

# IRC - Mechanical



cdpACCESS

## 2024 GROUP A PROPOSED CHANGES TO THE I-CODES

Committee Action Hearings (CAH #2)  
October 23 - 31, 2024  
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# RM1-24

IRC: M1305.1.2, M1305.1.2.2 (New)

## Proposed Change as Submitted

**Proponents:** David Crawford Bixby, Air Conditioning Contractors of America (ACCA), ACCA (david.bixby@acca.org)

### 2024 International Residential Code

**M1305.1.2 Appliances in attics.** Attics containing *appliances* shall be provided with an opening and a clear and unobstructed passageway large enough to allow removal of the largest *appliance*, but not less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) long measured along the centerline of the passageway from the opening to the *appliance*. The passageway shall have continuous solid flooring in accordance with Chapter 5 not less than 24 inches (610 mm) wide. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present along all sides of the *appliance* where access is required. The clear access opening dimensions shall be not less than of 20 inches by 30 inches (508 mm by 762 mm), and large enough to allow removal of the largest *appliance*. **Exceptions:**

1. The passageway and level service space are not required where the *appliance* can be serviced and removed through the required opening.
2. Where the passageway is unobstructed and not less than 6 feet (1829 mm) high and 22 inches (559 mm) wide for its entire length, the passageway shall be not more than 50 feet (15 250 mm) long.

#### Add new text as follows:

**M1305.1.2.2 Permanent service access.** For new construction, a permanent means of access without the use of a portable ladder shall be provided in order to comply with M1305.1. Such means shall include the use of either pulldown stairs or other permanent steps acceptable to the code official. **Exception:** Existing construction.

**Reason:** Section M1305.1.2 provides specifications for the size of the minimum clear and unobstructed opening and passageway to allow removal of the largest appliance. However, the need for a safe and secure energy efficient access is not specified and should be added for the safety of personnel and consumers. For consumers, replacement of HVAC filters is recommended maintenance and access to the attic should be as safe as possible. ACCA believes that there is an urgent need for new homes to be constructed to take care of future service, repair, replacement and overall general safety for all including the homeowner, contractors, insurance representatives, regular structural pest control inspections, especially first responders and anyone else who may need to access to this part of the home in the future. The exception limits the proposal to new construction only. ACCA is not suggesting that existing homes anywhere in the country change their access to a stair/ladder access when they change their heating and cooling equipment or any other items in their attics. The proposal is similar to an amendment to the Georgia building code that became effective January 1, 2020.

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

#### Estimated Immediate Cost Impact:

The code change proposal **will increase** the cost of construction. It is estimated that attic stairs/ladders may add \$250-\$350 to a new home cost, but the savings in safety over time is significantly overcome and justified.

#### Estimated Immediate Cost Impact Justification (methodology and variables):

A range of costs was determined based on surveying available pull-down attic stairs that are widely available in the marketplace.

## Public Hearing Results (CAH1)

### Committee Action:

**Disapproved**

**Committee Reason:** The committee voted to disapprove of this proposal 9-1. The reason provided was that the cost estimate was way off, as the requirement to add insulation was not factored in. In addition to the inaccurate cost estimate, additional arguments suggest that these stairs take up a lot of space. The example given was the use of these stairs in townhomes without having the required room to properly use the stairs in halls or closets. The continued discussion noted that the practicality of the proposal simply does not work. There is also no standard available for ladders to be installed per this proposed application.

## Individual Consideration Agenda

### *Comment 1:*

**IRC: M1305.1.2, M1305.1.2.2 , M1305.1.2.3 (New)**

**Proponents:** David Bixby, Air Conditioning Contractors of America (ACCA), ACCA (david.bixby@acca.org) requests As Modified by Committee (AMC2)

**Further modify as follows:**

### 2024 International Residential Code

**M1305.1.2 Appliances in attics.** *Attics* containing *appliances* shall be provided with an opening and a clear and unobstructed passageway large enough to allow removal of the largest *appliance*, but not less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) long measured along the centerline of the passageway from the opening to the *appliance*. The passageway shall have continuous solid flooring in accordance with Chapter 5 not less than 24 inches (610 mm) wide. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present along all sides of the *appliance* where access is required. The clear access opening dimensions shall be not less than of 20 inches by 30 inches (508 mm by 762 mm), and large enough to allow removal of the largest *appliance*. **Exceptions:**

1. The passageway and level service space are not required where the *appliance* can be serviced and removed through the required opening.
2. Where the passageway is unobstructed and not less than 6 feet (1829 mm) high and 22 inches (559 mm) wide for its entire length, the passageway shall be not more than 50 feet (15 250 mm) long.

**M1305.1.2.2 Permanent service access.** For new construction, a permanent means of access without the use of a portable ladder shall be provided in order to comply with M1305.1. Such means shall include the use of either pulldown stairs or other permanent steps acceptable to the code official.

**Exception:** Existing construction.

**Add new text as follows:**

**M1305.1.2.3 Pulldown Stairs Duty Rating.** Pulldown stairs shall have a duty rating of not less than 350 lbs. and be installed according to the manufacturer's instructions.

