

INTERNATIONAL MECHANICAL CODE CHANGES DOCUMENTATION

Code Change No: **M9-07/08**

Original Proposal

Sections 304.9; IRC M1305.1.4.1, M1308.3; IFGC 305.7 (IRC G2408.4)

Proponent: Guy McMann, Jefferson County, CO, representing the Colorado Association of Plumbing and Mechanical Officials (CAPMO)

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC, THE IRC MECHANICAL AND THE IFGC CODE DEVELOPMENT COMMITTEES AS 3 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

Revise as follows:

304.9 Clearances from grade. Equipment and appliances installed at grade level shall be supported on a level concrete slab or other approved material extending not less than 3 inches (76 mm) above adjoining grade or shall be suspended ~~a minimum of~~ not less than 6 inches (152 mm) above adjoining grade. Such support shall be in accordance with the manufacturer's installation instructions.

Reason: This change will make the IMC consistent with the IRC and a proposed change to the IFGC.

Cost Impact: The code change proposal will not increase the cost of construction.

PART II – IRC

1. Revise as follows:

M1305.1.4.1 Ground clearance. Equipment and appliances supported from the ground shall be level and firmly supported on a concrete slab or other approved material extending not less than 3 inches (76 mm) above the adjoining ground. Such support shall be in accordance with the manufacturer's installation instructions. Appliances suspended from the floor shall have a clearance of not less than 6 inches (152 mm) from the ground.

2. Delete without substitution:

~~**M1308.3 Foundations and supports.** Foundations and supports for outdoor mechanical systems shall be raised at least 3 inches (76 mm) above the finished grade, and shall also conform to the manufacturer's installation instructions.~~

Reason: The two IRC Mechanical sections are addressing the same subject matter. It's more efficient to combine the two and have just one section covering the topic. The modification to IMC 304.9 and IFGC 305.7 are consistent language with that of M1305.1.4.1.

Cost Impact: The code change proposal will not increase the cost of construction.

PART III – IFGC

Revise as follows:

305.7 (G2408.4) Clearances from grade. Equipment and appliances installed at grade level shall be supported on a level concrete slab or other approved material extending not less than 3-inches (76 mm) above adjoining grade or shall be suspended ~~a minimum of~~ not less than 6 inches (152 mm) above adjoining grade.

Reason: This change will make the IFGC consistent with the IRC and a proposed change to the IMC.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I – IMC**Committee Action:****Approved as Submitted**

Committee Reason: A minimum height above grade is needed in the code and this change adds a 3 inch height which is consistent with the IRC requirement.

Assembly Action:**None****PART II – IRC****Committee Action:** **Approved as Submitted**

Committee Reason: This code change combines two sections to put all of the ground clearance requirements in one place.

Assembly Action:**None****PART III – IFGC****Committee Action:****Disapproved**

Committee Reason: The parallel code text in the IMC and IRC contains a requirement for compliance with the manufacturer's instructions which is not proposed for the IFGC text. There are pads being successfully used in the field that are less than 3 inches in height above grade.

Assembly Action:**None**

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Guy McMann, Jefferson County, CO, representing the Colorado Association of Plumbing and Mechanical Officials (CAPMO), requests Approval as Modified by this Public Comment.

Modify proposal as follows:

305.7 Clearances from grade. Equipment and appliances installed at grade level shall be supported on a level concrete slab or other approved material extending not less than 3-inches (76 mm) above adjoining grade or shall be suspended not less than 6 inches (152 mm) above adjoining grade. Such supports shall be installed in accordance with the manufacturer's installation instructions.

Commenter's Reason: This text was mistakenly left out. This is now consistent with Part I and Part II which were approved as submitted.

Final Hearing Results

M9-07/08, Part I	AS
M9-07/08, Part II	AS
M9-07/08, Part III	AMPC1

Code Change No: **M10-07/08**

Original Proposal

Sections 306.1, 306.2, 306.3, 306.4, 306.5, 306.5.1; IRC M1305.1.3, M1305.1.4 (IFGC [M] 306.1, [M] 306.2, [M] 306.3, [M] 306.4, [M] 306.5, [M] 306.5.1)

Proponent: Guy McMann, Jefferson County, CO, representing the Colorado Association of Plumbing and Mechanical Officials (CAPMO)

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

Revise as follows:

306.1 (Supp) Access for maintenance and replacement. Mechanical equipment and appliances shall be provided with access. Appliances shall be accessible for inspection, service, repair and replacement without disabling the function of a fire-resistance-rated assembly or removing permanent construction, other appliances, venting systems or any other piping or ducts not connected to the appliance being inspected, serviced, repaired or replaced. A level working space at least 30 inches deep and 30 inches wide (762 mm by 762 mm) shall be provided in front of the control side to service an appliance.

306.2 Appliances in rooms. Rooms containing appliances ~~requiring access~~ shall be provided with a door and an unobstructed passageway measuring not less than 36 inches (914 mm) wide and 80 inches (2032 mm) high.

Exception: Within a dwelling unit, appliances installed in a compartment, alcove, basement or similar space shall be accessed by an opening or door and an unobstructed passageway measuring not less than 24 inches (610 mm) wide and large enough to allow removal of the largest appliance in the space, provided that a level service space of not less than 30 inches (762 mm) deep and the height of the appliance, but not less than 30 inches (762 mm), is present at the front or service side of the appliance with the door open.

306.3 Appliances in attics. Attics containing appliances ~~requiring access~~ shall be provided with an opening and unobstructed passageway large enough to allow removal of the largest appliance. The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) in length measured along the center line of the passageway from the opening to the appliance. The passageway shall have continuous solid flooring 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 at the front or service side of the appliance. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), where such dimensions are large enough to allow removal of the largest appliance.

Exceptions:

1. The passageway and level service space are not required where the appliance is capable of being 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 wide for its entire length, the passageway shall be not greater than 50 feet (15 250 mm) in length.

306.4 Appliances under floors. Under floor spaces containing appliances ~~requiring access~~ shall be provided with an access opening and unobstructed passageway large enough to remove the largest appliance. The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide, nor more than 20 feet (6096 mm) in length measured along the centerline of the passageway from the opening to the appliance. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the appliance. If the depth of the passageway or the service space exceeds 12 inches (305 mm) below the adjoining

grade, the walls of the passageway shall be lined with concrete or masonry. Such concrete or masonry shall extend a minimum of 4 inches (102 mm) above the adjoining grade and shall have sufficient lateral-bearing capacity to resist collapse. The clear access opening dimensions shall be a minimum of 22 inches by 30 inches (559 mm by 762 mm), where such dimensions are large enough to allow removal of the largest appliance.

Exceptions:

1. The passageway is not required where the level service space is present when the access is open and the appliance is capable of being serviced and removed through the required opening.
2. Where the passageway is unobstructed and not less than 6 feet high (1929 mm) and 22 inches wide for its entire length, the passageway shall not be limited in length.

306.5 (Supp) Equipment and appliances on roofs or elevated structures. Where equipment and appliances requiring access are installed on roofs or elevated structures at a height exceeding 16 feet (4877 mm), access shall be provided by a permanent approved means of access, the extent of which shall be from grade or floor level to the equipment and appliances' level service space. Such access shall not require climbing over obstructions greater than 30 inches (762 mm) high or walking on roofs having a slope greater than four units vertical in 12 units horizontal (33-percent slope). Where access involves climbing over parapet walls, the height shall be measured to the top of the parapet wall.

Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:

1. The side railing shall extend above the parapet or roof edge not less than 30 inches (762 mm).
2. Ladders shall have rung spacing not to exceed 14 inches (356 mm) on center.
3. Ladders shall have a toe spacing not less than 6 inches (152 mm) deep.
4. There shall be a minimum of 18 inches (457 mm) between rails.
5. Rungs shall have a minimum 0.75-inch (19 mm) diameter and be capable of withstanding a 300-pound (136.1 kg) load.
6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds (488.2 kg/m²) per square foot. Landing dimensions shall be not less than 18 inches and not less than the width of the ladder served. A guard rail shall be provided on all open sides of the landing.
7. Ladders shall be protected against corrosion by approved means.

Catwalks installed to provide the required access shall be not less than 24 inches (610 mm) wide and shall have railings as required for service platforms.

Exception: This section shall not apply to Group R-3 occupancies.

306.5.1 (Supp) Sloped roofs. Where appliances, equipment, fans or other components ~~that require service~~ are installed on a roof having a slope of three units vertical in 12 units horizontal (25-percent slope) or greater and having an edge more than 30 inches (762 mm) above grade at such edge, a level platform shall be provided on each side of the appliance or equipment to which access is required for service, repair or maintenance. The platform shall be not less than 30 inches (762 mm) in any dimension and shall be provided with guards. The guards shall extend not less than 42 inches (1067 mm) above the platform, shall be constructed so as to prevent the passage of a 21-inch-diameter (533 mm) sphere and shall comply with the loading requirements for guards specified in the *International Building Code*. Access shall not require walking on roofs having a slope greater than 4 units vertical in 12 units horizontal (33-percent slope). Where access involves obstructions greater than 30 inches in height, such obstructions shall be provided with ladders installed in accordance with Section 306.5 or stairs installed in accordance with the requirements specified in the *International Building Code* in the path of travel to and from appliances, fans or equipment requiring service.

PART II – IRC

Revise as follows:

M1305.1.3 Appliances in attics. Attics containing appliances requiring access shall have 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 when 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 at least 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 a minimum of 20 inches by 30 inches (508 mm by 762 mm), where such dimensions are 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.

M1305.1.4 Appliances under floors. Under floor spaces containing appliances ~~requiring access~~ shall have an unobstructed passageway large enough to remove the largest appliance, but not less than 30 inches (762 mm) high and 22 inches (559 mm) wide, nor more than 20 feet (6096 mm) long when measured along the centerline of the passageway from the opening to the appliance. A level service space at least 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the appliance. If the depth of the passageway or the service space exceeds 12 inches (305 mm) below the adjoining grade, the walls of the passageway shall be lined with concrete or masonry extending 4 inches (102 mm) above the adjoining grade in accordance with Chapter 4. The rough-framed access opening dimensions shall be a minimum of 22 inches by 30 inches (559 mm by 762 mm), where the dimensions are large enough to remove the largest appliance.

Exceptions:

1. The passageway is not required where the level service space is present when the access is open, and the appliance can be serviced and removed through the required opening.
2. Where the passageway is unobstructed and not less than 6 feet high (1929 mm) and 22 inches wide for its entire length, the passageway shall not be limited in length.

Reason (Part I): This general statement covers all equipment no matter where located, not just equipment located on roofs, in attics and under floors. As far as 306.2 thru 306.5.1 are concerned, it is unnecessary to state the obvious. All appliances and equipment require access and service.

(Part II) This is redundant language. M1305.1 already states mechanical equipment and appliances require access. There is no need to state the obvious.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I – IMC**Committee Action:****Disapproved**

Committee Reason: The committee preferred the language in M11-07/08, Part I.

Assembly Action:**None****PART II – IRC****Committee Action:****Approved as Submitted**

Committee Reason: Section M1305.1 already requires access for mechanical equipment and appliances. The stricken language is redundant.

Assembly Action:**None**

Final Hearing Results

M10-07/08, Part I	D
M10-07/08, Part II	AS

Code Change No: M11-07/08

Original Proposal

Sections 306.2, 306.3, 306.4, 306.5; IRC M1305.1.3, M1305.1.4 (IFGC [M] 306.2, [M] 306.3, [M] 306.4, [M] 306.5)

Proponent: Antwone J. Ross, Chesterfield County, VA, representing the Virginia Plumbing & Mechanical Inspectors Association

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

Revise as follows:

306.2 Appliances in rooms. Rooms containing appliances ~~requiring access~~ shall be provided with a door and an unobstructed passageway measuring not less than 36 inches (914 mm) wide and 80 inches (2032 mm) high.

Exception: Within a dwelling unit, appliances installed in a compartment, alcove, basement or similar space shall be accessed by an opening or door and an unobstructed passageway measuring not less than 24 inches (610 mm) wide and large enough to allow removal of the largest appliance in the space, provided that a level service space of not less than 30 inches (762 mm) deep and the height of the appliance, but not less than 30 inches (762 mm), is present at the front or service side of the appliance with the door open.

306.3 Appliances in attics. Attics containing appliances ~~requiring access~~ shall be provided with an opening and unobstructed passageway large enough to allow removal of the largest appliance. The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) in length measured along the center line of the passageway from the opening to the appliance. The passageway shall have continuous solid flooring 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 at the front or service side of the appliance. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), where such dimensions are large enough to allow removal of the largest appliance.

Exceptions:

1. The passageway and level service space are not required where the appliance is capable of being 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 wide for its entire length, the passageway shall be not greater than 50 feet (15 250 mm) in length.

306.4 Appliances under floors. Underfloor spaces containing appliances ~~requiring access~~ shall be provided with an access opening and unobstructed passageway large enough to remove the largest appliance. The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide, nor more than 20 feet (6096 mm) in length measured along the centerline of the passageway from the opening to the appliance. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the appliance. If the depth of the passageway or the service space exceeds 12 inches (305 mm) below the adjoining grade, the walls of the passageway shall be lined with concrete or masonry. Such concrete or masonry shall extend a minimum of 4 inches (102 mm) above the adjoining grade and shall have sufficient lateral-bearing capacity to resist collapse. The clear access opening dimensions shall be a minimum of 22 inches by 30 inches (559 mm by 762 mm), where such dimensions are large enough to allow removal of the largest appliance.

Exceptions:

1. The passageway is not required where the level service space is present when the access is open and the appliance is capable of being serviced and removed through the required opening.
2. Where the passageway is unobstructed and not less than 6 feet high (1929 mm) and 22 inches wide for its entire length, the passageway shall not be limited in length.

306.5 (Supp) Equipment and appliances on roofs or elevated structures. Where equipment and appliances ~~requiring access~~ are installed on roofs or elevated structures at a height exceeding 16 feet (4877 mm), such access shall be provided by a permanent approved means of access, the extent of which shall be from grade or floor level to the equipment and appliances' level service space. Such access shall not require climbing over obstructions greater than 30 inches (762 mm) high or walking on roofs having a slope greater than four units vertical in 12 units horizontal (33-percent slope). Where access involves climbing over parapet walls, the height shall be measured to the top of the parapet wall.

Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:

1. The side railing shall extend above the parapet or roof edge not less than 30 inches (762 mm).
2. Ladders shall have rung spacing not to exceed 14 inches (356 mm) on center.
3. Ladders shall have a toe spacing not less than 6 inches (152 mm) deep.
4. There shall be a minimum of 18 inches (457 mm) between rails.
5. Rungs shall have a minimum 0.75-inch (19 mm) diameter and be capable of withstanding a 300-pound (136.1 kg) load.
6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds (488.2 kg/m²) per square foot. Landing dimensions shall be not less than 18 inches and not less than the width of the ladder served. A guard rail shall be provided on all open sides of the landing.
7. Ladders shall be protected against corrosion by approved means.

Catwalks installed to provide the required access shall be not less than 24 inches (610 mm) wide and shall have railings as required for service platforms.

Exception: This section shall not apply to Group R-3 occupancies.

PART II – IRC-M

Revise as follows:

M1305.1.3 Appliances in attics. Attics containing appliances ~~requiring access~~ 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 when 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 at least 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 a minimum of 20 inches by 30 inches (508 mm) by 762 mm), where such dimensions are 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.

