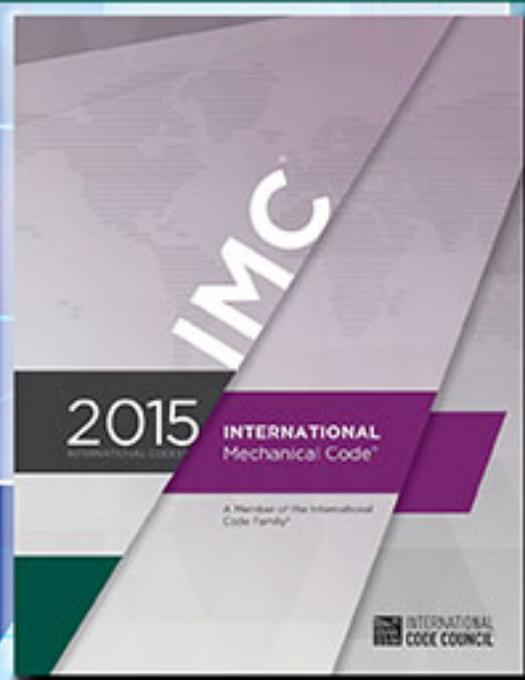


# COMPLETE REVISION HISTORY TO THE 2015 I-CODES<sup>®</sup>

Successful Changes and Public Comments



**Complete Revision History to the 2015 I-Codes: Successful Changes and  
Public Comments: 2015 IMC**

First Printing: September 2014

COPYRIGHT 2014  
BY  
INTERNATIONAL CODE COUNCIL, INC.

ALL RIGHTS RESERVED. This Complete Revision History to the 2015 I-Codes: Successful Changes and Public Comments: 2015 IMC is a copyrighted work owned by the International Code Council, Inc. Without advance written permission from the copyright owner, no part of this book may be reproduced, distributed, or transmitted in any form or by any means, including, without limitations, electronic, optical or mechanical means (by way of example and not limitation, photocopying, or recording by or in an information storage retrieval system). For information on permission to copy material exceeding fair use, please contact: Publications, 4051 West Flossmoor Road, Country Club Hills, IL 60478- 5795. Phone: 1-888-ICC-SAFE (422-7233).

Trademarks: International Code Council, the International Code Council logo are trademarks of the International Code Council, Inc.

PRINTED IN THE U.S.A

# INTRODUCTION

*Why did IMC/2015 Section 501.4 change from the 2012 edition?* This Complete Revision History to the 2015 I-Codes: Successful Changes and Public Comments: 2015 IMC has been compiled to provide the answers to such questions.

This Complete Revision History to the 2015 I-Codes: Successful Changes and Public Comments: 2015 IMC provides the published documentation for each successful code change in the IMC/2015 since the 2012 edition. Each changed code section is listed in the Table of Changes which contains three headings. The first heading is 2015 IMC which lists the section number in the 2015 code. If (new) appears after the section number it indicates that the section is new in 2015. If (deleted) is indicated in 2015 it means that the section no longer exists and the second column 2012 IMC will show the section number that was deleted. Also, the second heading will indicate if a section number has changed from 2012 to 2015. If there is nothing indicated in the 2012 column, the section number remained the same. The third heading lists the code change number(s) which affected that particular section. The published material for each change is contained in the Documentation section.

## HOW TO USE THE HANDBOOK

This Complete Revision History to the 2015 I-Codes: Successful Changes and Public Comments: 2015 IMC makes it possible for the reader to examine, in one location, all published information about a particular code change. For any given change, the text of the proposed change, committee actions and modifications, assembly actions, successful public comments, and final action can be found by using the following steps:

1. Locate the code section in the Table of Changes using the 2015 IMC section number.
2. Note the corresponding proposed code change number(s) from the list.
3. Locate the proposed code change number (listed in numerical order under the appropriate year and letter designation) in the Documentation section to read the complete chronological documentation of the proposed change.

## SOURCE DOCUMENTS

The code development cycle (see page vii) involves the publication of four documents, the result of 1) public submittal of proposed changes, 2) Report of Committee Action Hearing, 3) Public Comments Hearing Agenda, and 4) final action results. Under each code change number in the Documentation section of this handbook, material corresponding to that individual proposed change has been drawn from each of the four publications. One code change cycle occurred between published editions of the 2012 and 2015 IMC; therefore, the Documentation section of this handbook contains material collected from the following published documents:

## **2012 Documentation**

*2012 Proposed Changes to the International Codes*  
*2012 Report of the Public Hearing on the International Codes*  
*2012 Final Action Agenda on the International Codes*  
*Final Action on 2012 Proposed Changes to the International Codes*

## **2013 Documentation**

*2013 Proposed Changes to the International Codes*  
*2013 Report of the Public Hearing on the International Codes*  
*2013 Final Action Agenda on the International Codes*  
*Final Action on 2013 Proposed Changes to the International Codes*

Unsuccessful proposed changes have not been included since they do not directly affect the final content of the code.

**Code Change No: M42-12**

Code change numbers are identified with a letter and a year designation. For instance, **M42-12** is proposed change number **42** to the International Mechanical Code and was submitted in the **12** (2012) code change cycle. (See IMC Code Change Numbers on page v for a discussion of code committees)

### **Original Proposal**

This is the proposal as published in the 2012 Proposed Changes to the International Codes. It includes the section number(s), proponent's name, who they are representing, the text of the proposed change and their reason for the change. This is a change to IMC Section 403.

### **Public Hearing Results**

This is the result of the Code Development Hearing held to consider the change, as published in the 2012 Report of the Committee Action Hearing to the International Codes. It includes the committee's action (Disapproved) and reason for the action and also identifies if there was an assembly motion (None).

**Public Comments**

This is text of the submitted public comment, as published in the 2015 Public Comment Agenda to the International Codes. It includes the public commenter’s name and affiliation, the requested action to be considered at the Public Comment Hearing (Approved As Modified by this public comment) and the reason.

**Final Hearing Results**

This is the action taken by the eligible voting members of the ICC at the Public Comment Hearing, as published in the Final Action on 2012 Proposed Changes to the International Codes. The Final Action was AMPC which means the eligible voting members of ICC overturned the committee’s action and approved the change based on the submitted public comment.

**CODE CHANGE NUMBERS**

The following is the legend for code change numbers, along with the applicable committee and the committee’s primary area of responsibility relative to the IMC.

<b>Prefix</b>	<b>Code Committee</b>	<b>Primary IPC Chapters Affected</b>
M	IMC Code Committee	Chapters 1-15
F	IFC Code Committee	Chapter 6
FS	IBC Fire Safety Code Committee	Chapters 5 and 6
FG	IFGC Code Committee	Chapter 3
G	IBC General Committee	Chapters 1 and 2

Although most changes to the IMC are found under proposed change numbers beginning with an M, some changes to the IMC are published within a proposed change to the other *International Codes*, and therefore are found under a proposed code change number beginning with one of the other letters listed above. Use the table of contents to locate appropriate sections by year and letter designation.

## CODE SECTION NUMBER DIFFERENCES

For editorial reasons, some code section numbers in the 2015 edition have changed from the 2012 edition. The numbering of code sections is an editorial task which takes place outside of the normal code development cycle, and is necessary to avoid duplicate or non-sequential section numbers.

The Table of Changes typically references the 2012 code section numbers that have been deleted. (See Introduction)

In most cases the section numbers have not changed from the 2012 to the 2015 edition. However, the reader should remember that it is always the 2012 code section numbers which appear in the material contained in the Documentation section. This is due to proposed changes which have as their basis, a section number in the 2012 edition. Since an attempt to correlate code sections by number may lead to confusion, the user is advised to rely on the section content rather than the numbers to locate and compare parallel sections in the two editions.

## ABBREVIATIONS FOR ACTIONS

In the Documentation section, the following abbreviations are used to signify committee or final action:

### Legend for 2012 and 2013 Documentation:

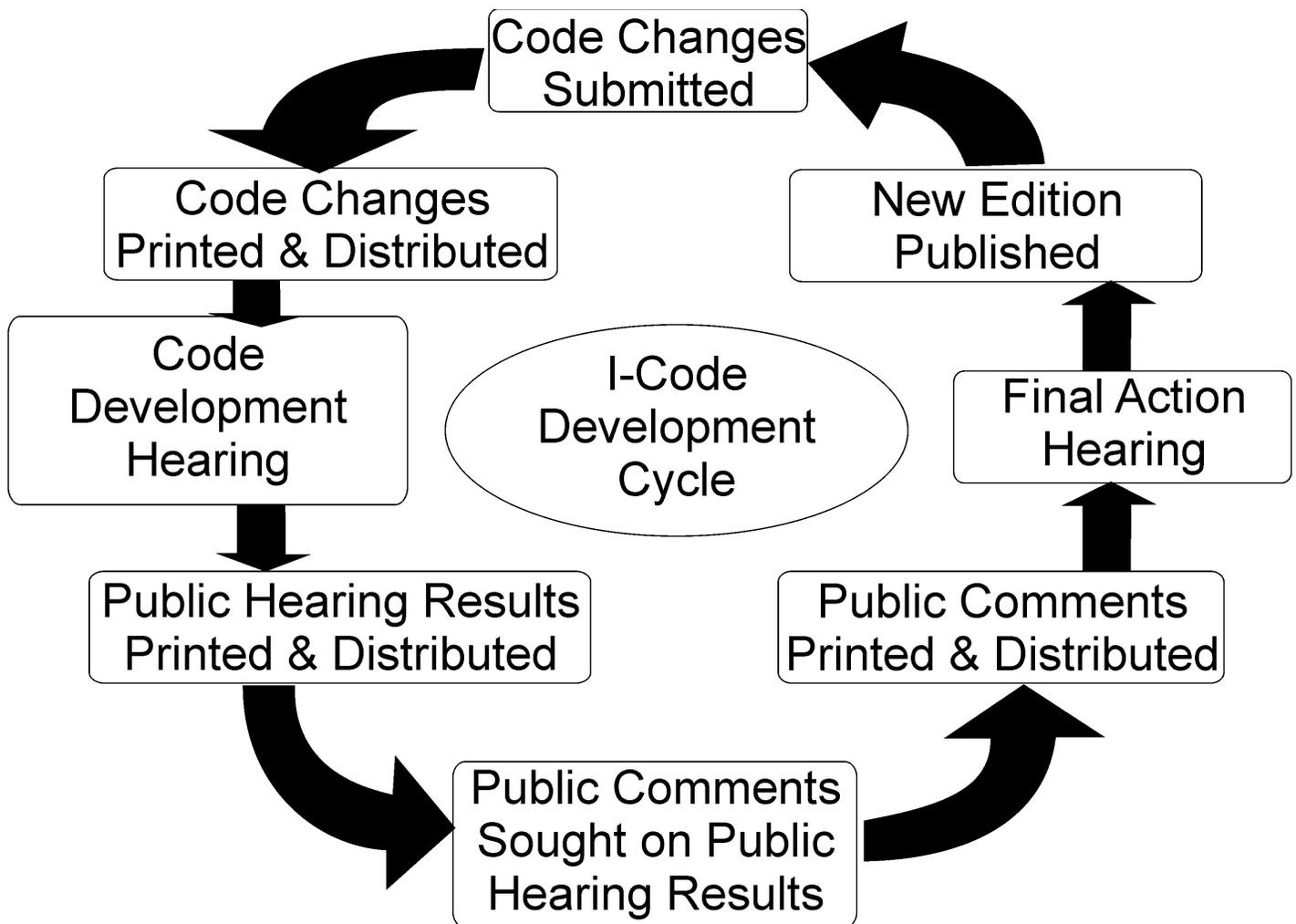
AS	=	Approved as Submitted
D	=	Disapproved
AM	=	Approved as Modified by the Code Committee
AMPC	=	Approved as Modified by a Public Comment
WP	=	Withdrawn by Proponent

## CODE CORRELATION COMMITTEE

During the course of the code development process, there are editorial issues, issues related to code correlation problems arising from code changes, and issues related to the appropriate committee that should consider certain topics. These issues are placed before the ICC Code Correlation Committee for resolution. During the development of the 2015 Code, from 2012 to 2014, the Code Correlation Committee met 2 times to discuss and resolve these issues. Code Correlation Committee actions are posted on the ICC website in the Code Development Section.

## ICC CODE DEVELOPMENT PROCESS

The following depicts the key steps in ICC's Code Development Process:



The procedures governing ICC Code Development are entitled Code Development Process for the International Codes. These procedures are updated periodically and therefore not included here. To obtain the current version, visit ICC's website at [www.iccsafe.org](http://www.iccsafe.org).

# TABLE OF CONTENTS

	<u>PAGE</u>
<b>International Mechanical Code.....</b>	<b>1</b>
<b>International Building Code, General.....</b>	<b>180</b>
<b>International Building Code, Fire Safety.....</b>	<b>181</b>
<b>Administrative.....</b>	<b>185</b>

# INTERNATIONAL MECHANICAL CODE TABLE OF CHANGES

## CHAPTER 1 SCOPE AND ADMINISTRATION

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
[A] 101.3		ADM6-13 Part I AMPC
[A] 102.3		ADM22-12 Part I
[A] 103.4		ADM21-12 Part I
[A] 103.4.1		ADM21-12 Part I
[A] 104.4		ADM22-12 Part I
[A] 105.1		ADM22-12 Part I
[A] 105.2		ADM23-12 Part I
[A] 106.1		ADM22-12 Part I
[A] 106.1.1 (New)		ADM26-12 Part I
[A] 106.1.2 (New)		ADM26-12 Part I
[A] 106.3		ADM22-12 Part I
[A] 108.5		ADM22-12 Part I
[A] 108.7.2		ADM22-12 Part I

## CHAPTER 2 DEFINITIONS

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
AIR, MAKEUP		M52-12 AMPC
AIR OUTDOOR (New)		M52-12 AMPC
AIR TRANSFER (New)		M52-12 AMPC
[A] APPROVED		ADM55-13 Part I
[A] APPROVED AGENCY		ADM57-13 Part I
CONDITIONED SPACE		M2-12
[B] DESIGN FLOOD ELEVATION		G8-12
DISCRETE PRODUCT (New)		M134-12
DUCTLESS MINI-SPLIT SYSTEM (New)		M26-12
EXFILTRATION (New)		M52-12
EXTRA-HEAVY-DUTY COOKING APPLIANCE		M3-12
FLAMMIBILITY CLASSIFICATION		M182-12
FLEXIBLE AIR CONNECTOR (New)		M5-12
HEAVY-DUTY COOKING APPLIANCE		M3-12
INFILTRATION (New)		M52-12
MECHANICAL JOINT		M7-12
OCCUPATIONAL EXPOSURE LIMIT (OEL) (New)		M182-12
PROTECTIVE ASSEMBLY (REDUCED CLEARANCE)		M34-12
REFRIGERANT SAFETY CLASSIFICATIONS		M182-12
TOXICITY CLASSIFICATION		M182-12

## CHAPTER 3 GENERAL REGULATIONS

2015 IECC	2012 IECC	CODE CHANGE NUMBER(S)
303.3		M10-12
303.5		M11-12
[B] 304.11		M14-12
305.4		M15-12

## CHAPTER 3 - continued

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
Table 305.4		M16-12 AMPC
306.1		M18-12
307.2		M20-12
307.2.2		M22-12
307.2.4.1 (New)		M29-12 AMPC
307.2.5 (New)		M32-12 AMPC
307.3 (New)		M215-12

## CHAPTER 4 VENTILATION

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
401.2		M36-12, Part I
403.1		M42-12 AMPC
403.2		M42-12 AMPC
403.2.1		M42-12 AMPC, M43-12, M44-12
403.2.2		M42-12 AMPC
403.3 (New)		M42-12 AMPC
403.3.1 (New)		M42-12 AMPC
403.3.1.1	403.3	M42-12 AMPC, M51-12
Table 403.3.1.1	Table 403.3	M36-12, Part I, M42-12 AMPC, M43-12, M44-12, M46-12, M49-12, M64-12
403.3.1.2	403.4	M42-12 AMPC, M52-12 AMPC
403.3.2 (New)		M42-12 AMPC
403.3.2.1 (New)		M42-12 AMPC
403.3.2.2 (New)		M42-12 AMPC
403.3.2.3 (New)		M42-12 AMPC
Table 403.3.2.3 (New)		M42-12 AMPC
404.1		M54-12
407 (New)		M36-12, Part I
407.1 (New)		M36-12, Part I

## CHAPTER 5 EXHAUST SYSTEMS

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
501.3		M59-12, M60-12
Deleted	501.3.1.1	M60-12
501.4		M52-12, M61-12
502.14		M63-12
502.20 (New)		M64-12
504.5 (New)		M68-12
504.6	504.5	M68-12

**CHAPTER 5 - continued**

**CHAPTER 5 - continued**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
504.7	504.6.7	M68-12, M71-12
504.7.1	504.6.1	M68-12, M71-12
504.7.2	504.6.2	M66-12 AMPC, M68-12, M71-12
504.7.3	504.6.3	M68-12, M71-12
504.7.4	504.6.4	M68-12, M71-12
504.7.4.1	504.6.4.1	M68-12, M71-12
Table 504.7.4.1	Table 504.6.4.1	M68-12, M71-12
504.7.4.2	504.6.4.2	M68-12, M71-12
504.7.4.3 (New)		M68-12
504.7.5	504.6.5	M68-12, M70-12, M71-12
504.7.6	504.6.6	M68-12, M71-12
504.8	504.6	M68-12, M71-12
504.9	504.7	M68-12, M71-12
504.10	504.8	M68-12, M71-12
505.1		M76-12
505.3 (New)		M73-12
505.4 (New)		M76-12
506.3.7.1		M85-12, M87-12
506.3.8		M86-12
506.3.11		M88-12, M90-12, M92-12
506.3.11.1		M92-12
506.3.11.2		M92-11
506.3.11.3		M92-12
506.5.1.1 (New)		M97-12
506.5.3		M100-12
507.1		M101-12, M104-12, M107-12
507.1.1	507.2.1.1	M101-12, M107-12
507.1.1.1 (New)		M103-12
507.1.2	507.2.3	M76-12, M101-12
507.1.3	507.3	M101-12
507.1.4 (New)		M101-12
Deleted	507.2	M101-12
507.2	507.2.1	M101-12, M106-12
507.2.1	507.2.1.2	M101-12
507.2.2	507.2.4	M101-12
507.2.3	507.4	M101-12
507.2.4 (New)		M101-12
507.2.5	507.7.1	M101-12
507.2.6	507.9	M101-12
507.2.7	507.10	M101-12
507.2.8	507.11	M101-12
Table 507.2.8	Table 507.11	M101-12
507.2.8.1	507.11.1	M101-12, M111-12
507.2.8.2	507.11.2	M101-12
507.2.9 (New)		M101-12
507.3	507.2.2	M101-12
507.3.1	507.5	M101-12
507.3.2	507.6	M101-12
507.3.3	507.7.2	M101-12
Deleted	507.7	M101-12
Deleted	507.7.1	M101-12
Deleted	507.8	M101-12
507.4 (New)		M101-12
507.4.1	507.12	M101-12
507.4.2	507.14	M101-12
507.5	507.13	M101-12
507.5.1	507.13.1	M101-12
507.5.2	507.13.2	M101-12
507.5.3	507.13.3	M101-12
507.5.4	507.13.4	M101-12
507.5.5	507.13.5	M101-12

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
507.6	507.16	M101-12
507.6.1	507.16.1	M101-12
508.1.2 (New)		M112-12
510.4		M113-12
510.5 (New)		M113-12, M114-12, M116-12, M117-12
510.6	510.5	M113-12
510.6.1	510.5.1	M113-12
510.6.2	510.5.2	M113-12
510.6.3	510.5.3	M113-12
510.6.4	510.5.4	M113-12
510.6.5	510.5.5	M113-12, M118-12
510.6.6	510.5.6	M113-12, M116-12
510.6.7	510.5.7	M113-12
510.7	510.6	M113-12
510.7.1	510.6.1	M113-12
510.7.1.1 (New)		M119-12
510.7.2	510.6.2	M113-12
510.7.3	510.6.3	M113-12
510.7.4	510.6.4	M113-12
510.8	510.7	M113-12
510.9	510.8	M113-12, M120-12
Table 510.9	Table 510.8	M113-12
510.9.1	510.8.1	M113-12
510.9.2	510.8.2	M113-12
Table 510.9.2	Table 510.8.2	M113-12
510.9.3	510.8.3	M113-12
510.10	510.9	M113-12
514.2		M123-12

**CHAPTER 6  
DUCT SYSTEMS**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
601.5 (New)		M167-12
602.1		M126-12
602.2		M130-12 AMPC
602.2.1.4		M134-12
602.2.1.5 (New)		M134-12
602.2.1.6	602.2.1.5	M134-12
602.2.1.6.1	602.2.1.5.1	M134-12
602.2.1.6.2	602.2.1.5.2	M134-12
602.2.1.6.3	602.2.1.5.3	M134-12
602.2.1.7 (New)		M136-12 AMPC
603.2		M142-12
Table 603.4		M143-12
603.4.2 (New)		M145-12
603.9		M149-12, M151-12
603.10		M153-12
605.1		M156-12
607.3.1		FS104-12
607.5.4.1		M157-12
607.6.2.1		FS115-12
607.6.3		FS116-12

**CHAPTER 7  
COMBUSTION AIR**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
701.2 (New) .....		M159-12

**CHAPTER 8  
CHIMNEYS AND VENTS**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
802.9 (New) .....		M161-12

**CHAPTER 9  
SPECIFIC APPLIANCES, FIREPLACES AND SOLID FUEL-BURNING EQUIPMENT**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
902.2 .....	901.4 .....	M162-12
903.4 (New) .....		M163-12
908.5 .....		M164-12
908.8 (New) .....		M165-12
908.8.1 (New) .....		M165-12
908.8.2 (New) .....		M165-12
Deleted .....	917.2 .....	M166-12
917.2 .....	917.3 .....	M166-12
Deleted .....	918.2 .....	M142-12
918.5 (New) .....		M167-12
Deleted .....	918.6 .....	M167-12
918.6 .....	918.7 .....	M142-12
Deleted .....	918.8 .....	M167-12
923.1 .....		M169-12, Part I
928.1 .....		M168-12

**CHAPTER 10  
BOILERS, WATER HEATERS AND PRESSURE VESSELS**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
1003.1 .....		M171-12
1003.3 .....		M172-12
1004.1 .....		M173-12
1007.1 .....		M175-12 AMPC
1007.2 (New) .....		M175-12 AMPC
1007.3 .....	1007.2 .....	M175-12 AMPC
1008.1 .....		M176-12
1009.2 .....		M177-12
Table 1009.2 (New) .....		M177-12
1011.1 .....		M178-12

**CHAPTER 11  
REFRIGERATION**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
1101.10 .....		M179-12
1102.3 (New) .....		M181-12
[F] Table 1103.1 .....		M182-12
1104.1 .....		M182-12

**CHAPTER 11 - continued**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
1106.3 .....		M184-12
1107.1 .....		M185-12

**CHAPTER 12  
HYDRONIC PIPING**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
Table 1202.4 .....		M188-12, M189-12, M191-12
Table 1202.5 .....		M192-12 AMPC, M193-12, M194-12, M197-12, M198-12
Deleted .....	1203.15 .....	M188-12
Deleted .....	1203.15.1 .....	M188-12
Deleted .....	1203.15.2 .....	M188-12
Deleted .....	1203.15.3 .....	M188-12
1203.15 .....	1203.16 .....	M188-12
1203.15.1 .....	1203.16.1 .....	M188-12
1203.15.2 .....	1203.16.2 .....	M188-12
1203.16 .....	1203.17 .....	M188-12
1203.16.1 .....	1203.17.1 .....	M188-12
1203.16.2 .....	1203.17.2 .....	M188-12
1203.17 .....	1203.18 .....	M188-12
1203.17.1 .....	1203.18.1 .....	M188-12
1203.17.2 .....	1203.18.2 .....	M188-12
1203.18 .....	1203.19 .....	M188-12
1203.18.1 .....	1203.19.1 .....	M188-12
1203.18.2 .....	1203.19.2 .....	M188-12
1208.1 .....		M188-12
Deleted .....	1208.1.1 .....	M188-12
1209.3.2 .....		M206-12
1209.3.4 (New) .....		M197-12
Section 1210 (New) .....		M188-12
1210.1 through 1210.5 (New) .....		M188-12
Section 1211 (New) .....		M188-12
1211.1 through 1211.9 (New) .....		M188-12
Section 1212 (New) .....		M188-12
1212.1 through 1212.2 .....		M188-12
Section 1213 (New) .....		M188-12
1213.1 through 1213.11 (New) .....		M188-12
Section 1214 (New) .....		M188-12
1214.1 (New) .....		M188-12
Section 1215 (New) .....		M188-12
1215.1 (New) .....		M188-12
Section 1216 (New) .....		M188-12
1216.1 (New) .....		M188-12

**CHAPTER 13  
FUEL OIL PIPING AND STORAGE**

2015 IMC	2012 IMC	CODE CHANGE NUMBER(S)
Table 1302.3 .....		M208-12, M211-12
1303.3.2 .....		M210-12
1303.7 .....		M211-12

**CHAPTER 15  
REFERENCED STANDARDS**

<b>2015 IMC</b>	<b>2012 IMC</b>	<b>CODE CHANGE NUMBER(S)</b>
CHAPTER 15.....	CHAPTER 15.....	ADM62-13
ASHRAE.....		M36, Part I
ASME.....	M185-12, M198-12, M211-12	
ASTM.....		M189-12,
	M192-12 AMPC, M197-12	
AWWA.....		M192-12 AMPC
CSA.....		M188-12
ISO.....		M194-12
MSS.....		M15-12
NBBI (New).....		M172-12
UL.....		M68-12, M92-12

## Code Change No: M2-12

### Original Proposal

**Section(s):** 202

**Proponent:** Brent Ursenbach, Salt Lake City, UT, Salt Lake County Planning and Development representing the Utah Chapter ICC (bursenbach@slco.org)

**Revise as follows:**

**CONDITIONED SPACE.** An area, room or space that is being heated or cooled by any equipment or appliance; enclosed within the building thermal envelope and that is directly heated or cooled or that is indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate thru openings with conditioned spaces, where they are separated from conditioned spaces by un-insulated walls, floors or ceilings and where they contain un-insulated ducts, piping or other sources of heating or cooling.

**Reason:** Confusion exists between the two different definitions in the IMC and IECC. The IECC attempts to define how a space may be indirectly conditioned; however, further clarification is needed. This proposed change is similar to the definition in ASHRAE 90.1 – 2010.

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

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**CONDITIONED SPACE.** An area, room or space that is enclosed within the building thermal envelope and that is directly heated or cooled or that is indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate thru openings with conditioned spaces, where they are separated from conditioned spaces by un-insulated walls, floors or ceilings ~~and~~ or where they contain un-insulated ducts, piping or other sources of heating or cooling.

**Committee Reason:** Approval is based upon the proponent's published reason. The modification clarifies that any one of the three conditions could qualify a space as being indirectly heated or cooled.

**Assembly Action:**

**None**

### Final Hearing Results

**M2-12**

**AM**

## Code Change No: **M3-12**

### Original Proposal

**Section(s):** 202

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**EXTRA-HEAVY-DUTY COOKING APPLIANCE.** ~~Extra-heavy-duty cooking appliances are those include appliances utilizing open flame combustion of solid fuel at any time, such as wood, charcoal and briquettes, and mesquite to provide all or part of the heat source for cooking.~~

**HEAVY-DUTY COOKING APPLIANCE.** Heavy-duty cooking *appliances* include electric under-fired broilers, electric chain (conveyor) broilers, gas under-fired broilers, gas chain (conveyor) broilers, gas open-burner ranges (with or without oven), electric and gas wok ranges, smokers, smoker ovens, and electric and gas over-fired (upright) broilers and salamanders.

**Reason:** The definition of Extra-heavy-duty appliances does not appear to address smokers and smoker grills. The wood is not burned to contribute heat for cooking in these appliances, so these appliances seem to fall through the crack. Smokers would appear to require hoods based on Section 507.2.4. By defining smokers as "Heavy-duty" instead of "Extra-heavy-duty," they can be placed under a Type I hood with other heavy-, medium- and light-duty appliances. There is no apparent reason for them to be under an independent exhaust system as is required for appliances that have open flame combustion. As revised, the definition distinguishes between appliances that produce only smoke and those that actually combust the solid fuel for heat.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M3-12**

**AS**

## Code Change No: M5-12

### Original Proposal

**Section(s):** 202

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Add new definition as follows:**

**FLEXIBLE AIR CONNECTOR.** Flexible air connectors are tested for compliance with UL 181 with the exception of the fire penetration, puncture and impact tests of that standard. Flexible air connectors are labeled as such and are used to connect sections of ductwork, connect ductwork to equipment and connect ductwork to inlet and outlet terminals. The UL181 standard limits the length of flexible air connectors to 14 feet or less.

**Reason:** The code does not define "flexible air connector." As seen in the field, flexible air connectors are often indistinguishable from flexible ducts and the only way to tell them apart is to look at their labels. It is the product listing and label that dictates whether the product is an air connector or an air duct.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Replace proposal as follows:**

**Flexible Air Connector.** A conduit for transferring air between an air duct or plenum and an air terminal unit or between an air inlet and air outlet. Such conduit is limited in use, length and location.

**Committee Reason:** Approval is based upon the proponent's published reason. The modification rewrites the text to be less prescriptive and to avoid stating requirements in a definition. Other codes have similar definitions.