**Reason:** Additional criteria is proposed which is similar to the City of Houston Mechanical Code requirements (305.2.3) for inside access of furnaces installed in attics. In addition, the Houston requirement specifies pulldown stairs having a rated load capacity of not less than 350 lbs. This capacity rating is covered under ANSI A14.9 – 2019, *Standard for Disappearing Attic Stairways*, as published by the American Ladder Institute (ALI). The scope of the standard is shown below.

*SCOPE: This standard prescribes rules concerning the safe design, construction, testing, care, installation and use of permanently installed metal or wood, disappearing attic stairways of various types designed to be used for access to upper levels such as attics. Household units with duty ratings of 250, 300 and 350 lbs., or commercial units with a rating of 500 lbs. are the only units covered in this standard. This standard is not intended to apply to any attic stairway covered in any other ANSI A14 standards or disappearing attic stairways intended for use with ceiling heights in excess of 12 feet. This standard also prescribes rules and minimum requirements for installation instructions and labeling of disappearing attic stairways in order to promote safety under normal conditions of usage. This standard is not intended to cover requirements for fire separation that may be required by various building codes. It does not apply where training, supervision, or established safety procedures are in conflict with, or serve in lieu of, this standard.*

**Cost Impact:** Increase

**Estimated Immediate Cost Impact:**

According to the website shown below, attic ladder installation costs range from \$340 to \$1,240, including labor and materials, while the average cost to install an attic ladder comes in at \$490. The price to install an attic ladder depends on the ladder length, material, labor, permits, and more. <https://www.bobvila.com/articles/attic-ladder-installation-cost/>

**Estimated Immediate Cost Impact Justification (methodology and variables):**

See website link on methodology and variables: <https://www.bobvila.com/articles/attic-ladder-installation-cost/>

Comment (CAH2)# 555

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## RM2-24

IRC: M1401.1, ASHRAE Chapter 44 (New)

### Proposed Change as Submitted

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

## 2024 International Residential Code

**Revise as follows:**

**M1401.1 Installation.** Heating and cooling *equipment* and *appliances* shall be installed in accordance with the manufacturer's instructions and the requirements of this code. Heating and cooling equipment using a refrigeration system shall also be installed in accordance with ASHRAE 15.2.

**Add new standard(s) as follows:**

## ASHRAE

ASHRAE  
180 Technology Parkway  
Peachtree Corners, GA 30092

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. This code change closes the hole that was created in the Code when ASHRAE 15 split its scope between standards 15 and 15.2.

**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:**

These changes will have no impact on the cost of construction. The equipment design of residential systems is covered by the product design standard, UL 60335-2-40. Additionally, installation instructions will be found in the installation manuals provided by the Original Equipment Manufacturers (OEMs). However, the reference to ASHRAE 15.2 is necessary, as it is now the required application standard for residential systems serving a single dwelling or sleeping unit.

RM2-24

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### Public Hearing Results (CAH1)

**Committee Action:**

**As Submitted**

**Committee Reason:** The committee voted to approve this proposal as submitted 6-5. The discussion centered around ASHRAE 15.2 being added in this code section for specific use of residential installations. The consensus for approval is that this standard is already included in manufacturers instructions.

RM2-24

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### Individual Consideration Agenda

## Comment 1:

IRC: CHAPTER 14, SECTION M1401, M1401.1, SECTION M1411, M1411.1, M1411.2, M 1411.3

**Proponents:** Nathan Kahre, National Association of Home Builders (nkahre@nahb.org); Vladimir G. Kochkin, NAHB, NAHB (vkochkin@nahb.org) requests As Modified by Committee (AMC2)

**Modify as follows:**

2024 International Residential Code

## CHAPTER 14 HEATING AND COOLING EQUIPMENT AND APPLIANCES

### SECTION M1401 GENERAL

**Revise as follows:**

**M1401.1 Installation.** Heating and cooling *equipment* and *appliances* shall be installed in accordance with the manufacturer's instructions and the requirements of this code. ~~Heating and cooling equipment using a refrigeration system shall also be installed in accordance with ASHRAE 15.2.~~

[No changes to sections M1402-M1410]

### SECTION M1411 HEATING AND COOLING EQUIPMENT

**M1411.1 Approved refrigerants.** Refrigerants used in direct refrigerating systems shall conform to the applicable provisions of ANSI/ASHRAE 34.

**M1411.2 Refrigeration system listing.** Refrigeration systems using Group A2L refrigerants shall be *listed* and *labeled* to UL/CSA 60335-2-40. Manufacturer's installation instructions for refrigeration systems using Group A2L refrigerants shall be included in the listing and shall comply with the applicable requirements of UL/CSA 60335-2-40 and ASHRAE 15.2. Refrigeration systems using Group A1 refrigerants shall be *listed* to UL/CSA 60335-2-40 or UL 1995. The equipment shall be installed in accordance with the listing.

**M 1411.3 Refrigeration system installation.** Refrigeration systems shall be installed in accordance with the manufacturer's installation instructions. After installation, the manufacturer's installation instructions, owner's manuals, service manuals and any other product literature provided with the equipment shall be attached to the indoor unit or left with the homeowner.