M1305.1.4 Appliances under floors. Under floor spaces containing appliances ~~requiring access~~ shall have an unobstructed passageway large enough to remove the largest appliance, but not less than 30 inches (762 mm) high and 22 inches (559 mm) wide, nor more than 20 feet (6096 mm) long when measured along the centerline of the passageway from the opening to the appliance. A level service space at least 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the appliance. If the depth of the passageway or the service space exceeds 12 inches (305 mm) below the adjoining grade, the walls of the passageway shall be lined with concrete or masonry extending 4 inches (102 mm) above the adjoining grade in accordance with Chapter 4. The rough-framed access opening dimensions shall be a minimum of 22 inches by 30 inches (559 mm by 762 mm), where the dimensions are large enough to remove the largest appliance.

Exceptions:

1. The passageway is not required where the level service space is present when the access is open, and the appliance can be serviced and removed through the required opening.
2. Where the passageway is unobstructed and not less than 6 feet high (1929 mm) and 22 inches wide for its entire length, the passageway shall not be limited in length.

Reason: All appliances require access. The current code language is misleading and sometimes generates unnecessary discussions about which appliances need access and which don't. Section 306.1 already requires access.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I – IMC**Committee Action:****Approved as Modified****Modify proposal as follows:**

306.5 (Supp) Equipment and appliances on roofs or elevated structures. Where equipment requiring access and appliances are installed on roofs or elevated structures at a height exceeding 16 feet (4877 mm), such access shall be provided by a permanent approved means of access, the extent of which shall be from grade or floor level to the equipment and appliances' level service space. Such access shall not require climbing over obstructions greater than 30 inches (762 mm) high or walking on roofs having a slope greater than four units vertical in 12 units horizontal (33-percent slope). Where access involves climbing over parapet walls, the height shall be measured to the top of the parapet wall.

Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:

1. The side railing shall extend above the parapet or roof edge not less than 30 inches (762 mm).
2. Ladders shall have rung spacing not to exceed 14 inches (356 mm) on center.
3. Ladders shall have a toe spacing not less than 6 inches (152 mm) deep.
4. There shall be a minimum of 18 inches (457 mm) between rails.
5. Rungs shall have a minimum 0.75-inch (19 mm) diameter and be capable of withstanding a 300-pound (136.1 kg) load.
6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds (488.2 kg/m²) per square foot. Landing dimensions shall be not less than 18 inches and not less than the width of the ladder served. A guard rail shall be provided on all open sides of the landing.
7. Ladders shall be protected against corrosion by approved means.

Catwalks installed to provide the required access shall be not less than 24 inches (610 mm) wide and shall have railings as required for service platforms.

Exception: This section shall not apply to Group R-3 occupancies.

(Portions of proposal not shown remain unchanged)

Committee Reason: This proposal clarifies that all equipment and appliances need access. The modification adds "requiring access" after "equipment" because not all elevated equipment requires access.

Assembly Action:**None****PART II – IRC****Committee Action:****Approved as Submitted**

Committee Reason: This proposal is identical to M10, Part II and the action by the committee is consistent with its action on M10.

Assembly Action:**None**

Final Hearing Results

M11-07/08, Part I
M11-07/08, Part II

AM
AS

Code Change No: M16-07/08

Original Proposal

Table 308.6, Sections 307.2.3, 506.3.1.1, 507.4, 507.5, [F] 513.13.1 (IFC 909.13.1; IBC [F] 902.13.1), Table 603.4, 803.8, Table 803.9(1), Table 803.9(2), 803.10.4; IRC Table M1306.2, M1308.2, M1411.3.1, M1502.5, M1505.1, Table M1601.1.1(2), Table M1803.2; IFGC 404.5, 502.4, 502.7; IBC 716.5.3, 716.5.4, 716.6.1

Proponent: Guy McMann, Jefferson County, CO, representing the Colorado Association of Plumbing and Mechanical Officials (CAPMO)

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC, THE IRC MECHANICAL, THE IFGC AND THE IBC FIRE SAFETY CODE DEVELOPMENT COMMITTEES AS 4 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

Revise as follows:

305.5 Protection against physical damage. In concealed locations where piping, other than cast-iron or steel, is installed through holes or notches in studs, joists, rafters or similar members less than 1.5 inches (38 mm) from the nearest edge of the member, the pipe shall be protected by shield plates. Protective ~~steel~~ shield plates ~~shall be a minimum of 0.062-inch thick (1.6 mm) steel having a minimum thickness of 0.0575-inches (1.463 mm) (No. 16 Gage),~~ shall cover the area of the pipe where the member is notched or bored, and shall extend a minimum of 2 inches (51 mm) above sole plates and below top plates.

307.2.3 Auxiliary and secondary drain systems. In addition to the requirements of Section 307.2.1, a secondary drain or auxiliary drain pan shall be required for each cooling or evaporator coil or fuel-fired appliance that produces condensate, where damage to any building components will occur as a result of overflow from the equipment drain pan or stoppage in the condensate drain piping. One of the following methods shall be used:

1. An auxiliary drain pan with a separate drain shall be provided under the coils on which condensation will occur. The auxiliary pan drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The pan shall have a minimum depth of 1.5 inches (38 mm), shall not be less than 3 inches (76 mm) larger than the unit or the coil dimensions in width and length and shall be constructed of corrosion-resistant material. ~~Metallic Galvanized sheet steel~~ pans shall have a minimum thickness of not less than ~~0.0276 0.0236~~ -inch (~~0.7 mm~~) (~~0.6010 mm~~) (~~No. 24 gauge~~) galvanized sheet metal. Nonmetallic pans shall have a minimum thickness of not less than 0.0625 inch (1.6 mm).
2. A separate overflow drain line shall be connected to the drain pan provided with the equipment. Such overflow drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The overflow drain line shall connect to the drain pan at a higher level than the primary drain connection.
3. An auxiliary drain pan without a separate drain line shall be provided under the coils on which condensate will occur. Such pan shall be equipped with a water-level detection device conforming to UL 508 that will shut off the equipment served prior to overflow of the pan. The auxiliary drain pan shall be constructed in accordance with Item 1 of this section.
4. A water level detection device conforming to UL 508 shall be provided that will shut off the equipment served in the event that the primary drain is blocked. The device shall be installed in the primary drain line, the overflow drain line, or in the equipment-supplied drain pan, located at a point higher than the primary drain line connection and below the overflow rim of such pan.

Exception: Fuel-fired appliances that automatically shut down operation in the event of a stoppage in the condensate drainage system.

**TABLE 308.6
CLEARANCE REDUCTION METHODS**

TYPE OF PROTECTIVE ASSEMBLY	REDUCED CLEARANCE WITH PROTECTION (inches)							
	Horizontal combustible assemblies located above the heat source				Horizontal combustible assemblies located beneath the heat source and all vertical combustible assemblies			
	Required clearance to combustibles without protection (inches)				Required clearance to combustibles without protection (inches)			
	36	18	9	6	36	18	9	6
Galvanized sheet metal <u>steel, having a minimum nominal thickness of 0.024 0.0236 inches (0.6010 mm) (No. 24 Gage)</u> , mounted on 1-inch glass fiber or mineral wool batt reinforced with wire on the back, 1 inch off the combustible assembly	18	9	5	3	12	6	6	3
Galvanized sheet metal <u>steel, having a minimum nominal thickness of 0.024 0.0236 inch (0.6010 mm) (No. 24 Gage)</u> , spaced 1 inch off the combustible assembly	18	9	5	3	12	6	6	2
Two layers of galvanized sheet metal <u>steel, having a minimum nominal thickness of 0.024 0.036 inch (0.6010 mm) (No. 24 Gage)</u> , having a 1-inch airspace between layers, spaced 1 inch off the combustible assembly	18	9	5	3	12	6	6	3
Two layers of galvanized sheet metal <u>steel, having a minimum nominal thickness of 0.024 0.0236 inch (0.6010 mm) (No. 24 Gage)</u> , having 1 inch of fiberglass insulation between layers, spaced 1 inch off the combustible assembly	18	9	5	3	12	6	6	3
0.5-inch inorganic insulating board, over 1 inch of fiberglass or mineral wool batt, against the combustible assembly	24	12	6	4	18	9	9	3
3.5-inch brick wall, spaced 1 inch off the combustible wall	—	—	—	—	12	6	6	6
3.5-inch brick wall, against the combustible wall	—	—	—	—	24	12	12	5

(Footnotes not shown remain unchanged)

506.3.1.1 (Supp) Grease duct materials. Grease ducts serving Type I hoods shall be constructed of steel ~~not less than 0.055 inch (1.4 mm) (No. 16 Gage) in thickness~~ having a minimum thickness of 0.575-inch (1.463 mm) (No. 16 gage) or stainless steel not less than ~~0.044 0.0450-inch (1.14 mm) (No. 18 Gage) in thickness.~~

Exception: Factory-built commercial kitchen grease ducts listed and labeled in accordance with UL 1978 and installed in accordance with Section 304.1.

507.4 Type I materials. Type I hoods shall be constructed of steel ~~not less than 0.043 inch (1.09 mm) (No. 18 MSG) in thickness, having a minimum thickness of 0.0466-inches (1.181 mm) (No. 18 Gage)~~ or stainless steel not less than ~~0.037 0.0335-inch (0.94 mm) (.8525 mm) (No. 20 MSG) in thickness.~~

507.5 Type II hood materials. Type II hoods shall be constructed of steel ~~not less than 0.030 inch (0.76 mm) (No. 22 Gage) in thickness, having a minimum thickness of 0.0296-inches (.7534 mm) (No. 22 Gage)~~ or stainless steel not less than ~~0.024 0.0220-inch (0.64 mm) (.5550 mm) (No. 24 Gage)~~ in thickness, copper sheets weighing not less than 24 ounces per square foot (7.3 kg/m²), or of other approved material and gage.

[F] 513.13.1 (IFC 902.13.1; IBC [F]902.13.1) Materials. Control-air tubing shall be hard-drawn copper, Type L, ACR in accordance with ASTM B 42, ASTM B 43, ASTM B 68, ASTM B 88, ASTM B 251 and ASTM B 280. Fittings shall be wrought copper or brass, solder type in accordance with ASME B 16.18 or ASME B 16.22. Changes in direction shall be

made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a BCuP5 brazing alloy with solidus above 1,100°F (593°C) and liquids below 1,500°F (816°C). Brazing flux shall be used on copper-to-brass joints only.

Exception: Nonmetallic tubing used within control panels and at the final connection to devices provided all of the following conditions are met:

1. Tubing shall be listed by an approved agency for flame and smoke characteristics.
2. Tubing and connected device shall be completely enclosed within a galvanized or paint-grade steel enclosure of not less than 0.030 inch (0.76 mm) (No. 22 galvanized sheet gage) thickness having a minimum thickness of 0.0296-inches (.7534 mm) (No. 22 Gage) Entry to the enclosure shall be by copper tubing with a protective grommet of neoprene or teflon or by suitable brass compression to male barbed adapter.
3. Tubing shall be identified by appropriately documented coding.
4. Tubing shall be neatly tied and supported within the enclosure. Tubing bridging cabinets and doors or moveable devices shall be of sufficient length to avoid tension and excessive stress. Tubing shall be protected against abrasion. Tubing serving devices on doors shall be fastened along hinges.

TABLE 603.4
DUCT CONSTRUCTION MINIMUM SHEET METAL
THICKNESSES FOR SINGLE DWELLING UNITS

DUCT SIZE	GALVANIZED		APPROXIMATE ALUMINUM B & S GAGE MINIMUM THICKNESS
	MINIMUM THICKNESS INCHES AND (mm)	EQUIVALENT GALVANIZED GAGE NO.	
Round ducts and enclosed rectangular ducts			
14" or less	0.013 0.0157 (.3950 mm)	30 28	26 0.0175
Over 14" 16 and 18 inch	0.016 0.0187 (.4712 mm)	28 26	24 0.018
20 inch and over	0.0236 (.6010 mm)	24	0.023
Exposed rectangular ducts			
14" or less	0.016 0.0157 (.3950 mm)	28	24 0.0175
Over 14" ^a	0.019 0.0187 (.4712 mm)	26	22 0.018

a. For duct gages and reinforcement requirements at static pressures of ½", 1" and 2" w.g., SMACNA Duct Construction Standard, Tables 2-1; 2-2 and 2-3 shall apply.

803.8 Vent connector construction. Vent connectors shall be constructed of metal. The minimum nominal thickness of the connector shall be 0.019 inch (0.5 mm) 0.0136-inches (.3462 mm) (No. 28 Gage) for galvanized steel, 0.022 inch (0.6 mm) (No. 26 B & S Gage) for copper, and 0.020 inch (0.5 mm) (No. 24 B & S Gage) for aluminum.

TABLE 803.9(1)
MINIMUM CHIMNEY CONNECTOR THICKNESS FOR
LOW-HEAT APPLIANCES^a

DIAMETER OF CONNECTOR (inches)	MINIMUM NOMINAL THICKNESS (galvanized) (inches) (mm)
5 and smaller	0.022 (No. 26 Gage)
Larger than 5 and up to 10	0.028 (No. 24 Gage)
Larger than 10 and up to 16	0.034 (No. 22 Gage)
14 inches and less	0.0157 (.3950 mm) (.No. 28 Gage)
Larger than 16 16 and 18 inch ^a	0.064 (No. 16 Gage) 0.0187 (.4712 mm) (No. 26 Gage)

For SI: 1 inch = 25.4 mm.

a. For sizes larger than 18 inches SMACNA Duct Construction Standard, Table 3-5 shall apply.

TABLE 803.9(2)
MINIMUM CHIMNEY CONNECTOR THICKNESS FOR
MEDIUM- AND HIGH-HEAT APPLIANCES

AREA (square inches)	EQUIVALENT ROUND DIAMETER (inches)	MINIMUM NOMINAL THICKNESS Inches (mm)
0-154	0-14	0.060 0.0575 (1.463 mm) (No. 16 Gage)
155-201	15-16	0.075 0.0705 (1.784 mm) (No. 14 Gage)
202-254	17-18	0.105 0.0994 (2.523 mm) (No. 12 Gage)
Greater than 254	Greater than 18	0.135 0.1292 (3.280 mm) (No. 10 Gage)

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm².

TABLE 803.10.4
CHIMNEY CONNECTOR SYSTEMS AND CLEARANCES
TO COMBUSTIBLE WALL MATERIALS FOR DOMESTIC HEATING APPLIANCES ^{a,b,c,d}

System A (12-inch clearance)	A 3.5-inch-thick brick wall shall be framed into the combustible wall. A 0.625-inch-thick fire-clay liner (ASTM C 315 or equivalent) shall be firmly cemented in the center of the brick wall maintaining a 12-inch clearance to combustibles. The clay liner shall run from the outer surface of the bricks to the inner surface of the chimney liner.
System B (9-inch clearance)	A labeled solid-insulated factory-built chimney section (1-inch insulation) the same inside diameter as the connector shall be utilized. Sheet metal <u>steel</u> supports cut to maintain a 9-inch clearance to combustibles shall be fastened to the wall surface and to the chimney section. Fasteners shall not penetrate the chimney flue liner. The chimney length shall be flush with the masonry chimney liner and sealed to the masonry with water-insoluble refractory cement. Chimney manufacturers' parts shall be utilized to securely fasten the chimney connector to the chimney section.
System C (6-inch clearance)	A sheet metal <u>steel</u> (minimum number 24 Gage) ventilated thimble having a minimum thickness of 0.0236-inches (.6010 mm) (No.24 Gage) having two 1-inch air channels shall be installed with a sheet <u>steel</u> chimney connector. (minimum number 24 Gage). Sheet <u>Steel</u> supports (minimum number 24 Gage) shall be cut to maintain a 6-inch clearance between the thimble and combustibles. The chimney connector and steel supports shall have a minimum thickness of 0.0236-inches (.6010 mm) (No 24 Gage) . One side of the support shall be fastened to the wall on all sides. Glass-fiber insulation shall fill the 6-inch space between the thimble and the supports.
System D (2- inch clearance)	A labeled solid-insulated factory-built chimney section (1-inch insulation) with a diameter 2 inches larger than the chimney connector shall be installed with a sheet <u>steel</u> chimney connector (minimum number 24 Gage) having a minimum thickness of 0.0236-inches (.6010 mm) (No.24 Gage). Sheet metal <u>steel</u> supports shall be positioned to maintain a 2-inch clearance to combustibles and to hold the chimney connector to ensure that a 1-inch airspace surrounds the chimney connector through the chimney section. The steel support shall be fastened to the wall on all sides and the chimney section shall be fastened to the supports. Fasteners shall not penetrate the liner of the chimney section.