**Assembly Action:**

**None**

### Final Hearing Results

**M5-12**

**AM**

## Code Change No: **M7-12**

### Original Proposal

**Section(s):** 202

**Proponent:** James Paschal, Paschal Engineering, representing self  
(Jim@PaschalEngineering.com)

**Revise as follows:**

#### **MECHANICAL JOINT.**

1. A connection between pipes, fittings, or pipes and fittings that is not welded, brazed, caulked, soldered, ~~or~~ solvent cemented, or heat-fused.
2. A general form of gas or liquid-tight connections obtained by the joining of parts through a positive holding mechanical construction such as, but not limited to, flanged, screwed, clamped or flared connections.

**Reason:** Heat fusion is now a defined type of joint for plastic piping, and is considered separate from welding because there is not any additional filler material used in forming the joint. However, heat-fusion joints are not mechanical joints and as such should be excluded from the definition of mechanical joints.

**Cost Impact:** This proposal will not increase the cost of construction.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M7-12**

**AS**

# Code Change No: M10-12

## Original Proposal

**Section(s):** 303.3

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**303.3 Prohibited locations.** Fuel-fired appliances shall not be located in, or obtain combustion air from, any of the following rooms or spaces:

1. Sleeping Rooms
2. Bathrooms
3. Toilet Rooms
4. Storage Closets
5. Surgical Rooms

**Exception:** This section shall not apply to the following appliances:

1. Direct-vent appliances that obtain all combustion air from the outdoors.
2. Solid fuel-fired appliances, provided that ~~the room is not a confined space and the building is not of unusually tight construction~~ combustion air is provided in accordance with the manufacturers' instructions.
3. Appliances installed in a dedicated enclosure in which all combustion air is taken directly from the outdoors, in accordance with Chapter 7. Access to such enclosure shall be through a solid door, weather-stripped in accordance with the exterior door leakage requirements of the International Conservation Code and equipped with an approved self-closing device.

**Reason:** The concepts of confined space and unusually tight construction are no longer valid and were deleted from the IFGC along with the definitions of such.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason

**Assembly Action:**

**None**

## Final Hearing Results

**M10-12**

**AS**

## Code Change No: M11-12

### Original Proposal

**Section(s):** 303.5

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**303.5 Indoor locations.** Furnaces and boilers installed in closets and alcoves shall be listed for such installation. ~~For purposes of this section, a closet or alcove shall be defined as a room or space having a volume less than 12 times the total volume of the fuel-fired appliances other than boilers and less than 16 times the total volume of boilers. Room volume shall be computed using the gross floor area and the actual ceiling height up to a maximum computation height of 8 feet.~~

**Reason:** This section needs to be coordinated with the IFGC. The volume rules for 12 times and 16 times the appliance volume, along with the concept of "rooms large in comparison with the appliance" were deleted from the IFGC and are a thing of the past. This IMC text is based on IFGC text that is antiquated and no longer existing in the IFGC.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The deleted text is covered in the appliance listings and manufacturer's instructions.

**Assembly Action:**

**None**

### Final Hearing Results

**M11-12**

**AS**

## Code Change No: M14-12

### Original Proposal

**Section(s):** [B]304.11

**Proponent:** Gary Kreutziger, M.C.P., City of San Antonio, representing self

**Revise as follows:**

**[B] 304.11 Guards.** Guards shall be provided where appliances, *equipment*, fans or other components that require service and roof hatch openings are located within 10 feet (3048mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762mm) above the floor, roof, or grade below. The guard shall extend not less than 30 inches (762mm) beyond each end of such appliances, *equipment*, fans, or components ~~and roof hatch openings~~ and the top of the guard shall be located not less than 42 inches (1067mm) above the elevated surface adjacent to the guard. The guard shall be constructed so as to prevent the passage of a 21-inch-diameter (533mm) sphere and shall comply with the loading requirements for guards specified in the *International Building Code*.

**Reason:** The change will correlate the IMC with the IBC and IFC where there is currently a conflict. The IBC and IFC do not require the guards to extend 30 inches beyond a roof hatch opening as is currently required in the IMC. There are manufactured guards available now that mount directly to the roof hatch curb and encircle the roof hatch opening but do not extend 30 inches beyond the opening as required in the IMC, however, as the IMC is currently written these guards would not be allowed, but are allowed per the IBC and IFC. These guards meet the prescriptive requirements and intent of the IBC and IFC but not the IMC. The guards that encircle the roof hatch opening provide a safer access to the roof when oriented correctly, by serving as a handrail as well as a guard and also add value by limiting roof penetrations.

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

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The removal of the existing language regarding guard extensions at roof hatches will coordinate the IMC with the IBC, Sections 1013.6 and 1013.7.

**Assembly Action:**

**None**

### Final Hearing Results

**M14-12**

**AS**

## Code Change No: M15-12

### Original Proposal

**Section(s):** 305.4, Chapter 15

**Proponent:** Robert O'Neill; David Thompson, Manufacturers Standardization Society, representing Manufacturers Standardization Society (dthompson@mss-hq.org)

**Revise as follows:**

**305.4 Interval of support.** Piping shall be supported at distances not exceeding the spacing specified in Table 305.4, or in accordance with ~~MSS SP-69~~ ANSI/MSS SP-58-2009.

**Add new standard to Chapter 15 as follows:**

ANSI/MSS SP-58-2009

Pipe Hangers and Supports –Materials, Design, Manufacture, Selection, Application, and Installation

**Reason:** In 2009, SP-58 was revised (including the title) to comprehensively combine and incorporate all of the content of five Pipe Hanger and Support standards into a single document; specifically including all of the information from **ANSI/MSS SP-69-2003, Selection and Application**; MSS SP-77-1995 (R 2000), *Guidelines for Pipe Support Contractual Relations*; MSS SP-89-2003, *Fabrication and Installation Practices*; and MSS SP-90-2000, *Guidelines on Terminology for Pipe Hangers and Supports*. On February 11, 2011, the revised SP-58 was approved by the American National Standards Institute (ANSI) as an American National Standard (ANS). The new title is **ANSI/MSS SP-58-2009, Pipe Hangers and Supports –Materials, Design, Manufacture, Selection, Application, and Installation**. The aforementioned SP-69 will not be revised (will "sunset" by 2014) and SP-77, 89, and 90 were withdrawn in 2010. **This ANSI/MSS SP-58-2009 edition can officially be utilized and referenced in place of the aforementioned Standard Practices.**

**Cost Impact:** The code change proposal will not increase the cost of construction other than the minimal difference in cost to acquire the ANSI/MSS SP-58-2009 standard document.

**Analysis:** A review of the standard proposed for inclusion in the code, [ANSI/MSS SP-58-2009] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M15-12**

**AS**

## Code Change No: M16-12

### Original Proposal

**Section(s):** Table 305.4

**Proponent:** Larry Gill, P. Eng., IPEX USA LLC (larry.gill@ipexna.com)

**Revise as follows:**

**TABLE 305.4  
PIPING SUPPORT SPACING<sup>a</sup>**

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
<u>PE-RT ≤ 1"</u>	<u>2 ⅔ (32 inches)</u>	<u>4</u>
<u>PE-RT ≥ 1¼</u>	<u>4</u>	<u>4</u>

**Reason:** Add support dimensions for polyethylene of raised temperature (PE-RT). PE-RT is already in the International Codes and adding the support spacing will provide additional information for installation. All other dimensions in the table remain unchanged.

**Cost Impact:** The proposed change will not increase the cost of construction.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Public Comments

*Public Comment:*

**Larry Gill, IPEX USA LLC requests Approval as Modified by this Public Comment.**

TABLE 305.4  
PIPING SUPPORT SPACING

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
PE-RT ≤ 1"	2 ⅔ (32 inches)	4- 10 <sup>c</sup>
PE-RT ≥ 1¼	4	4- 10 <sup>c</sup>

**Commenter's Reason:** The value of 4 feet for the vertical spacing was submitted in error. The format of the horizontal value should match the current table.

### Final Hearing Results

**M16-12**

**AMPC**

## Code Change No: M18-12

### Original Proposal

**Section(s):** 306.1

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**306.1 Access.** Appliances, controls devices, heat exchangers and HVAC system components that utilize energy 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*.

**Reason:** Section 306.1 applies to appliances and therefore does not address equipment such as fan/coil units, air handling units, damper motors, HVAC controls, etc. Units with heat exchangers need to be provided with access so that they can be cleaned. Air handlers and fan/coil units are not considered to be appliances because they do not fall under the definition because the code provides no specific requirements for them.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** This could increase the cost of construction.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M18-12**

**AS**

## Code Change No: M20-12

### Original Proposal

**Section(s):** 307.2

**Proponent:** Patrick A. McLaughlin, McLaughlin & Associates, representing Air-Conditioning, Heating & Refrigeration Institute  
(pmclaugma@aol.com)

**Revise as follows:**

**307.2 Evaporators and cooling coils.** Condensate drain systems shall be provided for *equipment* and appliances containing evaporators or cooling coils. Condensate drain systems shall be designed, constructed and installed in accordance with Sections 307.2.1 through 307.2.4.

**Exception:** Evaporators and cooling coils that are designed to operate in sensible cooling only and not support condensation shall not be required to meet the requirements of this section.

**Reason:** The introduction of chilled beam technology is relatively new in the North American market. The code does not take into consideration the fact that dry coils are utilized in most all chilled beam designs; it is an integral part of the design. The chilled beam products have been successfully operating in applications all over the world in this dry manner for over 25 years. Additionally, it is more hygienic and provides greater energy efficiency to design these systems with dry coils. Finally condensation prevention strategies are already employed as part of the design of chilled beam systems.

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

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M20-12**

**AS**

## Code Change No: M22-12

### Original Proposal

**Section(s):** 307.2.2

**Proponent:** James Paschal, Paschal Engineering, representing self  
(Jim@PaschalEngineering.com)

**Revise as follows:**

**307.2.2 Drain pipe materials and sizes.** Components of the condensate disposal system shall be cast iron, galvanized steel, copper, cross-linked polyethylene, ~~polybutylene~~, polyethylene, ABS, CPVC, or PVC, or polypropylene pipe or tubing. All components shall be selected for the pressure and temperature rating of the installation. Joints and connections shall be made in accordance with the applicable provisions of Chapter 7 of the *International Plumbing Code* relative to the material type. Condensate waste and drain line size shall not be less than ¾-inch (19 mm) internal diameter and shall not decrease in size from the drain pan connection to the place of condensate disposal. Where the drain pipes from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with Table 307.2.2.

**Reason:** Delete PB material as it is no longer available or used in this application, and add polypropylene materials which are currently being used in this application.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M22-12**

**AS**

## Code Change No: M26-12

### Original Proposal

**Section(s):** 202 (NEW), Section 307.2.3.1

**Proponent:** Timothy Burgos, InterCode Incorporated, representing Rectorseal Corporation and Ken Sagan, NRG Code Advocates, representing self (ken@nrgcodeadvocates.com)

**Add new definition as follows:**

**DUCTLESS MINI-SPLIT SYSTEM.** A heating and cooling system that is comprised of one or multiple indoor evaporator/air handler units and an outdoor condensing unit that is connected by refrigerant piping and electrical wiring. A ductless mini-split system is capable of cooling or heating one or more rooms without the use of a traditional ductwork system.

**Revise as follows:**

**307.2.3.1 Water-level monitoring devices and condensate pumps.** On down-flow units and all other coils that do not have a secondary drain or provisions to install a secondary or auxiliary drain pan, a water-level monitoring device shall be installed inside the primary drain pan. This device shall shut off the *equipment* served in the event that the primary drain becomes restricted. Devices installed in the drain line shall not be permitted. For ductless mini-split equipment that is not able to drain condensate from the unit by gravity, a condensate pump shall be installed to remove water from the *equipment*. The condensate pump shall be powered by the same power supply that powers the *equipment* being served and shall be capable of shutting off the equipment served in the event of failure of the pump to remove condensate.

**Reason:** Ductless mini-split systems have existed for more than 50 years and have been available for more than 30 years in the United States HVAC residential and/or light commercial markets. Most American consumers, however, are unaware of these products. A ductless mini-split system is not a window unit; it is a permanently installed mechanical system used in new construction, additions, multi-family (condo/apartment) housing, and to improve comfort in poorly conditioned spaces.

Ductless Mini-split equipment must follow the same code requirements as other condensate producing equipment due to the potential damage and health risk associated with uncontrolled condensation. Ductless mini-split units also do not have provisions for a secondary drain, or auxiliary drain pans to prevent condensation from overflowing the primary drain pan. Currently it is unclear in the code if ductless mini-split units require water-level monitoring devices. In installations where gravity drains condensation removal is impossible, a condensate pump must be installed that communicates with the ductless mini-split to stop the equipment if there is a failure of the condensate removal system. Power for the condensate pump should be provided from the mini-split equipment and not from a separate power source. The danger of using a separate power supply is that if the circuit that supplies power to the condensate pump fails, but the circuit providing power to the mini split equipment remains active, the pump will not operate and the equipment will produce excessive condensation without shutting down. This code change addresses the condensate requirement and allows simplicity in code compliance.

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

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**DUCTLESS MINI-SPLIT SYSTEM.** A heating and cooling system that is comprised of one or multiple indoor evaporator/air handler units and an outdoor condensing unit that is connected by refrigerant piping and electrical wiring. A ductless mini-split system is capable of cooling or heating one or more rooms without the use of a traditional ductwork system.

**Revise as follows:**

**307.2.3.1 Water-level monitoring devices and condensate pumps.** On down-flow units and all other coils that do not have a secondary drain or provisions to install a secondary or auxiliary drain pan, a water-level monitoring device shall be installed inside the primary drain pan. This device shall shut off the *equipment* served in the event that the primary drain becomes restricted. Devices installed in the drain line shall not be permitted. ~~For ductless mini-split equipment that is not able to drain condensate from the unit by gravity, a condensate pump shall be installed to remove water from the equipment. The condensate pump shall be powered by the same power supply that powers the equipment being served and shall be capable of shutting off the equipment served in the event of failure of the pump to remove condensate.~~

**Committee Reason:** Approval is based upon the proponent's published reason. The modification deletes proposed text that is redundant with the manufacturer's instructions.

**Assembly Action:**

**None**

<b>Final Hearing Results</b>
------------------------------

**M26-12**

**AM**

---

## Code Change No: M29-12

### Original Proposal

**Section(s):** 202, 307.2.4.1

**Proponent:** Timothy Burgos, InterCode Incorporated, representing Rectorseal Corporation and Ken Sagan, NRG Code Advocates, representing self

**Add new definition as follows:**

**DUCTLESS MINI-SPLIT SYSTEM.** A heating and cooling system that is comprised of one or multiple indoor evaporator/air handler units and an outdoor condensing unit that is connected by refrigerant piping and electrical wiring. A ductless mini-split system is capable of cooling or heating one or more rooms without the use of a traditional ductwork system.

**Add new text as follows:**

**307.2.4.1 Ductless Mini-Split Traps.** Ductless mini split equipment that produces condensation shall be provided with an inline check valve located in the drain line instead of a trap.

**Reason:** Ductless mini-split condensate lines are direct openings for unconditioned outside air, contaminants, insects and other undesirable materials to enter the conditioned space and should be trapped using an inline check valve as a preventative measure.

Ductless mini-split systems have existed for more than 50 years and have been available for more than 30 years in the United States HVAC residential and/or light commercial markets. Most American consumers, however, are unaware of these products. A ductless-mini split system is not a window unit; it is a permanently installed mechanical system used in new construction, additions, multi-family (condo/apartment) housing, and to improve comfort in poorly conditioned spaces. Since mini-splits require no ducts and indoor components are mounted directly on interior ceiling, walls, or on the floor, they avoid the energy losses associated with ductwork of central forced air systems. Duct losses can account for more than 30% of energy consumption for space conditioning, especially if the ducts are in an unconditioned space such as an attic.

Ductless mini-split heating and cooling systems are highly efficient products that deliver warm or cool air directly into different zones in a building instead of through ducts. They are also called mini-split, multi-split, or variable refrigerant flow (VRF) heat pump systems. They are an increasingly popular and cost-effective solution to replace inefficient baseboard electric heating and window air conditioners in existing homes.

Ductless mini-split systems have numerous potential applications in residential, commercial, and institutional buildings. The most common applications are in multifamily housing or as retrofit add-ons in houses with "non-ducted" heating systems, such as hydronic (hot water heat), radiant (electric resistance), and space heaters (wood, kerosene, propane). They can also be a good choice for room additions and small apartments where extending or installing distribution ductwork (for a central air-conditioner or heating systems) is not feasible or where existing equipment cannot handle the additional load.

A ductless mini-split system is comprised of an indoor unit called the evaporator and an outdoor unit called the condenser. The evaporator is connected to the condensing unit by copper tubing and electrical wiring which is passed through a 2 ½" – 4" hole. Basically, it is a small central air unit with the flexibility of cooling or heating one or more room.

***The advantages of installing a ductless mini-split over a central air system.***

The main advantages of a ductless mini-split are their small size and flexibility for zoning or heating and cooling individual rooms. Models can have as many as four indoor air handling units (for four zones or rooms) connected to one outdoor unit. The number of units is determined by how much heating or cooling is required for the building or each zone (which in turn is affected by the properties of the building envelope). Since each of the zones has its own thermostat, the space can be conditioned only when occupied saving energy and money.

1. With Central Air, an entire home must be cooled when only one room may be occupied. Ductless mini-splits cool only the areas that require conditioning.
2. 18,000 BTU is a typical minimum central air unit: ductless mini-splits are available beginning at 9,000 or 12,000 BTUs.
3. Typical homes requiring 3-ton HVAC units may not be zoned or require complex zoning systems that are very expensive for the homeowner. With ductless mini-splits, multiple evaporators make zoning as simple as setting a remote control.
4. Energy wasted in long lengths of uninsulated ductwork means higher energy bills. Less than 5% cooling loss occurs in insulated refrigerant lines compared with up to 25% through ducts.
5. Retrofitting existing homes with whole house air conditioning requires cutting holes in walls, floors, ceilings or decreasing closet space with ducts.
6. Ductless mini-splits require just a 2 ½ or 4" diameter hole in the outside wall meaningless mess and better home aesthetics.

Most systems now incorporate inverter-driven compressors, which allow for system ramp-up until the desired set temperature is met, then permit the system to modulate its operation so that a comfortable temperature is maintained. This operation avoids the abrupt and energy-consuming start and stop exhibited by traditional HVAC systems.

Ductless mini-split systems are also often easier to install than other types of space conditioning systems. For example, the hook-up between the outdoor and indoor units generally requires only a three inch (~8 centimeter [cm]) hole through a wall for the conduit. Also, most manufacturers of this type of system can provide a variety of lengths of connecting conduits. So, if necessary, you can locate the outdoor unit as far away as 50 feet (~15 meters [m]) from the indoor evaporator. This makes it possible to cool rooms on the front side of a building with the compressor in a more appropriate or inconspicuous place on the outside of the building.

Indoor air handlers can be suspended from a ceiling, flush-mounted in a drop ceiling, or hung on a wall. Floor-standing models are also available. Many offer a remote control to make control of high mounted units easier. Split systems can also contribute to the security of a building by eliminating the need for larger openings required for through-the-wall units or unsecured windows housing window-mounted units –openings that can provide easy access for intruders

Ductless mini-split equipment must follow the same code requirements as other condensate producing equipment due to the potential damage and health risk associated with uncontrolled condensation. Ductless mini-split units also do not have provisions for a secondary drain, or auxiliary drain pans to prevent condensation from overflowing the primary drain pan. Currently it is unclear in the code if ductless mini-split units require water-level monitoring devices. In installations where gravity drains condensation removal is impossible, a condensate pump must be installed that communicates with the ductless mini-split to stop the equipment if there is a failure of the condensate removal system. Power for the condensate pump should be provided from the mini-split equipment and not from a separate power source. The danger of using a separate power supply is that if the circuit that supplies power to the condensate pump fails, but the circuit providing power to the mini split equipment remains active, the pump will not operate and the equipment will produce excessive condensation without shutting down.

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

### Public Hearing Results

**Committee Action:**

**Disapproved**

**Committee Reason:** There is no need to mandate a check valve as the only means. Manufacturers vary and this should be left to the manufacturers to decide.

**Assembly Action:**

**None**

### Public Comments

*Public Comment:*

**Vickie Lovell, InterCode Incorporated, representing Rectorseal Corporation, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

**307.2.4.1 Ductless Mini Split System Traps.** Ductless mini split equipment that produces condensation shall be provided with an inline check valve located in the drain line ~~instead of~~ or a trap.

*(Portions not shown are unaffected by this Public Comment.)*

**Commenter's Reason:** The committee had an issue with the original proposal because it was too limiting for what could be used as trap. We agree with their reason. The reason for this public comment is to give an option of either using an inline check valve or a traditional trap when installing a ductless mini split system.

One of the advantages of a ductless mini split system is the ability to install a cooling system in a limited space. However, if the space is limited, a traditional trap may not be practical and an inline check should be used.

### Final Hearing Results

**M29-12**

**AMPC**

## Code Change No: M32-12

### Original Proposal

**Section(s):** 307.2.5 (New)

**Proponent:** Andrew Scott Jones, President, A Better Deal Heating and Air Conditioning, Inc., a Texas Corporation, representing self (tfkolter@gmail.com/tom.kolter@yahoo.com)

**Add new text as follows:**

**307.2.5 Cleanouts.** Condensate drains shall be provided with a means to allow cleaning of the drain and clearing of blockages without having to cut or disassemble the piping.

**Reason:** Drain line stoppages in evaporative coils drain pan drain lines are unavoidable and common occurrences requiring clearing the drain line. Clearing these lines almost always involves cutting the drain line itself, causing water to leak into the attic or closet where the drain is located, possible collected in a bucket or soaked up with rags or paper towels. Then the technician blows compressed air through the drain line in both directions from the cut. The cut must be repaired by resealing the drain line with a PVC coupling and solvent.

This process exposes the surrounding area to water leakage and spilling with the risk of damage, mold, spilling, as well as the extra time and effort of carrying extra equipment, parts and flammable solvent. The process takes extra time and costs the homeowner more money.

With a device that permits the introduction of compressed air or nitrogen directly into the drain system permitting clearing in both directions, there is no spillage of water, no cost for the couplings or solvent and no risk of water damage or mold. The entire process requires less than five minutes.

Typically the cost of clearing a drain equipped with such a device is at least 50% less to the homeowner than the cost of clearing a blockage through the common method of cutting the pipe, attempting to collect the condensate water and repairing the cut in the drain line.

Each time a drain line is cleared though the cutting/repair process, the repair could be accomplished by installing a \$15.00 line clearing device rather than a simple coupling.

Also, if clearing the drain lines were part of regular maintenance, line blockages could largely be prevented in the first place.

**Cost Impact:** The code change will increase the cost of construction, totaling an estimated \$15.00 per unit.

### Public Hearing Results

**Committee Action:**

**Disapproved**

**Committee Reason:** The words "a means" are not defined. It may not be safe to pressurize drains with nitrogen. The proposed text may preclude the use of unions to allow disassembly.

**Assembly Action:**

**None**

### Public Comments

*Public Comment:*

**Andrew S. Jones, State of Texas, representing A Better Deal Heating and Air Conditioning, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

~~**307.2.5 Cleanouts.** Condensate drains shall be provided with a means to allow cleaning of the drain and clearing of blockages without having to cut or disassemble the piping.~~

**307.2.5 Cleanouts.** Condensate drain lines shall be configured to permit the clearing of blockages and performance of maintenance without requiring the drain line to be cut.

**Commenter's Reason:** Stoppages in drain lines from evaporative coil drain pans are a common problem, often causing substantial damage to structures and property.

**Final Hearing Results**

**M32-12**

**AMPC**

---

## Code Change No: M34-12

### Original Proposal

**Section(s):** 202, 308

**Proponent:** Bob Eugene, representing Underwriters Laboratories (Robert.Eugene@ul.com)

**Revise as follows:**

**PROTECTIVE ASSEMBLY (REDUCED CLEARANCE).** Any noncombustible assembly that is *labeled* or constructed in accordance with Table 308.64.2 and is placed between combustible materials or assemblies and mechanical appliances, devices or *equipment*, for the purpose of reducing required airspace clearances. Protective assemblies attached directly to a combustible assembly shall not be considered as part of that combustible assembly.

**308.4 Allowable reduction.** The reduction of required *clearances* to combustible assemblies or combustible materials shall be based on the utilization of a reduced *clearance* protective assembly in accordance with Section 308.54.1 or 308.64.2.

**308.54.1 Labeled assemblies.** The allowable clearance reduction shall be based on an approved reduced clearance protective assembly that is listed and labeled in accordance with UL 1618.

**308.64.2 Reduction table.** The allowable *clearance* reduction shall be based on one of the methods specified in Table 308.64.2. Where required *clearances* are not listed in Table 308.64.2, the reduced *clearances* shall be determined by linear interpolation between the distances listed in the table. Reduced *clearances* shall not be derived by extrapolation below the range of the table.

**308.75 Solid fuel-burning appliances.** The *clearance* reduction methods specified in Table 308.64.2 shall not be utilized to reduce the *clearance* required for solid fuel-burning appliances that are *labeled* for installation with clearances of 12 inches (305 mm) or less. Where appliances are *labeled* for installation with *clearances* of greater than 12 inches (305 mm), the *clearance* reduction methods of Table 308.64.2 shall not reduce the *clearance* to less than 12 inches (305 mm).

**308.86 Masonry chimneys.** The *clearance* reduction methods specified in 308.64.2 shall not be utilized to reduce the *clearances* required for masonry *chimneys* as specified in Chapter 8 and the *International Building Code*.

**308.97 Chimney connector pass-throughs.** The *clearance* reduction methods specified in 308.64.2 shall not be utilized to reduce the *clearances* required for *chimney* connector pass-throughs as specified in Section 803.10.4.

**308.108 Masonry fireplaces.** The *clearance* reduction methods specified in 308.64.2 shall not be utilized to reduce the *clearances* required for masonry fireplaces as specified in Chapter 8 and the *International Building Code*.

**308.149 Kitchen exhaust ducts.** The *clearance* reduction methods specified in 308.64.2 shall not be utilized to reduce the minimum *clearances* required by Section 506.3.11 for kitchen exhaust ducts enclosed in a shaft.

### TABLE 308-6 308.4.2 CLEARANCE REDUCTION METHODS<sup>b</sup>

(Portions of table and footnotes not shown remain unchanged)

- b. For limitations on clearance reduction for solid fuel-burning appliances, masonry chimneys, connector pass-throughs, masonry fire places and kitchen ducts, see Sections ~~308.7 through 308.11~~ 308.5 through 308.9.

**Reason:** Provide clarity that there are two different methods for reducing clearances.

**Cost Impact:** None

**Public Hearing Results**

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**PROTECTIVE ASSEMBLY (REDUCED CLEARANCE).** Any noncombustible assembly that is *labeled* or constructed in accordance with Table 308.4.2 and is placed between combustible materials or assemblies and mechanical appliances, devices or *equipment*, for the purpose of reducing required airspace clearances. Protective assemblies attached directly to a combustible assembly shall not be considered as part of that combustible assembly.

**308.4 Allowable reduction.** The reduction of required *clearances* to combustible assemblies or combustible materials shall be based on the utilization of a reduced *clearance* protective assembly in accordance with Section 308.4.1 or 308.4.2

**308.4.1 Labeled assemblies.** The allowable clearance reduction shall be based on an approved reduced clearance protective assembly that is listed and labeled in accordance with UL 1618.

**308.4.2 Reduction table.** The allowable *clearance* reduction shall be based on one of the methods specified in Table 308.4.2. Where required *clearances* are not listed in Table 308.4.2, the reduced *clearances* shall be determined by linear interpolation between the distances listed in the table. Reduced *clearances* shall not be derived by extrapolation below the range of the table.

**~~308.5-4.2.1~~ Solid fuel-burning appliances.** The *clearance* reduction methods specified in Table 308.4.2 shall not be utilized to reduce the *clearance* required for solid fuel-burning appliances that are *labeled* for installation with clearances of 12 inches (305 mm) or less. Where appliances are *labeled* for installation with *clearances* of greater than 12 inches (305 mm), the *clearance* reduction methods of Table 308.4.2 shall not reduce the *clearance* to less than 12 inches (305 mm).

**~~308.6-4.2.2~~ Masonry chimneys.** The *clearance* reduction methods specified in 308.4.2 shall not be utilized to reduce the *clearances* required for masonry *chimneys* as specified in Chapter 8 and the *International Building Code*.

**~~308.7-4.2.3~~ Chimney connector pass-throughs.** The *clearance* reduction methods specified in 308.4.2 shall not be utilized to reduce the *clearances* required for *chimney* connector pass-throughs as specified in Section 803.10.4.

**~~308.8-4.2.4~~ Masonry fireplaces.** The *clearance* reduction methods specified in 308.4.2 shall not be utilized to reduce the *clearances* required for masonry fireplaces as specified in Chapter 8 and the *International Building Code*.

**~~308.9-4.2.5~~ Kitchen exhaust ducts.** The *clearance* reduction methods specified in 308.4.2 shall not be utilized to reduce the minimum *clearances* required by Section 506.3.11 for kitchen exhaust ducts enclosed in a shaft.

**TABLE 308.4.2  
CLEARANCE REDUCTION METHODS<sup>b</sup>**

*(Portions of table and footnotes not shown remain unchanged)*

- b. For limitations on clearance reduction for solid fuel-burning appliances, masonry chimneys, connector pass-throughs, masonry fire places and kitchen ducts, see Sections 308.4.2.1 through 308.4.2.5.

**Committee Reason:** Approval is based upon the proponent's published reason. The modification relocates text that is related to not using the reduction table and therefore appropriate under Section 308.4.2.