**Reason:** This change achieves two goals:

- It locates the new installation requirements in the appropriate section for heating and cooling equipment (Section M1411)
- It updates the requirements to ensure that the new installation practices are included in the manufacturer's installation instructions

ASHRAE 15.2 is an engineering standard and the complex format of the information in ASHRAE 15.2 is not conducive to direct implementation in the field for residential construction. The only effective way to ensure that the new measures are implemented correctly in the field is to include the applicable information in the installation instructions.

The proposed revision ensures that installation instruction from all equipment manufacturers include the necessary measures and that these measures are consistent with the equipment safety features built into the equipment from the specific manufacturer. Most of the information in ASHRAE 15.2 will not apply to the standard equipment used for one- and two-family dwellings. All relevant information can

be easily and more effectively communicated via installation instructions resulting in more consistent implementation in the field and in better enforcement. Requiring the HVAC installers to retrieve a few bits of relevant information from ASHRAE 15.2 rather than rely on installation instructions is not a feasible strategy to roll out A2L refrigerants.

2024 IRC already includes key provisions for addressing A2L refrigerants in Section M1411. The language that was added by RM2 at the April committee hearings (CAH1) causes duplication of requirements with Section M1411. The proposed change resolves this conflict and offers the optimum balance between the requirements of the IRC provisions and the installation instructions. In addition, this format will allow manufacturers to update their installation instructions as ASHRAE 15.2 gets updated on a continuous cycle.

Moreover, the transition to A2Ls has already begun and is required by law to be complete years before 2027 IRC will begin to be adopted and implemented by jurisdictions. The only way this transition can be successfully implemented if all applicable requirements are addressed through the installation instructions on day one as the new equipment arrives on job sites around the country. The IRC should provide a path that reflects the most effective practice for equipment installation and inspection. Having multiple compliance documents on the job site will lead to counterproductive outcomes.

**Cost Impact:** Decrease

**Estimated Immediate Cost Impact:**

The transition to A2L refrigerants will increase cost of construction due to additional costs for new equipment and new refrigerants. However, the proposed modification seeks to consolidate installation requirements into a single document and gain efficiencies in installation and inspections processes, which can lead to mitigating effects on the cost impact. The expected cost decrease will come from savings of time installers and code officials would otherwise need to spend on reviewing, understanding, and coordinating installation requirements from different documents.

At the time of submitting this comment, ASHRAE 15.2 costs \$105 but it's expected that ASHRAE will post 15.2 for access free of charge.

**Estimated Immediate Cost Impact Justification (methodology and variables):**

The key variable is the time needed for installers and code officials to ensure that manufacturer's installation instructions comply with an engineering standard (ASHRAE 15.2). Because ASHRAE 15.2 is a complex engineering document, additional time will be required to determine which provisions apply and how these provisions apply to the specific equipment and its installation and resolving any differences with installation instructions.

Comment (CAH2)# 204

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## *Comment 2:*

**IRC: SECTION R202, SECTION 202 (New), CHAPTER 14, SECTION M1401, M1401.1, SECTION M1411, M1411.6, ASHRAE Chapter 44**

**Proponents:** Greg Johnson, Johnson & Associates Consulting Services, National Multifamily Housing Council (gjohnsonconsulting@gmail.com) requests As Modified by Committee (AMC2)

**Modify as follows:**

## 2024 International Residential Code

# SECTION R202 DEFINITIONS

**Add new definition as follows:**



[MP] REFRIGERANT LEAK DETECTION SYSTEM. A system, installed by the manufacturer or installed in accordance with the manufacturer's instructions, capable of sensing and responding to a refrigerant leak.

## CHAPTER 14 HEATING AND COOLING EQUIPMENT AND APPLIANCES

### SECTION M1401 GENERAL

**M1401.1 Installation.** Heating and cooling *equipment* and *appliances* shall be installed in accordance with the manufacturer's instructions and the requirements of this code. ~~Heating and cooling equipment using a refrigeration system shall also be installed in accordance with ASHRAE 15.2.~~

### SECTION M1411 HEATING AND COOLING EQUIPMENT

**M1411.6 Refrigerant charge.** Refrigeration systems shall have refrigerant charge in compliance with the equipment manufacturer's installation instructions and the requirements of the listing. Group A2L refrigerant charge for an individual refrigeration system shall not exceed ~~34.5~~ 35.1 pounds (~~15.7~~ 15.9 kg). Refrigerant charge for Group A2L refrigeration systems that do not have a *refrigerant leak detection system* shall also be in accordance with ASHRAE 15.2.

## ASHRAE

ASHRAE  
180 Technology Parkway  
Peachtree Corners, GA 30092

15.2-2022

Safety Standard for Refrigeration Systems in Residential Applications

**Reason:** Refrigerant leak detection systems have been selected by HVAC original equipment manufacturers as the primary risk mitigation measure for heating and cooling systems with A2L refrigerants in one- and two-family dwellings. Centralized A/C and heat pump systems and many mini-split systems will incorporate a refrigerant leak detection system. The refrigerant charge limit for equipment with a refrigerant leak detection system is much higher than IRC-compliant installations will require, simplifying compliance requirements.