(Footnotes not shown remain unchanged)

PART II – IRC-M

1. Revise as follows:

TABLE M1306.2

a, b, c, d, e, f, g, h, i, j, k

REDUCTION OF CLEARANCES WITH SPECIFIED FORMS OF PROTECTION

TYPE OF PROTECTION APPLIED TO AND COVERING ALL SURFACES OF COMBUSTIBLE MATERIAL WITHIN THE DISTANCE SPECIFIED AS THE REQUIRED CLEARANCE WITH NO PROTECTION [See Figures M1306.1 and M1306.2]	WHERE THE REQUIRED CLEARANCE WITH NO PROTECTION FROM APPLIANCE, VENT CONNECTOR, OR SINGLE WALL METAL PIPE IS:									
	36 inches		18 inches		12 inches		9 inches		6 inches	
	Allowable clearances with specified protection (Inches) ^b									
	Use column 1 for clearances above an appliance or horizontal connector. Use column 2 for clearances from an appliance, vertical connector and single-wall metal pipe.									
	Above column 1	Sides and rear Column 2	Above column 1	Sides and rear Column 2	Above column 1	Sides and rear Column 2	Above column 1	Sides and rear Column 2	Above column 1	Sides and rear Column 2
3½-inch thick masonry wall without ventilated air space	----	24	----	12	----	9	----	6	----	5
½-in. insulation board over 1-inch glass fiber or mineral wool batts	24	18	12	9	9	6	6	5	4	3
24 gage sheet metal Galvanized sheet steel having a minimum thickness of 0.0236-inches (.6010 mm) (No.24 Gage) over 1-inch glass fiber or mineral wool batts reinforced with wire on rear face with a ventilated air space	18	12	9	6	6	4	5	3	3	3
3½-inch thick masonry wall with ventilated air space	----	12	----	6	----	6	----	6	----	6
24 gage sheet metal Galvanized sheet steel having a minimum thickness of 0.0236-inches (.6010 mm) (No. 24 Gage) with a ventilated air space 1-inch off the combustible assembly	18	12	9	6	6	4	5	3	3	2
½-inch thick insulation board with ventilated air space	18	12	9	6	6	4	5	3	3	3
24 gage sheet metal Galvanized sheet steel having a minimum thickness of 0.0236-inches (.6010 mm) (No 24 Gage) with ventilated air space over 24 gage sheet metal steel with a ventilated air space	18	12	9	6	6	4	5	3	3	3
1-inch glass fiber or mineral wool batts sandwiched between two sheets 24 gage sheet metal of galvanized sheet steel having a minimum thickness of 0.0236-inches (.6010 mm) (No.24 Gage) with a ventilated air space.	18	12	9	6	6	4	5	3	3	3

(Footnotes not shown remain unchanged)

M1308.2 Protection against physical damage. In concealed locations where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than 1.5 inches (38 mm) from the nearest edge of the member, the pipe shall be protected by shield plates. Protective steel shield plates shall be a minimum of 0.062-inch-thick (1.6 mm) steel having a minimum thickness of 0.0575-inches (1.463 mm) (No. 16 Gage), shall cover the area of the pipe where the member is notched or bored, and shall extend a minimum of 2 inches (51 mm) above sole plates and below top plates.

M1411.3.1 (Supp) Auxiliary and secondary drain systems. In addition to the requirements of Section M1411.3, a secondary drain or auxiliary drain pan shall be required for each cooling or evaporator coil where damage to any building components will occur as a result of overflow from the equipment drain pan or stoppage in the condensate drain piping. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than 1/8 unit vertical in 12 units horizontal (1-percent slope). Drain piping shall be a minimum of 3/4-inch (19 mm) nominal pipe size. One of the following methods shall be used:

1. An auxiliary drain pan with a separate drain shall be installed under the coils on which condensation will occur. The auxiliary pan drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The pan shall have a minimum depth of 1.5 inches (38 mm), shall not be less than 3 inches (76 mm) larger than the unit or the coil dimensions in width and length and shall be constructed of corrosion-resistant material. ~~Metallic~~ Galvanized sheet steel pans shall have a minimum thickness of not less than 0.0276-inch 0.0236-inches (0.7 mm) (.6010 mm) (No. 24 Gage) ~~galvanized sheet metal~~. Nonmetallic pans shall have a minimum thickness of not less than 0.0625 inch (1.6 mm).
2. A separate overflow drain line shall be connected to the drain pan provided with the equipment. This overflow drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The overflow drain line shall connect to the drain pan at a higher level than the primary drain connection.
3. An auxiliary drain pan without a separate drain line shall be installed under the coils on which condensate will occur. This pan shall be equipped with a water level detection device conforming to UL 508 that will shut off the equipment served prior to overflow of the pan. The pan shall be equipped with a fitting to allow for drainage. The auxiliary drain pan shall be constructed in accordance with Item 1 of this section.
4. A water level detection device conforming to UL 508 shall be provided that will shut off the equipment served in the event that the primary drain is blocked. The device shall be installed in the primary drain line, the overflow drain line or the equipment-supplied drain pan, located at a point higher than the primary drain line connection and below the overflow rim of such pan.

M1502.5 Duct construction. Exhaust ducts shall be constructed of rigid metal, having a minimum thickness of 0.016-inch-thick (0.4 mm) rigid metal ducts, 0.0157-inches (.3950 mm) (No. 28 Gage) having and shall have smooth interior surfaces with joints running in the direction of air flow. Exhaust ducts shall not be connected with sheet-metal screws or fastening means which extend into the duct.

M1505.1 General. Domestic open-top broiler units shall be provided with a metal exhaust hood, ~~not less than 28-gage,~~ having a minimum thickness of 0.0157-inches (.3950 mm (No. 28 Gage) with 1/4 inch (6 mm) clearance between the hood and the underside of combustible material or cabinets. A clearance of at least 24 inches (610 mm) shall be maintained between the cooking surface and the combustible material or cabinet. The hood shall be at least as wide as the broiler unit and shall extend over the entire unit. Such exhaust hood shall discharge to the outdoors and shall be equipped with a backdraft damper or other means to control infiltration/exfiltration when not in operation. Broiler units incorporating an integral exhaust system, and listed and labeled for use without an exhaust hood, need not be provided with an exhaust hood.

2. Delete and substitute as follows:

TABLE M1601.1.1(2)
GAGES OF METAL DUCTS AND PLENUMS USED FOR HEATING OR COOLING

TYPE OF DUCT	SIZE (inches)	MINIMUM THICKNESS (inch)	EQUIVALENT GALVANIZED SHEET GAGE	APPROXIMATE ALUMINUM B & S GAGE
Round ducts and enclosed rectangular ducts	14 or less	0.013	30	26
	over 14	0.016	28	24
Exposed rectangular ducts	14 or less	0.016	28	24
	over 14	0.019	26	22

TABLE M1601.1.1(2)
GAGES OF METAL DUCTS AND PLENUMS USED FOR HEATING OR COOLING

<u>DUCT SIZE</u>	<u>Galvanized</u>		<u>Aluminum</u>
	<u>Minimum thickness inches and (mm)</u>	<u>Equivalent galvanized gage no.</u>	<u>Minimum thickness</u>
<u>Round ducts and enclosed rectangular ducts</u>			
<u>14" or less</u>	<u>0.0157 (.3950 mm)</u>	<u>28</u> <u>26</u>	<u>0.0175</u>
<u>16 and 18 inch</u>	<u>0.0187 (.4712 mm)</u>	<u>24</u>	<u>0.018</u>
<u>20 inch and over</u>	<u>0.0236 (.6010 mm)</u>		<u>0.023</u>
<u>Exposed rectangular ducts</u>			
<u>14" or less</u>	<u>0.0157 (.3950 mm)</u>	<u>28</u> <u>26</u>	<u>0.0175</u>
<u>Over 14"^a</u>	<u>0.0187 (.4712 mm)</u>		<u>0.018</u>

For SI: 1 inch = 25.4 mm.

a. For duct gages and reinforcement requirements at static pressures of ½", 1" and 2" w.g., SMACNA Duct Construction Standard, Tables 2-1; 2-2 and 2-3 shall apply.

3. Revise table as follows:

TABLE M1803.2
THICKNESS FOR SINGLE-WALL METAL PIPE CONNECTORS^a

<u>DIAMETER OF CONNECTOR (inches)</u>	<u>GALVANIZED SHEET METAL GAGE NUMBER</u>	<u>MINIMUM THICKNESS (inch) (mm)</u>
<u>Less than 6</u>	<u>26</u>	<u>0.019</u>
<u>6 to 10</u>	<u>24</u>	<u>0.024</u>
<u>14 inches and less</u>	<u>28</u>	<u>0.0157 (.3950 mm)</u>
<u>Over 10 through 16</u>	<u>22</u>	<u>0.029</u>
<u>16 and 18 inch^a</u>	<u>26</u>	<u>0.0187 (.4712 mm)</u>

For SI: 1 inch = 25.4 mm.

a. For sizes larger than 18 inches SMACNA Duct Construction Standard, Table 3-5 shall apply.

PART III – IFGC

Revise as follows:

404.5 Protection against physical damage. In concealed locations, where piping other than black or galvanized steel is installed through holes or notches in wood studs, joists, rafters or similar members less than 1.5 inches (38 mm) from the nearest edge of the member, the pipe shall be protected by shield plates. Protective steel shield plates shall be a minimum of 1/16-inch-thick (1.6 mm) steel, having a minimum thickness of 0.0575-inches (1.463 mm) (No. 16 Gage) shall cover the area of the pipe where the member is notched or bored and shall extend a minimum of 4 inches (102 mm) above sole plates, below top plates and to each side of a stud, joist or rafter.

502.4 Insulation shield. Where vents pass through insulated assemblies, an insulation shield constructed of steel not less than 26 gage sheet (0.016 inch) (0.4 mm) metal having a minimum thickness of 0.0187-inches (.4712 mm) (No. 26 Gage) shall be installed to provide clearance between the vent and the insulation material. The clearance shall not be less than the clearance to combustibles specified by the vent manufacturer's installation instructions. Where vents pass through attic space, the shield shall terminate not less than 2 inches (51 mm) above the insulation materials and shall be secured in place to prevent displacement. Insulation shields provided as part of a listed vent system shall be installed in accordance with the manufacturer's installation instructions.

502.7 Protection against physical damage. In concealed locations, where a vent is installed through holes or notches in studs, joists, rafters or similar members less than 1.5 inches (38 mm) from the nearest edge of the member, the vent shall be protected by shield plates. Protective steel shield plates shall be a minimum of 1/16-inch-thick (1.6 mm) steel, having a minimum thickness of 0.0575-inches (1.463 mm) (No. 16 Gage) shall cover the area of the vent where the member is notched or bored and shall extend a minimum of 4 inches (102 mm) above sole plates, below top plates and to each side of a stud, joist or rafter.

PART IV – IBC FIRE SAFETY

716.5.3 (Supp) Shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with approved fire and smoke dampers installed in accordance with their listing.

Exceptions:

1. Fire dampers are not required at penetrations of shafts where:
 - 1.1. Steel exhaust subducts are extended at least 22 inches (559 mm) vertically in exhaust shafts, provided there is a continuous airflow upward to the outside; or
 - 1.2. Penetrations are tested in accordance with ASTM E119 or UL263 as part of the fire-resistance rated assembly; or
 - 1.3. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 909 and where the fire damper will interfere with the operation of the smoke control system; or
 - 1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
2. In Group B and R occupancies, equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke dampers are not required at penetrations of shafts where:
 - 2.1. Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust subducts, having a ~~wall thickness of at least 0.019 inch (0.48 mm); and~~ minimum thickness of - .0187-inches (0.4712 mm) (No. 26 Gage)
 - 2.2. That extend at least 22 inches (559 mm) vertically; and
 - 2.3. An exhaust fan is installed at the upper terminus of the shaft that is, powered continuously in accordance with the provisions of Section 909.11, so as to maintain a continuous upward airflow to the outside.
3. Smoke dampers are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
4. Smoke dampers are not required at penetrations of shafts where ducts are used as part of an approved mechanical smoke control system designed in accordance with Section 909 and where the smoke damper will interfere with the operation of the smoke control system.
5. Fire dampers and combination fire/smoke dampers are not required in kitchen and clothes dryer exhaust system when installed in accordance with the *International Mechanical Code*.

716.5.4 (Supp) Fire partitions. Ducts and air transfer openings that penetrate fire partitions shall be protected with listed fire dampers installed in accordance with their listing.

Exceptions: In occupancies other than Group H, fire dampers are not required where any of the following apply:

1. The partitions are tenant separation or corridor walls in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a through penetration in accordance with Section 712.
2. Tenant partitions in covered mall buildings where the walls are not required by provisions elsewhere in the code to extend to the underside of the floor or roof sheathing, slab or deck above.
3. The duct system is constructed of approved materials in accordance with the *International Mechanical Code* and the duct penetrating the wall complies with all of the following requirements:
 - 3.1. The duct shall not exceed 100 square inches (0.06 m²).
 - 3.2. The duct shall be constructed of steel ~~a minimum of 0.0217 inch (0.55 mm) in thickness~~ having a minimum thickness of 0.0157-inches (0.3950 mm) (No. 28 Gage).
 - 3.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.
 - 3.4. The duct shall be installed above a ceiling.
 - 3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
 - 3.6. A minimum 12-inch-long (305 mm) ~~by 0.060-inch-thick (1.52 mm)~~ steel sleeve having a minimum thickness of 0.0575-inches (1.465 mm) (No. 16 Gage) shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 11/2-inch by 11/2-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and the wall opening shall be filled with mineral wool batting on all sides.

716.6.1(Supp) Through penetrations. In occupancies other than Groups I-2 and I-3, a duct constructed of approved materials in accordance with the *International Mechanical Code* that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection, provided a listed fire damper is installed at the floor line or the duct is protected in accordance with Section 712.4. For air transfer openings, see Exception 7 to Section 707.2.

Exception: A duct is permitted to penetrate three floors or less without a fire damper at each floor, provided it meets all of the following requirements:

1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel ~~not less than 0.019-inch (0.48 mm) (26 gage) in thickness~~ having a minimum thickness of 0.0187-inches ((0.4712 mm) (No. 26 Gage).
2. The duct shall open into only one dwelling or sleeping unit and the duct system shall be continuous from the unit to the exterior of the building.
3. The duct shall not exceed 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m²) in any 100 square feet (9.3 m²) of floor area.
4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.
5. Grille openings located in a ceiling of a fire-resistance- rated floor/ceiling or roof/ceiling assembly shall be protected with a listed ceiling radiation damper installed in accordance with Section 716.6.2.1.

