicable to all refrigeration systems.

It is appropriate for code officials to grant an alternative approval in accordance with Section 104.2.3 of the ICC International Mechanical Code. The alternative approval would be to allow the use of Exception 2 to Section 1109.2.5 as applying to a refrigeration system using any refrigerant. The alternative approval would be consistent with ASHRAE 15 and the 2027 edition of the ICC International Mechanical Code.

Summary: ASHRAE 15 grants the design professional the option to install refrigerant piping in a fire-resistance rated shaft, or to protect every floor/ceiling penetration in accordance with the Building Code. Code Officials enforcing the 2021 or 2024 edition of the ICC International Mechanical Code should grant an alternative approval for refrigeration systems using refrigerants, other than Group A1 refrigerants, to not be located in a pipe shaft based on the requirements in ASHRAE 15.

Respectfully submitted,



Julius Ballanco, P.E.
President

(Note: Julius Ballanco was the Chair of the SSPC 15 Refrigerant Piping Working Group and proponent of the ICC refrigerant piping code change.)

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM

ITEM NO: _____ (DCA USE ONLY) PAGE 1 OF 1

CODE: 2021/2024 IPC SECTION: 403.2 exception 6

PROPONENT: Kenneth Jacobsen DATE: 8/28/24

EMAIL: [redacted]

ADDRESS: [redacted]

TELEPHONE NUMBER: [redacted] FAX NUMBER: ( ) -

CHECK ONE:
- ☐ Revise section to read as follows:
- ☐ Add new section to read as follows:
- ☐ Delete section and substitute the following:
- ☒ Delete without substitution:

~~LINE THROUGH MATERIAL TO BE DELETED:~~ UNDERLINE MATERIAL TO BE ADDED

☐ Approve ☐ Approve as amended (DCA STAFF ONLY) ☐ Disapprove ☐ Withdrawn

DESCRIPTION:
Delete without subsitution - IPC section 403.2, Exception #6

REASON/INTENT:
The safety of females is the paramount concern and intent behind section 403.2. Allowing all sexes in the same restroom at the same time removes the barrier for the women's safety.. Exception #6 violates the safety concerns for women & young girls.

FINANCIAL IMPACT OF PROPOSED AMENDMENT:
no impact

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS

CODE AMENDMENT FORM INSTRUCTION SHEET

1. Do not complete the line entitled "Item No._____".
2. Use a separate form for each proposed code amendment.
3. "Sheet ____ of _____" indicates the number of sheets for each individual proposed code amendment, not the number of sheets for all the amendments submitted.
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6. Be sure to indicate the type of recommended action in the space referred to as "Check One".
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8. Under the "Reason" section, provide the reasoning behind the proposed code amendment. The reason should be clear and concise. Test reports, standards or other supporting information and documentation may be submitted with the proposed amendment and must be attached to the amendment form.
9. **A Statement of Financial Impact must accompany all proposed code amendments.** The statement should be clear and concise. Test reports, standards or other supporting information and documentation may be submitted with the proposed amendment and must be attached to the amendment form.
10. **All proposed amendments must be typed and completed in full and the original submitted to the Codes and Industrialized Buildings Section of the Department of Community Affairs NO LATER THAN DECEMBER 15TH.** The proposed code change shall be submitted for review to the State Codes Advisory Committee at their quarterly meeting in January. An incomplete form will be sent back to the proponent for completion. An amendment submitted after the submittal deadline date will be returned to the proponent.
11. The proponent will be notified when the proposed amendment will be considered by the State Codes Advisory Committee.
12. Information concerning submittal of code amendments, including deadline dates for submittal, can be obtained by contacting the Codes and Industrialized Buildings Section at (404) 679-3118. All proposed code amendments should be submitted to:

The Department of Community Affairs
Codes and Industrialized Buildings Section
60 Executive Park South, NE
Atlanta, Georgia 30329-2231

We are regular citizens of the State of Georgia with no affiliation to any particular associations or groups. We live in and around the Savannah area. My background is in civil engineering with a focus on building design. My two counterparts in this email are Edith and Kim. Edith is the wife of an air force veteran, mother of an Army Sargent First Class, and grandmother. Kim is a business entrepreneur, wife and mother.

We are reaching out to you because we believe your heart's mission is to support and promote the welfare of families, women and children. We are deeply concerned about some of the provisions in the new 2024 Edition of International Building Code and International Plumbing Code ("Building Code") and how, if implemented in its original format, could gravely endanger the lives of women and children all over this state. We want to make sure that you and the Governor are aware of this risk and that the appropriate committees and state congressional leaders will address this threat without delay.

The Building Code has a provision for gender-neutral multiple occupancy use public restrooms where men, women and children will be forced to use toilet and urinal stalls next to each other and share common space at the sink area. The State's Department of Community Affairs Construction Codes Program is in the process of adopting this Code as statewide minimum building code.
https://www.dca.ga.gov/node/8849
https://www.dca.ga.gov/node/9066

Gender-neutral public restrooms discriminate against women and children. Men will have access to both water closet compartments and urinal spaces while decreasing the available number of bathroom spaces for women and children. It also decreases the area available for women to address personal needs such as menstrual or medical care, nursing and baby changing activities which may be carried out in the sink area as opposed to the water closet compartment.

Furthermore, Gender-neutral public restrooms place women and children in dangerous physical and emotional situations. Women and children tend to be physically less able to fight off predators who use this as opportunity for easy access. We have multiple sources demonstrating that this type of restroom directly exposes women and children to sexual violence, voyeurism, and human trafficking.

Gender-neutral public restrooms as provided in the Building Code do not work. In the United Kingdom, they tried to implement these kinds of facilities to disastrous effects and have since reverted to traditional gender-separated public restroom spaces. Our neighboring state of South Carolina adopted the Building Code last year, and when they realized these provisions were in it, they held an emergency session to revise their Code and remove this dangerous language.

It is our understanding that Bill HB1104 sponsored by Senator Clint Dixon will restrict student athletes from using school bathrooms based on gender identity which is further supported by efforts from Attorney General Chris Carr to prevent title IX from mandating males and females share restrooms. The new Building Code provision for gender-neutral multiple occupancy use restrooms is in direct conflict with the State's efforts to preserve gender-separate bathroom spaces for our students.

We have more information to share and hope that we might be able to meet with you to discuss this critical matter further. We would also appreciate your recommendations on who we may contact to make sure these dangers have been thoroughly discussed before this terrible Building Code language is implemented in Georgia. We wait in eager anticipation of your reply.

You can easily reach us through our emails or my contact number.

Thank you for your time and attention to this matter.

Respectfully,
Yen Yen Skelton [redacted]
Edith Darden