**Assembly Action:**

**None**

**Final Hearing Results**

**M34-12**

**AM**

# Code Change No: M36-12, Part I

## Original Proposal

**Section(s):** 401.2, Table 403.3; 407 (New); Chapter 15, IBC 1203.1

**Proponent:** John Williams, CBO, Chair, ICC Ad Hoc Committee on Health Care and Carl Baldassarra, P.E., FSFPE, Chair, ICC Code Technology Committee

**THIS IS A 2 PART CODE CHANGE, BOTH PARTS WILL BE HEARD BY THE MECHANICAL CODE COMMITTEE AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THIS COMMITTEE.**

### PART I – IMC

**Revise as follows:**

**Section 401.2 Ventilation required.** Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. Where the air infiltration rate in a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2-inch water column (50 Pa) in accordance with Section 402.4.1.2 of the *International Energy Conservation Code*, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.

**TABLE 403.3  
MINIMUM VENTILATION RATES**

OCCUPANCY CLASSIFICATION	OCCUPANT DENSITY #/1,000 FT <sup>2</sup> <sup>a</sup>	PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE, R <sub>p</sub> CFM/PERSON	AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE, R <sub>a</sub> CFM/FT <sup>2</sup> <sup>a</sup>	EXHAUST AIRFLOW RATE CFM/ FT <sup>2</sup> <sup>a</sup>
<b>Food and Beverage Service</b>				
Bars, cocktail lounges	100	7.5	0.18	--
Cafeteria, fast food	100	7.5	0.18	--
Dining rooms	70	7.5	0.18	--
Kitchens (cooking) <sup>b</sup>	--	--	--	0.7
<b>Hospitals, Nursing and convalescent homes</b>				
Autopsy rooms <sup>b</sup>	--	--	--	0.5
Medical procedure rooms	20	15	--	--
Operating rooms	20	30	--	--
Patient rooms	10	25	--	--
Physical therapy	20	15	--	--
Recovery and ICU	20	15	--	--
<b>Hotels, motels, resorts and dormitories</b>				
Multipurpose assembly		5	0.06	--
Bathrooms/toilets-private <sup>g</sup>		--	--	25/50 <sup>f</sup>

*(Portions of table and footnotes not shown remain unchanged)*

Add new text as follows:

**SECTION 407**  
**AMBULATORY CARE FACILITIES AND GROUP I-2 OCCUPANCIES**

**Section 407.1 General.** Mechanical ventilation for ambulatory care facilities and Group I-2 occupancies shall be designed and installed in accordance with this code and ASHRAE 170.

Add new referenced standard to Chapter 15:

**ASHRAE**

Standard in Number	Title	Referenced code	Reference section number
<u>170-2008</u>	<u>Ventilation of Health Care Facilities</u> <u>(with addendums a through h – 2011)</u>		<u>407.1</u>

**Reason:** This proposal is submitted by the ICC Ad Hoc Committee for Healthcare (AHC). The AHC was established by the ICC Board of Directors to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. The AHC is composed of building code officials, fire code officials, hospital facility engineers, and state healthcare enforcement representatives. The goals of the committee are to ensure that the ICC family of codes appropriately addresses the fire and life safety concerns of a highly specialized and rapidly evolving healthcare delivery system. This process is part of a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Since its inception in April, 2011, the AHC has held 5 open meetings and over 80 workgroup calls which included members of the AHC as well as any interested party to discuss and debate the proposed changes. All meeting materials and reports are posted on the AHC website at: <http://www.iccsafe.org/cs/AHC/Pages/default.aspx>. This proposal is being co-sponsored by the ICC Code Technology Committee. The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html>. Since its inception in April, 2005, the CTC has held twenty-two meetings – all open to the public.

Currently Table 403.3 if the IMC has a limited number of spaces identified with ventilation rates, additionally if a room is not identified in the table then one is required to use the ventilation rate of an adjacent room that is on the list which is problematic if the space usage is vastly different. ASHRAE Standard 170, Table 7-1 has more comprehensive in the spaces that are identified as well as the design parameter requirements. Facility Guidelines Institute (FGI) has also incorporated ASHRAE 170 into the ventilation design requirements at health care facilities. ASHRAE 170 is similar in nature to the IMC referenced standard for the International Institute for Ammonia Refrigeration.

**Cost Impact:** The code change proposal should not increase the cost of construction because compliance with the standard is already required by facility licensure requirements.

**Analysis:** A review of the standard proposed for inclusion in the code, [ASHRAE170-2008] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M36-12, Part I**

**AS**

## Code Change No: M36-12, Part II

### Original Proposal

**Section(s):** 401.2, Table 403.3; 407 (New); Chapter 15, IBC 1203.1

**Proponent:** John Williams, CBO, Chair, ICC Ad Hoc Committee on Health Care and Carl Baldassarra, P.E., FSFPE, Chair, ICC Code Technology Committee

**THIS IS A 2 PART CODE CHANGE, BOTH PARTS WILL BE HEARD BY THE MECHANICAL CODE COMMITTEE AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THIS COMMITTEE.**

### PART II- IBC GENERAL

**Revise as follows:**

**1203.1 General.** Buildings shall be provided with natural ventilation in accordance with Section 1203.4, or mechanical ventilation in accordance with the *International Mechanical Code*. Where the air infiltration rate in a *dwelling unit* is less than 5 air changes per hour when tested with a blower door at a pressure 0.2 inch w.c. (50 Pa) in accordance with Section 402.4.1.2 of the *International Energy Conservation Code*, the *dwelling unit* shall be ventilated by mechanical means in accordance with Section 403 of the *International Mechanical Code*. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407 of the *International Mechanical Code*.

**Reason:** This proposal is submitted by the ICC Ad Hoc Committee for Healthcare (AHC). The AHC was established by the ICC Board of Directors to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. The AHC is composed of building code officials, fire code officials, hospital facility engineers, and state healthcare enforcement representatives. The goals of the committee are to ensure that the ICC family of codes appropriately addresses the fire and life safety concerns of a highly specialized and rapidly evolving healthcare delivery system. This process is part of a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Since its inception in April, 2011, the AHC has held 5 open meetings and over 80 workgroup calls which included members of the AHC as well as any interested party to discuss and debate the proposed changes. All meeting materials and reports are posted on the AHC website at: <http://www.iccsafe.org/cs/AHC/Pages/default.aspx>. This proposal is being co-sponsored by the ICC Code Technology Committee. The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html>. Since its inception in April, 2005, the CTC has held twenty-two meetings – all open to the public.

Currently Table 403.3 if the IMC has a limited number of spaces identified with ventilation rates, additionally if a room is not identified in the table then one is required to use the ventilation rate of an adjacent room that is on the list which is problematic if the space usage is vastly different. ASHRAE Standard 170, Table 7-1 has more comprehensive in the spaces that are identified as well as the design parameter requirements. Facility Guidelines Institute (FGI) has also incorporated ASHRAE 170 into the ventilation design requirements at health care facilities. ASHRAE 170 is similar in nature to the IMC referenced standard for the International Institute for Ammonia Refrigeration.

**Cost Impact:** The code change proposal should not increase the cost of construction because compliance with the standard is already required by facility licensure requirements.

**Analysis:** A review of the standard proposed for inclusion in the code, [ASHRAE170-2008] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M36-12, Part II**

**AS**

---

## Code Change No: M42-12

### Original Proposal

**Section(s):** 403, 403.3 (NEW), 403.3.1 (New), 403.3.2 (New), 403.3.2.1 (New), 403.3.2.1.1 (New), 403.3.2.2 (New), 403.3.2.3 (New), 403.3.2.4 (New)

**Proponent:** Mike Moore, Newport Ventures, representing Broan NuTone (mmoore@newportpartnersllc.com)

#### Revise as follows:

**403.1 Ventilation system.** Except as required by Section 403.1.1, mechanical ventilation shall be provided by a method of supply air and return or exhaust air. The amount of supply air shall be approximately equal to the amount of return and exhaust air. The system shall not be prohibited from producing negative or positive pressure. The system to convey ventilation air shall be designed and installed in accordance with Chapter 6.

**403.1.1 R-2, R-3 and R-4 occupancies.** Mechanical ventilation air requirements for R-2, R-3, and R-4 buildings three stories or less in height above grade plane shall be provided by an exhaust system, supply system, or combination thereof.

**403.2 Outdoor air required.** The minimum outdoor airflow rate shall be determined in accordance with Section 403.3. ~~Ventilation supply systems shall be designed to deliver the required rate of outdoor airflow to the breathing zone within each occupiable space.~~

**Exception:** Where the registered design professional demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.

**403.2.1 Recirculation of air.** The outdoor air required by Section 403.3 shall not be recirculated. Air in excess of that required by Section 403.3 shall not be prohibited from being recirculated as a component of supply air to building spaces, except that:

1. Ventilation air shall not be recirculated from one dwelling to another or to dissimilar occupancies.
2. Supply air to a swimming pool and associated deck areas shall not be recirculated unless such air is dehumidified to maintain the relative humidity of the area at 60 percent or less. Air from this area shall not be recirculated to other spaces where more than 10 percent of the resulting supply airstream consists of air recirculated from these spaces.
3. Where mechanical exhaust is required by Note b in Table 403.3.1.1, recirculation of air from such spaces shall be prohibited. All air supplied to such spaces shall be exhausted, including any air in excess of that required by Table 403.3.1.1.
4. Where mechanical exhaust is required by Note g in Table 403.3.1.1, mechanical exhaust is required and recirculation is prohibited where more than 10 percent of the resulting supply airstream consists of air recirculated from these spaces.

**403.2.2 Transfer air.** Except where recirculation from such spaces is prohibited by Table 403.3.1.1, air transferred from occupiable spaces is not prohibited from serving as makeup air for required exhaust systems in such spaces as kitchens, baths, toilet rooms, elevators and smoking lounges. The amount of transfer air and exhaust air shall be sufficient to provide the flow rates as specified in Section 403.3.1.1.

The required outdoor airflow rates specified in Table 403.3.1.1 shall be introduced directly into such spaces or into the occupied spaces from which air is transferred or a combination of both.

In R-2, R-3, and R-4 occupancies three stories or less in height, measures shall be taken to minimize air movement across envelope components separating dwelling units including sealing penetrations in the common walls, ceilings, and floors of each unit, and by sealing vertical chases adjacent to the units. Doors between dwelling units and common hallways shall be gasketed or otherwise made airtight.

**403.3 Outdoor air and local exhaust airflow rates.** R-2, R-3, and R-4 buildings three stories or less in height above grade plane shall be provided with outdoor air and local exhaust in accordance with Section 403.3.2. All other buildings intended to be occupied shall be provided with outdoor air and local exhaust, in accordance with Section 403.3.1.

**403.3.1 Other buildings intended to be occupied.** The design of local exhaust systems and ventilation systems for outdoor air for occupancies other than R-2, R-3 and R-4 three stories or less above grade plane, shall comply with this section.

**403.3.1.1 Outdoor airflow rate.** Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate, determined in accordance with this section. Ventilation supply systems shall be designed to deliver the required rate of outdoor airflow to the breathing zone within each occupiable space. The occupant load utilized for design of the ventilation system shall not be less than the number determined from the estimated maximum occupant load rate indicated in Table 403.3.1.1. Ventilation rates for occupancies not represented in Table 403.3.1.1 shall be those for a listed occupancy classification that is most similar in terms of occupant density, activities and building construction; or shall be determined by an approved engineering analysis. The ventilation system shall be designed to supply the required rate of ventilation air continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.

With the exception of smoking lounges, the ventilation rates in Table 403.3.1.1 are based on the absence of smoking in occupiable spaces. Where smoking is anticipated in a space other than a smoking lounge, the ventilation system serving the space shall be designed to provide ventilation over and above that required by Table 403.3.1.1 in accordance with accepted engineering practice.

**Exception:** The occupant load is not required to be determined based on the estimated maximum occupant load rate indicated in Table 403.3.1.1 where approved statistical data document the accuracy of an alternate anticipated occupant density.

*(Renumber current sections as indicated in table)*

Old Section Numbering	New Section Numbering	Section Heading
403.3	403.3.1.1	Outdoor airflow rate
403.3.1	403.3.1.1.1	Zone outdoor airflow
403.3.1.1	403.3.1.1.1.1	Breathing zone outdoor airflow
403.3.1.2	403.3.1.1.1.2	Zone air distribution effectiveness
403.3.1.3	403.3.1.1.1.3	Zone outdoor airflow
403.3.2	403.3.1.1.2	System outdoor airflow
403.3.2.1	403.3.1.1.2.1	Single zone systems
403.3.2.2	403.3.1.1.2.2	100-percent outdoor air systems
403.3.2.3	403.3.1.1.2.3	Multiple zone recirculating systems
403.3.2.3.1	403.3.1.1.2.3.1	Primary outdoor air fraction
403.3.2.3.2	403.3.1.1.2.3.2	System ventilation efficiency
403.3.2.3.3	403.3.1.1.2.3.3	Uncorrected outdoor air intake
403.3.2.3.4	403.3.1.1.2.3.4	Outdoor air intake flow rate
403.4	403.3.1.2	Exhaust ventilation
403.5	403.3.1.3	System operation

403.6	403.3.1.4	Variable air volume system control
403.7	403.3.1.5	Balancing

**403.3.2 R-2, R-3, and R-4 buildings three stories or less in height above grade plane.** The design of local exhaust systems and ventilation systems for outdoor air in R-2, R-3, and R-4 occupancies three stories and less in height above grade plane shall comply with sections 403.3.2.1 through 403.3.2.4.

**403.3.2.1 Outdoor air for dwelling units.** An outdoor air ventilation system consisting of a mechanical exhaust system, supply system, or combination thereof shall be installed for each dwelling unit. Local exhaust or supply systems, including outdoor air ducts connected to the return side of an air handler, are permitted to serve as such a system. The outdoor air ventilation system shall be designed to provide the required rate of outdoor air continuously during the period that the building is occupied. The minimum continuous outdoor airflow rate is specified in Equation 4-1.

$$Q_{OA} = 0.03A_{floor} + 7.5(N_{br} + 1) \quad \text{(Equation 4-1)}$$

where

$Q_{OA}$  = outdoor airflow rate, cfm

$A_{floor}$  = floor area, ft<sup>2</sup>

$N_{br}$  = number of bedrooms; not to be less than one

**Exception:** The outdoor air ventilation system shall be permitted to be designed to operate intermittently where the system has controls that enable operation for not less than 25-percent of each 4-hour segment and the outdoor airflow rate prescribed by Equation 4-1 is multiplied by the factor determined in accordance with Table 403.3.2.1. This factor shall be applied after the outdoor airflow rate is adjusted for occupant density in accordance with Section 403.3.2.1.1.

**TABLE 403.3.2.1  
INTERMITTENT OUTDOOR AIR RATE FACTORS<sup>a,b</sup>**

RUN-TIME PERCENTAGE IN EACH 4-HOUR SEGMENT	25%	33%	50%	66%	75%	100%
Factor <sup>a</sup>	4	3	2	1.5	1.3	1.0

**403.3.2.1.1 Occupant density.** Equation 4-1 assumes that there are two occupants in a studio or one-bedroom dwelling unit and an additional occupant for each additional bedroom. Where higher occupant densities are known, the outdoor airflow rate shall be increased by 7.5 cfm for each additional occupant. Lower occupant densities shall not be used except where approved by the code official.

**403.3.2.2 Outdoor air for other spaces.** Corridors and other common areas within the conditioned space shall be provided with outdoor air at a rate of not less than 0.06 cfm per ft<sup>2</sup> of floor area.

**403.3.2.3 Local exhaust.** Local exhaust systems shall be provided in kitchens, bathrooms, and toilet rooms, and shall have the capacity to exhaust the minimum airflow rate determined in accordance with Table 403.3.2.3.

**TABLE 403.3.2.3  
MINIMUM REQUIRED LOCAL EXHAUST RATES FOR R-2, R-3, AND R-4 OCCUPANCIES**

AREA TO BE EXHAUSTED	EXHAUST RATE CAPACITY
Kitchens	100 cfm intermittent or 25 cfm continuous
Bathrooms-Toilet Rooms	50 cfm intermittent or 20 cfm continuous

**403.3.2.4. System controls.** Local exhaust systems and ventilation systems for outdoor air shall be provided with controls that enable manual override.

**Reason:** Historically, the basis of the mechanical ventilation requirements for all buildings within the scope of the IMC has been ASHRAE Standard 62.1, Ventilation for Acceptable Indoor Air Quality. However, the scope of ASHRAE Standard 62.1 does not address R-2, R-3, and R-4 buildings with a height of three stories or less above grade plane. Instead, mechanical ventilation requirements for these buildings fall under the scope of ASHRAE Standard 62.2, *Ventilation and Acceptable Indoor Air Quality in*

*Low-Rise Residential Buildings.* This proposal seeks to align the mechanical ventilation requirements for R-2, R-3, and R-4 buildings of three stories or less above grade plane with the latest requirements of ASHRAE 62.2, while retaining common elements with the 2012 IRC mechanical ventilation requirements in Section M1507 wherever possible (e.g., Table 403.3.2.3 is the same as M1507.4; Table 403.3.2.1 is the same as M1507.3.3(2)).

This proposal makes no changes to the mechanical ventilation requirements of buildings other than R-2, R-3, and R-4 buildings of three stories or less above grade plane (note that the text removed from 403.2 has simply been reinserted in 403.3.1.1).

The effect of this proposal will be to simplify and clarify mechanical ventilation requirements for R-2, R-3, and R-4 buildings with a height of three stories or less above grade plane, ensuring that the IMC requirements are aligned with the latest ASHRAE standard that addresses these building types. Note that the latest ASHRAE 62.2 requirements addressing R-2, R-3, and R-4 buildings are found in addendum j to the 2010 edition. To receive a complimentary copy of addendum j, contact ASHRAE at (404) 636-8400.

**Cost Impact:** There is no expected increase to the cost of construction.

## Public Hearing Results

**Committee Action:**

**Disapproved**

**Committee Reason:** There would be a significant cost impact if such text was approved. Proposed Section 403.3.2.1.1 makes assumptions. Enforcement of the proposed text would be difficult. ASHRAE 62.2 has no history of implementation on which to judge its acceptability. M40-12 was approved and approval of M42-12 would cause a clash between Sections 401.2.1 and 403.3.2.1, respectively.

**Assembly Action:**

**None**

## Public Comments

*Public Comment:*

**Mike Moore, Newport Ventures, representing Broan NuTone, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

~~403.1 Ventilation system. Except as required by Section 403.1.4, Mechanical ventilation shall be provided by a method of supply air and return or exhaust air except that mechanical ventilation air requirements for Group R-2, R-3, and R-4 occupancies three stories or less in height above grade plane shall be provided by an exhaust system, supply system, or combination thereof. The amount of supply air shall be approximately equal to the amount of return and exhaust air. The system shall not be prohibited from producing negative or positive pressure. The system to convey ventilation air shall be designed and installed in accordance with Chapter 6.~~

~~403.1.1 R-2, R-3 and R-4 occupancies. Mechanical ventilation air requirements for R-2, R-3, and R-4 buildings three stories or less in height above grade plane shall be provided by an exhaust system, supply system, or combination thereof.~~

**403.2 Outdoor air required.** The minimum outdoor airflow rate shall be determined in accordance with Section 403.3.

**Exception:** Where the registered design professional demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.

**403.2.1 Recirculation of air.** The outdoor air required by Section 403.3 shall not be recirculated. Air in excess of that required by Section 403.3 shall not be prohibited from being recirculated as a component of supply air to building spaces, except that:

1. Ventilation air shall not be recirculated from one dwelling to another or to dissimilar occupancies.
2. Supply air to a swimming pool and associated deck areas shall not be recirculated unless such air is dehumidified to maintain the relative humidity of the area at 60 percent or less. Air from this area shall not be recirculated to other spaces where more than 10 percent of the resulting supply airstream consists of air recirculated from these spaces.
3. Where mechanical exhaust is required by Note b in Table 403.3.1.1, recirculation of air from such spaces shall be prohibited. All air supplied to such spaces shall be exhausted, including any air in excess of that required by Table 403.3.1.1.
4. Where mechanical exhaust is required by Note g in Table 403.3.1.1, mechanical exhaust is required and recirculation is prohibited where more than 10 percent of the resulting supply airstream consists of air recirculated from these spaces.

**403.2.2 Transfer air.** Except where recirculation from such spaces is prohibited by Table 403.3.1.1, air transferred from occupiable spaces is not prohibited from serving as makeup air for required exhaust systems in such spaces as kitchens, baths, toilet rooms, elevators and smoking lounges. The amount of transfer air and exhaust air shall be sufficient to provide the flow rates as specified in Section 403.3.1.1. The required outdoor airflow rates specified in Table 403.3.1.1 shall be introduced directly into such spaces or into the occupied spaces from which air is transferred or a combination of both.

~~In R-2, R-3, and R-4 occupancies three stories or less in height, measures shall be taken to minimize air movement across envelope components separating dwelling units including sealing penetrations in the common walls, ceilings, and floors of each unit, and by sealing vertical chases adjacent to the units. Doors between dwelling units and common hallways shall be gasketed or otherwise made airtight.~~

**403.3 Outdoor air and local exhaust airflow rates.** Group R-2, R-3, and R-4 occupancies three stories or less in height above grade plane shall be provided with outdoor air and local exhaust in accordance with Section 403.3.2. All other buildings intended to be occupied shall be provided with outdoor air and local exhaust, in accordance with Section 403.3.1.

**403.3.1 Other buildings intended to be occupied.** The design of local exhaust systems and ventilation systems for outdoor air for occupancies other than R-2, R-3 and R-4 three stories or less above grade plane, shall comply with this section.

**403.3.1.1 Outdoor airflow rate.** Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate determined in accordance with this section. ~~Ventilation supply systems shall be designed to deliver the required rate of outdoor airflow to the breathing zone within each occupiable space.~~ The occupant load utilized for design of the ventilation system shall not be less than the number determined from the estimated maximum occupant load rate indicated in Table 403.3.1.1. Ventilation rates for occupancies not represented in Table 403.3.1.1 shall be those for a listed occupancy classification that is most similar in terms of occupant density, activities and building construction; or shall be determined by an approved engineering analysis. The ventilation system shall be designed to supply the required rate of ventilation air continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.

With the exception of smoking lounges, the ventilation rates in Table 403.3.1.1 are based on the absence of smoking in occupiable spaces. Where smoking is anticipated in a space other than a smoking lounge, the ventilation system serving the space shall be designed to provide ventilation over and above that required by Table 403.3.1.1 in accordance with accepted engineering practice.

**Exception:** The occupant load is not required to be determined based on the estimated maximum occupant load rate indicated in Table 403.3.1.1 where approved statistical data document the accuracy of an alternate anticipated occupant density.

*(Renumber current sections as indicated in table)*

Old Section Numbering	New Section Numbering	Section Heading
403.3	403.3.1.1	Outdoor airflow rate
403.3.1	403.3.1.1.1	Zone outdoor airflow
403.3.1.1	403.3.1.1.1.1	Breathing zone outdoor airflow
403.3.1.2	403.3.1.1.1.2	Zone air distribution effectiveness
403.3.1.3	403.3.1.1.1.3	Zone outdoor airflow
403.3.2	403.3.1.1.2	System outdoor airflow
403.3.2.1	403.3.1.1.2.1	Single zone systems
403.3.2.2	403.3.1.1.2.2	100-percent outdoor air systems
403.3.2.3	403.3.1.1.2.3	Multiple zone recirculating systems
403.3.2.3.1	403.3.1.1.2.3.1	Primary outdoor air fraction
403.3.2.3.2	403.3.1.1.2.3.2	System ventilation efficiency
403.3.2.3.3	403.3.1.1.2.3.3	Uncorrected outdoor air intake
403.3.2.3.4	403.3.1.1.2.3.4	Outdoor air intake flow rate
403.4	403.3.1.2	Exhaust ventilation
403.5	403.3.1.3	System operation
403.6	403.3.1.4	Variable air volume system control
403.7	403.3.1.5	Balancing

**403.3.2 R-2, R-3, and R-4 buildings three stories or less in height above grade plane.** The design of local exhaust systems and ventilation systems for outdoor air in R-2, R-3, and R-4 occupancies three stories and less in height above grade plane shall comply with sections 403.3.2.1 through 403.3.2.4.

**403.3.2.1 Outdoor air for dwelling units.** An outdoor air ventilation system consisting of a mechanical exhaust system, supply system, or combination thereof shall be installed for each dwelling unit. Local exhaust or supply systems, including outdoor air ducts connected to the return side of an air handler, are permitted to serve as such a system. The outdoor air ventilation system shall be designed to provide the required rate of outdoor air continuously during the period that the building is occupied. The minimum continuous outdoor airflow rate is specified in Equation 4-1.

$$Q_{OA} = 0.03 \ 1A_{floor} + 7.5(N_{br} + 1) \quad \text{(Equation 4-1)}$$

where

$Q_{OA}$  = outdoor airflow rate, cfm

$A_{floor}$  = floor area, ft<sup>2</sup>

$N_{br}$  = number of bedrooms; not to be less than one

**Exception:** The outdoor air ventilation system shall be permitted to be designed to operate intermittently where the system has controls that enable operation for not less than ~~25 percent 1 hour~~ of each 4-hour segment and period. The average outdoor airflow rate over the 4-hour period shall be not less than that prescribed by Equation 4-1 ~~is multiplied by the factor determined in accordance with Table 403.3.2.1. This factor shall be applied after the outdoor airflow rate is adjusted for occupant density in accordance with Section 403.3.2.1.1.~~

**TABLE 403.3.2.1  
INTERMITTENT OUTDOOR AIR RATE FACTORS<sup>a,b</sup>**

RUN-TIME PERCENTAGE IN EACH 4-HOUR SEGMENT	25%	33%	50%	66%	75%	100%
Factor <sup>a</sup>	4	3	2	1.5	1.3	1.0

**403.3.2.1.1 Occupant density.** ~~Equation 4-1 assumes that there are two occupants in a studio or one-bedroom dwelling unit and an additional occupant for each additional bedroom. Where higher occupant densities are known, the outdoor airflow rate shall be increased by 7.5 cfm for each additional occupant. Lower occupant densities shall not be used except where approved by the code official.~~

**403.3.2.2 Outdoor air for other spaces.** Corridors and other common areas within the conditioned space shall be provided with outdoor air at a rate of not less than 0.06 cfm per ft<sup>2</sup> of floor area.

**403.3.2.3 Local exhaust.** Local exhaust systems shall be provided in kitchens, bathrooms, and toilet rooms, and shall have the capacity to exhaust the minimum airflow rate determined in accordance with Table 403.3.2.3.

**TABLE 403.3.2.3  
MINIMUM REQUIRED LOCAL EXHAUST RATES FOR GROUP R-2, R-3, AND R-4 OCCUPANCIES**

AREA TO BE EXHAUSTED	EXHAUST RATE CAPACITY
Kitchens	100 cfm intermittent or 25 cfm continuous
Bathrooms-Toilet Rooms	50 cfm intermittent or 20 cfm continuous

~~**403.3.2.4. System controls.** Local exhaust systems and ventilation systems for outdoor air shall be provided with controls that enable manual override.~~

**Commenter's Reason:** The comment and proposal are intended to clarify and simplify the mechanical ventilation compliance path for R-2, R-3, and R-4 buildings three stories or less in height above grade plane to be consistent with those in the 2012 IRC and ASHRAE 62.2 as much as possible. The reason for this is that these buildings more closely match the scope of ASHRAE 62.2 than ASHRAE 62.1, and so they should not be subject to the rigor of the design calculations of ASHRAE 62.1/IMC Section 403 (Note that ASHRAE 62.1 serves as the precedent for IMC Section 403, and the requirements are very similar). One big advantage gained by aligning the mechanical ventilation path for these buildings with ASHRAE 62.2 and the 2012 IRC Section M1507 is that only one equation is necessary in the proposed comment instead of the eight equations that a designer could have to solve if she were to follow the prescriptive requirements of Section 403, which applies to all commercial buildings. Further, the proposed text does not reference ASHRAE 62.2, so the path is simplified by not requiring the user to reference any external standards or codes.

Significant changes in the comment that provide improvements to the original proposal include:

- Outdoor air flow rates are now in accordance with ASHRAE 62.2-2010 and 2012 IRC M1507
- Removed requirement for manual override control (doesn't really make sense for hotels)
- Removed requirement to adjust flow rate when future occupancy rates are known (this is rarely the case and is unenforceable)
- Removed language to require air sealing of individual units (unenforceable in its proposed format; also this is already covered within the IECC)
- Removed the intermittent ventilation table while retaining the option to provide intermittent outdoor air (simplified and consistent with 2012 IRC M1507.3.3)

Addressing the committee objections:

1. Committee: There would be a significant cost impact if such text was approved. ANSWER: Not true, since the IECC already requires mechanical ventilation for these occupancies. Further, these systems are typically provided with an upgraded bathroom exhaust fan, so the marginal cost of a system is typically \$100-\$150 versus an entry level bath fan.
2. Committee: Proposed Section 403.3.2.1.1 makes assumptions. Enforcement of the proposed text would be difficult. ANSWER: I agree, and have removed this text.
3. Committee: The latest ASHRAE 62.2 addenda on which part of this proposal was based has no history of implementation on which to judge its acceptability. ANSWER: I agree, and have removed the parts of the proposal that were based on requirements in the addenda.

4. Committee: M40-12 was approved and approval of M42-12 would cause a clash between Sections 401.2.1 and 403.3.2.1, respectively. ANSWER: There is no clash between the two sections. Rather, Section 403.3.2.1 provides greater clarification for code officials and designers on what a compliant system looks like, to remove confusion that could otherwise result from just having M40-12 and no complementary text.

**Cost impact:** This proposal will not increase the cost of construction. If anything, it will reduce the cost of construction by simplifying system design.