Reason: The code has been inconsistent in its approach to decimals and the related gages. This is a much needed clean up in an attempt to bring consistency in language as it relates to stated decimals and gages. The gage should always accompany a decimal as most end users relate to a gage as opposed to a decimal. Some decimals were not accurate to the stated gage. Also, some of the gages stated in the tables were not consistent with the standard and were changed to reflect that. Now anyone can reference the SMACNA standard and go to Table A-2; A-4 and 3-5 and see where the numbers come from. A new footnote has been added to Tables 603.4, 803.9 (1) and 503.10.2.4 to direct the user to more information that doesn't necessarily need to be in the code. There are many combinations of gages and reinforcement methods available for use which means no one particular gage fits all situations. This itemized account will make things clearer as to the intent of this change.

Bibliography

SMACNA Duct Construction Standards, 2005, Table A-1 and A-3; Sheet Metal and Air Conditioning Contractors National Association, Inc.; Chantilly, VA.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I – IMC

Committee Action:

Approved as Modified

Modify proposal as follows:

307.2.3 Auxiliary and secondary drain systems. In addition to the requirements of Section 307.2.1, a secondary drain or auxiliary drain pan shall be required for each cooling or evaporator coil or fuel-fired appliance that produces condensate, where damage to any building components will occur as a result of overflow from the equipment drain pan or stoppage in the condensate drain piping. One of the following methods shall be used:

1. An auxiliary drain pan with a separate drain shall be provided under the coils on which condensation will occur. The auxiliary pan drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The pan shall have a minimum depth of 1.5 inches (38 mm), shall not be less than 3 inches (76 mm) larger than the unit or the coil dimensions in width and length and shall be constructed of corrosion-resistant material. Galvanized sheet steel pans shall have a minimum thickness of not less than 0.0236-inch (0.6010 mm) (No. 24 gage) ~~galvanized sheet metal~~. Nonmetallic pans shall have a minimum thickness of not less than 0.0625-inch (1.6 mm).
2. A separate overflow drain line shall be connected to the drain pan provided with the equipment. Such overflow drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The overflow drain line shall connect to the drain pan at a higher level than the primary drain connection.
3. An auxiliary drain pan without a separate drain line shall be provided under the coils on which condensate will occur. Such pan shall be equipped with a water-level detection device conforming to UL 508 that will shut off the equipment served prior to overflow of the pan. The auxiliary drain pan shall be constructed in accordance with Item 1 of this section.
4. A water level detection device conforming to UL 508 shall be provided that will shut off the equipment served in the event that the primary drain is blocked. The device shall be installed in the primary drain line, the overflow drain line, or in the equipment-supplied drain pan, located at a point higher than the primary drain line connection and below the overflow rim of such pan.

Exception: Fuel-fired appliances that automatically shut down operation in the event of a stoppage in the condensate drainage system.

TABLE 803.9(1)
MINIMUM CHIMNEY CONNECTOR THICKNESS FOR
LOW-HEAT APPLIANCES^a

DIAMETER OF CONNECTOR (inches)	MINIMUM NOMINAL THICKNESS (galvanized) (inches) (mm)
<u>5 and smaller</u>	<u>0.022 (No. 26 Gage)</u>
<u>Larger than 5 and up to 10</u>	<u>0.028 (No. 24 Gage)</u>
<u>Larger than 10 and up to 16</u>	<u>0.034 (No. 22 Gage)</u>
<u>14 inches and less</u>	<u>0.0157 (.3950 mm) (No. 28 Gage)</u>
<u>Larger than 16</u> <u>16 and 18 inch^a</u>	<u>0.064 (No. 16 Gage)</u> <u>0.0187 (.4712 mm) (No. 26 Gage)</u>

For SI: 1 inch = 25.4 mm.

a. For sizes larger than 18 inches SMACNA Duct Construction Standard, Table 3-5 shall apply.

(Portions of proposal not shown remain unchanged.)

Committee Reason: This code change provides consistency between the I-codes and SMACNA's Duct Construction Standards related to sheet metal thicknesses. Both the decimal and gage designations of thickness have been revised. The modification deleted duplicated language in Section 307.2.3 and reverted Table 803.9(1) back to the current code language because that table is for oil-burning appliance connectors and there was concern that reducing the wall thicknesses was not justified for such high heat applications.

Assembly Action:

None

PART II – IRC-M

Committee Action:

Approved as Modified

Modify proposal as follows:

TABLE M1803.2
THICKNESS FOR SINGLE-WALL METAL PIPE CONNECTORS^a

DIAMETER OF CONNECTOR (inches)	GALVANIZED SHEET METAL GAGE NUMBER	MINIMUM THICKNESS (inch) (mm)
<u>Less than 6</u>	<u>26</u>	<u>0.019</u>
<u>6 to 10</u> <u>14 inches and less</u>	<u>24</u> <u>28</u>	<u>0.024</u> <u>0.0157 (.3950 mm)</u>
<u>Over 10 through 16</u> <u>16 and 18 inch^a</u>	<u>22</u> <u>26</u>	<u>0.029</u> <u>0.0187 (.4712 mm)</u>

For SI: 1 inch = 25.4 mm.

a. For sizes larger than 18 inches SMACNA Duct Construction Standard, Table 3-5 shall apply.

(Portions of proposal not shown remain unchanged.)

Committee Reason: This code change provides consistency between the I-codes and SMACNA's Duct Construction Standards related to decimal and gage designations of sheet metal thicknesses. The modification reverted Table M1803.2 back to the current code language because that table is for oil-burning appliance connectors and there was concern that reducing the wall thicknesses was not justified for such high heat applications.

Assembly Action:

None

PART III – IFGC

Committee Action:

Approved as Submitted

Committee Reason: The proposed revisions make the code more user-friendly by providing a gage number in addition to a minimum thickness number. For consistency, the gage number designations and thicknesses have been aligned with those in the SMACNA duct construction standard.

Assembly Action:

None

PART IV – IBC FIRE SAFETY

Committee Action:

Approved as Modified

Modify proposal as follows:

716.5.3 (Supp) Shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with approved fire and smoke dampers installed in accordance with their listing.

Exceptions:

1. Fire dampers are not required at penetrations of shafts where:
 - 1.1. Steel exhaust subducts are extended at least 22 inches (559 mm) vertically in exhaust shafts, provided there is a continuous airflow upward to the outside; or
 - 1.2. Penetrations are tested in accordance with ASTM E119 or UL263 as part of the fire-resistance rated assembly; or
 - 1.3. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 909 and where the fire damper will interfere with the operation of the smoke control system; or
 - 1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
2. In Group B and R occupancies, equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke dampers are not required at penetrations of shafts where:
 - 2.1. Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust subducts, having a minimum wall thickness of 0.187-inches (0.4712 mm) (No. 26 Gage)
 - 2.2. That extend at least 22 inches (559 mm) vertically; and
 - 2.3. An exhaust fan is installed at the upper terminus of the shaft that is, powered continuously in accordance with the provisions of Section 909.11, so as to maintain a continuous upward airflow to the outside.
3. Smoke dampers are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
4. Smoke dampers are not required at penetrations of shafts where ducts are used as part of an approved mechanical smoke control system designed in accordance with Section 909 and where the smoke damper will interfere with the operation of the smoke control system.
5. Fire dampers and combination fire/smoke dampers are not required in kitchen and clothes dryer exhaust system when installed in accordance with the *International Mechanical Code*.

716.5.4 (Supp) Fire partitions. Ducts and air transfer openings that penetrate fire partitions shall be protected with listed fire dampers installed in accordance with their listing.

Exceptions: In occupancies other than Group H, fire dampers are not required where any of the following apply:

1. The partitions are tenant separation or corridor walls in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a through penetration in accordance with Section 712.
2. Tenant partitions in covered mall buildings where the walls are not required by provisions elsewhere in the code to extend to the underside of the floor or roof sheathing, slab or deck above.
3. The duct system is constructed of approved materials in accordance with the *International Mechanical Code* and the duct penetrating the wall complies with all of the following requirements:
 - 3.1. The duct shall not exceed 100 square inches (0.06 m²).
 - 3.2. The duct shall be constructed of steel a minimum of 0.0217-inch (0.55 mm) in thickness ~~having a minimum thickness of 0.0157-inches (0.3950 mm) (No. 28 Gage).~~
 - 3.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.
 - 3.4. The duct shall be installed above a ceiling.
 - 3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
 - 3.6. A minimum 12-inch-long (305 mm) by 0.060-inch thick (1.52 mm) steel sleeve ~~having a minimum thickness of 0.0575-inches (1.465 mm) (No. 16 Gage)~~ shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 1 1/2-inch by 1 1/2-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and the wall opening shall be filled with mineral wool batting on all sides.

716.6.1(Supp) Through penetrations. In occupancies other than Groups I-2 and I-3, a duct constructed of approved materials in accordance with the *International Mechanical Code* that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection, provided a listed fire damper is installed at the floor line or the duct is protected in accordance with Section 712.4. For air transfer openings, see Exception 7 to Section 707.2.

Exception: A duct is permitted to penetrate three floors or less without a fire damper at each floor, provided it meets all of the following requirements:

1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel having a minimum wall thickness of 0.0187-inches (0.4712 mm) (No. 26 Gage).
2. The duct shall open into only one dwelling or sleeping unit and the duct system shall be continuous from the unit to the exterior of the building.
3. The duct shall not exceed 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m²) in any 100 square feet (9.3 m²) of floor area.
4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01-inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.
5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a listed ceiling radiation damper installed in accordance with Section 716.6.2.1.

Committee Reason: The committee agreed that this revised language was appropriate to bring consistency in language as it relates to decimals and gages stated within the code. Further, the committee agreed that the modification adding the term "wall" in two places to define thickness was an appropriate clarification. Lastly, the committee agreed with the modification to undo the proposed changes for items 3.2 and 3.6 of Section 716.5.4 based on the fact that these thicknesses were based on specific testing results.

Assembly Action:

None

Final Hearing Results

M16-07/08, Part I	AM
M16-07/08, Part II	AM
M16-07/08, Part III	AS
M16-07/08, Part IV	AM

Code Change No: **M17-07/08**

Original Proposal

Table 308.6; IRC Table M1306.2

Proponent: Guy McMann, Jefferson County, CO, representing the Colorado Association of Plumbing and Mechanical Officials (CAPMO)

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

Revise table as follows:

**TABLE 308.6
CLEARANCE REDUCTION METHODS^b**

(No change to table)

For SI: 1 inch = 25.4 mm, °C = [(°F)-32]/1.8, 1 pound per cubic foot = 16.02 kg/m³, 1.0 Btu • in/ft² • h • °F = 0.144 W/m² • K.

a. (No change)

b. For limitations on clearance reduction for solid fuel-burning appliances, see Section 308.7

Reason: There have been cases where 308.7 is being overlooked, thus installers have been attempting to install solid fuel appliances with 6 and 9-inch clearances when 12 is the absolute minimum. This footnote will aid in the proper installation of solid fuel appliances.

Cost Impact: The code change proposal will not increase the cost of construction.

PART II – IRC-M

Revise table as follows:

**TABLE M1306.2
REDUCTION OF CLEARANCES WITH SPECIFIED FORMS OF PROTECTION^{a,b,c,d,e,f,g,h,i,j,k,l}**

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm, 1 pound per cubic foot = 16.019 kg/m³, °C = [(°F)-32]/1.8, 1 Btu/(h • ft² • °F/in.) = 0.001442299 (W/cm² • °C/cm).

a. through k. (No change)

b. For limitations on clearance reduction for solid fuel-burning appliances see Section M1306.2.1.

Reason: There have been cases where M1306.2.1 is being overlooked, thus installers have been attempting to install solid fuel appliances with 6 and 9-inch clearances when 12 is the absolute minimum. This footnote will aid in the proper installation of solid fuel appliances.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I – IMC**Committee Action:****Disapproved**

Committee Reason: There are other items in Section 308, such as masonry chimneys and kitchen exhaust ducts, that have limitations on clearance reduction methods in Table 308.6. To only have a note for solid fuel-burning appliances might cause users to think they can use the table for those other items.

Assembly Action:**None****PART II – IRC-M****Committee Action:****Approved as Submitted**

Committee Reason: The added footnote will point users to Section M1306.2.1 to clarify that 12 inches is the absolute minimum clearance to combustibles for solid fuel-burning appliances and that the reduced clearances in the table are not allowed.

Assembly Action:**None**

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Guy McMann, Jefferson County, CO, representing the Colorado Association of Plumbing and Mechanical Officials (CAPMO) requests Approval as Modified by this Public Comment for Part I.

Modify proposal as follows:

TABLE 308.6
CLEARANCE REDUCTION METHODS^b
 (No change to table)

For SI: 1 inch = 25.4 mm, °C = [(°F)-32]/1.8, 1 pound per cubic foot = 16.02 kg/m³, 1.0 Btu • in/ft² • h • °F = 0.144 W/m² • K.

- a. (No change)
- b. For limitations on clearance reduction for solid fuel-burning appliances, masonry chimneys, connector pass-throughs, masonry fireplaces and kitchen exhaust ducts, see Sections 308.7 through 308.11.

Commenter's Reason: This change was originally intended for solid fuel-burning appliances only because that was where the most common infractions were occurring. The committee was concerned that not addressing the other limitations on masonry fireplaces, chimneys etc. might cause users to think they could use the table for those other items. All those other items were included now in the footnote. This will provide the user with even greater guidance thereby cutting cost and time making corrections. This was approved as submitted in the IRC.