The proposed change reserves ASHRAE 15.2 for equipment that is employing mitigation methods other than a refrigerant leak detection system. The proposed modification requires that the amount of refrigerant charge installed in such equipment is determined in accordance with ASHRAE 15.2. This determination of compliance with ASHRAE 15.2 can also be accomplished via manufacturer's installation instructions, yet the proposed language creates an additional pointer for installers and code officials to consult where needed.

UL 60355-2-40 – the required listing standard for this equipment – includes requirements for both functions of a refrigerant leak detection system: (1) refrigerant detection and (2) appropriate mitigation actions. A definition of Refrigerant Leak Detection System is also added to IRC to complement the proposed provisions.

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

#### **Justification for no cost impact:**

This modification to RM2-24 is intended to improve coordination between IRC provisions and ASHRAE 15.2 and to simplify compliance.

Comment (CAH2)# 620

## RM5-24

IRC: SECTION 202, M1413.1, CHAPTER 15, SECTION M1502, M1502.3, SECTION M1504, M1504.3, M1602.1

### Proposed Change as Submitted

**Proponents:** Mike Moore, Stator LLC, Broan-NuTone (mmoore@statorllc.com)

## 2024 International Residential Code

**[MP] LIVING SPACE.** Space within a *dwelling unit* utilized for living, sleeping, eating, cooking, bathing, washing and sanitation purposes. For the definition applicable in Chapter 11, see Section N1101.6. For the definition applicable in Chapter 24, see Section G2403.

### Revise as follows:

**M1413.1 General.** Evaporative cooling *equipment* and *appliances* shall comply with UL 1995 or UL/CSA 60335-2-40, and shall be installed:

1. In accordance with the manufacturer's instructions.
2. On level platforms in accordance with Section M1305.1.3.1.
3. So that openings in exterior walls are flashed in accordance with Section R703.4.
4. So as to protect the potable water supply in accordance with Section P2902.
5. So that outdoor air intake opening locations are in accordance with Section R325.4.1.

## CHAPTER 15 EXHAUST AND VENTILATION SYSTEMS

### SECTION M1502 CLOTHES DRYER EXHAUST

### Revise as follows:

**M1502.3 Duct termination.** Exhaust ducts shall terminate on the outside of the *building*. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. If the manufacturer's instructions do not specify a termination location, the exhaust duct shall terminate not less than 3 feet (914 mm) in any direction from openings into *buildings*, including openings in ventilated soffits. Exhaust duct terminations shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination. Exhaust air shall not be directed onto walkways.

### SECTION M1504 VENTILATION SUPPLY DUCTS, LIVING SPACE EXHAUST DUCTS, AND LIVING SPACE EXHAUST TERMINATIONS OPENINGS

**M1504.3 Location of ~~E~~exhaust terminations serving living spaces ~~openings~~.** Exhaust air shall not be directed onto walkways. ~~Air exhaust openings shall terminate~~ Exhaust terminations serving dwelling-unit toilet rooms, bathrooms, kitchens, and other dwelling unit living spaces shall be located as follows:

1. Not less than 3 feet (914 mm) from property lines.

2. Not less than 3 feet (914 mm) from gravity outdoor air intake openings, operable windows and doors except where the exhaust opening is located not less than 1 foot (305 mm) above the gravity air intake opening, operable windows and doors.
3. Not less than 10 feet (3048 mm) from mechanical outdoor air intake openings except where either of the following apply:
  - 3.1. The exhaust termination opening is located not less than 3 feet (914 mm) above the air intake opening.
  - 3.2. The exhaust termination opening is part of a factory-built intake/exhaust combination termination fitting installed in accordance with the fan manufacturer's instructions, and the exhaust air is drawn from a *living space*.
4. ~~In accordance with Sections R303.5.2 and R303.6.~~

**M1505.4 Exhaust termination protection.** Exhaust terminations serving dwelling-unit toilet rooms, bathrooms, kitchens, and other dwelling unit living spaces shall be protected with corrosion-resistant screens, louvers, or grilles having an opening size of not less than 1/4 inch (6 mm) and a maximum opening size of 1/2 inch (13 mm), in any dimension. Exhaust terminations shall be protected against local weather conditions.

**M1602.1 Outdoor air intake openings.** Outdoor air intake openings shall be located in accordance with Section ~~R325.4.1~~R303.5.1. Opening protection shall be in accordance with Section ~~R325.5~~R303.6.

**Reason:** In the 2009/2010 cycle, Section M1504.3 was formed through proposal RM12-09/10 based on the rationale that outdoor air intake openings should be addressed in Chapter 3 and that exhaust terminations should be addressed elsewhere. After multiple cycles, the language has become muddled, and modifications are needed to clarify the intent. This proposal does the following:

1. Uses the term "outdoor air intake opening" where referenced in Chapters 14, 15, and 16, consistent with the language in R303.5.1.
2. Uses consistent terminology when referring to "exhaust terminations," "clothes dryer exhaust duct terminations," and "vent and chimney terminations."
3. Moves the R303.5.2 prohibition for directing exhaust onto walkways to Sections M1504.3 and M1502.3, which address exhaust termination locations for exhaust air from living spaces and exhaust air from clothes dryers, respectively. Note that Table G2427.8 (503.8) already prohibits appliance vent terminations from being located above public walkways.
4. Moves the R303.6 requirements for exhaust termination protection to Section M1504.4, as this only applies to exhaust terminations that serve dwelling-unit toilet rooms, bathrooms, kitchens, and other dwelling-unit living spaces.
5. Modifies the titles for various sections to align with the material contained in those sections.