<b>Final Hearing Results</b>
------------------------------

**M42-12**

**AMPC**

---

## Code Change No: M43-12

### Original Proposal

**Section(s):** 403.2.1, Table 403.3

**Proponent:** Richard Grace, Fairfax County, Virginia Plumbing and Mechanical Inspectors Association, Virginia Building Code Officials Association

**Revise as follows:**

**403.2.1 Recirculation of air.** The air required by Section 403.3 shall not be recirculated. Air in excess of that required by Section 403.3 shall not be prohibited from being recirculated as a component of supply air to building spaces, except that:

- Where mechanical exhaust is required by Note b in Table 403.3, recirculation of air from such spaces shall be prohibited. Recirculation of air that is contained completely within such spaces shall not be prohibited. Where recirculation of air is prohibited, All air supplied to such spaces shall be exhausted, including any air in excess of that required by Table 403.3.

*(Portions not shown remain unchanged)*

**Revise footnote as follows:**

#### **TABLE 403.3 MINIMUM VENTILATION RATES**

b. Mechanical exhaust required and the recirculation of air from such spaces is prohibited. Recirculation of air that is contained completely within such spaces shall not be prohibited. (see Section 403.2.1, Item 3).

**Reason:** The language used in these sections is accurate, yet weak. The intent is commonly being misinterpreted, resulting in a requirement of 100% outdoor air systems to all spaces applicable to footnote b. This type of misinterpretation would not allow for the installation of a mini-split type room air conditioner or even a ceiling mounted paddle fan because both would recirculate air within the space. This is not the intent of this requirement. The intent of these sections is to prohibit air that is delivered to a space, such as a beauty salon or a repair garage, from being taken out of that space and delivered to another, unrelated space such as a dining room or a classroom or an operating room. Where a space is provided with an air distribution system dedicated to such space, the air delivered to that space cannot possibly be distributed to other, unrelated spaces, therefore recirculation "from" such spaces is not possible. The outdoor air and exhaust requirements for spaces subject to this footnote effectively remove the contaminants generated within such spaces, therefore air provided to such spaces that is in excess of that required by Table 403.3 may safely be recirculated within such spaces.

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

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M43-12**

**AS**

# Code Change No: M44-12

## Original Proposal

**Section(s):** 403.2.1, Table 403.3

**Proponent:** Richard Grace, Fairfax County, Virginia Plumbing and Mechanical Inspectors Association, Virginia Building Code Officials Association

**Revise as follows:**

**403.2.1 Recirculation of air.** The air required by Section 403.3 shall not be recirculated. Air in excess of that required by Section 403.3 shall not be prohibited from being recirculated as a component of supply air to building spaces, except that:

*(No changes to items 1 through 3)*

4. Where mechanical exhaust is required by Note g in Table 403.3, mechanical exhaust is required and recirculation from such spaces is prohibited where more than 10 percent of the resulting supply airstream consists of air recirculated from these spaces. Recirculation of air that is contained completely within such spaces shall not be prohibited.

### TABLE 403.3 MINIMUM VENTILATION RATES

- g. Mechanical exhaust is required and recirculation from such spaces is prohibited except that recirculation shall be permitted where the resulting supply airstream consists of not more than 10 percent air recirculated from these spaces. Recirculation of air that is contained completely within such spaces shall not be prohibited. (see Section 403.2.1, Items 2 and 4).

*(Portions of table and footnotes not shown remain unchanged)*

**Reason:** Unlike footnote b (Table 403.3), footnote g does allow for recirculation of air from such a space to another space. The purpose of footnote g was to encourage the use of heat recovery systems in air handling units and exhaust systems that served bathrooms, toilet rooms, locker rooms, and the like. For this reason, recirculation of air, from these spaces to other spaces, is limited. That limitation allowed for a small amount of leakage from the exhaust to the supply by the energy recovery units. Where energy recovery units are not used, meeting this requirement would be rare, where this requirement is applicable. The intent of this section is being misinterpreted, resulting in a requirement of 100% outdoor air systems where dedicated air handling units are being specified for such spaces. Where a space is provided with an air distribution system dedicated to such space, the air delivered to that space cannot possibly be distributed to other, unrelated spaces, therefore recirculation "from" such spaces is not possible. The outdoor air and exhaust requirements for spaces subject to this footnote effectively remove the contaminants generated within such spaces, therefore air provided to such spaces that is in excess of that required by Table 403.3 may safely be recirculated within such spaces, regardless of the percentage of the resulting supply airstream.

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

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason and the action taken on M43-12.

**Assembly Action:**

**None**

## Final Hearing Results

**M44-12**

**AS**

# Code Change No: M46-12

## Original Proposal

**Section(s):** Table 403.3

**Proponent:** Richard Grace, Fairfax County, Virginia Plumbing and Mechanical Inspectors Association, Virginia Building Code Officials Association and Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcman@jeffco.us)

**Revise as follows:**

### TABLE 403.3 MINIMUM VENTILATION RATES

- h. For nail salons, each nail station shall be provided with a *source capture system* capable of exhausting not less than 50 cfm per station. Where one or more required source capture systems operate continuously during occupancy, the exhaust rate from such systems shall be permitted to be applied to the exhaust flow rate required by Table 403.3 for the nail salon.

*(Portions of table and footnotes not shown remain unchanged.)*

**Reasons:**

**Grace-**The exhaust rate in the Table was established before the requirement for source capture systems was required. It's punitive to add more exhaust when the original amount was sufficient. It's not the intent for the source capture system flow rate to be in addition to the general exhaust requirement when it runs continuously as most of the vapors are being contained at the source. The balance of exhaust required will cover any fugitive vapors that may slip by the station exhaust system. If for instance there are individually controlled fans at each station, then that amount of exhaust would be in addition to the general amount because there is no guarantee that the fans will be used.

**McMann-**Currently the code is silent on how to apply both the general exhaust column and note h of Table 403.3 The exhaust rate in the Table was established before the requirement for source capture systems were required. It's punitive to add more exhaust when the original amount was sufficient. It's not the intent for the source capture system flow rate to be in addition to the general exhaust requirement when it runs continuously during occupancy as most of the chemical vapors are being contained at the source. The balance of exhaust required will cover any fugitive vapors that may slip by the station exhaust system. If for instance there are individually controlled fans at each station, then that amount of exhaust would be in addition to the general amount because there is no guarantee they will be operated. As an example, if the salon is required to have 800 cfm of general exhaust by Table 403.3 and 6 nail stations exhaust the required minimum of 300 cfm continuously, the general exhaust could be reduced to 500 cfm. The intent of the code is met because a total of 800 cfm is still being exhausted and the vapors are still being captured at their source.

**Cost Impact:** None

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M46-12**

**AS**

# Code Change No: M49-12

## Original Proposal

**Section(s):** Table 403.3

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO) and Richard Grace, Fairfax County Government, representing The Virginia Plumbing and Mechanical Inspectors Association, The Virginia Building Code Officials Association (gcmcmann@jeffco.us)

**Revise as follows:**

**TABLE 403.3  
MINIMUM VENTILATION RATES**

OCCUPANCY CLASSIFICATION	OCCUPANT DENSITY #/1000 FT <sup>2</sup> <sup>a</sup>	PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE CFM/PERSON	AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE R <sub>a</sub> CFM/FT <sup>2</sup> <sup>a</sup>	EXHAUST AIRFLOW RATE CFM/FT <sup>2</sup> <sup>a</sup>
Private dwellings, single and multiple	—	—	—	0.75
Garages, common for multiple units <sup>b</sup>	—	—	—	100 cfm per car
Garages, separate for each dwelling <sup>b</sup>	—	—	—	25/100 <sup>f</sup>
Kitchens <sup>b</sup>	—	—	—	—
Living areas <sup>c</sup>	—	—	—	—
	Based upon number of bedrooms. First bedroom, 2; each additional bedroom, 1	0.35 ACH but not less than 15 cfm/person	—	—
Toilet rooms and bathrooms <sup>g</sup>	—	—	—	20/50 <sup>f</sup>

*(Portions of table not shown remain unchanged.)*

**Reason:**

**McMann-**The requirement for an exhaust system which is a form of ventilation seems to conflict with Section 502.14 which exempts one and two family dwellings from being ventilated. The concern is installing a fan of this size will have no impact on the garage space as it would not provide much in the way of flow. There are very few if any jurisdictions enforcing a fan in a residential garage. There is no technical justification to require this provision because simply opening the door when a car leaves will provide more ventilation than any fan of this size would even if the garage has no windows and certainly makeup air could technically come into play which isn't practical either.

**Grace-**This is in direct conflict with Section 502.14 Exception # 2 which exempts one and two family dwellings. This makes no sense as there are no values to supply a garage with ventilation air and installing a fan of this size will have no impact on the garage space as it would not provide much in the way of flow. There are few if any jurisdictions enforcing a fan in a residential garage. There is no technical justification to require this provision because simply opening the door when a car leaves will provide more ventilation than any fan would and certainly makeup air would come into play which isn't practical either.

**Cost Impact:** This could decrease the cost of construction.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M49-12**

**AS**

---

## Code Change No: M51-12

### Original Proposal

**Section(s):** 403.2

**Proponent:** Maureen Traxler/City of Seattle Dept of Planning & Development/ City of Seattle Dept of Planning & Development (maureen.traxler@seattle.gov)

**Revise as follows:**

**403.2 Outdoor air required.** The minimum outdoor airflow rate shall be determined in accordance with Section 403.3. ~~Ventilation In occupiable spaces, the ventilation~~ supply systems shall be designed to deliver the required rate of outdoor airflow to the *breathing zone* ~~within each occupiable space.~~

**Exception:** Where the *registered design professional* demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor air ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.

**Reason:** The purpose of this proposal is to make an editorial clarification. As currently worded, the provision has caused confusion that ventilation systems are only required for occupiable spaces. The purpose of the second sentence of Section 403.2 is to require that the outdoor airflow be directed to the breathing zone—a requirement that is only applicable in occupiable spaces because, according to the definition, “breathing zones” only occur in occupied spaces. The first sentence establishes the general requirement that minimum rates of outdoor air are required in all the locations specified in Table 403.3; as written, the second sentence causes some confusion that the outdoor air is only required for occupiable spaces. This proposal clarifies the meaning of the section without changing its impact.

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

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**403.2 Outdoor air required.** The minimum outdoor airflow rate shall be determined in accordance with Section 403.3. In each occupiable space, the ventilation supply system shall be designed to deliver the required rate of outdoor airflow to the *breathing zone*.

**Exception:** Where the *registered design professional* demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor air ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.

**Committee Reason:** Approval is based upon the proponent's published reason. The modification makes certain that the provision is applicable to each individual occupied space.

**Assembly Action:**

**None**

### Final Hearing Results

**M51-12**

**AM**

## Code Change No: M52-12

### Original Proposal

**Section(s):** 403.4

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**403.4 Exhaust ventilation.** Exhaust airflow rate shall be provided in accordance with the requirements in Table 403.3. Where Table 403.3 specifies a people outdoor airflow rate, an area outdoor airflow rate, or both for an occupancy that also has an exhaust airflow rate specified by Table 403.3, the space served by the required exhaust airflow shall be supplied with outdoor air at a rate not less than that determined in accordance with Section 403.3 and such outdoor air shall be either a component of the makeup air for the required exhaust airflow or it shall be otherwise relieved or exhausted. Exhaust *makeup air* shall be permitted to be any combination of outdoor air, recirculated air and transfer air provided that the outdoor air requirements of Table 403.3 are satisfied except as limited in accordance with Section 403.2.

**Reason:** Consistent with the intent of ASHRAE 62.1, the exhaust rate prescribed by the last (far right) column of Table 403.3 is NOT applied in addition to the rate determined from the other columns. Note that the exhaust column rate will almost always be greater than the rate determined from the other columns, therefore, the exhaust rate column rules. For example, see table entries for cells with plumbing, wood shops, science labs, barber shops, ice arenas and copy rooms. This raises the question of why are there numbers in the first 3 columns if they are overridden by the exhaust column. According to ASHRAE, the reason is to make sure that at least that much outdoor air is introduced into the space as makeup air for the exhaust system, with the rest of the makeup air being transfer air from other spaces. For example, assume a standalone barber shop of 1000 sq ft with a single zone and assume a zone effectiveness ( $E_z$ ) of 1. So, 0.5 times 1000 = 500 CFM for the exhaust column. For the other columns, 7.5 times 25 occupants = 188CFM and 0.06 times 1000 = 60 CFM; 60 plus 188 = 248 CFM which is less than 500. The intent is that 500CFM is the required ventilation rate for the shop and the makeup air has to be composed of at least 248 CFM of outdoor air and the remainder of 252 CFM can be transfer air or outdoor air. Now that it can be seen how this is supposed to work, it is apparent that Section 403.4 fails to explain this. The code user would have no idea based on current text.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

**Public Comments**

*Public Comment:*

**Mike Moore, Newport Ventures, representing Broan NuTone, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

**403.4 Exhaust ventilation.** Exhaust airflow rate shall be provided in accordance with the requirements in Table 403.3. ~~Outdoor air introduced into a space by an exhaust system shall be considered as contributing to the outdoor airflow required by Table 403.3. Where Table 403.3 specifies a people outdoor airflow rate, an area outdoor airflow rate, or both for an occupancy that also has an exhaust airflow rate specified by Table 403.3, the space served by the required exhaust airflow shall be supplied with outdoor air at a rate not less than that determined in accordance with Section 403.3 and such outdoor air shall be either a component of the makeup air for the required exhaust airflow or it shall be otherwise relieved or exhausted. Exhaust makeup air shall be permitted to be any combination of outdoor air, recirculated air and transfer air provided that the outdoor air requirements of Table 403.3 are satisfied.~~

**AIR, MAKEUP.** ~~Air that is provided to replace air being exhausted~~ Any combination of outdoor and transfer air intended to replace exhaust air and exfiltration

**AIR, OUTDOOR AIR.** ~~Air taken from the outdoors, and therefore not previously circulated through the system.~~ Ambient air that enters a building through a ventilation system, through intentional openings for natural ventilation, or by infiltration

**AIR, TRANSFER.** Air moved from one indoor space to another

**INFILTRATION.** ~~Uncontrolled inward air leakage to conditioned spaces through unintentional openings in ceilings, floors, and walls from unconditioned spaces or the outdoors caused by pressure differences across these openings due to wind, inside-outside temperature differences (stack effect), and imbalances between supply and exhaust airflow rates.~~

**EXFILTRATION.** ~~Uncontrolled outward air leakage from conditioned spaces through unintentional openings in ceilings, floors, and walls to unconditioned spaces or the outdoors caused by pressure differences across these openings due to wind, inside-outside temperature differences (stack effect), and imbalances between supply and exhaust airflow rates.~~

**TABLE 403.3.1.2  
ZONE AIR DISTRIBUTION EFFECTIVENESS<sup>a,b,c,d,e</sup>**

<b>Air Distribution Configuration</b>	<b>Ez</b>
Ceiling or floor supply of cool air	1.0f
Ceiling or floor supply of warm air and floor return	1.0
Ceiling supply of warm air and ceiling return	0.8g
Floor supply of warm air and ceiling return	0.7
Makeup air drawn in on the opposite side of the room from the exhaust and/or return	0.8
Makeup air drawn in near to the exhaust and/or return location	0.5

- a. "Cool air" is air cooler than space temperature.
- b. "Warm air" is air warmer than space temperature.
- c. "Ceiling" includes any point above the breathing zone.
- d. "Floor" includes any point below the breathing zone.
- e. ~~"Makeup air" is air supplied or transferred to a zone to replace air removed from the zone by exhaust or return systems.~~
- f. Zone air distribution effectiveness of 1.2 shall be permitted for systems with a floor supply of cool air and ceiling return, provided that low velocity displacement ventilation achieves unidirectional flow and thermal stratification.
- g. Zone air distribution effectiveness of 1.0 shall be permitted for systems with a ceiling supply of warm air, provided that supply air temperature is less than 15°F above space temperature and provided that the 150 foot-per-minute supply air jet reaches to within 4 1/2 feet of floor level.

**501.4 Pressure equalization.** Mechanical exhaust systems shall be sized to remove the quantity of air required by this chapter to be exhausted. The system shall operate when air is required to be exhausted. Where mechanical exhaust is required in a room or space in other than occupancies in R-3 and dwelling units in R-2, such space shall be maintained with a neutral or negative pressure. If a greater quantity of air is supplied by a mechanical ventilating supply system than is removed by a mechanical exhaust for a room, adequate means shall be provided for the natural or mechanical exhaust of the excess air supplied. If only a mechanical exhaust system is installed for a room or if a greater quantity of air is removed by a mechanical exhaust system than is supplied by a mechanical ventilating supply system for a room, adequate makeup air ~~consisting of supply air, transfer air or outdoor air~~ shall be provided to satisfy the deficiency. The calculated building infiltration rate shall not be used to satisfy the requirements of this section.

**Commenter's Reason:** Overview: The intention of M52, which was approved as submitted, was to clarify the relationship between exhaust air, outdoor air, transfer air, and makeup air. This comment proposes to further simplify and clarify this section by updating key definitions to be consistent with ASHRAE 62.1 and then deleting redundant/outdated text in Sections

403.4, Table 403.3.1.2, and 501.4. If approved, this change should reduce a great deal of confusion that exists over these terms and their application.

Detailed Explanation: M52 added the second sentence of Section 403.4 to describe the physical relationship between exhaust air, makeup air, outdoor air, and transfer air. It sought to clarify that exhaust air can result in outdoor air provided to a space. This clarification is helpful because the current IMC definition of outdoor air ("*air from the outdoors, and therefore not previously circulated through the system*") does not provide any information on how outdoor air can be provided by an exhaust system. By updating the definition of outdoor air to the same definition used in ASHRAE 62.1 (the standard upon which this section was originally based), this is clarified (i.e., exhaust systems provide outdoor air through infiltration). Section 403.4 also seeks to clarify the origin/composition of makeup air. This is currently necessary because the current IMC definition of makeup air is inadequate. By updating the definition of makeup air to that used in ASHRAE 62.1 (i.e., "...any combination of outdoor air and transfer air"), this is corrected, and there is no longer a need to explain the origin/composition of makeup air in Section 403.4.

Table 403.3.1.2, based on ASHRAE 62.1 Table 6-2, has a definition of makeup air that should be removed for two reasons. First, definitions belong in chapter 2. Second, ASHRAE 62.1 Table 6-2 does not support this definition. For consistency, there should only be one definition of makeup air within the IMC and it should correlate with ASHRAE 62.1.

Regarding Section 501.4, with makeup air now defined to include outdoor air and transfer air, it is no longer necessary to have the explanation of makeup air in this section, only the reference. Also, proposal M61 (approved as submitted by the IMC committee in Dallas) removed the last sentence of this section. Hence, this sentence has been stricken in keeping with the committee's action.

Three new definitions are added for Transfer Air, Infiltration, and Exfiltration. Transfer Air (Section 403.2.2) and Infiltration (Section 401.2) are currently referenced within the IMC but not defined within the IMC. All three of these terms are also referenced within the ASHRAE 62.1 definitions of makeup air and outdoor air that are proposed within this comment, and so should be defined here for clarity.

### Final Hearing Results

**M52-12**

**AMPC**

---

# Code Change No: M54-12

## Original Proposal

### Section(s): 404.1

**Proponent:** Don Davies, Salt Lake City Corp/Salt Lake County representing Utah Chapter of ICC, Brent Ursenbach, Utah Chapter of ICC (don.davies@slcgov.com) and Donald R. Monahan, PE, Walker Parking Consultants/Engineers, Inc. representing the Parking Consultants Council of the National Parking Association, Washington, DC (don.monahan@walkerparking.com)

### Revise as follows:

**404.1 Enclosed parking garages.** ~~Where mechanical ventilation systems for enclosed parking garages shall be permitted to operate intermittently, such operation shall be automatic in accordance with Item 1, Item 2 or both.~~

- ~~1. The system shall be arranged to operate automatically upon detection of vehicle operation or the presence of occupants by approved automatic detection devices.~~
2. The system shall be arranged to operate automatically by means of carbon monoxide detectors applied in conjunction with nitrogen dioxide detectors. Such detectors shall be installed in accordance with their manufacturers' recommendations.

**Reason:** Enclosed parking garages require mechanical ventilation to safeguard the building occupants from emissions of high levels of carbon monoxide (CO) by cars and/or nitrogen dioxide (NO<sub>2</sub>) from diesel engines. In most enclosed parking garages the operation of the ventilation system consumes the major portion of the total energy use of the facility. Reducing the energy use for ventilation while maintaining adequate indoor air quality can be achieved using demand ventilation control strategies. However permitting motion detectors to operate the ventilation system does not promote energy efficiency and will not provide optimum life safety protection for the following reasons:

- The mechanical ventilation system will run, unnecessarily, every time a vehicle or person moves even though the CO or NO<sub>2</sub> concentrations are within safe indoor air quality levels.
- Dangerous levels of CO and/or NO<sub>2</sub> from an idling vehicle will go undetected by motion detectors.

Whereas the mechanical ventilation system will only run when toxic gases present a threat to the safety of people, which is the most important purpose of a ventilation system. The revision to the main section simply gets rid of permissive language.

**Cost Impact:** There will be a significant savings in energy cost with approval of this proposal as follows:

Consider a 100,000 sf underground parking structure for about 350 parking spaces with a combined horsepower of all fans of approximately 75 HP. 75 HP X 746 Watts per HP = 55,950 watts or 55.95 kilowatts. Annual fan power consumption without gas detection = 12 hours per day X 365 days per year x 55.95 kW = 245,061 kWh. With gas detection demand control = 2 hours per day X 365 days X 55.95 kilowatts = 40,844 kWh. The annual savings is 204,217 kWh. At a U.S. average electric utility rate of \$0.10 per kWh, the annual cost savings is \$20,422.

(Source: "Demand Controlled Ventilation Cuts Energy Bills, Increases Patron Comfort", *Parking Magazine* by National Parking Association, March 2011.) In the 2000 ASHRAE Transactions, the paper "Evaluation of Design Ventilation Requirements for Enclosed Parking Facilities" by Ayari and Krarti indicated an energy savings of 17 to 46% with demand control ventilation strategies.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason. This proposal improves life safety. Such detectors are reliable. Motor vehicles could continue to operate without moving to actuate a motion detector.

**Assembly Action:**

**None**

**Final Hearing Results**

**M54-12**

**AS**

---

## Code Change No: M59-12

### Original Proposal

**Section(s):** 501.3

**Proponent:** Umesh Kumar Bhargava, PE, Bhargava International Inc., representing self

**Revise as follows:**

**501.3 Exhaust discharge.** The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a nuisance and not less than the distances specified in Section 501.3.1. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic or crawl space.

**Exceptions:**

1. Whole-house ventilation-type attic fans shall be permitted to discharge into the attic space of *dwelling units* having private attics.
2. Commercial cooking recirculating systems.
3. Where installed in accordance with the manufacturer's installation instructions and where mechanical or *natural ventilation* is otherwise provided in accordance with Chapter 4, *listed* and *labeled* ductless range hoods shall not be required to discharge to the outdoors.

**Reason:** Residential kitchen exhaust recirculating hoods are not stated in the Code explicitly.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**501.3 Exhaust discharge.** The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a nuisance and not less than the distances specified in Section 501.3.1. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic or crawl space.

**Exceptions:**

1. Whole-house ventilation-type attic fans shall be permitted to discharge into the attic space of *dwelling units* having private attics.
2. Commercial cooking recirculating systems.
3. Where installed in accordance with the manufacturer's installation instructions and where mechanical or *natural ventilation* is otherwise provided in accordance with Chapter 4, *listed* and *labeled domestic* ductless range hoods shall not be required to discharge to the outdoors.

**Committee Reason:** The proposed text correlates with Section 505.1 to eliminate a conflict. The modification limits the applicability to domestic hoods which is the intent.

**Assembly Action:**

**None**

### Final Hearing Results

**M59-12**

**AM**

## Code Change No: M60-12

### Original Proposal

**Section(s):** 501.3, 501.3.1.1

**Proponent:** Robert Atkins, Prince William, VA, representing VA Plumbing and Mechanical Inspectors Association (VPMIA) and VA Building Code Officials Association (VBCOA) (radkins@pwcgov.org) and Guy McMann, MCP, Jefferson County Colorado, represented Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcmmann@jeffco.us)

**Revise as follows:**

**501.3 Exhaust discharge.** The air removed by every mechanical exhaust system shall be discharged outdoors at a point ~~where it will not cause a nuisance and~~ not less than the distances specified in Section 501.3.1. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic, ~~or~~ crawl space, or be directed onto walkways.

**501.3.1.1 Exhaust discharge.** ~~Exhaust air shall not be directed onto walkways.~~

**Reason:**

**Atkins-**The term “nuisance” is too subjective and un-enforceable. Combining 501.3.1.1 into 501.3 (both titled “Exhaust discharge”) is appropriate as it is applicable to all locations of exhaust discharge.

**McMann-**It’s not necessary to have an entire Section on this topic when it can be incorporated into 501.2. The term “nuisance” in this instance is un-enforceable as it is too subjective in nature.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**501.3 Exhaust discharge.** The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a public nuisance and not less than the distances specified in Section 501.3.1. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic, ~~or~~ crawl space or be directed onto walkways.

**Committee Reason:** Approval is based upon the proponent’s published reason. The modification restores the necessary reference to nuisance and adds the term “public” to limit the scope and further define the intent to refer to a more serious nuisance.

**Assembly Action:**

**None**

### Final Hearing Results

**M60-12**

**AM**

## Code Change No: M61-12

### Original Proposal

**Section(s):** 501.4

**Proponent:** Julius Ballanco, P.E., JB Engineering and Code Consulting, P.C., representing Self (JBEngineer@aol.com)

**Revise as follows:**

**501.4 Pressure equalization.** Mechanical exhaust systems shall be sized to remove the quantity of air required by this chapter to be exhausted. The system shall operate when air is required to be exhausted. Where mechanical exhaust is required in a room or space in other than occupancies in R-3 and *dwelling units* in R-2, such space shall be maintained with a neutral or negative pressure. If a greater quantity of air is supplied by a mechanical ventilating supply system than is removed by a mechanical exhaust for a room, adequate means shall be provided for the natural or mechanical exhaust of the excess air supplied. If only a mechanical exhaust system is installed for a room or if a greater quantity of air is removed by a mechanical exhaust system than is supplied by a mechanical ventilating supply system for a room, adequate *makeup air* consisting of supply air, transfer air or outdoor air shall be provided to satisfy the deficiency. ~~The calculated building infiltration rate shall not be used to satisfy the requirements of this section.~~

**Reason:** Calculating the building infiltration rate is a valid method of providing make up for an exhaust system. I have personally designed in excess of 1000 buildings using the calculated infiltration rate to provide make up air for the exhaust system. All of these buildings are working without incident. Mechanical engineers are trained in methods for calculating the infiltration rate. There should not be an arbitrary requirement in the code that prohibits common engineering design practices.

**Cost Impact:** This change does not increase the cost of construction.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M61-12**

**AS**

## Code Change No: M63-12

### Original Proposal

**Section(s):** 502.14

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**502.14 Motor Vehicle Operation.** In areas where motor vehicles operate, mechanical ventilation shall be provided in accordance with Section 403. Additionally, areas in which stationary motor vehicles are operated shall be provided with a source capture system that connects directly to the motor vehicle exhaust systems. Such system shall be engineered by a registered design professional or shall be factory-built equipment designed and sized for the purpose.

#### Exceptions:

1. This section shall not apply where the motor vehicles being operated or repaired are electrically powered.
2. This section shall not apply to one- and two- family dwellings.
3. This section shall not apply to motor vehicle service areas where engines are operated inside the building only for the duration necessary to move the motor vehicles in and out of the building.

**Reason:** Section 502.14 requires a *source capture system*, but no criteria or specs are given for such systems. At minimum, such systems need to be engineered systems as opposed to randomly chosen fans, pipe and hoses thrown together by an installer. The term is defined as a mechanical exhaust system that discharges to the outdoors with no further criteria given. Without this revision, the code could not be cited to prevent home-made concoctions and “handyman” specials from being installed.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** This proposal could increase the cost of construction.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent’s published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M63-12**

**AS**

## Code Change No: M64-12

### Original Proposal

**Section(s):** 502.20 (New), Table 404.3

**Proponent:** Guy McMann MCP, Jefferson County Colorado representing Colorado Association of Plumbing and Mechanical Officials (CAPMO)  
(gmcman@jeffco.us)

**Add new text as follows:**

**502.20 Manicure and pedicure stations.** Manicure and pedicure stations shall be provided with an exhaust system in accordance with Table 403.3, note h. Manicure tables and pedicure stations not provided with factory-installed exhaust inlets shall be provided with exhaust inlets located not more than 12 inches horizontally and vertically from the point of chemical application.

**Revise as follows:**

#### TABLE 404.3 MINIMUM VENTILATION RATES

- h. For nail salons, each ~~nail~~ manicure and pedicure station shall be provided with a source capture system capable of exhausting not less than 50 cfm per station. Exhaust inlets shall be located in accordance with Section 502.20

*(Portions of table and footnotes not shown remain unchanged)*

**Reason:** There needs to be more guidance in the code for code officials, designers and installers to reinforce the requirements for the source capture system at pedicure and manicure stations. Chemicals are being applied at pedicure stations and therefore needs to be included. There is much confusion as to where these outlets should be located in order to obtain maximum efficiency with as few fugitive vapors as possible. These dimensions have proven to work very well in observing many installations since these requirements were first a code requirement, and still provides the designer with flexibility. This will provide guidance where there currently is none as the definition of "source capture system" does not provide any.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M64-12**

**AS**

## Code Change No: M66-12

### Original Proposal

**Section(s):** 504.4, 504.6.2

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**504.4 Exhaust installation.** Dryer exhaust ducts for clothes dryers shall terminate on the outside of the building and shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination. ~~Ducts shall not be connected or installed with sheet metal screws or other fasteners that will obstruct the exhaust flow.~~ Clothes dryer exhaust ducts shall not be connected to a vent connector, vent or chimney. Clothes dryer exhaust ducts shall not extend into or through ducts or plenums.