Final Hearing Results

M17-07/08, Part I
M17-07/08, Part II

AMPC
AS

Code Change No: **M30-07/08**

Original Proposal

Sections 504.6, 504.6.1, 504.6.2, 504.6.3 (New), 504.6.4 (New), 504.6.4.1 (New), 504.6.4.2 (New), 504.6.4.3 (New), 504.6.5 (New), Table 504.6.5 (New), 504.6.6 (New), 504.6.7 (New) [IFGC [M] 614.6, [M] 614.6.1, [M] 614.6.2, [M] 614.6 through [M] 614.6.7 (New)]; IRC M1502.3, M1502.3.1 (New), M1502.3.2 (New), M1502.3.3 (New), M1502.3.4 (New), M1502.3.4.1 (New), M1502.3.4.2 (New), M1502.3.4.3 (New), M1502.3.5 (New), Table M1502.3.5 (New), M1502.3.6 (New), M1502.3.7 (New), M1502.4, M1502.5, M1502.6, M1502.3 (New)

Proponent: Julius Ballanco, PE, JB Engineering and Code Consulting, PC, representing In-O-Vate Technologies

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

1. Delete and substitute as follows:

~~**504.6 Domestic clothes dryer ducts.** Exhaust ducts for domestic clothes dryers shall be constructed of metal and shall have a smooth interior finish. The exhaust duct shall be a minimum nominal size of 4 inches (102 mm) in diameter. The entire exhaust system shall be supported and secured in place. The male end of the duct at overlapped duct joints shall extend in the direction of airflow. Clothes dryer transition ducts used to connect the appliance to the exhaust duct system shall be limited to single lengths not to exceed 8 feet (2438 mm) and shall be listed and labeled for the application. Transition ducts shall not be concealed within construction.~~

~~**504.6.1 (Supp) Maximum length.** The maximum length of a clothes dryer exhaust duct shall not exceed 25 feet (7620 mm) from the dryer location to the outlet terminal. The maximum length of the duct shall be reduced 2 1/2 feet (762 mm) for each 45 degree (0.79 rad) bend and 5 feet (1524 mm) for each 90 degree (1.6 rad) bend. The maximum length of the exhaust duct does not include the transition duct.~~

~~**Exception:** Where the make and model of the clothes dryer to be installed is known and the manufacturer's installation instructions for such dryer are provided to the code official, the maximum length of the exhaust duct, including any transition duct, shall be permitted to be in accordance with the dryer manufacturer's installation instructions. Where exhaust ducts are installed in concealed locations, the developed length of the exhaust duct system shall be indicated by permanent labels or tags installed in an observable location.~~

~~**504.6.2 Rough-in required.** Where a compartment or space for a domestic clothes dryer is provided, an exhaust duct system shall be installed in accordance with Sections 504.6 and 504.6.1.~~

~~**504.6 (IFGC [M] 614.6) Domestic clothes dryer exhaust ducts.** Exhaust ducts for domestic clothes dryers shall conform to the requirements of Sections 504.6.1 through 504.6.7.~~

~~**504.6.1 (IFGC [M] 614.6.1) Material and size.** Exhaust ducts shall have a smooth interior finish and shall be constructed of metal a minimum 0.016-inch (0.4 mm) thick. The exhaust duct size shall be 4 inches nominal in diameter.~~

~~**504.6.2 (IFGC [M] 614.6.2) Duct installation.** Exhaust ducts shall be supported at 4 foot intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct.~~

~~**504.6.3 (IFGC [M] 614.6.3) Transition ducts.** Transition ducts used to connect the dryer to the exhaust duct system shall be a single length that is listed and labeled in accordance with UL 2158A. Transition ducts shall be a maximum of 8 feet in length. Transition ducts shall not be concealed within construction.~~

504.6.4 (IFGC [M] 614.6.4) Duct length. The maximum allowable exhaust duct length shall be determined by one of the methods specified in Sections 504.6.4.1 through 504.6.4.3.

504.6.4.1 (IFGC [M] 614.6.4.1) Specified length. The maximum length of the exhaust duct shall be 25 feet (7620mm) from the connection to the transition duct from the dryer to the outlet terminal.

504.6.4.2 (IFGC [M] 614.6.4.2) Manufacturer's instructions. The maximum length of the exhaust duct shall be determined by the dryer manufacturer's installation instructions. The code official shall be provided with a copy of the installation instructions for the make and model of the dryer.

504.6.4.3 (IFGC [M] 614.6.4.3) Booster fan. The maximum length of the exhaust duct shall be determined by the booster fan manufacturer's installation instructions. Booster fans shall be listed and labeled for use in dryer exhaust duct systems. The booster fan shall be installed in accordance with the manufacturer's installation instructions.

504.6.5 (IFGC [M] 614.6.5) Exhaust duct length reduction. The maximum length of the exhaust duct shall be reduced in accordance with Table 504.6.5.

**TABLE 504.6.5 (IFGC [M] TABLE 614.6.5)
DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH**

Dryer Exhaust Duct Fitting Type	Equivalent Length (feet)
4" radius mitered 45 degree elbow	2-1/2
4" radius mitered 90 degree elbow	5
6" radius smooth 45 degree elbow	1
6" radius smooth 90 degree elbow	1-3/4
8" radius smooth 45 degree elbow	1
8" radius smooth 90 degree elbow	1-7/12
10" radius smooth 45 degree elbow	3/4
10" radius smooth 90 degree elbow	1-1/2

504.6.6 (IFGC [M] 614.6.6) Length identification. Where the exhaust duct is concealed within the building construction, the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet of the exhaust duct connection.

504.6.7 (IFGC [M] 614.6.7) Exhaust duct required. Where facilities for a clothes dryer are provided, an exhaust duct system shall be installed.

PART II – IRC-M

Delete and substitute as follows:

M1502.3 Duct size. The diameter of the exhaust duct shall be as required by the clothes dryer's listing and the manufacturer's installation instructions.

M1502.4 Transition ducts. Transition ducts shall not be concealed within construction. Flexible transition ducts used to connect the dryer to the exhaust duct system shall be limited to single lengths, not to exceed 8 feet (2438 mm) and shall be listed and labeled in accordance with UL 2158A.

M1502.5 Duct construction. Exhaust ducts shall be constructed of minimum 0.016-inch-thick (0.4 mm) rigid metal ducts, having smooth interior surfaces with joints running in the direction of air flow. Exhaust ducts shall not be connected with sheet metal screws or fastening means which extend into the duct.

M1502.6 (Supp) Duct length. The maximum length of a clothes dryer exhaust duct shall not exceed 35 feet (10 668 mm) from the dryer location to the wall or roof termination. The maximum length of the duct shall be reduced 2.5 feet (762 mm) for each 45-degree (0.8 rad) bend and 5 feet (1524 mm) for each 90-degree (1.6 rad) bend. The maximum length of the exhaust duct does not include the transition duct.

Exceptions:

1. Where the make and model of the clothes dryer to be installed is known and the manufacturer's installation instructions for the dryer are provided to the building official, the maximum length of the exhaust duct, including any transition duct, shall be permitted to be in accordance with the dryer manufacturer's installation instructions.

2. ~~Where large-radius 45-degree (0.8 rad) and 90-degree (1.6 rad) bends are installed, the equivalent length of the clothes dryer exhaust duct for each bend shall be as provided in the fitting manufacturer's installation instructions. The engineering calculation used by the manufacturer of such fittings shall be in accordance with the ASHRAE Fundamentals Handbook.~~

M1502.3 Dryer exhaust ducts. Dryer exhaust ducts shall conform to the requirements of Sections M1502.3.1 through M1502.3.7.

M1502.3.1 Material and size. Exhaust ducts shall have a smooth interior finish and shall be constructed of metal a minimum 0.016-inch (0.4 mm) thick. The exhaust duct size shall be 4 inches nominal in diameter.

M1502.3.2 Duct installation. Exhaust ducts shall be supported at 4 foot intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct.

M1502.3.3 Transition duct. Transition ducts used to connect the dryer to the exhaust duct system shall be a single length that is listed and labeled in accordance with UL 2158A. Transition ducts shall be a maximum of 8 feet in length. Transition ducts shall not be concealed within construction.

M1502.3.4 Duct length. The maximum allowable exhaust duct length shall be determined by one of the methods specified in Sections M1502.3.4.1 through M1502.3.4.3.

M1502.3.4.1 Specified length. The maximum length of the exhaust duct shall be 25 feet (7620mm) from the connection to the transition duct from the dryer to the outlet terminal.

M1502.3.4.2 Manufacturer's instructions. The maximum length of the exhaust duct shall be determined by the dryer manufacturer's installation instructions. The code official shall be provided with a copy of the installation instructions for the make and model of the dryer.

M1502.3.4.3 Booster fan. The maximum length of the exhaust duct shall be determined by the booster fan manufacturer's installation instructions. Booster fans shall be listed and labeled for use in dryer exhaust duct systems. The booster fan shall be installed in accordance with the manufacturer's installation instructions.

M1502.3.5 Exhaust duct length reduction. The maximum length of the exhaust duct shall be reduced in accordance with Table M1502.3.5.

TABLE M1502.3.5
DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH

<u>Dryer Exhaust Duct Fitting Type</u>	<u>Equivalent Length (feet)</u>
<u>4" radius mitered 45 degree elbow</u>	<u>2-1/2</u>
<u>4" radius mitered 90 degree elbow</u>	<u>5</u>
<u>6" radius smooth 45 degree elbow</u>	<u>1</u>
<u>6" radius smooth 90 degree elbow</u>	<u>1-3/4</u>
<u>8" radius smooth 45 degree elbow</u>	<u>1</u>
<u>8" radius smooth 90 degree elbow</u>	<u>1-7/12</u>
<u>10" radius smooth 45 degree elbow</u>	<u>3/4</u>
<u>10" radius smooth 90 degree elbow</u>	<u>1-1/2</u>

M1502.3.6 Length identification. Where the exhaust duct is concealed within the building construction, the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet of the exhaust duct connection.

M1502.3.7 Exhaust duct required. Where facilities for a clothes dryer are provided, an exhaust duct system shall be installed.

Reason (Part I): Over the past few code change cycles, the requirements for dryer exhaust venting has been subject to extensive changes. As a result, the requirements are not properly coordinated. The only feasible means of correctly the text is to provide all new language that is coordinated and contains all of the technically correct requirements.

The initial section establishes that the following section apply to dryer exhaust ducts. The specific requirements are found in the remaining section.

Section 504.6.1 has the requirements for a metal duct as currently found in the code. The change is the requirements for the duct to be 4 inches nominal in diameter. A mm equivalent is not provided since it is a nominal dimension. The current code requires a 4 inch minimum. However, if the duct is increased to 5 inch, the velocity in the exhaust duct drops significantly. The larger duct will not provide the minimum velocity to remove the moisture and any lint that gets into the exhaust duct.

Section 504.6.2 identifies a new requirement for support. Other than having an arbitrary statement, the support is required every 4 feet. This is a typical spacing for supporting a 4 inch duct with insert joints. The other change is to the proper terminology. Male end is no longer used in the profession. It is either an insert end or in the case of threads an outside thread.

Section 504.6.3 simply isolates the requirements for a transition duct. The current text is often missed since it is located within a section of exhaust duct length. The UL standard is currently listed in the Residential Code, but not the Mechanical Code.

Section 504.6.4 provides the three options for maximum exhaust duct length. The first requirement is 25 feet with is the current requirement in the Mechanical Code and Fuel Gas Code. While the Residential Code has a 35 foot limitation, this distance is incorrect. Stack type washers and dryers stipulate a maximum length of 25 feet. Hence, the length cannot be listed as 35 feet.

When the dryer has been specified, the manufacturer's instructions can be used to determine the dryer vent length. This is currently written as an exception; however, it is really an option. The requirements are the same as the current code.

The third viable method is power venting using a dryer booster fan. The new requirement stipulates that the dryer booster fan manufacturer determines the exhaust duct length. The requirements also state that the booster fan must be listed and label; and installed in accordance with the manufacturer's installation instructions. Listed booster fans are a viable method of extending the length of the duct.

Section 504.6.5 lists the equivalent lengths of various fittings. The newer fittings were determined based on an analysis using the ASHRAE and SMACNA fitting tables. The equivalent length table assumes that the current requirement in the code is accurate.

The identification is listed in Section 504.6.6. The new requirement is that the label or tag must be located within 6 feet of the exhaust duct connection. The distance is based on the maximum distance the gas valve can be located from a gas dryer. Since this has been used to determine close proximity for a gas valve, it is appropriate to use the same distance for close proximity for a label.

The last section requires an exhaust duct when a dryer connection is present in a building. This is the intent of the current rough-in section.

Reason (Part II): Over the past few code change cycles, the requirements for dryer exhaust venting has been subject to extensive changes. As a result, the requirements are not properly coordinated. The only feasible means of correctly the text is to provide all new language that is coordinated and contains all of the technically correct requirements.

The initial section establishes that the following section apply to dryer exhaust ducts. The specific requirements are found in the remaining section.

Section M1502.3.1 has the requirements for a metal duct as currently found in the code. The change is the requirements for the duct to be 4 inches nominal in diameter. A mm equivalent is not provided since it is a nominal dimension. The current code requires a 4 inch minimum. However, if the duct is increased to 5 inch, the velocity in the exhaust duct drops significantly. The larger duct will not provide the minimum velocity to remove the moisture and any lint that gets into the exhaust duct.

Section M1502.3.2 identifies a new requirement for support. Other than having an arbitrary statement, the support is required every 4 feet. This is a typical spacing for supporting a 4 inch duct with insert joints. The other change is to the proper terminology. Male end is no longer used in the profession. It is either an insert end or in the case of threads an outside thread.

Section M1502.3.3 simply isolates the requirements for a transition duct. The current text is often missed since it is located within a section of exhaust duct length. The UL standard is currently listed in the Residential Code, but not the Mechanical Code.

Section M1502.3.4 provides the three options for maximum exhaust duct length. The first requirement is 25 feet with is the current requirement in the Mechanical Code and Fuel Gas Code. While the Residential Code has a 35 foot limitation, this distance is incorrect. Stack type washers and dryers stipulate a maximum length of 25 feet. Hence, the length cannot be listed as 35 feet.

When the dryer has been specified, the manufacturer's instructions can be used to determine the dryer vent length. This is currently written as an exception; however, it is really an option. The requirements are the same as the current code.

The third viable method is power venting using a dryer booster fan. The new requirement stipulates that the dryer booster fan manufacturer determines the exhaust duct length. The requirements also state that the booster fan must be listed and label; and installed in accordance with the manufacturer's installation instructions. Listed booster fans are a viable method of extending the length of the duct.

Section M1502.3.5 lists the equivalent lengths of various fittings. The newer fittings were determined based on an analysis using the ASHRAE and SMACNA fitting tables. The equivalent length table assumes that the current requirement in the code is accurate.

The identification is listed in Section M1502.3.6. The new requirement is that the label or tag must be located within 6 feet of the exhaust duct connection. The distance is based on the maximum distance the gas valve can be located from a gas dryer. Since this has been used to determine close proximity for a gas valve, it is appropriate to use the same distance for close proximity for a label.

The last section requires an exhaust duct when a dryer connection is present in a building. This is the intent of the current rough-in section.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I – IMC

Committee Action:

Approved as Modified

Modify proposal as follows:

504.6.4 Duct length. The maximum allowable exhaust duct length shall be determined by one of the methods specified in Sections 504.6.4.1 through 504.6.4.3-2.

504.6.4.3 Booster fan. The maximum length of the exhaust duct shall be determined by the booster fan manufacturer's installation instructions. Booster fans shall be listed and labeled for use in dryer exhaust duct systems. The booster fan shall be installed in accordance with the manufacturer's installation instructions.

(Portions of proposal not shown remain unchanged.)

Committee Reason: This is a needed reorganization that breaks out specific requirements, such as transition ducts and maximum duct length, and adds a new table for duct fitting equivalent length. The modification deletes the booster fan section because the supporting standard is not yet approved.

Assembly Action:

None

PART II — IRC-M

Committee Action:

Disapproved

Committee Reason: The standard for dryer exhaust duct ventilators in proposed Section M1502.3.4.3 is not yet approved. There was no technical justification for reducing the maximum duct length from 35 feet to 25 feet.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 3:

Guy Tomberlin, Fairfax County, VA, representing the VA Plumbing and Mechanical Inspectors Association and VA Building and Code Officials Association, requests Approval as Modified by this Public Comment for Part I.

Further modify proposal as follows:

504.6 (IFGC [M] 614.6) Domestic clothes dryer exhaust ducts. Exhaust ducts for domestic clothes dryers shall conform to the requirements of Sections 504.6.1 through 504.6.7 504.6.6.

504.6.4 Duct length. The maximum allowable exhaust duct length shall be determined by one of the methods specified in Sections 504.6.4.1 or 504.6.4.2.

504.6.4.1 (IFGC [M] 614.6.4.1) Specified length. The maximum length of the exhaust duct shall be 25 feet (7620mm) from the connection to the transition duct from the dryer to the outlet terminal. Where fittings are utilized, the maximum length of the exhaust duct shall be reduced in accordance with Table 504.6.4.1.