To coordinate these modifications with Sections R303.5 and R303.6 of the IRC, a companion proposal is planned for the Group B hearings.

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

**Justification for no cost impact:**

This proposal is a clarification of existing requirements.

RM5-24

## *Public Hearing Results (CAH1)*

**Committee Action:**

**Disapproved**

**Committee Reason:** The committee voted to disapprove of this proposal 10-0. The consensus of the committee is that the sections referenced for M1413.1 are not correct and that the proposed code language as written for section M1502.3 is limited to how exhaust air

should be erected on sidewalks. The committee suggests this specific code language proposed would be more conducive of being added to the IRC.

## Individual Consideration Agenda

### *Comment 1:*

**IRC: SECTION 202, M1413.1, CHAPTER 15, SECTION M1502, M1502.3, M1502.3.1, M1502.4.6, M1502.4.6.1, SECTION M1504, M1504.1, M1504.2, M1504.3, M1504.4 (New), M1505.1, M1505.2, M1505.3, M1602.1, TABLE M1505.5**

**Proponents:** Mike Moore, Stator LLC, Broan-NuTone (mmoore@statorllc.com) requests As Modified by Committee (AMC2)

**Replace as follows:**

### 2024 International Residential Code

**[MP] LIVING SPACE.** Space within a *dwelling unit* utilized for living, sleeping, eating, cooking, bathing, washing and sanitation purposes. For the definition applicable in Chapter 11, see Section N1101.6. For the definition applicable in Chapter 24, see Section G2403.

**M1413.1 General.** Evaporative cooling *equipment* and *appliances* shall comply with UL 1995 or UL/CSA 60335-2-40, and shall be installed:

1. In accordance with the manufacturer's instructions.
2. On level platforms in accordance with Section M1305.1.3.1.
3. So that openings in exterior walls are flashed in accordance with Section R703.4.
4. So as to protect the potable water supply in accordance with Section P2902.
5. So that outdoor air intake opening locations are in accordance with Section R325.4.1.

## **CHAPTER 15 EXHAUST AND VENTILATION SYSTEMS**

### **SECTION M1502 CLOTHES DRYER EXHAUST**

**M1502.3 ~~Duct-Exhaust~~ termination.** Exhaust ducts shall terminate on the outside of the *building*. Exhaust ~~duct~~ terminations shall be in accordance with the dryer manufacturer's installation instructions. If the manufacturer's instructions do not specify an exhaust termination location, the exhaust duct shall terminate not less than 3 feet (914 mm) in any direction from openings into *buildings*, including openings in ventilated soffits. Exhaust ~~duct~~ terminations shall be equipped with a backdraft damper. Screens shall not be installed at the ~~duct~~ exhaust termination. Exhaust air shall not be directed onto walkways.

**M1502.3.1 Exhaust termination outlet and passageway size.** The passageway of dryer exhaust ~~duct~~ terminations shall be undiminished in size and shall provide an open area of not less than 12.5 square inches (8065 mm<sup>2</sup>).

**M1502.4.6 Duct length.** The maximum allowable exhaust duct length shall be determined by one of the methods specified in Sections M1502.4.6.1 through M1502.4.6.3.

**M1502.4.6.1 Specified length.** The maximum length of the exhaust duct shall be 35 feet (10 668 mm) from the connection to the transition duct from the dryer to the ~~outlet terminal~~exhaust termination. Where fittings are used, the maximum length of the exhaust duct shall be reduced in accordance with Table M1502.4.6.1. The maximum length of the exhaust duct does not include the transition duct.

## **SECTION M1504**

### **EXHAUST VENTILATION DUCTS AND EXHAUST OPENINGSTERMINATIONS**

**M1504.1 Duct construction.** Where ~~exhaust-ventilation~~ duct construction is not specified in this chapter, construction shall comply with Chapter 16.

**M1504.2 Duct length.** The length of exhaust and supply ducts used with ventilating *equipment* shall not exceed the lengths determined in accordance with Table M1504.2. **Exception:** Duct length shall not be limited where the *duct system* complies with the manufacturer's design criteria or where the airflow rate of the installed ventilating *equipment* is verified by the installer or *approved* third party using integrated diagnostic equipment, a flow hood, flow grid, or other airflow measuring device.