**504.6.2 Duct installation.** Exhaust ducts shall be supported at 4-foot (1219 mm) 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 nominal ¼ inch long by 1/8 inch diameter rivets screws or other fasteners that do not protrude into the inside of the duct more than such rivets.

**Reason:** Sections 504.4 and 504.6.2 both discuss duct fasteners, but, state different requirements and the IRC says something different yet. The IRC allows duct fasteners that protrude into the duct a limited distance. It is not logical for the IRC and IMC to differ on this subject. If duct fasteners are not allowed, there would be no method of securing duct joints other than duct tape. Tapes are sealing methods, not duct joining methods, and will eventually allow the duct joints to separate in concealed locations.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Disapproved**

**Committee Reason:** Lint will collect on the protrusions. Deletion of text in Section 504.4 will lose coverage for commercial ducts. The rivet diameter is not relevant.

**Assembly Action:**

**None**

### Public Comments

*Public Comment:*

**Shawn Strausbaugh, Arlington County, VA, representing International Code Council Plumbing, Mechanical, and Fuel Gas Code Action Committee (ICC PMG CAC), requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

**504.4 Exhaust installation.** Dryer exhaust ducts for clothes dryers shall terminate on the outside of the building and shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination, Ducts shall not be connected or installed

with sheet metal screws or other fasteners that will obstruct the exhaust flow. Clothes dryer exhaust ducts shall not be connected to a vent connector, vent or *chimney*. Clothes dryer exhaust ducts shall not extend into or through ducts or plenums.

**504.6.2 Duct installation.** Exhaust ducts shall be supported at 4-foot (1219 mm) 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 be joined with nominal 1/4 inch long by 1/8 inch diameter rivets or other fasteners that do not protrude into the inside of the duct more than such rivets.~~  
Ducts shall not be joined with screws or similar fasteners that protrude more than 1/8 inch (3.2mm) into the inside of the duct.

**Commenter's Reason:** The above new language is extracted from the 2012 IRC. This language does not reference rivets diameter which was stated to be irrelevant by the committee. The allowed 1/8" protrusion into the duct will only permit a minimal amount of lint to collect on the protrusion which was a concern of the committee. The small amount of lint is trivial in comparison to the duct separating from the lack of fastening and allowing combustion by products and lint to fill building cavities, crawl space, attics, or any other concealed or other areas where these exhaust systems are located. The original section 504.4 is restored to current 2012 code text.

<b>Final Hearing Results</b>
------------------------------

**M66-12**

**AMPC**

---

# Code Change No: M68-12

## Original Proposal

**Section(s):** 504.5 (NEW), 504.6.4, 504.6.4.3(NEW), Chapter 15

**Proponent:** Julius Ballanco, P.E., JB Engineering and Code Consulting, P.C., self

**Add new text as follows:**

**504.5 Dryer Exhaust Duct Power Ventilators.** Domestic dryer exhaust duct power ventilators shall conform to UL 705 for use in dryer exhaust duct systems. The dryer exhaust duct power ventilator shall be installed in accordance with the manufacturer's instructions.

*(Renumber subsequent sections)*

**Revise text 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 or 504.6.4.2~~ through 504.6.4.3.

**Add new text as follows:**

**504.6.4.3 Dryer exhaust duct power ventilator length.** The maximum length of the exhaust duct shall be determined by the dryer exhaust duct power ventilator manufacturer's installation instructions.

**Add new standard to Chapter 15 as follows:**

UL	Underwriters Laboratories, Inc. 333 Pfingsten Road Northbrook, IL 60062-2096	
Standard Referenced number	Title	Reference in code section number
705-2004 Revision 5	Standard for Power Ventilators	504.5

**Reason:** This is a companion change to the change adding reference to UL 705 for dryer exhaust power ventilators. UL 705 has testing requirements that will establish the maximum length permitted for a dryer duct connecting to a dryer exhaust duct power ventilator. The maximum dryer duct length must be included in the manufacturer's installation instructions.

This will add the requirements for dryer exhaust power ventilators for domestic dryer use. Dryer exhaust duct power ventilators are now regulated by Supplemental requirements to UL 705. These supplemental requirements specify testing for ventilators used in this application. The requirements include many safety provisions for the ventilators. The ventilator manufacturer specifies the maximum length of the dryer exhaust duct. This length is used for testing and listing the ventilator, thus verifying the instructions.

**Cost Impact:** This will not increase the cost of construction.

**Analysis:** A review of the standard proposed for inclusion in the code, [UL 705-2004, Revision 5] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

**Public Hearing Results**

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**504.5 Dryer Exhaust Duct Power Ventilators.** Domestic dryer exhaust duct power ventilators shall ~~conform~~ be listed and labeled to UL 705 for use in dryer exhaust duct systems. The dryer exhaust duct power ventilator shall be installed in accordance with the manufacturer's instructions.

*(Renumber subsequent sections)*

**Revise text 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.

**Add new text as follows:**

**504.6.4.3 Dryer exhaust duct power ventilator length.** The maximum length of the exhaust duct shall be determined by the dryer exhaust duct power ventilator manufacturer's installation instructions.

**Add new standard to Chapter 15 as follows:**

Standard Referenced number	Title	Reference in code section number
UL  705-2004 Revision 5 504.5	Underwriters Laboratories, Inc. 333 Pfingsten Road Northbrook, IL 60062-2096  Standard for Power Ventilators <u>with revisions through March 2012.</u>	

**Committee Reason:** Approval is based upon the proponent's published reason. The modifications substitute defined terms for the undefined term "conform" and provide the current title of the standard.

**Assembly Action:**

**None**

**Final Hearing Results**

**M68-12**

**AM**

---

## Code Change No: M70-12

### Original Proposal

**Section(s):** 504.6.5

**Proponent:** Richard Grace, Fairfax County Government, representing The Virginia Plumbing and Mechanical Inspectors Association, The Virginia Building Code Officials Association and Guy McMann MCP, Jefferson County Colorado, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO)  
(gmcman@jeffco.us)

**Revise as follows:**

**504.6.5 Length identification.** Where the exhaust duct ~~equivalent length exceeds 35 feet 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 (1829 mm) of the exhaust duct connection.

**Reason:** If the equivalent length is code compliant, there is no need for extra signage. This puts the code official in a position of recording each installation in order to verify at time of final that the stated length is accurate. This is over the top for code officials and installers to keep track of in a world of increasing duties and fewer resources. It should not matter if the duct is concealed or not as this is a benefit for the building owner or user.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M70-12**

**AS**

## Code Change No: M71-12

### Original Proposal

**Section(s):** 504.6.7, 504.6, IFGC 614.6.3, IFGC 614.6

**Proponent:** C. Ray Allshouse, AIA, CBO, City of Shoreline, WA, representing the Washington Association of Building Officials Technical Code Development Committee (rallshouse@shorelinewa.gov)

**Revise as follows:**

**504.6.7 (IFGC 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<sup>1</sup>/<sub>4</sub> inches (32 mm) between the duct and the finished face of the framing member. Protective shield plates shall be constructed of steel, have a thickness of 0.062 inch (1.6 mm) and extend a minimum of 2 inches (51 mm) above sole plates and below top plates.

**504.6.7 (IFGC 614.6.7) Domestic clothes dryer ducts.** Exhaust ducts for domestic clothes dryers shall conform to the requirements of Sections 504.6.1 through 504.6.7.6.

**Reason:** Existing dryer duct protection requirements for concealed dryer exhaust ducts should apply not only to domestic installations but to commercial installations as well. By making this a general dryer duct requirement, protection will be extended to include commercial clothes dryer exhaust ducts.

**Cost Impact:** The code change proposal will increase the cost of construction.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M71-12**

**AS**

# Code Change No: M73-12

## Original Proposal

### Section(s): 504.8, 505.3 (NEW)

**Proponent:** Al Godwin, CBO, CPM representing Aon Fire Protection Engineering  
(al.godwin@aon.com)

### Revise as follows:

**504.8 Common exhaust systems for clothes dryers located in multistory structures.** Where a common multistory duct system is designed and installed to convey exhaust from multiple clothes dryers, the construction of the system shall be in accordance with all of the following:

*(Items 1 through 12 remain unchanged)*

13. Dryer ducts shall have a cleanout located near the shaft penetration to permit cleaning of the 22" subduct required by Section 607.5.5, exception 2. The subduct length shall be considered in the calculation of allowable duct length.

**505.3 Common exhaust systems for domestic kitchens located in multistory structures.** Where a common multistory duct system is designed and installed to convey exhaust from multiple domestic kitchen exhaust systems, the construction of the system shall be in accordance with all of the following:

1. The shaft in which the duct is installed shall be constructed and fire-resistance rated as required by the *International Building Code*.
2. Dampers shall be prohibited in the exhaust duct, except as specified in Section 505.1. Penetrations of the shaft and ductwork shall be protected in accordance with Section 607.5.5, exception 2.
3. Rigid metal ductwork shall be installed within the shaft to convey the exhaust. The ductwork shall be constructed of sheet steel having a minimum thickness of 0.0187 inch (0.4712 mm) (No. 26 gage) and in accordance with *SMACNA Duct Construction Standards*.
4. The ductwork within the shaft shall be designed and installed without offsets.
5. The exhaust fan motor design shall be in accordance with Section 503.2.
6. The exhaust fan motor shall be located outside of the airstream.
7. The exhaust fan shall run continuously, and shall be connected to a standby power source.
8. Exhaust fan operation shall be monitored in an *approved* location and shall initiate an audible or visual signal when the fan is not in operation.
9. Makeup air shall be provided for the exhaust system.
10. A cleanout opening shall be located at the base of the shaft to provide access to the duct to allow for cleanout and inspection. The finished openings shall be not less than 12 inches by 12 inches (305 mm by 305 mm).
11. Screens shall not be installed at the termination.
12. The common multistory duct system shall serve only kitchen exhaust and shall be independent of other exhaust systems.

**Reason:** Since exception 2 has been installed in the IBC, it has been incomplete. The IMC has done a good job of updating the provisions for common ducts with clothes dryers but nothing has been done for domestic kitchens. Designers would not go to the expense of installing a shaft for domestic kitchen exhaust if there was not a smoke issue. When expensive condo's install super domestic kitchens, there is going to be smoke.

Also, IMC Section 505.1 specifically requires systems with downdraft exhaust to discharge to the exterior. How is that going to be done in a multi-story building? And, where there is smoke, there is grease. Thus, provisions are needed for kitchen exhaust and such exhaust needs to be separate from bathroom/toilet exhaust. The designer should take some responsibility for controlling grease discharge, but specifics are left to his/her discretion. Long dryer ducts have to install a 90 degree riser at the very end of

their discharge, the weakest point. A cleanout is appropriate. Perhaps someone has a better idea, but this should be a start.

**Cost Impact:** This code proposal will not increase the cost of construction since this is the method it should be designed to and it is less expensive than installation of a Type I hood.

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**504.8 Common exhaust systems for clothes dryers located in multistory structures.** Where a common multistory duct system is designed and installed to convey exhaust from multiple clothes dryers, the construction of the system shall be in accordance with all of the following:

*(Items 1 through 12 remain unchanged)*

~~13. Dryer ducts shall have a cleanout located near the shaft penetration to permit cleaning of the 22" subduct required by Section 607.5.5, exception 2. The subduct length shall be considered in the calculation of allowable duct length.~~

**505.3 Common exhaust systems for domestic kitchens located in multistory structures.** Where a common multistory duct system is designed and installed to convey exhaust from multiple domestic kitchen exhaust systems, the construction of the system shall be in accordance with all of the following:

1. The shaft in which the duct is installed shall be constructed and fire-resistance rated as required by the *International Building Code*.
2. Dampers shall be prohibited in the exhaust duct, except as specified in Section 505.1. Penetrations of the shaft and ductwork shall be protected in accordance with Section 607.5.5, exception 2.
3. Rigid metal ductwork shall be installed within the shaft to convey the exhaust. The ductwork shall be constructed of sheet steel having a minimum thickness of 0.0187 inch (0.4712 mm) (No. 26 gage) and in accordance with *SMACNA Duct Construction Standards*.
4. The ductwork within the shaft shall be designed and installed without offsets.
5. The exhaust fan motor design shall be in accordance with Section 503.2.
6. The exhaust fan motor shall be located outside of the airstream.
7. The exhaust fan shall run continuously, and shall be connected to a standby power source.
8. Exhaust fan operation shall be monitored in an *approved* location and shall initiate an audible or visual signal when the fan is not in operation.
9. Where the exhaust rate for an individual kitchen exceeds 400 cfm (0.19 m3/s) makeup air shall be provided for the exhaust system in accordance with Section 505.2.
10. A cleanup opening shall be located at the base of the shaft to provide access to the duct to allow for cleanout and inspection. The finished openings shall be not less than 12 inches by 12 inches (305 mm by 305 mm).
11. Screens shall not be installed at the termination.
12. The common multistory duct system shall serve only kitchen exhaust and shall be independent of other exhaust systems.

**Committee Reason:** Approval is based upon the proponent's published reason. The modifications correlate with the action taken on FS110-12 and serve to coordinate with current Section 505.2.

**Assembly Action:**

**None**

### Final Hearing Results

**M73-12**

**AM**

---

# Code Change No: M76-12

## Original Proposal

**Section(s):** 505.1, 505.3 (New), 507.2.3

**Proponent:** Carl Baldassarra, P.E., FSFPE, Chair, ICC Code Technology Committee

**Revise as follows:**

### SECTION 505 DOMESTIC KITCHEN EXHAUST EQUIPMENT

**505.1 Domestic systems.** Where domestic range hoods and domestic appliances equipped with downdraft exhaust are ~~located within dwelling units~~ provided, such hoods and appliances shall discharge to the outdoors through sheet metal ducts constructed of galvanized steel, stainless steel, aluminum or copper. Such ducts shall have smooth inner walls, shall be air tight, shall be equipped with a backdraft damper, and shall be independent of all other exhaust systems.

#### Exceptions:

1. In other than Group I-1 and I-2, where installed in accordance with the manufacturer's installation instructions and where mechanical or *natural ventilation* is otherwise provided in accordance with Chapter 4, *listed* and *labeled* ductless range hoods shall not be required to discharge to the outdoors.
2. Ducts for domestic kitchen cooking appliances equipped with downdraft exhaust systems shall be permitted to be constructed of Schedule 40 PVC pipe and fittings provided that the installation complies with all of the following:
  - 2.1. The duct shall be installed under a concrete slab poured on grade.
  - 2.2. The under floor trench in which the duct is installed shall be completely backfilled with sand or gravel.
  - 2.3. The PVC duct shall extend not more than 1 inch (25 mm) above the indoor concrete floor surface.
  - 2.4. The PVC duct shall extend not more than 1 inch (25 mm) above grade outside of the building.
  - 2.5. The PVC ducts shall be solvent cemented.

**505.2 Makeup air required.** Exhaust hood systems capable of exhausting in excess of 400 cfm (0.19 m<sup>3</sup>/s) shall be provided with *makeup air* at a rate approximately equal to the *exhaust air* rate. Such *makeup air* systems shall be equipped with a means of closure and shall be automatically controlled to start and operate simultaneously with the exhaust system.

**505.3 Other than Group R.** In other than Group R occupancies, where domestic cooking appliances are utilized for domestic purposes, such appliances shall be provided with domestic range hoods. Hoods and exhaust systems shall be in accordance with Sections 505.1 and 505.2.

### SECTION 507 COMMERCIAL KITCHEN HOODS

**507.2.3 Domestic cooking appliances used for commercial purposes.** Domestic cooking appliances utilized for commercial purposes shall be provided with Type I or Type II hoods as required for the type of

appliances and processes in accordance with Sections 507.2, 507.2.1 and 507.2.2. Domestic cooking appliances utilized for domestic purposes shall comply with Section 505.

**Reason:** The intent of this proposal is to clarify requirements and address new situations as Assisted Living and Nursing Home designs change.

Current requirements for domestic appliances used for domestic purposes are geared towards Group R facilities. When a stove is located in another use group, often a requirement for commercial hoods is misapplied. In a residential dwelling unit, often a range hood is not required if there is enough ventilation. Given the different types of facilities, this proposal would always require a hood when a range was provided in another use group.

As the style of assisted living facilities and nursing homes attempts to produce a more residential atmosphere, domestic ranges are provided either within the unit (some assisted living) or in common use areas (assisted living or nursing home residential 'suites'). Residents use this equipment for light cooking duties (few people and only occasional meals) or special cooking (i.e., cookies, cakes). If this equipment is used for cooking for a large number of residents on a regular basis, it is being used for commercial purposes, and it would fall under 507.2.3.

Hospitals or outpatient rehab facilities sometimes have domestic ranges in occupational therapy and dietician areas. The goal being to provide residents with training on good eating habits when they are at home.

Changes to 505.1 would allow residential and areas such as business break rooms to allow for recirculation if the mechanical system is designed for it.

The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html>. Since its inception in April, 2005, the CTC has held twenty-two meetings – all open to the public.

**Cost Impact:** Reduction

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based upon the proponent's published reason. The code needs to address the evolving lifestyles for aging populations.

**Assembly Action:**

**None**

**Final Hearing Results**

**M76-12**

**AS**

---

## Code Change No: M85-12

### Original Proposal

**Section(s):** 506.3.7.1

**Proponent:** Curt Campbell, Chesterfield County, VA, representing Va. Plumbing and Mechanical Inspectors Association (VPMIA) and Va. Building Code Officials Association (VBCOA) (CampbellCu@chesterfield.gov)

**Revise as follows:**

**506.3.7.1 Grease duct reservoirs.** Grease duct reservoirs shall:

1. Be constructed as required for the grease duct they serve.
2. Be located on the bottom of the horizontal duct or the bottommost section of the duct riser.
3. Have a length and width of not less than 12 inches (305 mm). Where the grease duct is less than 12 inches (305 mm) in a dimension, the reservoir shall be not more than 2 inches (51 mm) smaller than the duct in that dimension.
4. Have a depth of not less than 1 inch (25.4 mm).
5. Have a bottom that is sloped to a point for drainage.
6. Be provided with a cleanout opening constructed in accordance with Section 506.3.8 and installed to provide direct access to the reservoir. The cleanout opening shall be located on a side or on top of the duct so as to permit cleaning of the reservoir.
7. Be installed in accordance with the manufacturer's instructions where manufactured devices are utilized.

**Reason:** IMC 506.5.2 references an approved grease reservoir for manufactured vertical grease exhaust fans. The current language would require this reservoir to comply with 506.3.7.1, which of course is not applicable. This language should clearly show that these two grease reservoirs are two entirely different devices.

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

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M85-12**

**AS**

## Code Change No: M86-12

### Original Proposal

#### Section(s): 506.3.8

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO)

#### Revise as follows:

**506.3.8 Grease duct cleanouts and openings.** Grease duct cleanouts and openings shall comply with all of the following:

1. Grease ducts shall not have openings except where required for the operation and maintenance of the system.
2. Sections of vertical grease ducts that are inaccessible from the hood or discharge openings shall be provided with cleanout openings spaced not more than 20 feet apart and not more than 10 feet from changes in direction greater than 45 degrees.
3. Cleanouts and openings shall be equipped with tight-fitting doors constructed of steel having a thickness not less than that required for the duct.
4. Cleanout doors shall be installed liquid tight.
5. Door assemblies including any frames and gaskets shall be approved for the application and shall not have fasteners that penetrate the duct.
6. Gasket and sealing materials shall be rated for not less than 1500°F (816°C).
7. Listed door assemblies shall be installed in accordance with the manufacturer's instructions.

**Reason:** Sometimes there are vertical sections of grease duct that are in the middle of a run and inaccessible from the hood, fan or horizontal cleanouts and it can extend long distances. This may apply in high rise buildings as the grease will congeal over this vertical distance as it cools making it difficult to clean because there is no access. This is a helpful clarification as how to access these sections of duct that could not be otherwise accessed.

**Cost Impact:** This may increase the cost of construction.

### Public Hearing Results

#### Committee Action:

**Approved as Modified**

#### Modify proposal as follows:

**506.3.8 Grease duct cleanouts and openings.** Grease duct cleanouts and openings shall comply with all of the following:

1. Grease ducts shall not have openings except where required for the operation and maintenance of the system.
2. Sections of ~~vertical~~ grease ducts that are inaccessible from the hood or discharge openings shall be provided with cleanout openings spaced not more than 20 feet apart and not more than 10 feet from changes in direction greater than 45 degrees.
3. Cleanouts and openings shall be equipped with tight-fitting doors constructed of steel having a thickness not less than that required for the duct.
4. Cleanout doors shall be installed liquid tight.
5. Door assemblies including any frames and gaskets shall be approved for the application and shall not have fasteners that penetrate the duct.
6. Gasket and sealing materials shall be rated for not less than 1500°F (816°C).
7. Listed door assemblies shall be installed in accordance with the manufacturer's instructions.

**Committee Reason:** Approval is based on the proponent's published reason. The modification makes the text apply to all ducts, not just vertical.

#### Assembly Action:

**None**

**Final Hearing Results**

**M86-12**

**AM**

---

# Code Change No: M87-12

## Original Proposal

**Section(s):** 506.3.7.1

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO)  
(gmcman@jeffco.us)

**Revise as follows:**

**506.3.7.1 Grease reservoirs.** Grease reservoirs shall:

1. Be constructed as required for the grease duct they serve.
2. Be located on the bottom of the horizontal duct or the bottommost section of the duct riser.
3. ~~Have a length and width of not less than 12 inches (305 mm). Where the grease duct is less than 12 inches (305 mm) in a dimension, the reservoir shall be not more than 2 inches (51 mm) smaller than the duct in that dimension.~~
3. Extend across the full width of the duct and have a length of not less than 12 inches.
4. Have a depth of not less than 1 inch (25.4 mm).
5. Have a bottom that is ~~sloped to a point for drainage,~~ slopes to a drain.
6. Be provided with a cleanout opening constructed in accordance with Section 506.3.8 and installed to provide direct access to the reservoir. The cleanout opening shall be located on a side or on top of the duct so as to permit cleaning of the reservoir.
7. Be installed in accordance with the manufacturer's instructions where manufactured devices are utilized.

**Reason:** The current text permits grease to pass by the trap as a result of being anything smaller than the full width of the duct. There is no need to require a minimum arbitrary length as long as the fitting captures the grease as intended by the designer. Item 5 requires a sloped bottom but fails to actually require a drain. Sometimes simpler is better.

**Cost Impact:** None

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M87-12**

**AS**

## Code Change No: M88-12

### Original Proposal

#### Section(s): 506.3.11

**Proponent:** Richard Grace, Fairfax County Government, representing The Virginia Plumbing and Mechanical Inspectors Association, The Virginia Building Code Officials Association; Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcman@jeffco.us)

**THIS CODE CHANGE WILL BE HEARD BY THE IBC FIRE SAFETY. SEE THE TENTATIVE HEARING ORDER FOR THIS COMMITTEE.**

#### Revise as follows:

**506.3.11 Grease duct enclosures.** A grease duct serving a Type I hood that penetrates a ceiling, wall or floor shall be enclosed from the point of penetration to the outlet terminal. A duct shall penetrate exterior walls only at locations where unprotected openings are permitted by the International Building Code . The duct enclosure shall serve a single grease duct and shall not contain other ducts, piping or wiring systems. Duct enclosures shall be either field-applied or factory-built. Duct enclosures shall have a fire-resistance rating not less than that of the floor assembly penetrated, and not less than 1 hour. Fire dampers shall not be installed in grease ducts. Duct enclosures shall be as prescribed by Section 506.3.11.1, 506.3.11.2 or 506.3.11.3.

**Reason:** Although this states the obvious, the code just needs to come out and directly say that this is not an option.

**Cost Impact:** None

### Public Hearing Results

**This code change proposal was heard by the IBC Fire Safety code development committee.**

**Committee Action:**

**Approved as Modified**

**Modify the proposal as follows:**

**506.3.11 Grease duct enclosures.** A grease duct serving a Type I hood that penetrates a ceiling, wall or floor shall be enclosed from the point of penetration to the outlet terminal. A duct shall penetrate exterior walls only at locations where unprotected openings are permitted by the International Building Code . The duct enclosure shall serve a single grease duct and shall not contain other ducts, piping or wiring systems. Duct enclosures shall be either field-applied or factory-built. Duct enclosures shall have a fire-resistance rating not less than that of the floor assembly penetrated, and not less than 1 hour. Fire dampers and smoke dampers shall not be installed in grease ducts. Duct enclosures shall be as prescribed by Section 506.3.11.1, 506.3.11.2 or 506.3.11.3.

**Committee Reason:** Approval is based on the proponent's published reason. The modification appropriately includes smoke dampers as part of the prohibition.

**Assembly Action:**

**None**

### Final Hearing Results

**M88-12**

**AM**

## Code Change No: M90-12

### Original Proposal

**Section(s):** 506.3.11

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**506.3.11 Grease duct enclosures.** A grease duct serving a Type I hood that penetrates a ceiling, wall, floor or any concealed spaces shall be enclosed from the point of penetration to the outlet terminal. In-line exhaust fans not located outdoors shall be enclosed as required for grease ducts. A duct shall penetrate exterior walls only at locations where unprotected openings are permitted by the *International Building Code*.

**Reason:** Section 506.3.11 does not state that in-line fans located inside the building would have to be enclosed no differently than a grease duct. Such fans are installed in, and as part of, the duct system and if the duct must be enclosed, so too must the fan.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** This proposal could increase the cost of construction depending upon how current text is interpreted.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M90-12**

**AS**

## Code Change No: M92-12

### Original Proposal

**Section(s):** 506.3.11, 506.3.11.1, 506.3.11.2, 506.3.11.3, Chapter 15

**Proponent:** Bob Eugene/Underwriters Laboratories/Underwriters Laboratories (Robert.Eugene@ul.com)

**Revise as follows:**

**506.3.11 Grease duct enclosures.** A commercial kitchen grease duct serving a Type I hood that penetrates a ceiling, wall, floor or any concealed spaces shall be enclosed from the point of penetration to the outlet terminal. A duct shall penetrate exterior walls only at locations where unprotected openings are permitted by the *International Building Code*. The duct enclosure shall serve a single grease duct and shall not contain other ducts, piping or wiring systems. Duct enclosures shall be either a shaft enclosure in accordance with Section 506.3.11.1, a field-applied enclosure assembly in accordance with 506.3.11.2 or a factory-built enclosure assembly in accordance with Section 506.3.11.3. Duct enclosures shall have a fire-resistance rating of not less than that of the assembly penetrated and not less than 1 hour. ~~Duct enclosures shall be as prescribed by Section 506.3.11.1, 506.3.11.2 or 506.3.11.3.~~

**Exception:** ~~506.3.11.4 Duct enclosure not required.~~ A duct enclosure shall not be required for a grease duct that penetrates only a nonfire-resistance-rated roof/ceiling assembly.

**506.3.11.1 Shaft enclosure.** ~~Commercial kitchen grease~~ Grease ducts constructed in accordance with Section 506.3.1 shall be permitted to be enclosed in accordance with the *International Building Code* requirements for shaft construction. Such grease duct systems and exhaust *equipment* shall have a *clearance* to combustible construction of not less than 18 inches (457 mm), and shall have a *clearance* to noncombustible construction and gypsum wallboard attached to noncombustible structures of not less than 6 inches (76 mm). Duct enclosures shall be sealed around the duct at the point of penetration and vented to the outside of the building through the use of weather-protected openings.

**506.3.11.2 Field-applied grease duct enclosure.** ~~Commercial kitchen grease~~ Grease ducts constructed in accordance with Section 506.3.1 shall be enclosed by a listed and labeled field-applied grease duct enclosure that is a listed and labeled material, systems, product, or method of construction specifically evaluated for such purpose in accordance with ASTM E 2336. The surface of the duct shall be continuously covered on all sides from the point at which the duct originates to the outlet terminal. Duct penetrations shall be protected with a through-penetration ~~fire-stop firestop system classified tested and listed~~ fire-stop firestop system classified tested and listed in accordance with ASTM E 814 or UL 1497-1479 and having a "F" and "T" rating equal to the fire-resistance rating of the assembly being penetrated. The grease duct enclosure and firestop system shall be installed in accordance with the listing and the manufacturer's instructions. ~~Such fire-stop systems shall be installed in accordance with the listing and the manufacturer's installation instructions.~~ Partial application of a field-applied grease duct enclosure shall not be installed for the sole purpose of reducing clearances to combustibles at isolated sections of grease duct. Exposed duct-wrap systems shall be protected where subject to physical damage.

**506.3.11.3 Factory-built grease duct enclosure assemblies.** Factory-built grease ducts ~~assemblies~~ incorporating integral enclosure materials shall be *listed* and *labeled* for use as ~~commercial kitchen grease duct enclosure assemblies~~ specifically evaluated for such purpose in accordance with UL 2221. Duct penetrations shall be protected with a through-penetration firestop system ~~classified tested and listed~~ classified tested and listed in accordance with ASTM E 814 or UL 1479 and having an "F" and "T" rating equal to the fire-resistance rating of the assembly being penetrated. ~~Such assemblies~~ The grease duct enclosure

assembly and firestop system shall be installed in accordance with the listing and the manufacturer's instructions.

**Add referenced standard to Chapter 15 as follows:**

UL 1479-03 Standard for Fire Tests of Through-Penetration Firestops

**Reason:** There is a lot of confusion regarding the options for enclosing a commercial kitchen grease duct in the code community due to the current wording of section 506.3.11. The general requirements are mixed in with the specific requirements for the three construction options and the wording does not accurately define how these products are tested and listed. The focus of this effort is to combine common requirements in the first paragraph, clearly delineate which requirements apply to each of the three construction options and to clarify the wording to accurately reflect how these products are tested, listed and labeled.