**TABLE 504.6.4.51 (IFGC [M]TABLE 614.6.4.1)
DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH**

(No change to table contents)

504.6.4.2 (IFGC [M] 614.6.4.2) Manufacturer's instructions. The maximum length of the exhaust duct shall be determined by the dryer manufacturer's installation instructions. The code official shall be provided with a copy of the installation instructions for the make and model of the dryer. Where the exhaust duct is to be concealed, the installation instructions shall be provided to the code official prior to the concealment inspection. In the absence of fitting equivalent length calculations from the clothes dryer manufacturer, Table 504.6.4.1 shall be utilized.

504.6.5 (IFGC [M] 614.6.5) Exhaust duct length reduction. ~~The maximum length of the exhaust duct shall be reduced in accordance with Table 504.6.5.~~

504.6.65 (IFGC [M] 614.6.5) Length identification. Where the exhaust duct is concealed within the building construction, the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet of the exhaust duct connection.

504.6.7 6 (IFGC [M] 614.6.6) Exhaust duct required. ~~Where facilities space for a clothes dryer are is provided, an exhaust duct system shall be installed. Where the clothes dryer is not installed at the time of occupancy, the exhaust duct shall be capped at the location of the future dryer.~~

Exception: Where a listed condensing clothes dryer is installed prior to occupancy of structure.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: Some of the proposed modification is formatting. For example the table as referenced in the original proposal appears to be a third option for exhaust duct lengths, but the reality is it is nothing more than a tool to be used with the other alternatives, it just can't be used alone. It has been relocated under the first option with a newly added reference for maximum distances, because it is mainly utilized in conjunction with the standard 25 foot measurement. The modified text includes added direction if a manufacturer fails to provide fitting allowances within their installation instructions, which makes the connection with option number two for using the installation instructions.

Another modification was to replace the term facilities with the term space. This is a clarification if a "space" is left next to a washer then it could easily be determined it would be for a dryer and exhaust duct must be installed. But the existing term would ask if the area next to a washer is left open is it a "facility?"

The next modification would require that if a future exhaust duct is required to be in place then it must be capped or plugged and identified. The reason for the cap or plug is to better comply with the energy code. Leaving a 4 inch duct in place that terminates to the outdoors and may not get used for several years simply goes against energy code philosophy. Yes a backdraft damper is required but a substantial amount of air can still travel through such a conduit directly to the outdoors. Also this makes it clear to cap off the duct at the inside origination point not the outside termination where someone might not know the cap is in place. And the third improvement for future exhaust duct requirements is if someone wants to utilize a listed condensing dryer, only in order to take advantage of this exception the dryer must be in place for occupancy. This will prevent not installing the duct and just saying that a condensing unit "will be" installed at some point.

Public Comment 3:

Guy Tomberlin, Fairfax County, VA, representing the VA Plumbing and Mechanical Inspectors Association and VA Building and Code Officials Association, requests Approval as Modified by this Public Comment for Part II.

Modify proposal as follows:

M1502.3 Dryer exhaust ducts. Dryer exhaust ducts shall conform to the requirements of Sections M1502.3.1 through M1502.3.76.

M1502.3.4 Duct length. The maximum allowable exhaust duct length shall be determined by one of the methods specified in Sections M1502.3.4.1 through or M1502.3.4.3.2.

M1502.3.4.1 Specified length. The maximum length of the exhaust duct shall be 25 feet (7620mm) from the connection to the transition duct from the dryer to the outlet terminal. Where fittings are utilized, the maximum length of the exhaust duct shall be reduced in accordance with Table M1502.3.4.1.

**TABLE M1502.3.4.51
DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH**

(No change to table contents)

M1502.3.4.2 Manufacturer's instructions. The maximum length of the exhaust duct shall be determined by the dryer manufacturer's installation instructions. The code official shall be provided with a copy of the installation instructions for the make and model of the dryer at the concealment inspection. In the absence of fitting equivalent length calculations from the clothes dryer manufacturer, Table M1502.3.4.1 shall be utilized.

M1502.3.4.3 Booster fan. The maximum length of the exhaust duct shall be determined by the booster fan manufacturer's installation instructions. Booster fans shall be listed and labeled for use in dryer exhaust duct systems. The booster fan shall be installed in accordance with the manufacturer's installation instructions.

M1502.3.5 Exhaust duct length reduction. The maximum length of the exhaust duct shall be reduced in accordance with Table M1502.3.5.

M1502.3.6 5 Length identification. Where the exhaust duct is concealed within the building construction, the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet of the exhaust duct connection.

M1502.3.7 6 Exhaust duct required. Exhaust duct required. Where facilities space for a clothes dryer are is provided, an exhaust duct system shall be installed. Where the clothes dryer is not installed at the time of occupancy, the exhaust duct shall be capped at the location of the future dryer.

Exception: Where a listed condensing clothes dryer is installed prior to occupancy of structure.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: Some of the proposed modification is formatting. For example the table as referenced in the original proposal appears to be a third option for exhaust duct lengths, but the reality is it is nothing more than a tool to be used with the other alternatives, it just can't be used alone. It has been relocated under the first option with a newly added reference for maximum distances, because it is mainly utilized in conjunction with the standard 25 foot measurement. The modified text includes added direction if a manufacturer fails to provide fitting allowances within their installation instructions, which makes the connection with option number two for using the installation instructions.

Another modification was to replace the term facilities with the term space. This is a clarification if a "space " is left next to a washer then it could easily be determined it would be for a dryer and exhaust duct must be installed. But the existing term would ask if the area next to a washer is left open is it a "facility?"

The next modification would require that if a future exhaust duct is required to be in place then it must be capped or plugged and identified. The reason for the cap or plug is to better comply with the energy code. Leaving a 4 inch duct in place that terminates to the outdoors and may not get used for several years simply goes against energy code philosophy. Yes a backdraft damper is required but a substantial amount of air can still travel through such a conduit directly to the outdoors. Also this makes it clear to cap off the duct at the inside origination point not the outside termination where someone might not know the cap is in place. And the third improvement for future exhaust duct requirements is if someone wants to utilize a listed condensing dryer, only in order to take advantage of this exception the dryer must be in place for occupancy. This will prevent not installing the duct and just saying that a condensing unit "will be" installed at some point.

Final Hearing Results

**M30-07/08, Part I
M30-07/08, Part II**

**AMPC3
AMPC3**

Code Change No: **M32-07/08**

Original Proposal

Section 504.6.1, Table 504.6.1 (New); IRC M1502.6, Table M1502.6 (New); (IFGC [M] 614.6.1, Table [M] 614.6.1 (New))

Proponent: Julius Ballanco, PE, JB Engineering and Code Consulting, PC, representing In-O-Vate Technologies

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

1. Revise as follows:

504.6.1 (IFGC [M] 614.6.1) Maximum length. (Supp) The maximum length of a clothes dryer exhaust duct shall not exceed 25 feet (7620 mm) from the dryer location to the outlet terminal. The maximum length of the ducts shall be reduced ~~in accordance with Table 504.6.1 2-1/2 feet (762 mm) for each 45-degree (0.79 rad) bend and 5 feet (1524 mm) for each 90-degree (1.6 rad) bend.~~ The maximum length of the exhaust duct does not include the transition duct.

Exception: Where the make and model of the clothes dryer to be installed is known and the manufacturer's installation instructions for such dryer are provided to the code official, the maximum length of the exhaust duct, including any transition duct, shall be permitted to be in accordance with the dryer manufacturer's installation instructions. Where exhaust ducts are installed in concealed locations, the developed length of the exhaust duct system shall be indicated by permanent labels or tags installed in an observable location.

2. Add new table as follows:

**TABLE 504.6.1 (IFGC [M] TABLE 614.6.1)
DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH**

DRYER EXHAUST DUCT FITTING TYPE	EQUIVALENT LENGTH (FEET)
4" radius mitered 45 degree elbow	2-1/2
4" radius mitered 90 degree elbow	5
10" radius smooth 45 degree elbow	3/4
10" radius smooth 90 degree elbow	1-1/2

PART II – IRC-M

1. Revise as follows:

M1502.6 (Supp) Duct length. The maximum length of a clothes dryer exhaust duct shall not exceed 35 feet (10 668 mm) from the dryer location to the wall or roof termination. The maximum length of the ducts shall be reduced ~~in accordance with Table M1502.6 2.5 feet (762 mm) for each 45-degree (0.8 rad) bend and 5 feet (1524 mm) for each 90-degree (1.6 rad) bend.~~ The maximum length of the exhaust duct does not include the transition duct.

Exceptions:

- Where the make and model of the clothes dryer to be installed is known and the manufacturer's installation instructions for the dryer are provided to the building official, the maximum length of the exhaust duct, including any transition duct, shall be permitted to be in accordance with the dryer manufacturer's installation instructions.
- ~~Where large radius 45-degree (0.8 rad) and 90-degree (1.6 rad) bends are installed, the equivalent length of the clothes dryer exhaust duct for each bend shall be as provided in the fitting manufacturer's installation instructions. The engineering calculation used by the manufacturer of such fittings shall be in accordance with the ASHRAE Fundamentals Handbook.~~

2. Add new table as follows:

TABLE M1502.6
DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH

DRYER EXHAUST DUCT FITTING TYPE	EQUIVALENT LENGTH (FEET)
<u>4" radius mitered 45 degree elbow</u>	<u>2-1/2</u>
<u>4" radius mitered 90 degree elbow</u>	<u>5</u>
<u>10" radius smooth 45 degree elbow</u>	<u>3/4</u>
<u>10" radius smooth 90 degree elbow</u>	<u>1-1/2</u>

Reason (Part I): This change will take the text for equivalent length of dryer vent and place it in a table. New listings are added to the table for 10 inch radius elbows and 45s. The current code text is base on a 4 inch radius elbow.

By increasing the radius, the friction resistance is reduced. As such, the equivalent length is increased. The values for the 10 inch radius fitting are base on a comparison to the 4 inch radius fittings. Both ASHRAE and SMACNA publish table to use for friction resistance. The comparison uses these values and compares the equivalent length to the current code requirements.

Testing at UL verified that the 10 inch radius elbows perform significantly better than 4 inch radius elbows.

A detailed engineering report is available at www.dryer-ell.com.

Reason (Part II): This change will take the text for equivalent length of dryer vent and place it in a table. New listings are added to the table for 10 inch radius elbows and 45s. The current code text is base on a 4 inch radius elbow. The exception allows an analysis following ASHRAE.

It is easier for the code user to read a table than to run a calculation for equivalent dryer elbow length. The values for the 10 inch radius fitting are base on a comparison to the 4 inch radius fittings. Both ASHRAE and SMACNA publish table to use for friction resistance. The comparison uses these values and compares the equivalent length to the current code requirements.

Testing at UL verified that the 10 inch radius elbows perform significantly better than 4 inch radius elbows.

A detailed engineering report is available at www.dryer-ell.com.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I — IMC

Withdrawn By Proponent

PART II — IRC-M

Committee Action:

Approved as Submitted

Committee Reason: This proposal makes the determination of equivalent lengths of fittings easier for the user by replacing the text for standard elbows and the exception for large radius elbows with a new table.

Assembly Action:

None

Final Hearing Results

M32-07/08, Part I
M32-07/08, Part II

WP
AS

Code Change No: **M33-07/08**

Original Proposal

Sections 504.6.3 (New) [IFGC [M] 614.6.3 (New)]; IRC M1502.7 (New)

Proponent: John Neff, Washington State Building Code Council

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

Add new text as follows:

504.6.3 (IFGC [M] 614.6.3) Protection required. Protective shield plates shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Shield plates shall be placed on the finished face of all framing members where there is less than 1-1/4 inches (32 mm) between the duct and the finished face of the framing member. The shield plate shall be steel not less than 1/16 inch (1.59 mm) in thickness. The shield plate shall extend to protect the entire width of the duct.

PART II – IRC

Add new text as follows:

M1502.7 Protection required. Protective shield plates shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Shield plates shall be placed on the finished face of all framing members where there is less than 1-1/4 inches (32 mm) between the duct and the finished face of the framing member. The shield plate shall be steel not less than 1/16 inch (1.59 mm) in thickness. The shield plate shall extend to protect the entire width of the duct.

Reason: The purpose of this proposal is to ensure that combustible lint will not collect in the dryer duct, producing a risk of fire. If the duct is penetrated by a screw or nail, the “smooth interior finish” is compromised and a collection point is formed. Temperatures in the ducts can get high, especially when the duct is clogged and air flow is reduced.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I – IMC

Committee Action:

Disapproved

Committee Reason: This proposal goes beyond the protection requirements already in the code in Section 305.5 and would require protection in areas that do not normally require it. The proposal could add to construction costs beyond the value added by the plates.

Assembly Action:

None

PART II – IRC-M

Committee Action:

Disapproved

Committee Reason: Protection from fasteners penetrating walls is already covered in Section M1308.2. This proposal provided no prescriptive requirements to provide any guidance to the user such as maximum fastener lengths.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 2:

John Neff, Washington State Building Code Council, requests Approval as Modified by this Public Comment for Part I.

Modify proposal as follows:

504.6.3 (IFGC [M]614.6.3) Protection required. Protective shield plates shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Shield plates shall be placed on the finished face of all framing members where there is less than 1-1/4 inches (32 mm) between the duct and the finished face of the framing member. ~~The shield plate shall be steel not less than 1/16 inch (1.59 mm) in thickness. The shield plate shall extend to protect the entire width of the duct.~~ Protective shield plates shall be constructed of steel, shall have a thickness of 0.062-inch (1.6 mm) and shall extend a minimum of 2 inches above sole plates and below top plates.

Commenter's Reason: The purpose of this proposal is to ensure that combustible lint will not collect in the dryer duct, producing a risk of fire. If the duct is penetrated by a screw or nail, the "smooth interior finish" is compromised and a collection point is formed. Temperatures in the ducts can get high, especially when the duct is clogged and air flow is reduced. Section 305.5 addresses piping only and not ducts. This language is necessary to extend that same protection to dryer ducts.

Public Comment 2:

John Neff, Washington State Building Code Council, requests Approval as Modified by this Public Comment for Part II.

Modify proposal as follows:

M1502.7 Protection required. Protective shield plates shall be placed where nails or screws from finish or other work are likely to penetrate the clothes dryer exhaust duct. Shield plates shall be placed on the finished face of all framing members where there is less than 1-1/4 inches (32 mm) between the duct and the finished face of the framing member. ~~The shield plate shall be steel not less than 1/16 inch (1.59 mm) in thickness. The shield plate shall extend to protect the entire width of the duct.~~ Protective shield plates shall be constructed of steel, shall have a thickness of 0.062-inch thick (1.6 mm) and shall extend a minimum of 2 inches above sole plates and below top plates.

Commenter's Reason: The purpose of this proposal is to ensure that combustible lint will not collect in the dryer duct, producing a risk of fire. If the duct is penetrated by a screw or nail, the "smooth interior finish" is compromised and a collection point is formed. Temperatures in the ducts can get high, especially when the duct is clogged and air flow is reduced. Section M1308.2 addresses piping only and not ducts. This language is necessary to extend that same protection to dryer ducts.