**M1504.3 Exhaust termination location openings.** Exhaust air shall not be directed onto walkways. ~~Air exhaust openings shall terminate~~ Exhaust terminations serving living spaces, attics, or crawl spaces shall be located as follows:

1. Not less than 3 feet (914 mm) from property lines.
2. Not less than 3 feet (914 mm) from gravity outdoor air intake openings, operable windows and doors except where the exhaust opening is located not less than 1 foot (305 mm) above the gravity air intake opening, operable windows and doors.
3. Not less than 10 feet (3048 mm) from mechanical outdoor air intake openings except where either of the following apply:
  - 3.1. The exhaust termination opening is located not less than 3 feet (914 mm) above the outdoor air intake opening.
  - 3.2. The exhaust termination opening is part of a factory-built intake/exhaust combination termination fitting installed in accordance with the fan manufacturer's instructions, and the exhaust air is drawn from a *living space*.
4. ~~In accordance with Sections R303.5.2 and R303.6.~~

**Add new text as follows:**

**M1504.4 Exhaust termination protection.** Exhaust terminations shall meet the provisions for exterior wall opening protectives in accordance with this code. Exhaust terminations shall be protected with corrosion-resistant screens, louvers or grilles having an opening size of not less than ¼ inch (6 mm) and a maximum opening size of ½ inch (13 mm), in any dimension. Exhaust terminations shall be protected against local weather conditions. **Exception:** Screens, louvers, or grilles shall not be required for exhaust terminations serving *clothes dryers* or for vent and chimney terminals serving fuel-burning *appliances or fireplaces*.

**M1505.1 General.** Where *local exhaust* or whole-house mechanical *ventilation* is provided, the ventilation system shall be designed in accordance with this section. Ventilation ducts shall comply with Section M1504.

**M1505.2 Recirculation of air.** Exhaust air from bathrooms and toilet rooms shall not be recirculated within a residence or circulated to another *dwelling unit* and shall be exhausted directly to the outdoors. Exhaust air from bathrooms, toilet rooms and *kitchens* shall not discharge into an *attic, crawl space* or other areas inside the *building*. This section shall not prohibit the installation of ductless range hoods in accordance with the exception to Section M1503.3. **Exception:** Recirculation of exhaust air within a single *dwelling unit* shall be permitted during temporary defrost operation of a heat recovery ventilator or energy recovery ventilator.

**M1505.3 Exhaust Ventilating equipment listings.** Exhaust fans and whole-house mechanical ventilation fans shall be *listed* and *labeled* for airflow ~~as providing the minimum required airflow~~ based on laboratory testing in accordance with ANSI/AMCA 210-ANSI/ASHRAE

51 or HVI 916.

The listed airflow shall meet or exceed the airflow required by Section M1505.4.3 and Section M1505.5, as applicable, at not less than one speed setting.

**M1602.1 Outdoor air intake openings.** Outdoor air intake openings shall be located in accordance with Section R325.4.1. Opening protection shall be in accordance with Section R325.54.

**TABLE M1505.5 MINIMUM REQUIRED LOCAL EXHAUST RATES FOR ONE- AND TWO-FAMILY DWELLINGS**

AREA TO BE EXHAUSTED	EXHAUST RATES
Kitchens	100 cfm intermittent or 25 cfm continuous
Bathrooms-Toilet Rooms	Mechanical exhaust capacity of 50 cfm intermittent or 20 cfm continuous

For SI: 1 cubic foot per minute = 0.0004719 m<sup>3</sup>/s, 1 inch water column = 0.2488 kPa.

**Reason:** In the 2009/2010 cycle, Section M1504.3 was formed through proposal RM12-09/10 based on the rationale that outdoor air intake openings should be addressed in Chapter 3 and that exhaust terminations should be addressed elsewhere. After multiple cycles, the language has become muddled, and modifications are needed to clarify the intent. This proposal does the following:

1. Uses the term "outdoor air intake opening" where referenced in Chapters 14, 15, and 16, consistent with the language in R325.4.1.
2. Uses consistent terminology when referring to "exhaust terminations," "clothes dryer exhaust duct terminations," and "vent and chimney terminations."
3. Moves the R325.4.2 prohibition for directing exhaust onto walkways to Sections M1504.3 and M1502.3, which address exhaust termination locations for exhaust air from living spaces and exhaust air from clothes dryers, respectively. Note that Table G2427.8 (503.8) already prohibits appliance vent terminations from being located above public walkways.
4. Moves the R325.5 requirements for exhaust termination protection to Section M1504.4, as this only applies to exhaust terminations that serve living spaces, not exhaust terminations that serve clothes dryers or vent and chimney terminations.
5. Modifies the titles for various sections to align with the material contained in those sections.

Specific rationale for modifications to certain sections follows:

M1504.2 Exception: Integrated diagnostic equipment is recognized by Section 403.6.3 of the 2024 IECC-R for field verification of ventilation airflow rates, and it should also be recognized here for consistency.

M1505.1: A cross reference to Section M1504 is proposed to ensure that the duct requirements are not overlooked.

M1505.2: Adding an exception for recirculation defrost operation of HRVs and ERVs (collectively, HERVs) is needed to ensure that recirculation defrost is permitted temporarily within a single dwelling unit when needed to maintain HERV operation under very cold conditions. Recirculation defrost is likely the most common method for controlling defrost in unitary HERVs.