**Cost Impact:** None

**Analysis:** A review of the standard proposed for inclusion in the code, [UL 1479-03] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M92-12**

**AS**

---

# Code Change No: M97-12

## Original Proposal

### Section(s): 506.5.1.1 (NEW)

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

#### Add new text as follows:

**506.5.1.1 In line fan Location.** Where enclosed duct systems are connected to in line fans, the fan shall be located in a room or space having the same fire resistance rating as the duct enclosure. Access shall be provided for servicing and cleaning of fan components. Such rooms or spaces shall be ventilated in accordance with the fan manufacturers' installation instructions.

**Reason:** Currently there is no guidance in the IMC as to how and where an in-line fan is to be located as these types of fans are usually in unique locations. Fans cannot be treated the same way as ducts as far as ratings are concerned. Fans cannot be wrapped with duct wrap material. This proposal would require the fan be installed in a rated room or a rated enclosure when the ducts attached to the fan are required to be protected. The rated rooms or enclosures may need to be ventilated according to the fan manufacturers' instructions. This language is consistent with NFPA-96.

**Cost Impact:** This may or may not increase cost.

## Public Hearing Results

### Committee Action:

**Approved as Modified**

#### Modify the proposal as follows:

**506.5.1.1 In line fan Location.** Where enclosed duct systems are connected to in- line fans, not located outdoors, the fan shall be located in a room or space having the same fire resistance rating as the duct enclosure. Access shall be provided for servicing and cleaning of fan components. Such rooms or spaces shall be ventilated in accordance with the fan manufacturers' installation instructions.

**Committee Reason:** Approval is based on the proponent's published reason. The modification is consistent with the text in M90-12 which was recommended for approval.

### Assembly Action:

**None**

## Final Hearing Results

**M97-12**

**AM**

## Code Change No: **M100-12**

### Original Proposal

**Section(s):** 506.5.3

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO) and Richard Grace, Fairfax County Government, The Virginia Plumbing and Mechanical Inspectors Association, The Virginia Building Code Officials Association

**Revise as follows:**

**506.5.3 Exhaust fan mounting** ~~–An~~ Up-blast fans servicing Type I hoods and installed in a vertical or horizontal position shall be hinged, and supplied with a flexible weatherproof electrical cable to permit inspection and cleaning and shall be equipped with a means of restraint to limit the swing of the fan on its hinge. The ductwork shall extend a minimum of 18 inches (457 mm) above the roof surface.

**Reason:** Some clarification is needed in distinguishing between Type I fans and all others. Type II fans and other types of up-blast fans do not require hinges. There needs to be some method of restraint on hinged fans as they can become quite large and heavy. If one was to get loose from a grip the potential for damage from the fan falling in an opposite direction becomes high. This could result in damage to the electrical cable on the roof, wall or elsewhere. Also, the fan could tear itself off the curb altogether. In any case, property damage or personal injury could result. A restraining cable will aid in stabilizing the fan so cleaning and maintenance operations can be accomplished safely.

**Cost Impact:** Adding a cable may increase the cost of the fan.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M100-12**

**AS**

# Code Change No: M101-12

## Original Proposal

Section(s): 507

Proponent: Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

Revise as follows:

### SECTION 507 COMMERCIAL KITCHEN HOODS

**507.1 General.** Commercial kitchen exhaust hoods shall comply with the requirements of this section. Hoods shall be Type I or II and shall be designed to capture and confine cooking vapors and residues. A Type I or Type II hood shall be installed at or above all commercial cooking appliances in accordance with Sections 507.2 and 507.3. Where any cooking appliance under a single hood requires a Type I hood, a Type I hood shall be installed. Where a Type II hood is required, a Type I or Type II hood shall be installed. ~~Commercial kitchen exhaust hood systems shall operate during the cooking operation.~~

#### Exceptions:

1. Factory-built commercial exhaust hoods that are listed and labeled in accordance with UL 710, and installed in accordance with Section 304.1 shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4 and 507.5. ~~507.4, 507.5, 507.7, 507.11, 507.12, 507.13, 507.14, and 507.15.~~
2. Factory-built commercial cooking recirculating systems that are listed and labeled in accordance with UL 710B, and installed in accordance with Section 304.1 shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4 and 507.5. ~~507.4, 507.5, 507.7, 507.11, 507.12, 507.13, 507.14, and 507.15.~~ Spaces in which such systems are located shall be considered to be kitchens and shall be ventilated in accordance with Table 403.3. For the purpose of determining the floor area required to be ventilated, each individual *appliance* shall be considered as occupying not less than 100 square feet (9.3 m<sup>2</sup>).
- ~~3. Net exhaust volumes for hoods shall be permitted to be reduced during part-load cooking conditions, where engineered or listed multispeed or variable speed controls automatically operate the exhaust system to maintain capture and removal of cooking effluents as required by this section. Reduced volumes shall not be below that required to maintain capture and removal of effluents from the idle cooking appliances that are operating in a standby mode.~~
3. Where cooking appliances are equipped with integral down-draft exhaust systems and such appliances and exhaust systems are listed and labeled for the application in accordance with NFPA 96, a hood shall not be required at or above them.

**507.1.1 Operation.** Commercial kitchen exhaust hood systems shall operate during the cooking operation. The hood exhaust rate shall comply with the listing of the hood or shall comply with Section 507.5. ~~Type I Hood~~ systems shall be designed and installed to automatically activate the exhaust fan whenever cooking operations occur. The activation of the exhaust fan shall occur through an interlock with the cooking appliances, by means of heat sensors or by means of other approved methods. A method of interlock between an exhaust hood system and appliances equipped with standing pilot burners shall not cause the pilot burners to be extinguished. A method of interlock between an exhaust hood system and cooking appliances shall not involve or depend upon any component of a fire extinguishing system.

The net exhaust volumes for hoods shall be permitted to be reduced during part-load cooking conditions, where engineered or listed multispeed or variable speed controls automatically operate the exhaust system to maintain capture and removal of cooking effluents as required by this section. Reduced volumes shall not be below that required to maintain capture and removal of effluents from the idle cooking appliances that are operating in a standby mode.

**507.2 Where required.** A Type I or Type II hood shall be installed at or above all *commercial cooking appliances* in accordance with Sections 507.2.1 and 507.2.2. ~~Where any cooking appliance under a single hood requires a Type I hood, a Type I hood shall be installed. Where a Type II hood is required, a Type I or Type II hood shall be installed.~~

**Exception:** ~~Where cooking appliances are equipped with integral down-draft exhaust systems and such appliances and exhaust systems are listed and labeled for the application in accordance with NFPA 96, a hood shall not be required at or above them.~~

**507.1.23 Domestic cooking appliances used for commercial purposes.** Domestic cooking appliances utilized for commercial purposes shall be provided with Type I or Type II hoods as required for the type of appliances and processes in accordance with Sections 507.2 and 507.3.

**507.1.3 Fuel-burning appliances.** Where vented fuel-burning appliances are located in the same room or space as the hood, provisions shall be made to prevent the hood system from interfering with normal operation of the appliance vents.

**507.1.4 Cleaning.** A hood shall be designed to provide for thorough cleaning of the entire hood.

**507.1.5 Exhaust outlets.** Exhaust outlets located within the hood shall be located so as to optimize the capture of particulate matter. Each outlet shall serve not more than a 12-foot (3658 mm) section of hood.

**507.2.4 Type I hoods.** Type I hoods shall be installed where cooking *appliances* produce grease or smoke as a result of the cooking process. Type I hoods shall be installed over *medium-duty, heavy-duty* and *extra-heavy duty cooking appliances*. Type I hoods shall be installed over *light-duty cooking appliances* that produce grease or smoke.

**Exception:** A Type I hood shall not be required for an electric cooking appliance where an approved testing agency provides documentation that the appliance effluent contains 5 mg/m<sup>3</sup> or less of grease when tested at an exhaust flow rate of 500 cfm (0.236 m<sup>3</sup>/s) in accordance with Section 17 of UL 710B.

**507.2.1.1 Operation.** ~~Type I hood systems shall be designed and installed to automatically activate the exhaust fan whenever cooking operations occur. The activation of the exhaust fan shall occur through an interlock with the cooking appliances, by means of heat sensors or by means of other approved methods. A method of interlock between an exhaust hood system and appliances equipped with standing pilot burners shall not cause the pilot burners to be extinguished. A method of interlock between an exhaust hood system and cooking appliances shall not involve or depend upon any component of a fire extinguishing system.~~

**507.2.1.2 Type I exhaust flow rate label.** Type I hoods shall bear a label indicating the minimum exhaust flow rate in cfm per linear foot (1.55 L/s per linear meter) of hood that provides for capture and containment of the exhaust effluent for the cooking appliances served by the hood, based on the cooking appliance duty classifications defined in this code.

**507.2.2 Type I extra-heavy-duty.** Type I hoods used over *extra-heavy-duty cooking appliances* shall not cover *heavy-, medium- or light-duty appliances*. Such hoods shall discharge to an exhaust system that is independent of other exhaust systems.

**507.2.3 Type I materials.** Type I hoods shall be constructed of steel having a minimum thickness of 0.0466 inch (1.181 mm) (No. 18 gage) or stainless steel not less than 0.0335 inch [0.8525 mm (No. 20 MSG)] in thickness.

**507.2.4 Type I supports.** Type I hoods shall be secured in place by non-combustible supports. All Type I hood supports shall be adequate for the applied load of the hood, the unsupported ductwork, the effluent loading and the possible weight of personnel working in or on the hood.

**507.2.5 Type I joints, seams and penetrations.** External hood joints, seams and penetrations for Type I hoods shall be made with a continuous external liquid-tight weld or braze to the lowest outermost perimeter of the hood. Internal hood joints, seams, penetrations, filter support frames and other appendages attached inside the hood shall not be required to be welded or brazed but shall be otherwise sealed to be grease tight.

**Exceptions:**

1. Penetrations shall not be required to be welded or brazed where sealed by devices that are *listed* for the application.
2. Internal welding or brazing of seams, joints and penetrations of the hood shall not be prohibited provided that the joint is formed smooth or ground so as to not trap grease, and is readily cleanable.

**507.2.6 Clearances for Type I hood.** A Type I hood shall be installed with a *clearance* to combustibles of not less than 18 inches (457 mm).

**Exception:** *Clearance* shall not be required from gypsum wallboard or 1/2-inch (12.7 mm) or thicker cementitious wallboard attached to noncombustible structures provided that a smooth, cleanable, nonabsorbent and noncombustible material is installed between the hood and the gypsum or cementitious wallboard over an area extending not less than 18 inches (457 mm) in all directions from the hood.

**507.2.7 Type I hoods penetrating a ceiling.** Type I hoods or portions thereof penetrating a ceiling, wall or furred space shall comply with Section 506.3.11. Field-applied grease duct enclosure systems, as addressed in Section 506.3.11.2, shall not be utilized to satisfy the requirements of this section.

**507.2.8 Type I grease filters.** Type I hoods shall be equipped with grease filters listed and labeled in accordance with UL 1046 and designed for the specific purpose. Grease-collecting *equipment* shall be provided with access for cleaning. The lowest edge of a grease filter located above the cooking surface shall be not less than the height specified in Table 507.2.8.

**TABLE 507.2.8  
MINIMUM DISTANCE BETWEEN THE LOWEST EDGE OF A GREASE FILTER AND THE COOKING SURFACE OR THE HEATING SURFACE**

<b>Type of Cooking Appliances</b>	<b>Height Above Cooking Surface (feet)</b>
<u>Without exposed flame</u>	<u>0.5</u>
<u>Exposed flame and burners</u>	<u>2</u>
<u>Exposed charcoal and charbroil type</u>	<u>3.5</u>

For SI: 1 foot = 304.8 mm.

**507.2.8.1 Criteria.** Filters shall be of such size, type and arrangement as will permit the required quantity of air to pass through such units at rates not exceeding those for which the filter or unit was designed or *approved*. Filter units shall be installed in frames or holders so as to be readily removable without the use of separate tools, unless designed and installed to be cleaned in place and the system is equipped for such cleaning in place. Removable filter units shall be of a size that will allow them to be cleaned in a dishwashing machine or pot sink. Filter units shall be arranged in place or provided with drip-intercepting devices to prevent grease or other condensate from dripping into food or on food preparation surfaces.

**507.2.8.2. Mounting position of grease filters.** Filters shall be installed at an angle of not less than 45 degrees (0.79 rad) from the horizontal and shall be equipped with a drip tray beneath the lower edge of the filters.

**507.2.9 Grease gutters for Type I hood.** Grease gutters shall drain to an *approved* collection receptacle that is fabricated, designed and installed to allow access for cleaning.

**507.32.2 Type II hoods.** Type II hoods shall be installed above dishwashers and appliances that produce heat or moisture and do not produce grease or smoke as a result of the cooking process, except where the heat and moisture loads from such appliances are incorporated into the HVAC system design or into the design of a separate removal system. Type II hoods shall be installed above all appliances that produce products of *combustion* and do not produce grease or smoke as a result of the cooking process. Spaces containing cooking appliances that do not require Type II hoods shall be provided with exhaust at a rate of 0.70 cfm per square foot (0.00033 m<sup>3</sup>/s). For the purpose of determining the floor area required to be exhausted, each individual *appliance* that is not required to be installed under a Type II hood shall be considered as occupying not less than 100 square feet (9.3 m<sup>2</sup>). Such additional square footage shall be provided with exhaust at a rate of 0.70 cfm per square foot [0.00356 m<sup>3</sup>/(s · m<sup>2</sup>)].

~~**507.2.3 Domestic cooking appliances used for commercial purposes.** Domestic cooking appliances utilized for commercial purposes shall be provided with Type I or Type II hoods as required for the type of appliances and processes in accordance with Sections 507.2, 507.2.1 and 507.2.2.~~

~~**507.2.4 Extra-heavy-duty.** Type I hoods for use over *extra-heavy-duty cooking appliances* shall not cover *heavy-, medium- or light-duty appliances*. Such hoods shall discharge to an exhaust system that is independent of other exhaust systems.~~

~~**507.3 Fuel-burning appliances.** Where vented fuel-burning appliances are located in the same room or space as the hood, provisions shall be made to prevent the hood system from interfering with normal operation of the *appliance vents*.~~

~~**507.4 Type I materials.** Type I hoods shall be constructed of steel having a minimum thickness of 0.0466 inch (1.181 mm) (No. 18 gage) or stainless steel not less than 0.0335 inch [0.8525 mm (No. 20 MSG)] in thickness.~~

~~**507.3.15 Type II hood materials.** Type II hoods shall be constructed of steel having a minimum thickness of 0.0296 inch (0.7534 mm) (No. 22 gage) or stainless steel not less than 0.0220 inch (0.5550 mm) (No. 24 gage) in thickness, copper sheets weighing not less than 24 ounces per square foot (7.3 kg/m<sup>2</sup>) or of other *approved* material and gage.~~

~~**507.3.26 Type II Supports.** Type I hoods shall be secured in place by non-combustible supports. All Type I and Type II hood supports shall be adequate for the applied load of the hood, the unsupported ductwork, the effluent loading and the possible weight of personnel working in or on the hood.~~

~~**507.7 Hood joints, seams and penetrations.** Hood joints, seams and penetrations shall comply with Sections 507.7.1 and 507.7.2.~~

~~**507.7.1 Type I hoods.** External hood joints, seams and penetrations for Type I hoods shall be made with a continuous external liquid-tight weld or braze to the lowest outermost perimeter of the hood. Internal hood joints, seams, penetrations, filter support frames and other appendages attached inside the hood shall not be required to be welded or brazed but shall be otherwise sealed to be grease-tight.~~

**Exceptions:**

1. ~~Penetrations shall not be required to be welded or brazed where sealed by devices that are listed for the application.~~
2. ~~Internal welding or brazing of seams, joints and penetrations of the hood shall not be prohibited provided that the joint is formed smooth or ground so as to not trap grease, and is readily cleanable.~~

**507.3.37-2 Type II hoods joint, seams and penetrations.** Joints, seams and penetrations for Type II hoods shall be constructed as set forth in Chapter 6, shall be sealed on the interior of the hood and shall provide a smooth surface that is readily cleanable and watertight.

~~**507.8 Cleaning and grease gutters.** A hood shall be designed to provide for thorough cleaning of the entire hood. Grease gutters shall drain to an approved collection receptacle that is fabricated, designed and installed to allow access for cleaning.~~

~~**507.9 Clearances for Type I hood.** A Type I hood shall be installed with a clearance to combustibles of not less than 18 inches (457 mm).~~

~~**Exception:** Clearance shall not be required from gypsum wallboard or 1/2-inch (12.7 mm) or thicker cementitious wallboard attached to noncombustible structures provided that a smooth, cleanable, nonabsorbent and noncombustible material is installed between the hood and the gypsum or cementitious wallboard over an area extending not less than 18 inches (457 mm) in all directions from the hood.~~

~~**507.10 Hoods penetrating a ceiling.** Type I hoods or portions thereof penetrating a ceiling, wall or furred space shall comply with Section 506.3.11. Field-applied grease duct enclosure systems, as addressed in Section 506.3.11.2, shall not be utilized to satisfy the requirements of this section.~~

~~**507.11 Grease filters.** Type I hoods shall be equipped with grease filters listed and labeled in accordance with UL 1046 and designed for the specific purpose. Grease collecting equipment shall be provided with access for cleaning. The lowest edge of a grease filter located above the cooking surface shall be not less than the height specified in Table 507.11.~~

**TABLE 507.11  
MINIMUM DISTANCE BETWEEN THE LOWEST EDGE OF A GREASE FILTER AND THE COOKING SURFACE OR THE HEATING SURFACE**

Type of Cooking Appliances	Height Above Cooking Surface (feet)
Without exposed flame	0.5
Exposed flame and burners	2
Exposed charcoal and charbroil type	3.5

For SI: 1 foot = 304.8 mm.

~~**507.11.1 Criteria.** Filters shall be of such size, type and arrangement as will permit the required quantity of air to pass through such units at rates not exceeding those for which the filter or unit was designed or approved. Filter units shall be installed in frames or holders so as to be readily removable without the use of separate tools, unless designed and installed to be cleaned in place and the system is equipped for such cleaning in place. Removable filter units shall be of a size that will allow them to be cleaned in a dishwashing machine or pot sink. Filter units shall be arranged in place or provided with drip intercepting devices to prevent grease or other condensate from dripping into food or on food preparation surfaces.~~

~~**507.11.2 Mounting position.** Filters shall be installed at an angle of not less than 45 degrees (0.79 rad) from the horizontal and shall be equipped with a drip tray beneath the lower edge of the filters.~~

~~**507.4 Hood size and location.** Hoods shall comply with the overhang, set back and height requires in accordance with Sections 507.4.1 and 507.4.2 based on the type hood.~~

**507.4.1.12 Canopy hoods.** The inside lower edge of canopy-type Type I and II commercial hoods shall overhang or extend a horizontal distance of not less than 6 inches (152 mm) beyond the edge of the top horizontal surface of the *appliance* on all open sides. The vertical distance between the front lower lip of the hood and such surface shall not exceed 4 feet (1219 mm).

**Exception:** The hood shall be permitted to be flush with the outer edge of the cooking surface where the hood is closed to the *appliance* side by a noncombustible wall or panel.

**507.4.2.14 Noncanopy hoods.** Noncanopy-type hoods shall be located a maximum of 3 feet (914 mm) above the cooking surface. The edge of the hood shall be set back a maximum of 1 foot (305 mm) from the edge of the cooking surface.

**507.5.13 Capacity of hoods.** Commercial food service hoods shall exhaust a minimum net quantity of air determined in accordance with this section and Sections 507.543.1 through 507.543.5. The net quantity of *exhaust air* shall be calculated by subtracting any airflow supplied directly to a hood cavity from the total exhaust flow rate of a hood. Where any combination of *heavy-duty*, *medium-duty* and *light-duty cooking appliances* are utilized under a single hood, the exhaust rate required by this section for the heaviest duty *appliance* covered by the hood shall be used for the entire hood.

**507.543.1 Extra-heavy-duty cooking appliances.** The minimum net airflow for hoods, as determined by Section 507.12, used for *extra-heavy-duty cooking appliances* shall be determined as follows:

<b>Type of Hood</b>	<b>CFM per linear foot of hood</b>
Backshelf/pass-over	Not allowed
Double island canopy (per side)	550
Eyebrow	Not allowed
Single island canopy	700
Wall-mounted canopy	550

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.543.2 Heavy-duty cooking appliances.** The minimum net airflow for hoods, as determined by Section 507.12, used for *heavy-duty cooking appliances* shall be determined as follows:

<b>Type of Hood</b>	<b>CFM per linear foot of hood</b>
Backshelf/pass-over	400
Double island canopy (per side)	400
Eyebrow	Not allowed
Single island canopy	600
Wall-mounted canopy	400

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.543.3 Medium-duty cooking appliances.** The minimum net airflow for hoods, as determined by Section 507.12, used for *medium-duty cooking appliances* shall be determined as follows:

<b>Type of Hood</b>	<b>CFM per linear foot of hood</b>
Backshelf/pass-over	300
Double island canopy (per side)	300
Eyebrow	250
Single island canopy	500
Wall-mounted canopy	300

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.543.4 Light-duty cooking appliances.** The minimum net airflow for hoods, as determined by Section 507.12, used for *light-duty cooking appliances* and food service preparation shall be determined as follows:

<b>Type of Hood</b>	<b>CFM per linear foot of hood</b>
Backshelf/pass-over	250
Double island canopy (per side)	250
Eyebrow	250
Single island canopy	400
Wall-mounted canopy	200

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.513.5 Dishwashing appliances.** The minimum net airflow for Type II hoods used for dishwashing appliances shall be 100 CFM per linear foot of hood length.

**Exception:** Dishwashing appliances and *equipment* installed in accordance with Section 507.32-2.

~~**507.14 Noncanopy size and location.** Noncanopy type hoods shall be located a maximum of 3 feet (914 mm) above the cooking surface. The edge of the hood shall be set back a maximum of 1 foot (305 mm) from the edge of the cooking surface.~~

~~**507.15 Exhaust outlets.** Exhaust outlets located within the hood shall be located so as to optimize the capture of particulate matter. Each outlet shall serve not more than a 12-foot (3658 mm) section of hood.~~

~~**507.616 Performance test.** A performance test shall be conducted upon completion and before final approval of the installation of a ventilation system serving *commercial cooking appliances*. The test shall verify the rate of exhaust airflow required by Section 507.513, makeup airflow required by Section 508 and proper operation as specified in this chapter. The permit holder shall furnish the necessary test *equipment* and devices required to perform the tests.~~

~~**507.616.1 Capture and containment test.** The permit holder shall verify capture and containment performance of the exhaust system. This field test shall be conducted with all appliances under the hood at operating temperatures, with all sources of outdoor air providing *makeup air* for the hood operating and with all sources of recirculated air providing conditioning for the space in which the hood is located operating. Capture and containment shall be verified visually by observing smoke or steam produced by actual or simulated cooking, such as with smoke candles, smoke puffers, etc.~~

**Reason:** This section needs to be reorganized. The scope of this section has become much too large and non-cohesive due to multiple "tweaks" in the past. Requirements are "jumbled" and bounce around between the different types of hoods. There has been no change to intent in this proposed reorganization, only the presentation of the text has changed.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M101-12**

**AS**

## Code Change No: M103-12

### Original Proposal

**Section(s):** 507.2.1.1.1 (New)

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO) and Roger Harper, Louisa County, VA, representing VA. Plumbing and Mechanical Inspectors Association (VPMIA)

**Revise as follows:**

**507.2.1.1.1 Multiple hoods utilizing a single exhaust system.** Where heat or radiant energy sensors are utilized in hood systems consisting of multiple hoods served by a single exhaust system, such sensors shall be provided in each hood. Sensors shall be capable of being accessed from the hood outlet or from a cleanout location.

*(Renumber subsequent section)*

**Reason:**

**Harper-**Utilizing heat sensors to activate the exhaust hood is only effective if the sensors are placed in an appropriate location. Having sensors installed in a duct system, downstream of the cooking appliances, affects the time in which the hood will activate and will not be consistent with the intent of 507.2.1.1. Locating a sensor in the exhaust outlet of each hood will assure timely fan activation.

**McMann-**Having sensors installed elsewhere in a duct system affects the time in which the hood will activate and will not be consistent with the intent of 507.2.1.1. For example, 5 hoods on a single fan system where the sensor is located in a trunk duct downstream of 5 branches. The heat from the hood farthest away will take some time to reach the sensor under passive conditions if it makes it there at all under a light load. Its possible that reverse flow may occur under negative building pressure. Locating a sensor in the exhaust outlet of each hood will assure timely fan activation.

Sensors require periodic cleaning and access is required to the inside to the duct to mount them or replace them. Provisions need to be made for these operations. Installing a sensor on a non-factory made cleanout is a excellent solution or simply providing nearby works as well.

**Cost Impact:** This may increase cost.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M103-12**

**AS**

# Code Change No: M104-12

## Original Proposal

**Section(s):** 507.2

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**507.2 Where required.** A Type I or Type II hood shall be installed at or above all commercial cooking appliances in accordance with Sections 507.2.1 and 507.2.2 Where any cooking appliance under a single hood requires a Type I hood, a Type I hood shall be installed. Where a Type II hood is required, a Type I or Type II hood shall be installed. Where a Type I hood is installed, the installation of the entire system, including the hood, ducts, exhaust equipment and makeup air system shall comply with the requirements of Sections 506, 507, 508 and 509.

**Reason:** The code allows a Type I hood to be installed where the installation is required to have a Type II hood. The problem with replacing a Type II hood with a Type I is that the building can change hands and cooking operations can commence legally without triggering a permit. A Type I hood substituted for a Type II can be fitted with lesser gage duct with no thought to clearances and when a new tenant comes in, they see a Type I hood and start cooking items that produce grease and smoke, not understanding what's really above the ceiling. This situation provides a false sense of security for owners, tenants and code officials and this can lead to significant hazards down the road. If Type I hoods are installed, they should be installed with all of the materials and requirements that are associated such an installation. Installing a Type I hood without Type I ducts, clearances, etc is analogous to installing fire sprinkler heads without a water supply.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** This proposal will increase the cost of construction.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M104-12**

**AS**

# Code Change No: **M106-12**

## Original Proposal

**Section(s):** 507.2.1

**Proponent:** Roger Harper, Louisa County, VA, representing Va. Plumbing and Mechanical Inspectors Association (VPMIA), Va. Building Code Officials Association (VBCOA), and ICC Region VII (sharper@louisa.org) and Guy McMann MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcman@jeffco.us)

**Revise as follows:**

**507.2.1 Type I hoods.** Type I hoods shall be installed where cooking appliances produce grease or smoke. Type I hoods shall be installed over medium-duty, heavy-duty and extra-heavy-duty cooking appliances. ~~Type I hoods shall be installed over light duty cooking appliances that produce grease or smoke.~~

**Reason:** This does nothing but create confusion for designers and code officials. By definition, light duty appliances cannot produce grease or smoke and there are no examples of what this is referring to. Does this apply to burnt toast? It's anybody's guess. If it can't be explained it should not be in the code.

**Cost Impact:** None

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M106-12**

**AS**

# Code Change No: M107-12

## Original Proposal

**Section(s):** 507.2.1.1

**Proponent:** Steve Ferguson, American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE)

**Revise as follows:**

**507.2.1.1 Operation.** ~~Type I hood systems shall be designed and installed to automatically activate the exhaust fan whenever cooking operations occur. The activation of the exhaust fan shall occur through an interlock with the cooking appliances, by means of heat sensors or by means of other approved methods. The exhaust fan serving a Type I hood shall have automatic controls that will activate the fan when any appliance that requires such Type I Hood is turned on, or a means of interlock shall be provided that will prevent operation of such appliances when the exhaust fan is not turned on. Where one or more temperature or radiant energy sensors are used to activate a Type I hood exhaust fan, the fan shall activate not more than 15-minutes after the first appliance, served by that hood, has been turned on.~~ A method of interlock between an exhaust hood system and appliances equipped with standing pilot burners shall not cause the pilot burners to be extinguished. A method of interlock between an exhaust hood system and cooking appliances shall not involve or depend upon any component of a fire extinguishing system.

**Reason:** Clarification that the exhaust fan interlock is to prevent appliance operation when the exhaust fan is not on instead of preventing operation of the exhaust fan when appliance is not on. Also to recognize exhaust systems that include multiple hoods and or hood sections with multiple exhaust fans. The intent is to provide exhaust for operating appliances only. If this can be achieved with only one of multiple fans in a system then there is no need to pay the energy penalty of turning the complete system on. Also recognition that many low energy input cooking appliances require a warm-up period before any cooking may take place.

**Cost Impact:** None. This is already a code requirement to ensure fan operation when the appliances are in operation.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M107-12**

**AS**

## Code Change No: M110-12

### Original Proposal

**Section(s):** 507.11

**Proponent:** Jay Parikh, P.E., Compliance Solutions International Inc., representing himself

**Revise as follows:**

**507.11 Grease filters.** Type I hoods shall be equipped with grease filters listed and labeled in accordance with UL 1046 ~~and designed for the specific purpose.~~ ~~Grease-collecting equipment filters~~ shall be provided with access for cleaning or replacement. The lowest edge of a grease filter located above the cooking surface shall be not less than the height specified in Table 507.11.

**Reason:** (1) The grease filter listed and labeled in accordance with UL 1046 is designed for the specific purpose of using it in Type I hoods in commercial cooking operations. Hence, the phrase “and designed for the specific purpose” is not needed. This phrase is a carry-over from the earlier editions of this code, when the filter listing in accordance with UL 1046 was not required. (2) “Grease filter” is a better and more appropriate term instead of the term “Grease collecting equipment” to refer to these filters, as used in the heading of this section and also in other two sentences in this section, and hence “Grease filter” should be used in the second sentence as well. (3) Some grease filters available today are not to be cleaned, but are to be disposed of when loaded with grease, and replaced with new filters. The proposed change in the second sentence addresses such filters.