Final Hearing Results

M33-07/08, Part I	AMPC2
M33-07/08, Part II	AMPC2

Code Change No: M79-07/08

Original Proposal

Section 603.9; IRC M1601.3.1

Proponent: John R. Addario, PE, New York State Department of State Codes Division

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

Revise as follows:

603.9 (Supp) Joints, seams and connections. All longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA HVAC *Duct Construction Standards—Metal and Flexible* and NAIMA *Fibrous Glass Duct Construction Standards*. All joints, longitudinal and transverse

seams, and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, liquid sealants, or tapes. Closure systems ~~Tapes and mastics~~ used to seal ductwork listed and labeled in accordance with UL 181A shall be marked “181A-P” for pressure-sensitive tape, “181 A-M” for mastic or “181 A-H” for heat-sensitive tape. Closure systems ~~Tapes and mastics~~ used to seal flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked “181B-FX” for pressure-sensitive tape or “181B-M” for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Closure systems used to seal metal ductwork shall be installed in accordance with the manufacturer's installation instructions. Unlisted duct tape is not permitted as a sealant on any metal ducts.

PART II – IRC-M

Revise as follows:

M1601.3.1 (Supp) Joints and seams. Joints of duct systems shall be made substantially airtight by means of tapes, mastics, liquid sealants, gasketing or other approved closure systems. Closure systems used with rigid fibrous glass ducts shall comply with UL 181A and shall be marked “181A-P” for pressure-sensitive tape, “181A-M” for mastic or “181 A-H” for heat-sensitive tape. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL 181 B and s hall be m arked “ 181B-FX” f or p ressure-sensitive t ape or “ 181B-M”for mastic. D uct c onnections t o flanges of ai r distribution system equi pment or s heet m etal f ittings s hall be mechanically f astened. M echanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked “181B-C.” Crimp joints f or r ound m etal duc ts s hall have a c ontact l ap of at l east 1 1/ 2 inches (38 m m) and s hall be m echanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint. Closure systems used to seal metal ductwork shall be installed in accordance with the manufacture's installation instructions.

Exceptions:

1. Spray polyurethane foam shall be permitted to be applied without additional joint seals.
2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.

Reason (Part I): The purpose of this proposal is to create consistency between the IMC and the IRC. The residential requirement refers to “Closure Systems” rather than “Tapes and Mastics”. The term “Closure systems” applies to all products used to seal these ducts rather than just “tapes and mastics” The use of term “Closure Systems” is a better term, since it does apply to anything used to seal these ducts and is UL 181 Listed. Also, this proposal addresses sealing of metal ductwork. Sheet metal ducts are not specifically addressed in the current requirements, other than prohibiting the use of unlisted duct tape. Currently there does not exist any listing for closure system used for metal ductwork. This proposed change provides the requirement that the product must be installed in accordance with the manufactures recommended application and instructions. By requiring that they be used in accordance with manufactures recommended application, the product must be intended to be used to seal metal ducts by the manufacturer.

Reason (Part II): The purpose of this proposal is to create consistency between the IMC and the IRC. This proposal addresses sealing of metal ductwork. Sheet metal ducts are not specifically addressed in the current requirements, other than prohibiting the use of unlisted duct tape. Currently there does not exist any listing for closure system used for metal ductwork. This proposed change provides the requirement that the product must be installed in accordance with the manufactures recommended application and instructions. By requiring that they be used in accordance with manufactures recommended application, the product must be intended to be used to seal metal ducts by the manufacturer.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I – IMC

Committee Action:

Approved as Submitted

Committee Reason: This code change adds needed guidance for sealing metal ductwork and changes the term “tapes and mastics” to the more appropriate “closure systems”.

Assembly Action:

None

PART II – IRC-M

Committee Action:

Approved as Submitted

Committee Reason: This code change adds needed guidance for sealing metal ductwork. The committee wanted this section to be consistent with the IMC.

Assembly Action:

None

Final Hearing Results

M79-07/08, Part I	AS
M79-07/08, Part II	AS

Code Change No: M80-07/08

Original Proposal

Section 603.9; IRC M1601.3.1

Proponent: Guy McMann, Jefferson County, CO, representing the Colorado Association of Plumbing and Mechanical Officials (CAPMO)

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC**Revise as follows:**

603.9 (Supp) Joints, seams and connections. All longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA HVAC *Duct Construction Standards—Metal and Flexible* and NAIMA *Fibrous Glass Duct Construction Standards*. All joints, longitudinal and transverse seams, and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, liquid sealants, or tapes. Tapes and mastics used to seal ductwork listed and labeled in accordance with UL 181A shall be marked “181A-P” for pressure-sensitive tape, “181 A-M” for mastic or “181 A-H” for heat-sensitive tape. Tapes and mastics used to seal flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked “181B-FX” for pressure-sensitive tape or “181B-M” for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Unlisted duct tape is not permitted as a sealant on any metal ducts.

Exception: Continuously welded and locking type longitudinal joints and seams in ducts operating at static pressures less than 2-inches of water column (500 Pa) pressure classification shall not require additional closure systems.

PART II – IRC-M

M1601.3.1 (Supp) Joints and seams. Joints of duct systems shall be made substantially airtight by means of tapes, mastics, liquid sealants, gasketing or other approved closure systems. Closure systems used with rigid fibrous glass ducts shall comply with UL 181A and shall be marked “181A-P” for pressure-sensitive tape, “181A-M” for mastic or “181 A-H” for heat-sensitive tape. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked “181B-FX” for pressure-sensitive tape or “181B-M” for mastic. Duct connections to flanges of air distribution system equipment or sheet metal fittings shall be mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked “181B-C.” Crimp joints for round metal ducts shall have a contact lap of at least 1 1/2 inches (38 mm) and shall be mechanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint.

Exceptions:

1. Spray polyurethane foam shall be permitted to be applied without additional joint seals.

2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
3. Continuously welded and locking type longitudinal joints and seams in ducts operating at static pressures less than 2-inches of water column (500 P a) pressure classification s hall not r equire a dditional closure systems.

Reason: According to SMACNA Table 1-2, these types of joints are exempt from the sealing requirements. This should have been included in the original IRC and IMC change.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I – IMC

Committee Action:

Approved as Submitted

Committee Reason: The exception allows continuously welded and locking type joints to be exempt from sealing. This agrees with the SMACNA standard.

Assembly Action:

None

PART II – IRC-M

Committee Action:

Approved as Submitted

Committee Reason: The exception allows continuously welded and locking type joints to be exempt from sealing. This is already allowed in DOE's RESCHECK software for energy conservation.

Assembly Action:

None

Final Hearing Results

M80-07/08, Part I	AS
M80-07/08, Part II	AS

Code Change No: M88-07/08

Original Proposal

Section 918.6; IRC M1602.2; IFGC 618.5

Proponents: Jim Weiler, Pueblo County, CO, representing the Colorado Association of Plumbing and Mechanical Officials (CAPMO); Guy McMann, Jefferson County, CO, representing the Colorado Association of Plumbing and Mechanical Officials (CAPMO)

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC, THE IRC MECHANICAL AND THE IFGC CODE DEVELOPMENT COMMITTEES AS 3 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

Revise as follows:

918.6 Prohibited sources. Outdoor or return air for a forced-air heating system shall not be taken from the following locations:

1. Closer than 10 feet (3048 mm) from an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outdoor air inlet.

2. Where there is the presence of objectionable odors, fumes or flammable vapors; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.
3. A hazardous or insanitary location or a refrigeration machinery room as defined in this code.
4. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with Sections 918.2 and 918.3, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

Exception: The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

5. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room ~~or~~ furnace room, attic or crawl space.
6. A room or space containing a fuel-burning appliance where such room or space serves as the sole source of return air.

Exceptions:

1. This shall not apply where the fuel-burning appliance is a direct-vent appliance.
2. This shall not apply where the room or space complies with the following requirements:
 - 2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.
 - 2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.
 - 2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.
3. This shall not apply to rooms or spaces containing solid fuel-burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.

Reason: There are times when it is required to heat a crawl space for various reasons but installing a return air duct doesn't mean it is fully conditioned. There are good reasons not to do this. Mold, odors and insects just to name a few. The IMC doesn't specifically prohibit this situation although implied. This language will clarify that this should not occur.

Cost Impact: The code change proposal will not increase the cost of construction.

PART II – IRC-M

Revise as follows:

M1602.2 Prohibited sources. Outdoor and return air for a forced-air heating or cooling system shall not be taken from the following locations:

1. Closer than 10 feet (3048 mm) to an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.
2. Where flammable vapors are present; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.
3. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with ACCA Manual D, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

Exception: The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

4. A closet, bathroom, toilet room, kitchen, garage, mechanical room, furnace room, attic, crawl space, or other dwelling unit.
5. A room or space containing a fuel-burning appliance where such room or space serves as the sole source of return air.

Exceptions:

1. The fuel-burning appliance is a direct-vent appliance or an appliance not requiring a vent in accordance with Section M1801.1 or Chapter 24.

2. The room or space complies with the following requirements:
 - 2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.
 - 2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.
 - 2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.
3. Rooms or spaces containing solid-fuel burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.

Reason: There are times when it is required to heat a crawl space for various reasons but installing a return air duct doesn't mean it is fully conditioned. There are good reasons not to do this. Mold, odors and insects just to name a few. The IRC doesn't specifically prohibit this situation although implied. This language would clarify that this should not occur

Cost Impact: The code change proposal will not increase the cost of construction.

PART III – IFGC

Revise as follows:

618.5 Prohibited sources. Outside or return air for a forced-air heating system shall not be taken from the following locations:

1. Closer than 10 feet (3048 mm) from an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.
2. Where there is the presence of objectionable odors, fumes or flammable vapors; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.
3. A hazardous or insanitary location or a refrigeration machinery room as defined in the *International Mechanical Code*.
4. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with Section 618.2, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

Exception: The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

5. A room or space containing an appliance where such a room or space serves as the sole source of return air.

Exception: This shall not apply where:

1. The appliance is a direct-vent appliance or an appliance not requiring a vent in accordance with Section 501.8.
2. The room or space complies with the following requirements:
 - 2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.
 - 2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.
 - 2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.
3. Rooms or spaces containing solid fuel-burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.
6. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room ~~or~~ furnace room, attic, or crawl space.

Reason: There are times when it is required to heat a crawl space for various reasons but installing a return air duct doesn't mean it is fully conditioned. There are good reasons not to do this. Mold, odors and insects just to name a few. The IFGC doesn't specifically prohibit this situation although implied. This language would clarify that this should not occur.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

PART I — IMC**Committee Action:****Disapproved**

Committee Reason: The committee thought that the last sentence in the proposed modification was confusing and needed to be deleted. Without the modification that added the term “unconditioned” to attics and crawl spaces, the proposed language is incomplete because it is appropriate to take return air from conditioned attics and crawl spaces.

Assembly Action:**None****PART II — IRC-M****Committee Action:****Approved as Modified****Modify proposal as follows:**

M1602.2 Prohibited sources. Outdoor and return air for a forced-air heating or cooling system shall not be taken from the following locations:

1. Closer than 10 feet (3048 mm) to an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.
2. Where flammable vapors are present; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.
3. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with ACCA Manual D, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

Exception: The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

4. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room, furnace room, unconditioned attic, ~~crawl space~~, or other dwelling unit.
5. A room or space containing a fuel-burning appliance where such room or space serves as the sole source of return air.
6. An unconditioned crawl space by means of direct connection to the return side of a forced air system.
Transfer openings in the crawl space enclosure shall not be prohibited.

Exceptions:

1. The fuel-burning appliance is a direct-vent appliance or an appliance not requiring a vent in accordance with Section M1801.1 or Chapter 24.
2. The room or space complies with the following requirements:
 - 2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.
 - 2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.
 - 2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.
3. Rooms or spaces containing solid-fuel burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.

Committee Reason: This proposal adds attics and crawl spaces to the list of spaces from which return air must not be taken. Mold and odors from unconditioned attics and crawl spaces could be introduced into the conditioned space without this prohibition. The modification creates a new item for crawl spaces and adds the term “unconditioned” to both attics and crawl spaces to clarify that taking return air from conditioned attics and crawl spaces would be acceptable.

Assembly Action:**None****PART III — IFGC****Committee Action:****Approved as Modified****Modify proposal as follows:**

618.5 Prohibited sources. Outside or return air for a forced-air heating system shall not be taken from the following locations:

1. Closer than 10 feet (3048 mm) from an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.
2. Where there is the presence of objectionable odors, fumes or flammable vapors; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.
3. A hazardous or insanitary location or a refrigeration machinery room as defined in the *International Mechanical Code*.
4. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with Section 618.2, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

Exception: The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

5. A room or space containing an appliance where such a room or space serves as the sole source of return air.

Exception: This shall not apply where:

1. The appliance is a direct-vent appliance or an appliance not requiring a vent in accordance with Section 501.8.
2. The room or space complies with the following requirements:
 - 2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.
 - 2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.
 - 2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.
3. Rooms or spaces containing solid fuel-burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.
6. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room, or furnace room, or attic, or crawl space.
7. A crawl space by means of direct connection to the return side of a forced air system. Transfer openings in the crawl space enclosure shall not be prohibited.

Committee Reason: Return air should not be taken from attics and crawl spaces because of contaminants that could be present in such spaces. The modification creates a separate item for crawl spaces recognizing that although direct connection between the return air duct system and the crawl space is undesirable, air taken from the crawl space through transfer openings should not pose a problem.

Assembly Action:

None

Final Hearing Results

M88-07/08, Part I	D
M88-07/08, Part II	AM
M88-07/08, Part III	AM

Code Change No: M91-07/08

Original Proposal

Section 1101.10 (New); IRC M1411.6 (New)

Proponent: Mona Casey, Naples, FL

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

Add new text as follows:

1101.10 Locking access port caps. Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps.

PART II – IRC

Add new text as follows:

M1411.6 Locking access port caps. Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps.

Reason: The purpose of this code modification is to add new requirements to the Code. The existing code does not address the issue of accessibility to the lethal chemical Chlorofluorocarbons (CFCs/Freon) by untrained and unlicensed individuals, including children.

Because the lethal chemical Freon is easily accessible, "huffing", which refers to the inhalation of Freon and other dangerous chemicals, has been on the rise over the past few years not only among pre-teens and teenagers but among adults as well. Freon is highly addictive and is considered a gateway drug because users often progress from inhalants to illegal drugs and alcohol.

National Statistics

- The National Institute on Drug Abuse reports that one in five American teens have used Inhalants to get high.
- According to Stephen J. Pasierb, President and CEO of The Partnership for Drug-Free America, 22% of 6th and 8th graders admitted abusing inhalants and only 3% of parents think their child has ever abused inhalants.
- An analysis of 144 Texas death certificates by the Texas Commission on Alcohol and Drug Abuse involving misuse of inhalants found that the most frequently mentioned inhalant (35%) was Freon (51 deaths). Of the Freon deaths, 42 percent were students or youth with a mean age of 16.4 years.
- Suffocation, inhaling fluid or vomit into the lungs, and accidents each cause about 15% of deaths linked to inhalant abuse.
- National Institute on Drug Abuse's 'Monitoring the Future' study reveals that inhalant abuse among 8th graders is up 7.7% since 2002.

55% of deaths linked to inhalant abuse are caused by "Sudden Sniffing Death Syndrome." SSDS can occur on the first use or any use. The Inhalant causes the heart to beat rapidly and erratically, resulting in cardiac arrest.

22% of inhalant abusers who died of SSDS had no history of previous inhalant abuse. In other words, they were first-time users.