M1505.3: Clarification is needed to communicate that the airflows required are not provided by ANSI/AMCA 210-ANSI/ASHRAE 51 or HVI 916, but by Sections M1505.4.3 (whole-house mechanical ventilation airflow rates) and Section M1505.5 (local exhaust airflow rates), as applicable.

Table M1505.5: "One- and two-family dwellings" should be removed from the header, because this table is meant to apply to all occupancies within the scope of the IRC (e.g., including townhouses), not just one- and two-family dwellings.

To coordinate these modifications with Sections R325.4 and R325.5 of the IRC, a companion proposal is planned for the Group B hearings. Following is the proposal that is planned for Group B:

~~**R325.4 Opening location.** Outdoor intake and exhaust openings shall be located in accordance with Sections R325.4.1 and R325.4.2.~~

**R325.34.1 Outdoor air intake openings location.** Mechanical and gravity outdoor air intake openings shall be located not less than 10 feet (3048 mm) from any hazardous or noxious contaminant, such as vents, chimneys, plumbing vents, streets, alleys, parking lots, and loading docks. For the purpose of this section, the exhaust from dwelling unit toilet rooms, bathrooms and kitchens shall not be considered as hazardous or noxious.

**Exceptions:**

1. The 10-foot (3048 mm) separation is not required where the intake opening is located 3 feet (914 mm) or greater below the contaminant source.
2. Separation from vents and chimneys terminals serving fuel-burning appliances or fireplaces shall be terminated in accordance with the applicable provisions of Chapters 18 and 24.
3. Separation from clothes dryer exhaust duct terminations shall be terminated in accordance with Section M1502.3.
4. Separation from exhaust terminations serving living spaces, attics, or crawl spaces shall comply with Section M1504.3.

~~**R325.4.2 Exhaust openings.** Exhaust air shall not be directed onto walkways.~~

~~**R325.4.5 Outside Outdoor air intake opening protection.** Air exhaust and Outdoor air intake openings that terminate outdoors shall be protected with corrosion-resistant screens, louvers or grilles having an opening size of not less than 1/4 inch (6 mm) and a maximum opening size of 1/2 inch (13 mm), in any dimension. Outdoor air intake openings shall be protected against local weather conditions. Outdoor air exhaust and intake openings shall meet the provisions for exterior wall opening protectives in accordance with this code.~~

**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:**

Within this proposal, there are no substantive changes that would affect the cost of compliance. The proposal is intended to clarify current requirements and to better coordinate with the IECC-R.

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Comment (CAH2)# 720

## Proposed Change as Submitted

**Proponents:** Jeanne Rice, NYS DOS, NYS DOS (jeanne.rice@dos.ny.gov); Chad Sievers, NYS, NYS DOS (chad.sievers@dos.ny.gov); Kevin Duerr-Clark, NYS DOS, NYS DOS (kevin.duerr-clark@dos.ny.gov); China Clarke, New York State Dept of State, Manager Technical Support Unit (china.clarke@dos.ny.gov)

## 2024 International Residential Code

### Revise as follows:

**M1601.1.1 Above-ground duct systems.** Above-ground *duct systems* shall conform to the following:

1. *Equipment* connected to *duct systems* shall be designed to limit discharge air temperature to not greater than 250°F (121°C).
2. Factory-made ducts shall be *listed* and *labeled* in accordance with UL 181 and installed in accordance with the manufacturer's instructions.
3. Fibrous glass duct construction shall conform to the *SMACNA Fibrous Glass Duct Construction Standards* or *NAIMA Fibrous Glass Duct Construction Standards*.
4. Field-fabricated and shop-fabricated metal and flexible duct constructions shall conform to the *SMACNA HVAC Duct Construction Standards—Metal and Flexible* except as allowed by Table M1601.1.1. Galvanized steel shall conform to ASTM A653.
5. The use of gypsum products to construct return air ducts or plenums is permitted, provided that the air temperature does not exceed 125°F (52°C) and exposed surfaces are not subject to condensation.
6. *Duct systems* shall be constructed of materials having a *flame spread index* of not greater than 200.
7. ~~Stud wall cavities and the spaces between solid floor joists to be used as air plenums shall comply with the following conditions:~~  
~~*Building framing cavities shall not be used as ducts or plenums.*~~
  - 7.1. ~~These cavities or spaces shall not be used as a plenum for supply air.~~
  - 7.2. ~~These cavities or spaces shall not be part of a required fire resistance rated assembly.~~
  - 7.3. ~~Stud wall cavities shall not convey air from more than one floor level.~~
  - 7.4. ~~Stud wall cavities and joist space plenums shall be isolated from adjacent concealed spaces by tight fitting *fireblocking* in accordance with Section R302.11. *Fireblocking* materials used for isolation shall comply with Section R302.11.1.~~
  - 7.5. ~~Stud wall cavities in the outside walls of building envelope assemblies shall not be utilized as air plenums.~~
  - 7.6. ~~Building cavities used as plenums shall be sealed.~~
8. Volume dampers, equipment and other means of supply, return and exhaust air adjustment used in system balancing shall be provided with access.