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

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M110-12**

**AS**

**Code Change No: M111-12**

**Original Proposal**

**Section(s):** 507.11

**Proponent:** Jay S. Parikh, Compliance Solutions International Inc., representing self.

**Revise as follows:**

**507.11.1 Criteria.** Filters shall be of such size, type and arrangement as will permit the required quantity of air to pass through such units at rates not exceeding those for which the filter or unit was designed or *approved*. Filter units shall be installed in frames or holders so as to be readily removable without the use of separate tools, unless designed and installed to be cleaned in place and the system is equipped for such cleaning in place. Where filters are designed to be and required to be cleaned, removable filter units shall be of a size that will allow them to be cleaned in a dishwashing machine or pot sink. Filter units shall be arranged in place or provided with drip-intercepting devices to prevent grease or other condensate from dripping into food or on food preparation surfaces.

**Reason:** Some grease filters available today are not to be cleaned, but are to be disposed of when loaded with grease, and replaced with new filters. The proposed change addresses such filters.

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

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason and the action taken on M110-12..

**Assembly Action:**

**None**

**Final Hearing Results**

**M111-12**

**AS**

---

Code Change No: **M112-12**

**Original Proposal**

**Section(s):** 508.1.2 (New)

**Proponent:** Steve Ferguson, American Society of Heating Refrigerating and Air-Conditioning Engineers

**Add new text as follows:**

**508.1.2 Air balance.** Design plans for a facility with a commercial kitchen ventilation system shall include a schedule or diagram indicating the design outdoor air balance. The design outdoor air balance shall indicate all exhaust and replacement air for the facility, plus the net exfiltration if applicable. The total replacement air airflow rate shall equal the total exhaust airflow rate plus the net exfiltration.

**Reason:** The proposed text is consistent with ASHRAE 154 and the IMC is currently silent on this issue.

**Cost Impact:** This will not increase the cost of construction.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason and the need to inform the designer.

**Assembly Action:**

**None**

**Final Hearing Results**

**M112-12**

**AS**

---

## Code Change No: M113-12

### Original Proposal

**Section(s):** 510.4, 510.5

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**510.4 Independent system.** ~~Hazardous exhaust systems shall be independent of other types of exhaust systems. Incompatible materials, as defined in the *International Fire Code*, shall not be exhausted through the same hazardous exhaust system. Hazardous exhaust systems shall not share common shafts with other duct systems, except where such systems are hazardous exhaust systems originating in the same fire area.~~

**Exception:** ~~The provision of this section shall not apply to laboratory exhaust systems where all of the following conditions apply:~~

- ~~1. All of the hazardous exhaust ductwork and other laboratory exhaust within both the occupied space and the shafts are under negative pressure while in operation.~~
- ~~2. The hazardous exhaust ductwork manifolded together within the occupied space must originate within the same fire area.~~
- ~~3. Each control branch has a flow regulating device.~~
- ~~4. Perchloric acid hoods and connected exhaust shall be prohibited from manifolding.~~
- ~~5. Radioisotope hoods are equipped with filtration and/ or carbon beds where required by the *registered design professional*.~~
- ~~6. Biological safety cabinets are filtered.~~
- ~~7. Provision is made for continuous maintenance of negative static pressure in the ductwork. Contaminated air shall not be recirculated to occupiable areas. Air containing explosive or flammable vapors, fumes or dusts; flammable, highly toxic or toxic gases; or radioactive material shall be considered to be contaminated.~~

**510.5 Incompatible materials and common shafts.** Incompatible materials, as defined in the *International Fire Code*, shall not be exhausted through the same hazardous exhaust system. Hazardous exhaust systems shall not share common shafts with other duct systems, except where such systems are hazardous exhaust systems originating in the same fire area.

**Exception:** The provisions of this section shall not apply to laboratory exhaust systems where all of the following conditions apply:

1. All of the hazardous exhaust ductwork and other laboratory exhaust within both the occupied space and the shafts are under negative pressure while in operation.
2. The hazardous exhaust ductwork manifolded together within the occupied space must originate within the same fire area.
3. Each control branch has a flow regulating device.
4. Perchloric acid hoods and connected exhaust shall be prohibited from manifolding.
5. Radioisotope hoods are equipped with filtration and/or carbon beds where required by the *registered design professional*.
6. Biological safety cabinets are filtered.
7. Provision is made for continuous maintenance of negative static pressure in the ductwork.

Contaminated air shall not be recirculated to occupiable areas. Air containing explosive or flammable vapors, fumes or dusts; flammable, highly toxic or toxic gases; or radioactive material shall be considered to be contaminated.

**Reason:** The exception to Section 510.4 states that the provision (singular) of this section does not apply if the 7 items are met. Which provision of the three provisions in the main section is being exempted? While it appears that this was meant to apply only to the 2<sup>nd</sup> and 3<sup>rd</sup> sentences, it actually applies to the entire section. It makes no sense for the exception to negate the 1<sup>st</sup> sentence of the main section. Hazardous exhaust must always be independent of other types of exhaust.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M113-12**

**AS**

---

## Code Change No: M114-12

### Original Proposal

**Section(s):** 510.4

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**510.4 Independent system.** Hazardous exhaust systems shall be independent of other types of exhaust systems. Incompatible materials, as defined in the *International Fire Code*, shall not be exhausted through the same hazardous exhaust system. Hazardous exhaust systems shall not share common shafts with other duct systems, except where such systems are hazardous exhaust systems originating in the same fire area.

**Exception:** The provision of this section shall not apply to laboratory exhaust systems where all of the following conditions apply:

1. All of the hazardous exhaust ductwork and other laboratory exhaust within both the occupied space and the shafts are under negative pressure while in operation.
2. The hazardous exhaust ductwork manifolded together within the occupied space must originate within the same fire area.
3. Each control branch has a flow regulating device.
4. Perchloric acid hoods and connected exhaust shall be prohibited from manifolding.
5. Radioisotope hoods are equipped with filtration and/or carbon beds where required by the *registered design professional*.
6. Biological safety cabinets are filtered.
7. Provision is made for continuous maintenance of negative static pressure in the ductwork.

~~Contaminated air shall not be recirculated to occupiable areas. Air containing explosive or flammable vapors, fumes or dusts; flammable, highly toxic or toxic gases; or radioactive material shall be considered to be contaminated.~~

**Reason:** Section 510.4, the last paragraph, conflicts with section 501.3 by implying that hazardous exhaust can be recirculated if cleaned somehow. It was never the intent to allow hazardous exhaust under Section 510 to be recirculated because the complexity of the exhaust is such that effective filtering cannot be prescribed in most cases and because it poses unacceptable risk to the occupants. Filter maintenance is also a major concern. Hazardous exhaust should always discharge to the outdoors, as was intended by this section.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason. The proposal is consistent with what is required by Section 502.

**Assembly Action:**

**None**

**Final Hearing Results**

**M114-12**

**AS**

---

## Code Change No: M116-12

### Original Proposal

#### Section(s): 510.4, 510.5

**Proponent:** Jeremy Lebowitz, P.E., Rolf Jensen & Associates, Inc., representing himself (jlebowitz@rjagroup.com)

#### Revise as follows:

**510.4 Independent system.** Hazardous exhaust systems shall be independent of other types of exhaust systems. Incompatible materials, as defined in the *International Fire Code*, shall not be exhausted through the same hazardous exhaust system. Hazardous exhaust systems shall not share common shafts with other duct systems, except where such systems are hazardous exhaust systems originating in the same fire area.

**Exception:** The provision of this section shall not apply to laboratory exhaust systems where all of the following conditions apply:

1. All of the hazardous exhaust ductwork and other laboratory exhaust within both the occupied space and the shafts are under negative pressure while in operation.
2. The hazardous exhaust ductwork manifolded together within the occupied space must originate within the same fire area.
3. Hazardous exhaust ductwork originating in different fire areas and manifolded together in an unoccupied common shaft shall meet the provisions of Section 717.5.3, Exception 1.1 of the *International Building Code*.
4. Each control branch has a flow regulating device.
5. Perchloric acid hoods and connected exhaust shall be prohibited from manifolding.
6. Radioisotope hoods are equipped with filtration and/or carbon beds where required by the *registered design professional*.
7. Biological safety cabinets are filtered.
8. Provision is made for continuous maintenance of negative static pressure in the ductwork.

**510.5 Contaminated air.** Contaminated air shall not be recirculated to occupiable areas. Air containing explosive or flammable vapors, fumes or dusts; flammable, highly toxic or toxic gases; or radioactive material shall be considered to be contaminated.

*(Renumber subsequent sections)*

**Reason:** Non-laboratory hazardous exhaust is already permitted to be manifolded together in a common exhaust duct when originating from the same fire area. IMC 510.4 Exception addresses ducts acting as a direct link between different fire areas through the requirement for continuous negative pressure within the duct. The manifold location is relevant as the amount of dilution inside the shaft is far greater than outside of it. IMC 510.4 Exception should allow manifolding of hazardous exhaust ducts from different fire areas within shafts. Fire dampers are prohibited at the shaft penetration, but alternative protection can and should be provided via subducts. 2012 IBC 717.5.3 Exception 1.1 allows 22-inch subducts with continuous upward airflow in lieu of fire dampers at shaft penetrations. This code approach suggests that a subduct with continuous airflow prevents contaminants from spreading between fire areas and justifies the manifolding of hazardous laboratory exhaust from separate fire areas within shafts.

Additionally, the requirements after the exception (new section 510.5) should be broken out into a separate code section to clearly show that they apply to all hazardous exhaust systems, including laboratory exhaust systems meeting the requirements of the exception.

**Cost Impact:** The code change will not increase the cost of construction, as it would generally permit the use of fewer shafts throughout a given building.

**Public Hearing Results**

**Committee Action:**

**Approved as Modified**

**Modify the proposal as follows:**

**510.4 Independent system.** Hazardous exhaust systems shall be independent of other types of exhaust systems. Incompatible materials, as defined in the *International Fire Code*, shall not be exhausted through the same hazardous exhaust system. Hazardous exhaust systems shall not share common shafts with other duct systems, except where such systems are hazardous exhaust systems originating in the same fire area.

**Exception:** The provision of this section shall not apply to laboratory exhaust systems where all of the following conditions apply:

1. All of the hazardous exhaust ductwork and other laboratory exhaust within both the occupied space and the shafts are under negative pressure while in operation.
2. The hazardous exhaust ductwork manifolded together within the occupied space must originate within the same fire area.
3. Hazardous exhaust ductwork originating in different fire areas and manifolded together in a ~~unoccupied~~ common shaft shall meet the provisions of Section 717.5.3, Exception 1.1 of the *International Building Code*.
4. Each control branch has a flow regulating device.
5. Perchloric acid hoods and connected exhaust shall be prohibited from manifolding.
6. Radioisotope hoods are equipped with filtration and/or carbon beds where required by the *registered design professional*.
7. Biological safety cabinets are filtered.
8. Provision is made for continuous maintenance of negative static pressure in the ductwork.

**510.5 Contaminated air.** Contaminated air shall not be recirculated to occupiable areas. Air containing explosive or flammable vapors, fumes or dusts; flammable, highly toxic or toxic gases; or radioactive material shall be considered to be contaminated.

*(Renumber subsequent sections)*

**Committee Reason:** Approval is based on the proponent's published reason. The modification deletes the adjective that suggests that shafts can be occupied spaces.

**Assembly Action:**

**Final Hearing Results**

**None**

**M116-12**

**AM**

---

# Code Change No: M117-12

## Original Proposal

**Section(s):** 510.4

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**Independent system.** Hazardous exhaust systems shall be independent of other types of exhaust systems. Incompatible materials, as defined in the *International Fire Code*, shall not be exhausted through the same hazardous exhaust system. Hazardous exhaust systems shall not share common shafts with other duct systems, except where such systems are hazardous exhaust systems originating in the same fire area.

**Exceptions:** The provision of this section shall not apply to laboratory exhaust systems where all of the following conditions apply:

1. All of the hazardous exhaust ductwork and other laboratory exhaust within both the occupied space and the shafts are under negative pressure while in operation.
2. The hazardous exhaust ductwork manifolded together within the occupied space must originate within the same fire area.
3. Each control branch has a flow regulating device.
4. Perchloric acid hoods and connected exhaust shall be prohibited from manifolding.
5. Radioisotope hoods are equipped with filtration and/ or carbon beds where required by the *registered design professional*.
6. Biological safety cabinets are filtered.
7. ~~Provision is made for continuous maintenance of negative static pressure in the ductwork.~~  
Each hazardous exhaust duct system shall be served by redundant exhaust fans that comply with either of the following:
  - 7.1 The fans shall operate simultaneously in parallel and each fan shall be individually capable of providing the required exhaust rate.
  - 7.2 Each of the redundant fans is controlled so as to operate when the other fan has ailed or is shut down for servicing.

*(Portions of text not shown remain unchanged.)*

**Reason:** Section 510.4, exception item #7 says nothing about how the intent is to be accomplished. Does this imply standby power, redundant fans, both? Code change M55-03/04 that put this text in the code suggests that the intent was to require redundant exhaust fans in case one fan fails or needs to be serviced.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** This proposal will increase the cost of construction.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M117-12**

**AS**

---

**Code Change No: M118-12**

**Original Proposal**

**Section(s): 510.5.5**

**Proponent:** Dustin McLehane, Chesterfield County, VA, Va. Plumbing and Mechanical Inspectors Association (VPMIA) And Va. Building Code Officials Association (VBCOA) and Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO)

**Revise as follows:**

**510.5.5 Makeup air.** Makeup air shall be provided at a rate approximately equal to the rate that air is exhausted by the hazardous exhaust system. Makeup-air intakes shall be located ~~so as to avoid recirculation of contaminated air.~~ in accordance with Section 401.4.

**Reason:**

**McLehaney-**This is editorial in nature. It removes ineffective language ("avoid") and references the appropriate code section for intakes opening locations.

**McMann-** This is editorial in nature and referencing the Section for intakes provides all the requirements for intake openings instead of merely addressing recirculation generically.

**Cost Impact:** None

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M118-12**

**AS**

## Code Change No: M119-12

### Original Proposal

**Section(s):** 510.6.1.1(New)

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Add new text as follows:**

**510.6.1.1 Hazardous exhaust ducts that penetrate fire-resistance-rated shafts shall comply with Section 714.3.1 or 714.3.1.2 of the International Building Code.**

**Reason:** Section 510.6 prohibits Fire/Smoke dampers in hazardous exhaust ducts but section 607.5.5 says the opposite. Section 510.6.2 addresses floor/ceiling assemblies. Section 510.3 addresses fire-resistance-rated wall assemblies. Section 510.6.4 addresses fire walls. The code is silent on penetration of fire rated shaft walls.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** This proposal will increase the cost of construction.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M119-12**

**AS**

## Code Change No: M120-12

### Original Proposal

#### Section(s): 510.8

**Proponent:** Marcelo M. Hirschler, GBH International  
(gbhint@aol.com)

#### Delete and substitute as follows:

~~**510.8 Duct construction.** Ducts used to convey hazardous exhaust shall be constructed of *approved* G90 galvanized sheet steel, with a minimum nominal thickness as specified in Table 510.8. Nonmetallic ducts used in systems exhausting nonflammable corrosive fumes or vapors shall be *listed and labeled*. Nonmetallic ducts shall have a flame spread index of 25 or less and a smoke-developed index of 50 or less, when tested in accordance with ASTM E 84 or UL 723. Ducts shall be *approved* for installation in such an exhaust system. Where the products being exhausted are detrimental to the duct material, the ducts shall be constructed of alternative materials that are compatible with the exhaust.~~

**510.8 Duct construction.** Ducts used to convey hazardous exhaust shall be constructed of materials *approved* for installation in such an exhaust system and shall comply with one of the following:

1. Ducts shall be constructed of *approved* G90 galvanized sheet steel, with a minimum nominal thickness as specified in Table 510.8.
2. Ducts used in systems exhausting nonflammable corrosive fumes or vapors shall be constructed of nonmetallic materials that exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E84 or UL 723 or that are *listed and labeled* for the application.
3. Where the products being exhausted are detrimental to the duct material, the ducts shall be constructed of alternative materials that are compatible with the exhaust.

**Reason:** This is simply editorial cleanup. The present section seems to suggest, in the first sentence, that the ducts must be constructed of galvanized sheet steel, something which the second sentence contradicts. Any material used for construction of hazardous exhaust ducts needs to be approved for the system.

**Cost Impact:** None

### Public Hearing Results

#### Committee Action:

**Approved as Modified**

#### Modify the proposal as follows:

**510.8 Duct construction.** Ducts used to convey hazardous exhaust shall be constructed of materials *approved* for installation in such an exhaust system and shall comply with one of the following: Where the products being exhausted are detrimental to the duct material, the ducts shall be constructed of alternative materials that are compatible with the exhaust.

1. Ducts shall be constructed of *approved* G90 galvanized sheet steel, with a minimum nominal thickness as specified in Table 510.8.
2. Ducts used in systems exhausting nonflammable corrosive fumes or vapors shall be constructed of nonmetallic materials that exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E84 or UL 723 and ~~or~~ that are *listed and labeled* for the application.
- ~~3. Where the products being exhausted are detrimental to the duct material, the ducts shall be constructed of alternative materials that are compatible with the exhaust.~~

**Committee Reason:** Approval is based on the proponent's published reason. The modification to item # 2 couples the testing requirement with a requirement for listing because testing and listing are interdependent. Item # 3 was meant to always apply and

therefore should not be listed as a choice.

**Assembly Action:**

**None**

**Final Hearing Results**

**M120-12**

**AM**

---

## Code Change No: M123-12

### Original Proposal

**Section(s):** 514.2

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**514.2 Prohibited applications.** Energy recovery ventilation systems shall not be used in the following systems:

**Exception:** The application of ERV equipment that recovers sensible heat only utilizing coil-type and fixed- plate heat exchangers shall not be limited by this section.

*(Portions not shown remain unchanged.)*

**Reason:** Section 514 limits the applications for ERV's and was focused on wheel- type heat exchanger units. Exemptions should apply for "run-around-coils", fixed plate heat exchangers and other non- latent energy types of ERV's. The ERV types in the exception cannot leak contaminants from one air stream to another, which was the concern of the original text. ERV's are in demand for some of these applications to meet the goals of energy and sustainability "green" codes, standards and rating systems.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Disapproved**

**Committee Reason:** The listing of some ERV's could prohibit such applications. Relaxation of the prohibition is a threat to indoor air quality.

**Assembly Action:**

**None**

### Public Comments

*Public Comment:*

**Shawn Strausbaugh, Arlington County, VA, representing International Code Council Plumbing, Mechanical, and Fuel Gas Code Action Committee (ICC PMG CAC), requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

**514.2 Prohibited applications.** Energy recovery ventilation systems shall not be used in the following systems:

**Exception:** The application of ERV equipment that recovers sensible heat only utilizing coil-type ~~and fixed-plate~~ heat exchangers shall not be limited by this section.

**Commenter's Reason:** Fixed plate heat exchangers have been removed from the original change because of concern for cross contamination resulting from the loss of integrity of a fixed plate. Coil type heat exchangers would not pose a threat to indoor air quality.

**Final Hearing Results**

**M123-12**

**AMPC**

---

## Code Change No: M126-12

### Original Proposal

#### Section(s): 602.1

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO)  
(gmcmann@jeffco.us)

#### Revise as follows:

### SECTION 602 PLENUMS

**602.1 General.** Supply, return, exhaust, relief and ventilation air plenums shall be limited to uninhabited crawl spaces, areas above a ceiling or below the floor, attic spaces and mechanical equipment rooms. Plenums shall be limited to one fire area. Return and transfer air shall be ducted from the boundary of the fire area directly to the air handling equipment. Fuel-fired appliances shall not be installed within a plenum.

**Reason:** It needs to be clarified that protected openings connecting one fire area to another are still linking the fire areas together regardless of whether a fire damper is installed in a fire barrier. There will still be a physical path for smoke to travel through even when the equipment has stopped in fire mode. Making it clear that this situation would require a direct ducted connection to the air handling equipment will be helpful to the user.

**Cost Impact:** None

### Public Hearing Results

#### Committee Action:

**Approved as Modified**

#### Modify the proposal as follows:

### SECTION 602 PLENUMS

**602.1 General.** Supply, return, exhaust, relief and ventilation air plenums shall be limited to uninhabited crawl spaces, areas above a ceiling or below the floor, attic spaces and mechanical equipment rooms. Plenums shall be limited to one fire area. ~~Return and transfer Air systems~~ shall be ducted from the boundary of the fire area served directly to the air handling equipment. Fuel-fired appliances shall not be installed within a plenum.

**Committee Reason:** Approval is based on the proponent's published reason. The modification adding the word "served" clarifies the relationship between the fire area and the air handler that serves the fire area. The modification opens the requirement to all air systems which can include supply and exhaust air as well as return and transfer air.

#### Assembly Action:

**None**

### Final Hearing Results

**M126-12**

**AM**

## Code Change No: M130-12

### Original Proposal

#### Section(s): 602.2

**602.2 Construction.** *Plenum* enclosures shall be constructed of materials that comply with the requirements of section 703.5 of the *International Building Code* or of materials that have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84 or UL 723 ~~permitted for the type of construction classification of the building.~~ The use of gypsum boards to form plenums shall be limited to systems where the air temperatures do not exceed 125°F (52°C) and the building and mechanical system design conditions are such that the gypsum board surface temperature will be maintained above the airstream dew-point temperature. Air plenums formed by gypsum boards shall not be incorporated in air-handling systems utilizing evaporative coolers.

**Reason:** All the materials contained within a plenum must be noncombustible or have a flame spread index of not more than 25 and a smoke developed index of not more than 50, except for a series of materials that meet their own special tests. The materials of construction of the plenum itself need to meet similar requirements. The IMC section is shown below.

**602.2.1 Materials within plenums.** Except as required by Sections 602.2.1.1 through 602.2.1.6, materials within plenums shall be noncombustible or shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84 or UL 723.

Plenums should not be allowed to be constructed simply of combustible materials (for example plain wood) because if the plenum enclosures can be made of wood, any fire would be able to spread along the walls of the plenum (wood typically has a flame spread index of up to 200) even with the best materials contained within the plenum.

During the last cycle proposal M88 introduced this issue but the technical committee was concerned that the proposal was placed in the wrong location because the requirements were placed in section 602.2.1 and they conflicted with the requirements of section 602.2 which would appear to allow plenum enclosures to be constructed of wood or other combustible building materials.

Requiring that a material be noncombustible in accordance with Section 703.5 of the IBC is much less onerous than simply requiring it to be noncombustible because composite materials are actually permitted to be “somewhat combustible” in accordance with 703.5.2 and only “elementary materials” are required to be strictly noncombustible. In particular section 703.5.2 of the IBC is intended to allow gypsum board to be classified as noncombustible, and, therefore, this avoids a conflict with the remainder of section 602.2 that allows gypsum board into certain plenums.

Section 703.5 of the IBC reads as follows:

**703.5 Noncombustibility tests.** *The tests indicated in Sections 703.5.1 and 703.5.2 shall serve as criteria for acceptance of building materials as set forth in Sections 602.2 602.3 and 602.4 in Type I, II, III and IV construction. The term “noncombustible” does not apply to the flame spread characteristics of interior finish or trim materials. A material shall not be classified as a noncombustible building construction material if it is subject to an increase in combustibility or flame spread beyond the limitations herein established through the effects of age, moisture or other atmospheric conditions.*

**703.5.1 Elementary materials.** *Materials required to be noncombustible shall be tested in accordance with ASTM E 136.*

**703.5.2 Composite materials.** *Materials having a structural base of noncombustible material as determined in accordance with Section 703.5.1 with a surfacing not more than 0.125 inch (3.18 mm) thick that has a flame spread index not greater than 50 when tested in accordance with ASTM E 84 or UL 723 shall be acceptable as noncombustible materials.*

The revised language proposed for the IMC takes care of the problem of using highly combustible materials to construct plenums by requiring that plenum enclosures be constructed of noncombustible materials (in accordance with section 703.5 of the IBC, which includes gypsum board) or of materials that meet the same fire test requirements as the materials contained within the plenum for all types of buildings.

**Cost Impact:** Plenums will not be permitted to be constructed of wood.

**Public Hearing Results**

**Committee Action:**

**Disapproved**

**Committee Reason:** The proposed text could be interpreted to require the materials in wall assemblies to comply as opposed to only the surfaces exposed to airflow.

**Assembly Action:**

**None**

**Public Comments**

*Public Comment:*

**Marcelo M. Hirschler, representing GBH International, Jesse Beitel, representing Hughes Associates for XPSA and Robert Davidson, representing Davidson Code Concepts, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

**602.2 Construction.** ~~Plenum enclosure construction materials that are exposed to the airflow shall~~ *Plenum enclosures shall be constructed of materials that* comply with the requirements of Section 703.5 of the *International Building Code* or such materials shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E 84 or UL 723. The use of gypsum boards to form plenums shall be limited to systems where the air temperatures do not exceed 125°F (52°C) and the building and mechanical system design conditions are such that the gypsum board surface temperature will be maintained above the airstream dew-point temperature. Air plenums formed by gypsum boards shall not be incorporated in air-handling systems utilizing evaporative coolers.

**Commenter's Reason:** The technical committee pointed out during the discussion that "The proposed text could be interpreted to require the materials in wall assemblies to comply as opposed to only the surfaces exposed to airflow." The public comment makes it clear that the new requirements apply only to those plenum enclosure construction materials exposed to the airflow.

The original proposal was opposed by one of the submitters of this public comment and the modification resolves the issue. The original reason for the code proposal remains valid and is adequately addressed by this comment, albeit (properly) by restricting it to the materials of construction exposed to the airflow: "All the materials contained within a plenum must be noncombustible or have a flame spread index of not more than 25 and a smoke developed index of not more than 50, except for a series of materials that meet their own special tests. The materials of construction of the plenum itself need to meet similar requirements."

The other issue addressed by the proposal is also still valid: the requirements of section 703.5 of the IBC allow gypsum board to continue to be used as a plenum construction material.

**Final Hearing Results**

**M130-12**

**AMPC**

---

## Code Change No: M134-12

### Original Proposal

**Section(s):** 202, 602.2.1.4

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Add new definition as follows:**

**DISCRETE PRODUCT.** Products such as duct straps, duct fittings, duct registers, and pipe hangers that are tested to UL 2043.

**Revise as follows:**

~~**602.2.1.4 Electrical equipment in plenums.** Electrical equipment exposed within a plenum shall comply with Sections 602.2.1.4.1 and 602.2.1.4.2~~

~~**602.2.1.4.1 Equipment in metallic enclosures.** Electrical equipment with metallic enclosures exposed within a plenum shall be permitted.~~

~~**602.2.1.4.2 Equipment in combustible enclosures.** Electrical equipment with combustible enclosures exposed within a plenum shall be listed and labeled for such use in accordance with UL 2043.~~

**602.2.1.4 Discrete electrical, plumbing and mechanical products in plenums.** Where discrete electrical, plumbing and mechanical products and appurtenances are located in a plenum and have exposed combustible material, they shall be listed and labeled for such use in accordance with UL 2043.

**Reason:** The first part of this proposal is just a text cleanup to delete unnecessary wording. Section 602.2.1.4.1 does not state a requirement and is simply the inverse of section 602.2.1.4.2. With Section 602.2.1.4.1 gone, Section 602.2.1.4 has no purpose. The only actual requirement is stated in Section 602.2.1.4.2. The second part of this proposal revises the remaining section to broaden its coverage to more than electrical products. There are combustible plumbing and mechanical products such as plumbing appurtenances, pipe and duct supports, condensate pumps, duct fittings, etc that are used in plenums and that cannot be effectively tested in accordance with standards ASTM E84 or UL 723. The UL 2043 standard was developed to test products and materials not able to be tested in accordance with ASTM E84 or UL 723, and is currently adopted by reference in Section 602.2.1.4.2. These products are individual distinct pieces and non-continuous (i.e. "discrete"). This proposal was presented last cycle and the Committee had questions about the term "discrete". Per the dictionary, 'discrete' refers to products that are non-continuous, individual distinct pieces, as compared to non-discrete products such as cable or plastic pipe. If adopted, this proposal will provide consistency in how the ICC codes treat discrete components in plenums. The new definition is necessary because of the new term. The definition basically states that a discrete product is something that is necessarily tested to UL 2043. A discrete product is defined by how it is tested.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**DISCRETE PRODUCT.** Products that are non-continuous, individual, distinct pieces such as, but not limited to, such as duct straps, duct fittings, duct registers, and pipe hangers. ~~that are tested to UL 2043.~~

Revise as follows:

**602.2.1.4 Electrical equipment in plenums.** Electrical equipment exposed within a plenum shall comply with Sections 602.2.1.4.1 and 602.2.1.4.2

**602.2.1.4.1 Equipment in metallic enclosures.** Electrical equipment with metallic enclosures exposed within a plenum shall be permitted.

**602.2.1.4.2 Equipment in combustible enclosures.** Electrical equipment with combustible enclosures exposed within a plenum shall be listed and labeled for such use in accordance with UL 2043.

**602.2.1.4-5 Discrete electrical, plumbing and mechanical products in plenums.** Where discrete electrical, plumbing and mechanical products and appurtenances are located in a plenum and have exposed combustible material, they shall be listed and labeled for such use in accordance with UL 2043.

**Committee Reason:** Approval is based on the proponent's published reason. The modification restores text that recognizes that electrical equipment having metallic enclosures is allowed in a plenum, despite the fact that such enclosures are not continuous because of the presence of mounting and similar holes in the metallic enclosure. The text of current Section 602.2.1.4.1 is needed to counter item # 5 of Section 602.2.1 which calls for combustible items to be fully enclosed by continuous enclosures.