Collier County, FL Statistics

- The use of inhalants in middle schools has doubled in two years
- The average age a child starts using drugs or alcohol is just 12½
- Every third day a child is taken to the hospital because of a drug overdose
- 85 percent of all juvenile criminal cases are substance related
- Deaths due solely to drug toxicity increased 76% between 1998 and 2005

The modification of this code will have an immense positive impact on the safety and health of our citizens, especially our youth. It will reduce the number of deaths associated with Inhalant abuse and the number of injuries associated with Freon accidents and leaks.

The modification of this code will:

- Seal service valve to prevent leaks
- Prevent excessive energy usage due to refrigerant loss
- Help prevent illegal venting of refrigerant
- Support every EPA management program
- Help prevent accidental mixing of refrigerant
- Deter refrigerant theft at unsecured sites
- Help prevent access by unauthorized persons
- Help prevent loss from cylinders and recovery tanks
- Reduce potential liability for inhalation induced injury or death

Cost Impact: The code change proposal will increase the cost of construction. The current cost of this locking refrigerant cap based on the companies I contacted ranges from \$20-\$30 per pair (installation not included).

Public Hearing Results

PART I – IMC

Committee Action:

Disapproved

Committee Reason: This is not an enforcement issue for the mechanical inspector. This should be addressed at the manufacturer's level rather than in the code. There are other ways to address this issue.

Assembly Action:

Approved as Submitted

PART II – IRC-M

Committee Action:

Disapproved

Committee Reason: The installation of locking access port caps would be better addressed with the HVAC manufacturers rather than in the code. Having them installed during the manufacturing process would insure wider usage and would probably have less cost impact to the homeowner.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

Part I is on the agenda for individual consideration because an assembly action was successful.

Part II is on the agenda for individual consideration because public comments were submitted.

The following list of individuals request Approval as Modified by this Public Comment for Part II.

Sharyl Adams, Chesterfield County Youth Planning and Development
Julius Ballanco, P.E., JB Engineering and Code Consulting, P.C.
Terri Brown, Camden Children's Alliance & Resources, Inc.
Mona Casey, representing the United Parents to Restrict Open Access to Refrigerant
John Gladness, City of Sylacauga, AL
Gregorio Deleon Guerrero, Mobile, AL
Jessica Landreth, Camden Children's Alliance & Resources, Inc.
Paola Merkins, West Vancouver, BC
Celenda Perry, Camden Children's Alliance & Resources, Inc.
Diana Lynne Prothro
Harvey Weiss, SYNERGIES/National Inhalant Prevention Coalition

Modify proposal as follows:

M1411.6 Locking access port caps. ~~Refrigerant circuit access ports located outdoors shall be fitted with locking type tamper resistant caps.~~
Protection. Outdoor connections for filling the system with refrigerant shall be protected from unauthorized access in an approved manner.

Commenter's Reason-Adams: SAFE is a substance abuse prevention coalition in Chesterfield County, Virginia. In 2005, SAFE discovered that inhalant abuse was a significant problem in our community. In fact, use by eighth graders was double the national average. SAFE has been aggressively educating the public about this issue since that time. However, education is only one approach to the problem. Decreasing accessibility to abusable products is important as well.

Abuse of refrigerant in air conditioners is one of the ways our youth get intoxicated from inhalants. The proposed modification listed above would prevent unauthorized access to refrigerant. Unfortunately, some young people have lost their lives from siphoning off and huffing refrigerant from an air conditioning unit.

SAFE strongly supports the proposed modification be included in ICC codes.

Commenter's Reason-Ballanco: The proponent has compelling justification for requiring protection of the fill connection for refrigerants. Rather than specifying a specific method, it would be more appropriate to have performance language which requires protection from unauthorized access. The proposed modification will add the necessary performance language to the section.

It would seem most appropriate to retitle the section, "Protection".

Commenter's Reason-Brown, Landreth, Perry: Refrigerant thefts by youth for recreational purposes do lead to fatalities and can be thwarted.

Commenter's Reason-Casey: The National Institute on Drug Abuse reports that one in five American teens have used Inhalants to get high.

According to Stephen J. Pasierb, President and CEO of The Partnership for Drug-Free America, 22% of 6th and 8th graders admitted abusing inhalants and only 3% of parents think their child has ever abused inhalants.

An analysis of 144 Texas death certificates by the Texas Commission on Alcohol and Drug Abuse involving misuse of inhalants found that the most frequently mentioned inhalant (35%) was Freon (51 deaths). Of the Freon deaths, 42 percent were students or youth with a mean age of 16.4 years.

National Institute on Drug Abuse's 'Monitoring the Future' study reveals that inhalant abuse among 8th graders is up 7.7% since 2002.

"Huffing," or inhaling volatile substances, is becoming increasingly popular among children, especially among 12- to 14-year-olds (*Archives of Pediatric and Adolescent Medicine*, 1998;152(8):781--786).

Although huffing peaks between the ages of 12 and 15 years, it often starts "innocently" in children only 6 to 8 years old (*Pediatrics*, 1996;97:3).

Inhalants are unique because each and every use holds a potential to be fatal, even the first; this is known as "sudden sniffing death syndrome," or SSDS, and results from an irregular heart rate. SSDS can occur without an "overdose." (Indiana Prevention Research Center, Indiana University, Bloomington)

Inhalants were the most frequently reported class of illicit drugs used in the past year among adolescents aged 12 or 13 (3.4 and 4.8 percent, respectively) according to the NSDUH Report March 13, 2008: Inhalant Use across the Adolescent Years by the US Department of Health and Human Services and SAMHSA's National Clearing House for Alcohol and Drug Information.

According to the Montana Office of Public Instructions 2007 Youth Behavior Risk Survey, the highest inhalant rates were among students at alternative schools (32.2%), urban Native Americans (26.3%) and students with disabilities (25.3%); Female use bested male use in 2005; and at grades 7-8 inhalant use exceeded marijuana use for the first time in 10 years.

According to the National Inhalant Prevention Coalition Inhalant Prevention Update: 19 May 2008, in Tennessee, between 2003 and 2007, inhalant use for females under 15 jumped from 13.3% to 17.2% while male cohorts went from 11.3% to 11.0%; at the 9th grade level female use rose from 12.7% in 2003 to 18.3% in 2007 while male cohorts were steady at 11.8%; among 11th grade males the 2005 inhalant use rate of 9.1% soared to 19.0% in 2007; and for 16 or 17 year old males inhalant use when from 11.5% in 2005 to 18.0% in 2007. In New York, between 2005 and 2007, male inhalant use when from 7.6% to 10.8% while female use grow from 9.6% to 10.8%; Black inhalant rates almost doubled from 5.6% to 10.6% while Hispanic rates rose from 9.3% to 16.2%.

Commenter's Reason-Gladness: This proposal is vitally important in limiting access to potentially lethal refrigerant by unlicensed, untrained individuals, specifically for the purpose of getting intoxicated.

Because the potentially lethal refrigerant is currently easily and readily accessible, "huffing", which refers to the inhalation of refrigerant and other dangerous chemicals has been on the rise over the past few years. As a result, the number of deaths due to "huffing" is increasing accordingly. Refrigerant and other inhalants are highly addictive and are considered a gateway drug because users often progress from inhalants to illegal drug and alcohol abuse.

Commenter's Reason-Guerrero: Due to the easy access of these filling systems and lack of education, a deep loss of an immediate family member can occur.

Commenter's Reason-Merkins: As a parent and former School Trustee I have been continuously involved in establishing and promoting Substance Abuse Prevention initiatives in my community. As an Architect I had never consider the possibility that air conditioning refrigerant could be siphoned through unsecured access and used as inhalant. While many might think that inhaling substances is the problem of the inhaler or addict, I believe it's an issue that should be addressed by the community in general. This is a great way to introduce regulations that might help save a life, usually a young life, in what might be a one time experiment gone lethal. Securing access is relatively easy and inexpensive compared to the devastating effects, social, economical and personal, that unregulated access and misuse of refrigerants have.

Commenter's Reason-Prothro: I am asking for this modification to be made to protect all outside refrigerant fill connections from unauthorized access in an approved manner, so that no other person will lose their life.

I came home from work on November 28, 2007 to find my beautiful 19 year old daughter, Erica Rain Prothro, who had just come home for the Thanksgiving holiday from college in New York, sitting in my living room chair with a plastic bag over her head – Dead. She had been introduced by a friend of hers just a few days prior, to huffing Freon. Erica had no idea what she was messing with. The one breath death killed my daughter with refrigerant from our very own air conditioner unit outside our home. We found the cap off the unit the next day. Erica was only home alone for approximately 40 minutes at most. Although Erica had been revived, she was completely brain dead.

Please protect our young by protecting these units from access by untrained, unlicensed individuals.

Commenter's Reason-Weiss: As the executive director of the National Inhalant Prevention Coalition, I can state very simply the importance of this modification. It will save lives!

Final Hearing Results

M91-07/08, Part I
M91-07/08, Part II

AS
AM

Code Change No: **M103-07/08**

Original Proposal

Table 1202.4, Sections 1203.17 (New), 1203.17.1 (New), 1203.17.2 (New), Chapter 15 (New); IRC Table M2101.1, M2104.3 (New), M2104.3.1 (New), M2104.3.2 (New), Chapter 43 (New)

Proponent: Larry Gill, IPEX USA LLC

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

1. Revise as follows:

TABLE 1202.4 (Supp)
HYDRONIC PIPE

MATERIAL	STANDARD (see chapter 15)
<u>Raised Temperature Polyethylene (PE-RT)</u>	<u>ASTM F2623</u>

(Portions of table not shown remain unchanged)

2. Add new text as follows:

1203.17 Raised temperature polyethylene (PE-RT) plastic tubing. Joints between raised temperature polyethylene tubing and fittings shall conform to Sections 1203.17.1 and 1203.17.2. Mechanical joints shall conform to Section 1203.3.

1203.17.1 Compression-type fittings. Where compression type fittings include inserts and ferrules or O-rings, the fittings shall be installed without omitting the inserts and ferrules or O-rings.

1203.17.2 PE-RT-to-metal connections. Solder joints in a metal pipe shall not occur within 18 inches (457 mm) of a transition from such metal pipe to PE-RT pipe.

Add standard to Chapter 15 as follows:

ASTM

F 2623-07 Standard Specification for Polyethylene of Raised Temperature (PE-RT) SDR 9 Tubing¹

PART II – IRC-M

1. Revise as follows:

**TABLE M2101.1
HYDRONIC PIPING MATERIALS**

MATERIAL	USE CODE ^a	STANDARD ^b	JOINTS	NOTES
Raised Temperature Polyethylene (PE-RT)	1, 2, 3	ASTM F2623	Copper crimp/insert fitting stainless steel clamp, insert fittings	---

(Portions of table and footnotes not shown remain unchanged)

2. Add new text as follows:

M2104.3 Raised temperature polyethylene (PE-RT) plastic tubing. Joints between raised temperature polyethylene tubing and fittings shall conform to Sections M2104.3.1 and M2104.3.2. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

M2104.3.1 Compression-type fittings. Where compression type fittings include inserts and ferrules or O-rings, the fittings shall be installed without omitting the inserts and ferrules or O-rings.

M2104.3.2 PE-RT-to-metal connections. Solder joints in a metal pipe shall not occur within 18 inches (457 mm) of a transition from such metal pipe to PE-RT pipe.

3. Add standard to Chapter 43 as follows:

ASTM

F 2623-07 Standard Specification for Polyethylene of Raised Temperature (PE-RT) SDR 9 Tubing¹

Reason: This change will add a product which is suitable for the application and has an approved ASTM standard.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

Note: The following analysis was not in the Code Change Proposal book but was posted on the ICC website.

Analysis: Review of proposed new standard ASTM F2623-07 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

PART I – IMC

Committee Action:

Approved as Submitted

Committee Reason: This code change adds a new piping material for hydronic systems that is supported by an approved standard.

Assembly Action:

None

PART II – IRC-M

Committee Action:

Approved as Submitted

Committee Reason: This code change adds a new piping material for hydronic systems that is supported by an approved standard.

Assembly Action:

None

Final Hearing Results

M103-07/08, Part I AS
M103-07/08, Part II AS

Code Change No: M104-07/08

Original Proposal

Table 1202.4, Sections 1203.17 (New), 1203.17.1 (New), 1203.17.2 (New), Chapter 15 (New); IRC Table M2101.1, M2104.3 (New), M2104.3.1 (New), M2104.3.2 (New), Chapter 43 (New)

Proponent: Larry Gill, IPEX USA LLC

THESE PROPOSALS ARE ON THE AGENDA OF THE IMC AND THE IRC MECHANICAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IMC

1. Revise as follows:

**TABLE 1202.4 (Supp)
HYDRONIC PIPE**

MATERIAL	STANDARD (see chapter 15)
Polyethylene/Aluminum/Polyethylene (PE-AL-PE) pressure pipe	ASTM F1282; CSA B137.9

(Portions of table not shown do not change)

2. Add new text as follows:

1203.17 Polyethylene/Aluminum/Polyethylene (PE-AL-PE) pressure pipe. Joints between Polyethylene/Aluminum/Polyethylene pressure pipe and fittings shall conform to sections 1203.17.1 and 1203.17.2. Mechanical joints shall comply with Section 1203.3.

1203.17.1 Compression-type fittings. Where compression type fittings include inserts and ferrules or O-rings, the fittings shall be installed without omitting the inserts and ferrules or O-rings.

1203.17.2 PE-AL-PE to metal connections. Solder joints in a metal pipe shall not occur within 18 inches (457 mm) of a transition from such metal pipe to PE-AL-PE pipe.

Add standards to Chapter 15 as follows:

ASTM

F 1282-06 Standard Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe

CSA

B137.9-M91 Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure-Pipe Systems

PART II – IRC-M

1. Revise as follows:

**TABLE M2101.1
HYDRONIC PIPING MATERIALS**

MATERIAL	USE CODE ^a	STANDARD ^b	JOINTS	NOTES
Polyethylene/Aluminum/Polyethylene (PE-AL-PE) pressure pipe	1, 2, 3	ASTM F1282; CSA B137.9	Mechanical, crimp/insert	---

(Portions of table and footnotes not shown remain unchanged)

2. Add new text as follows:

M2104.3 Polyethylene/Aluminum/Polyethylene (PE-AL-PE) pressure pipe. Joints between Polyethylene/Aluminum/Polyethylene pressure pipe and fittings shall conform to M2104.3.1 and M2104.3.2. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

M2104.3.1 Compression-type fittings. Where compression type fittings include inserts and ferrules or O-rings, the fittings shall be installed without omitting the inserts and ferrules or O-rings.

M2104.3.2 PE-AL-PE to metal connections. Solder joints in a metal pipe shall not occur within 18 inches (457 mm) of a transition from such metal pipe to PE-AL-PE pipe.

3. Add standards to Chapter 43 as follows:

ASTM

F 1282-06 Standard Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe

CSA

B137.9-M91 Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure-Pipe Systems

Reason: This change will add a product which is suitable for the application and has approved ASTM and CSA standards.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing Results

Note: The following analysis was not in the Code Change Proposal book but was posted on the ICC website.

Analysis: Review of proposed new standards ASTM F 1282-06 and CSA B137.2-M91 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

PART I – IMC

Committee Action:

Approved as Submitted

Committee Reason: This code change adds a new piping material for hydronic systems that is supported by an approved standard.

Assembly Action:

None

PART II – IRC-M

Committee Action:

Approved as Submitted

Committee Reason: This code change adds a new piping material for hydronic systems that is supported by an approved standard.

Assembly Action:

None

Final Hearing Results

M104-07/08, Part I	AS
M104-07/08, Part II	AS