**Reason:** Section N1103.3.7 (R403.3.7 in the IECCC) states that *building framing cavities* shall not be used as ducts or plenums. However, section M1601.1.1 provides provisions for using joist framing cavities as return air plenums, which contradicts section N1103.3.7. This change would align M1601.1.1 with N1103.3.7, prohibiting the use of framing cavities as plenums.

**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:

Sections M1601.1.1 and N1103.3.7 are contradictory on the subject of joist cavities used as return air plenums. Section 102.1 states that, in the event of such a conflict, the more restrictive provision shall apply. In this case, section 1103.3.7 is the more restrictive provision,



and as such, is the provision which should govern. This proposed change merely clarifies section M1601.1.1 so that there is no confusion for users who may or may not notice the contradiction.

RM7-24

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## Public Hearing Results (CAH1)

**Committee Action:**

**Disapproved**

**Committee Reason:** The committee voted to disapprove of this proposal with a vote of 9-1. The committee justified its decision based on the notion of an increased cost impact. Additionally, builders should have some latitude in jurisdictions where these codes have yet to be adopted and should be allowed to continue to utilize framing cavities as plenums. The committee contended that since depressurization impacts other cavities, adjustments to the energy code, not the residential mechanical code, are suggested.

RM7-24

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## Individual Consideration Agenda

### *Comment 1:*

**IRC: M1601.1.1**

**Proponents:** Jeanne Rice, NYSDOS (jeanne.rice@dos.ny.gov); Chad Sievers, NYS, NYS DOS (chad.sievers@dos.ny.gov); Kevin Duerr-Clark, NYS DOS, NYS DOS (kevin.duerr-clark@dos.ny.gov); Stephen Van Hoose, NYS DOS, NYS DOS (stephen.vanhoose@dos.ny.gov); China Clarke, New York State Dept of State, Manager Technical Support Unit (china.clarke@dos.ny.gov) requests As Modified by Committee (AMC2)

**Modify as follows:**

### 2024 International Residential Code

**Revise as follows:**

**M1601.1.1 Above-ground duct systems.** Above-ground *duct systems* shall conform to the following:

1. *Equipment* connected to *duct systems* shall be designed to limit discharge air temperature to not greater than 250°F (121°C).
2. Factory-made ducts shall be *listed* and *labeled* in accordance with UL 181 and installed in accordance with the manufacturer's instructions.
3. Fibrous glass duct construction shall conform to the *SMACNA Fibrous Glass Duct Construction Standards* or *NAIMA Fibrous Glass Duct Construction Standards*.
4. Field-fabricated and shop-fabricated metal and flexible duct constructions shall conform to the *SMACNA HVAC Duct Construction Standards—Metal and Flexible* except as allowed by Table M1601.1.1. Galvanized steel shall conform to ASTM A653.
5. The use of gypsum products to construct return air ducts or plenums is permitted, provided that the air temperature does not exceed 125°F (52°C) and exposed surfaces are not subject to condensation.
6. *Duct systems* shall be constructed of materials having a *flame spread index* of not greater than 200.

7. ~~Stud wall cavities and the spaces between solid floor joists to be used as air plenums shall comply with the following conditions: Building framing cavities shall not be used as ducts or plenums.~~
- ~~7.1. These cavities or spaces shall not be used as a plenum for supply air.~~
  - ~~7.2. These cavities or spaces shall not be part of a required fire resistance rated assembly.~~
  - ~~7.3. Stud wall cavities shall not convey air from more than one floor level.~~
  - ~~7.4. Stud wall cavities and joist space plenums shall be isolated from adjacent concealed spaces by tight fitting *fireblocking* in accordance with Section R302.11. *Fireblocking* materials used for isolation shall comply with Section R302.11.1.~~
  - ~~7.5. Stud wall cavities in the outside walls of building envelope assemblies shall not be utilized as air plenums.~~
  - ~~7.6. Building cavities used as plenums shall be sealed.~~
8. Volume dampers, equipment and other means of supply, return and exhaust air adjustment used in system balancing shall be provided with access.

**Reason:** In the 2012 IRC, Section N1103.2.3 was updated to state "Building framing cavities shall not be used as ducts or plenums." All newer versions of the IRC have included this requirement (Section N1103.3.7 in the 2021 IRC - Chapter 11 of the 2024 IRC was not available at the time of writing). However, Section M1601.1.1 of the IRC conflicts with Section N1103.3.7 of the IRC, which has led to confusion and questions on whether or not plenums are permitted. If a jurisdiction chooses to not adopt or to modify Chapter 11 of the IRC, such jurisdiction can also choose to modify Section M1601.1.1. However, the current IRC, with no modifications, is in conflict with itself. This proposal modifies Section M1601.1.1 to match Section N1103.3.7 so that the IRC is consistent throughout the document.

**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:**

Sections M1601.1.1 and N1103.3.7 are contradictory on the subject of joist cavities used as return air plenums. Section 102.1 states that, in the event of such a conflict, the more restrictive provision shall apply. In this case, section 1103.3.7 is the more restrictive provision, and as such, is the provision which should govern. This proposed change merely clarifies section M1601.1.1 so that there is no confusion for users who may or may not notice the contradiction.

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Comment (CAH2)# 459