**Assembly Action:**

**None**

**Public Comments**

*Public Comment:*

**Marcelo M. Hirschler, representing GBH International, requests Approval as Modified by this Public Comment.**

**Further modify the proposal as follows:**

**DISCRETE PRODUCT.** Products that are non-continuous, individual, distinct pieces such as, but not limited to, electrical, plumbing and mechanical products and duct straps, duct fittings, duct registers, and pipe hangers.

*(Portions of proposal not shown remain unchanged.)*

**Commenter's Reason:** This public comment addresses only the definition and supports the remainder of the proposal as approved by the technical committee. The reason for the proposed modification is to make the definition consistent with the requirements in sections 602.2.1.4 and 602.2.1.5. Discrete products such as duct straps, duct fittings and so on are clearly covered by the requirements of 602.2.1.5 but the requirements of 602.2.1.4 and 602.2.1.5 tend to apply also to larger discrete products with exposed combustible materials.

**Final Hearing Results**

**M134-12**

**AMPC**

## Code Change No: M136-12

### Original Proposal

**Section(s):** 602.2.1.6 (New)

**Proponent:** Marcelo M. Hirschler/GBH International (gbhint@aol.com)

**Add new text as follows:**

**602.2.1.6 Plastic piping and tubing used in plumbing systems shall exhibit a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723. The fire test report shall indicate that the materials were tested at full width of the tunnel and without water or any other liquid in the piping or tubing during the test.**

**Reason:** The IMC requires, in 602.2.1, that all materials within plenums must meet a flame spread index of 25 and a smoke developed index of 50 when tested to ASTM E84. However, in actual practice, many plastic piping and tubing materials are tested by filling the product with water during the test. This is neither a test in accordance with ASTM E84 nor is it adequate for the following reasons:

1. The plastic piping and tubing is listed for use in plenums and can be used with liquids other than water. For example it could be used for combustible liquids.
2. The plastic piping and tubing is not required to be held horizontally in the plenum. If the pipe is not horizontal then the water will not be retained in the pipe during use.
3. During construction and remodeling pipes are often empty.
4. Fire testing for all other products using ASTM E84 is conducted on the material to be used and not on the material with some fillings.
5. ASTM E84 requires all materials and products to be tested at full tunnel width, with only very few exceptions. Plastic piping and tubing is not one of the exceptions. The exceptions in ATM E84 are: (1) when there is a standard practice for the material (as shown in section 6.8), (2) when adhesives and trim have been listed with tests at less than full width and (3) when a specific test or application standard has been issued (as shown in Appendix X5). The relevant sections are shown below (section 6.3 and its associated subsections, section 6.8 and appendix X5).
6. Other plastic piping and tubing materials are tested without water and the comparison is inadequate if some materials are tested full of water.
7. Some materials are tested with water simply because they cannot meet the requirements otherwise.
8. If the IMC committee believes that ASTM E84 is not an appropriate test for such materials (which is a reasonable approach) a code change is needed and an alternate test must be specified because the present wording of section 602.2.1 of the IMC requires plastic piping and tubing to be tested to the ASTM E84/UL 723 test by default, without offering additional guidance on how to do the testing.

*ASTM E84 section 6.3, 6.8 and Appendix X5:*

*6.3 The size of the test specimen shall be:*

*Width: between 20 and 24 in. (508 and 610 mm)*

*Length: 24 ft + 12 in. — 6 in.*

*Thickness: maximum 4 in. (101 mm).*

*NOTE 1 - The test apparatus is not designed for testing at thicknesses greater than 4 in. (101 mm), but has the ability to be modified if required. This is accomplished through (a) modifications to the test apparatus lid to maintain an airtight seal, and (b) the introduction, usually of additional sample/lid supports above the test apparatus ledges. Due to the composition of some materials, test results obtained at a thickness greater than 4 in. (101 mm) will potentially vary from results of a test on the same material tested at a thickness of 4 in. (101 mm) or less.*

*6.3.1 The test specimen shall not be required to conform to the test specimen length and width described in 6.3 when the material complies with 6.3.1.1-6.3.1.3.*

*NOTE 2—When tests are conducted with materials installed at less than full width, representing the end-use width, any resulting flame spread and smoke developed indices will not relate to indices obtained with the calibration material, which is tested using the specimen width described in 6.3.*

*6.3.1.1 Materials for which there is a standard practice to address specimen preparation and mounting with this test method shall be tested as described in the appropriate standard practice (see 6.8).*

*6.3.1.2 Adhesives and trim shall be permitted to be tested in the width or length, or both, specified in their listings, or as part of their conditions for being labeled, by a nationally recognized testing laboratory.*

*6.3.1.3 Materials and products for which there is a specific test method or application standard requiring the use of the apparatus described in Section 5 shall be permitted to be tested in accordance with that specific test method or application standard (see Appendix X5).*

6.8 In addition to the above provisions, the standard practices listed below shall be used for specimen preparation and mounting of the relevant test materials. For all other products, guidance on mounting methods is provided in Appendix X1.

E2231 for pipe and duct insulation materials.

E2404 for paper, vinyl and textile wall and ceiling covering materials.

E2573 for site-fabricated stretch systems.

E2579 for the following wood products: solid board, lumber and timber products (including solid boards, lumber, timber, fingerjoined lumber, glulam, laminate wood, laminated veneer lumber and parallel strand lumber products), panel products (including fibreboard, hardboard, oriented strandboard, waferboard, and plywood panel products), decorative wood products (including fine woodwork, millwork and moulding) and shingles and shakes used as interior wall and ceiling finish and interior trim.

E2599 for reflective insulation, radiant barrier and vinyl stretch ceiling materials for building applications.

E2688 for tapes up to and including 8 in. (203.2 mm) in width.

E2690 for caulks and sealants intended to be applied up to and including 8 in. (203.2 mm) in width.

#### X5. SPECIFIC TEST METHODS AND APPLICATION STANDARDS

X5.1 The following standards address testing of materials in accordance with test methods that are applications or variations of this test method or apparatus.

X5.1.1 Wires and cables for use in air-handling spaces are covered by NFPA 262.

X5.1.2 Pneumatic tubing for control systems are covered by UL 1820.

X5.1.3 Combustible sprinkler piping is covered by UL 1887.

X5.1.4 Optical fiber and communications raceways are covered by UL 2024.

**IMC 602.2.1 Materials within plenums.** Except as required by Sections 602.2.1.1 through 602.2.1.5, materials within plenums shall be noncombustible or shall be listed and labeled as having a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723.

For information also:

NFPA 90A (section on ceiling cavity plenums)

**4.3.11.2.6.6** Plastic piping and tubing used in plumbing systems shall be permitted to be used within a ceiling cavity plenum if it exhibits a flame spread index of 25 or less and a smoke developed index of 50 or less when tested in accordance with ASTM E 84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, at full width of the tunnel and with no water or any other liquid in the pipe during the test.

NFPA 90A (section on raised floor plenums)

**4.3.11.5.5.7** Plastic piping and tubing used in plumbing systems shall be permitted to be used within a raised floor plenum if it exhibits a flame spread index of 25 or less and a smoke developed index of 50 or less when tested in accordance with ASTM E 84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, at full width of the tunnel and with no water or any other liquid in the pipe during the test.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Disapproved**

**Committee Reason:** E84 is already in the code and this proposal will be confusing to the code officials. E84 describes the specimen setup fully. There is no need to tell the testing lab what to put in the test report.

**Assembly Action:**

**None**

### Public Comments

*Public Comment:*

**Marcelo M. Hirschler, representing GBH International, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

**602.2.1.6** Plastic piping and tubing used in plumbing systems shall be listed and shall exhibit a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723. ~~The fire test report shall indicate that the materials were tested at full width of the tunnel and with no water or any other liquid in the piping or tubing during the test.~~

**Commenter's Reason:** The technical committee stated that ASTM E84 is already in the code. However, there is no explicit reference to testing plastic piping and tubing and there has been a lot of confusion in recent years regarding the need (or lack of it) for testing these materials. In view of the fact that the issues of "full width" or of water are addressed in the ASTM E84 standard I agree with the committee that they do not need to be addressed in the IMC.

However, it is important to state explicitly that plastic piping and tubing needs to comply with ASTM E84 requirements in view of the multiple discussions and challenges that have taken place in recent years regarding other test methods and in view of the fact (as shown below) that plastic pipe has often been tested full of water and by placing a single pipe in the ASTM E84 apparatus, neither of which is allowed by recent editions of ASTM E84.

Moreover it is important to clarify that plastic piping and tubing in plenums must be listed and this public comment adds that requirement.

<b>Final Hearing Results</b>
------------------------------

**M136-12**

**AMPC**

---

## Code Change No: M142-12

### Original Proposal

**Section(s):** 603.2, 918.2

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO)  
(gmcman@jeffco.us)

**Revise as follows:**

**603.2 Duct sizing.** Ducts installed within a single dwelling unit shall be sized in accordance with ACCA Manual D, the appliance manufacturer's installation instructions or other approved methods. Ducts installed within all other buildings shall be sized in accordance with the ASHRAE Handbook of Fundamentals or other equivalent computation procedure.

**Revise as follows:**

~~**918.2 Minimum duct sizes.** The minimum unobstructed total area of the outdoor and return air ducts or openings to a forced air warm air furnace shall be not less than 2 square inches per 1,000 Btu/h (4402 mm<sup>2</sup>/kW) output rating capacity of the furnace and not less than that specified in the furnace manufacturer's installation instructions. The minimum unobstructed total area of supply ducts from a forced air warm air furnace shall not be less than 2 square inches for each 1,000 Btu/h (4402 mm<sup>2</sup>/kW) output rating capacity of the furnace and not less than that specified in the furnace manufacturer's installation instructions.~~

~~**Exception:** The total area of the supply air ducts and outdoor and return air ducts shall not be required to be larger than the minimum size required by the furnace manufacturer's installation instructions.~~

~~**918.3 2 Heat pumps.** The minimum unobstructed total area of the outdoor and return air ducts or openings to a heat pump shall be not less than 6 square inches per 1,000 Btu/h (13 208 mm<sup>2</sup>/kW) output rating or as indicated by the conditions of listing of the heat pump. Electric heat pumps shall be tested in accordance with UL 1995.~~

**Reason:** This is outdated legacy code language and is not consistent with current practice. It is up to the design professional, or the requirements from Manual D or the manufacturer of the appliances to determine minimum sizes of ducts and transfer openings, not the code. If these numbers were to be applied, then the code could be condoning an undersized system. This subject matter is already covered in 603.2. There are too many variables and different situations for just one minimum to work for everything.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason. The deleted text is antiquated and not in ACCA Manual D.

**Assembly Action:**

**None**

**Final Hearing Results**

**M142-12**

**AS**

---

# Code Change No: M143-12

## Original Proposal

**Section(s):** Table 603.4

**Proponent:** Luis Escobar, Air Conditioning Contractors of America, representing ACCA (luis.escobar@acca.org)

**Revise as follows:**

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

DUCT SIZE	GALVANIZED		Appropriate Aluminum
	Minimum thickness (in.)	Equivalent galvanized gauge no.	B&S Gauge ALUMINUM MINIMUM THICKNESS (in.)
Round ducts and enclosed rectangular ducts			
14 inches or less	<u>0.013</u> 0.0157	<u>30</u> 28	<u>26</u> 0.0175
<del>Over 14"</del> 16 and 18 inches	<u>0.016</u> 0.0187	<u>28</u> 26	<u>24</u> 0.018
<del>20 inches and over</del>	0.0236	24	0.023
Exposed rectangular ducts			
14 inches or less	<u>0.016</u> 0.0157	28	<u>24</u> 0.0175
Over 14 inches <sup>a</sup>	<u>0.019</u> 0.0187	26	<u>22</u> 0.018

For SI: 1 inch = 25.4 mm, 1 inch water gage = 249 Pa.

a. ~~For duct gages and reinforcement requirements at static pressures of 1/2-inch, 1-inch and 2-inch w.g., SMACNA HVAC Duct Construction Standards, Tables 2-1, 2-2, and 2-3, shall apply.~~

**Reason:** The change that was previously made in the 2009 IMC (and carried forward to the 2012 IMC) unnecessarily increased the material thickness required for round sheet metal ducts.

This proposed change seeks to return to the requirements of 2006 and previous IMC editions which have historically recognized 30 gauge sheet metal as being appropriate for round ducts 14 inches or less diameter in "Single Dwelling Units".

The changes to table 603.4 in the 2009 IMC (and carried forward to the 2012 IMC):

1. Significantly increased cost for round sheet metal ducts
2. Did not improve safety
3. Did not improve energy performance
4. Encourages increased use of less expensive and less efficient non-metallic ducts.

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

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The current and past practice has been to allow 30 gauge duct material. There is no safety issue with 30 gauge duct. Nothing is gained by requiring 28 gauge material

**Assembly Action:**

**None**

**Public Comments**

*Public Comment:*

**Mark Terzigni, representing SMACNA Sheet Metal and Air Conditioning Contractors' National Association, requests Approval as Modified by this Public Comment.**

Replace the table in the original proposal with the following:

**TABLE 603.4  
DUCT CONSTRUCTION MINIMUM SHEET METAL THICKNESS FOR SINGLE DWELLING UNITS<sup>a</sup>**

Duct Shape and Size		½ Inch Water Gage (125 Pa)				1 inch water Gage (250 Pa)			
ROUND diameter		Galvanized		Aluminum		Galvanized		Aluminum	
inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
0-11	0-280	0.013	0.323	0.018	0.465	0.013	0.323	0.018	0.465
12-14	281-350	0.013	0.323	0.018	0.465	0.016	0.399	0.023	0.574
15-17	351-430	0.016	0.399	0.023	0.574	0.019	0.475	0.027	0.684
18	431-450	0.016	0.399	0.023	0.574	0.024	0.599	0.034	0.863
19-20	451-500	0.019	0.475	0.027	0.684	0.024	0.599	0.034	0.863
RECTANGULAR									
RECTANGULAR		Galvanized		Aluminum		Galvanized		Aluminum	
inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
0-8	0-200	0.013	0.323	0.018	0.465	0.013	0.323	0.018	0.465
9-10	201-250	0.013	0.323	0.018	0.465	0.016	0.399	0.023	0.574
11-12	251-300	0.016	0.399	0.023	0.574	0.019	0.475	0.027	0.684
13-16	301-400	0.019	0.475	0.027	0.684	0.019	0.475	0.027	0.684
17-18	401-450	0.019	0.475	0.027	0.684	0.024	0.599	0.034	0.863
19-20	451-500	0.024	0.599	0.034	0.863	0.024	0.599	0.034	0.863

a. Ductwork that exceeds 20 inches by dimension or exceeds a pressure of 1 inch gage (250 Pa) shall be constructed in accordance with *ANSI/SMACNA HVAC Duct Construction Standards Metal and Flexible*.

**Commenter's Reason:** The proposed change M143-12 wanted to return 14 inch round duct to its previous gage (prior to the code change adopted in 2009). SMACNA, the developer of the duct construction standard referenced in section 603 evaluated the request with consideration of limiting the application to single dwelling units. The above table permits the use of 30 gage (0.013 in) for dimensions up to 14 inch round if the static pressure is at or below ½ in. w.g. The table also provides options for 1 inch water gage. This should address all but the largest single dwelling units in which case the ductwork should be constructed as required by the ANSI/SMACNA HVAC Duct Construction Standard. The above modification:

1. Addresses the concern of the original proponent
2. Complies with methods used by SMACNA (ANSI Standard Developer)
3. Provides upper limits for size and pressure
4. Uses actual thickness not "gage" for both steel and aluminum
5. Provides valid options for "low" and "high" pressure single dwelling systems
6. Encourages the use of resource efficient material.

**Cost Impact:** This code change proposal will not increase the cost of construction

**Final Hearing Results**

**M143-12**

**AMPC**

## Code Change No: **M145-12**

### Original Proposal

**Section(s):** 603.4.2 (New)

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Add new text as follows:**

**603.4.2 Duct lap.** Crimp joints for round and oval metal ducts shall be lapped not less than one inch and the male end of the duct shall extend into the adjoining duct in the direction of airflow.

**Reason:** Section 603.4.1 states the number of fasteners to be used for the fastening of metal ducts but is silent on how many inches the ducts must be lapped and if the ducts must be lapped in a certain direction. The code should specifically state how much lap there should be within the ducts prior to securing them as stated in Section 603.4.1.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M145-12**

**AS**

## Code Change No: M149-12

### Original Proposal

#### Section(s): 603.9

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

#### Revise as follows:

**603.9 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 metallic and fibrous glass ductwork shall be listed and labeled in accordance with UL 181A and shall be marked "181A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat-sensitive tape. Closure systems 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~~ all ductwork shall be installed in accordance with the manufacturer's ~~installation~~ instructions. ~~Unlisted duct tape is not permitted as a sealant on any duct.~~

**Reason:** This proposal simplifies this section by stating what is meant by "closure systems." Tapes and mastics are addressed in UL181A. There is no closure system listed specifically for metal ducts, but it is appropriate to require sealing products used for metal ducts to be listed to UL181A because if the sealing product is good enough for fibrous glass ducts it is good enough for metal ducts. This is the case in the field, as fibrous glass duct tapes are commonly used with metal ducts. The manufacturer's instructions should apply for all closure systems, not just those for metal ducts. The last sentence is unnecessary because this proposal requires all tapes to be listed, including those used with metal ducts.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

#### Committee Action:

**Approved as Modified**

#### Modify the proposal as follows:

**603.9 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 ~~metallic and~~ fibrous glass ductwork shall be *listed and labeled* in accordance with UL 181A and 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 metallic and 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 all ductwork shall be installed in accordance with the manufacturer's instructions.

**Committee Reason:** Approval is based on the proponent's published reason. The modification corrects the application of UL181A verses UL181B.

**Assembly Action:**

**None**

<b>Final Hearing Results</b>
------------------------------

**M149-12**

**AM**

---

# Code Change No: M151-12

## Original Proposal

**Section(s):** 603.9

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**603.9 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 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 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 duct.

**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.~~ For ducts having a static pressure classification of less than 2 inches of water column (500Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints and seams of other than the snap-lock and button-lock types.

**Reason:** Unless sealant or a gasket is used, snap-lock and button-lock type seams will leak significantly. The current exception attempted to prevent unnecessary sealing for joints and seams that leak very little or not at all, but it went too far by including all locking type joints and seams. Some locking joints are leakproof such as mechanically folded seams used for spiral seam duct, but this cannot be said for all locking joints.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent’s published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M151-12**

**AS**

## Code Change No: M153-12

### Original Proposal

#### Section(s): 603.10

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

#### Revise as follows:

**603.10 Supports.** Ducts shall be supported ~~at intervals not to exceed 12 feet (3658 mm) and shall be in accordance with SMACNA HVAC Duct Construction Standards—Metal and Flexible. Flexible and other factory-made ducts shall be supported in accordance with the manufacturer's instructions.~~

**Reason:** This section should just reference the SMACNA standards as opposed to specifying a support interval. The 12 foot interval requirement is too broad and is inappropriate for many sizes and types of ducts. Many ducts require closer supports. This text could be easily interpreted as allowing 12 feet maximum support intervals for all ducts.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** This proposal could increase the cost of construction.

### Public Hearing Results

#### Committee Action:

Approved as Modified

#### Modify the proposal as follows:

**603.10 Supports.** Ducts shall be supported in accordance with SMACNA HVAC Duct Construction Standards—Metal and Flexible. Flexible and other factory-made ducts shall be supported in accordance with the manufacturer's instructions.

**Committee Reason:** Approval is based on the proponent's published reason. The modification restores the reference to the manufacturer's instructions to emphasize their importance and because the standard also refers to the instructions.

#### Assembly Action:

None

### Final Hearing Results

M153-12

AM

## Code Change No: M156-12

### Original Proposal

**Section(s):** 605.1

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**605.1 General.** Heating and air-conditioning systems ~~of the central type~~ shall be provided with *approved* air filters. Filters shall be installed such that all return air, outdoor air and makeup air is filtered in the return air system, upstream from any heat exchanger or coil. Filters shall be installed in an approved convenient location. Liquid adhesive coatings used on filters shall have a flash point not lower than 325°F (163°C).

**Reason:** It is just as important to filter outdoor air and makeup air as it is to filter return air. This provision should not be limited to central type systems because all heat exchangers need to be protected from fouling by air-borne debris.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M156-12**

**AS**

## Code Change No: M157-12

### Original Proposal

Section(s): [B] 607.5.4.1

Proponent: Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**THIS CODE CHANGE WILL BE HEARD BY THE INTERNATIONAL MECHANICAL COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THIS COMMITTEE.**

Revise as follows:

**[B] 607.5.4.1 Smoke damper.** Smoke dampers shall close as required by Section 607.3.3.2.

~~The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with the International Building Code and one of the following methods, as applicable:~~

- ~~1. Where a smoke damper is installed within a duct, a smoke detector shall be installed in the duct within 5 feet (1524 mm) of the damper with no air outlets or inlets between the detector and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.~~
- ~~2. Where a smoke damper is installed above smoke barrier doors in a smoke barrier, a spot-type detector listed for releasing service shall be installed on either side of the smoke barrier door opening.~~
- ~~3. Where a smoke damper is installed within an air transfer opening in a wall, a spot-type detector listed for releasing service shall be installed within 5 feet (1524 mm) horizontally of the damper.~~
- ~~4. Where a smoke damper is installed in a corridor wall or ceiling, the damper shall be permitted to be controlled by a smoke detection system installed in the corridor.~~
- ~~5. Where a total coverage smoke detector system is provided within areas served by a heating, ventilation and air conditioning (HVAC) system, smoke dampers shall be permitted to be controlled by the smoke detection system.~~

**Reason:** This text is redundant language and is not needed as Section 607.3.3.2 says exactly the same thing.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M157-12**

**AS**

---

## Code Change No: **M159-12**

### Original Proposal

**Section(s):** 701.2 (New)

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO)  
(gcmann@jeffco.us)

**Add new text as follows:**

**701.2 Dampered openings** Where combustion air openings are provided with volume, smoke or fire dampers, the dampers shall be interlocked with the firing cycle of the appliances served, so as to prevent operation of any appliance that draws combustion air from the room or space when any of the dampers are closed. Manual dampers shall not be installed in combustion air ducts. Ducts not provided with dampers and that pass through rated construction shall be enclosed in a shaft in accordance with the *International Building Code*.

**Reason:** This is basic pertinent information that the user shouldn't have to go to the standard to figure out.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason. Manual dampers are a life safety concern.

**Assembly Action:**

**None**

### Final Hearing Results

**M159-12**

**AS**

**Code Change No: M161-12**

**Original Proposal**

**Section(s): 802.10**

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO)  
(gmcmmann@jeffco.us)

**Add new text as follows:**

**802.10 Door swing.** Appliance and equipment vent terminals shall be located such that doors cannot swing within 12 inches (305 mm) horizontally of the vent terminals. Door stops or closures shall not be installed to obtain this clearance.

**Reason:** As indicated in the photo, any appliance vent can be subject to damage as a result of a door swing even when the vent has been installed in accordance with the manufacturer's instructions. Most manufacturers do not address proximity to doors on a different plane. Even if the door doesn't come in contact with the vent terminal, the door could be left too close to the vent when the appliance is operating and possibly overheating the door causing problems.

**Cost Impact:** None

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M161-12**

**AS**

## Code Change No: **M162-12**

### Original Proposal

**Section(s):** 901.4

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**901.4 902.2 Fireplace accessories.** Listed and labeled fireplace accessories shall be installed in accordance with the conditions of the listing and the manufacturer's instructions. Fireplace accessories shall comply with UL 907.

**Reason:** This section is applicable only to masonry fireplaces, therefore it belongs in Section 902 where its application will be limited to masonry fireplaces.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M162-12**

**AS**

---

## Code Change No: M163-12

### Original Proposal

**Section(s):** 903.4 (New)

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee and Thomas Stroud, Senior Manager of Codes & Standards for the Hearth, Patio & Barbecue Association, representing the Hearth, Patio & Barbecue Association.

**Add new text as follows:**

**903.4 Gasketed fireplace doors.** A gasketed fireplace door shall not be installed on a factory-built fireplace except where the fireplace system has been specifically tested, listed and labeled for such use in accordance with UL 127.

**Reason:**

**Strausbaugh, PMG-CAC-**Because of requirements in the IECC that require all fireplaces to be provided with gasketed doors, a great deal of controversy has resulted. Most factory-built fireplaces are not tested for use with sealed glass doors and installing such doors on fireplaces that are not tested for these doors could cause overheating of the fireplace resulting in a fire hazard. Without testing, the effect of the doors will be an unknown.

**Stroud-**Combustible clearances of the factory built fireplace and chimney system are determined by rigorous testing under UL 127. The addition of gasketed fireplace doors not specifically tested and listed for use with the fireplace can cause a change in the performance of the fireplace resulting in a hazardous condition.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Similar to the requirement of Section 903.3, the fireplace must be listed for use with such doors. This text could prevent fire hazards resulting from overheated fireplace components. This will not create a conflict with the IECC because the IECC can require doors where such doors are not in violation of the IMC.

**Assembly Action:**

**None**

### Final Hearing Results

**M163-12**

**AS**

## Code Change No: M164-12

### Original Proposal

**Section(s):** 908.5

**Proponent:** Guy Tomberlin, Fairfax County Virginia, representing Fairfax County Virginia  
(guy.tomberlin@fairfaxcounty.gov)

**Revise as follows:**

**908.5 Water supply.** Cooling towers, evaporative coolers and fluid coolers shall be provided with an approved water supply, sized for peak demand. The quality of water shall be provided in accordance with the equipment manufacturer's recommendations. ~~Water supplies~~ The piping system and protection of the potable water supply system shall be installed as required by the *International Plumbing Code*.

**Reason:** Various water resources are being utilized across the nation in many different ways. This is being done for many various reasons. Some are because of water shortages, others are in effort to simply conserve our precious resources and others are being done to constructively utilize rain water and properly treated re-use water. Technology provides us with the options for many different water reuses such as reclaimed and rainwater. This proposal clarifies that if the quality of water can be achieved then alternate sources shall be permitted. In addition if an interconnection or back up is provided with the potable system then proper cross connection contamination prevention shall be provided in accordance with the International Plumbing Code. Lastly, the piping system shall be installed according to the International Plumbing Code.

**Cost Impact:** reduces the cost below current requirements for the initial installation and throughout the life of the structure.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M164-12**

**AS**

## Code Change No: M165-12

### Original Proposal

**Section(s):** 908.8 (New), Chapter 15

**Proponent:** Tracy Quinn, Natural Resources Defense Council, on behalf of self  
(tquinn@nrdc.org)

**Add new text as follows:**

**908.8 Cooling Towers.** Cooling towers greater than 150 tons in capacity shall comply with Sections 908.8.1 through 908.8.4.

**908.8.1 Conductivity or Flow-based Control.** Cooling towers shall include of controls that maximize the cycles of concentration based on local water quality conditions. Such controls shall automate system bleed and chemical feed based on conductivity or in proportion to metered makeup volume, metered bleed volume, or bleed time.

**908.8.2 Flow Meter.** A water meter or sub-meter shall be installed to measure the volume of makeup water entering the cooling tower. Where both potable and non-potable water are supplied to the tower, a meter or sub-meter shall be installed to measure each source separately.

**908.8.3 Overflow Alarm.** Cooling towers shall include of an overflow alarm to prevent overflow of the sump in case of makeup water valve failure. Such overflow alarm shall send an audible signal or provide an alert by means of the Building Management System to the tower operator in case of sump overflow.

**908.8.4 Drift Eliminators.** Cooling towers shall be equipped with drift eliminators that achieve drift reduction to 0.002 percent of the circulated water volume. Drift eliminators shall be tested using the Isokinetic Drift Measurement Test Cost for Water Cooling Tower – ATC – 140” testing code from the Cooling Technology Institute.

**Add new standard to Chapter 15 as follows:**

**ATC-140-2011 Isokinetic Drift Measurement Test Cost for Water Cooling Tower – ATC-140” testing code.**

**Reason:** This section includes water efficiency provisions for cooling towers and evaporative cooling systems that tend to waste large quantities of water.

The complexity of managing cooling systems combined with the high operational and financial cost of early failure of a cooling tower, can result in an overly conservative approach to tower bleed frequency. The codes as proposed here aim to ensure that all cooling towers covered by the IMC have the controls necessary to maximize cycles of concentration and minimize unintentional waters losses such as leaks and overflow. Below we have provided information specific to the revisions we have proposed. The information comes from a 2011 Codes and Standards Enhancement Initiative (CASE) for Cooling Tower Water Savings prepared by the California Statewide Utility Code and Standards Program on Cooling Tower Water Savings (attached), hereafter referred to as the CASE study.

Flow meter – “This measure provides a number of water-efficiency benefits. A flow meter on the makeup water line effectively submeters the cooling tower, allowing the operator to know how much water the tower is using and facilitating the identification of excessive water use due to leaks, for example.”

Alarm – “Unintended water losses can occur if the standard float valve that controls the flow of makeup water in the sump fails, resulting in overflow into the sewer line. The failure of the makeup water line control also results in uncontrolled dilution and no activation of chemical feed, putting the system at risk for scale. An overflow alarm prevents these losses from going undetected for days, weeks or longer. An overflow alarm system includes a float switch and an audible electronic signaling device or notification through a building management system. Industry contacts, including cooling tower manufacturers and water treatment companies, generally indicated that the prevalence of installed overflow alarms is very low.”

Drift Eliminators – “Efficient drift eliminators minimize losses due to drift, which is liquid water that is blown or splashed out of the tower during normal operations. Drift eliminators include secondary benefits, such as minimizing the spread of disease and preventing damage to adjacent property, such as parked cars, that would otherwise be splashed. According to representatives of

cooling tower manufacturers, water treatment companies and drift eliminator distributors, most cooling towers have drift eliminators installed and the drift eliminators are likely to control drift losses to 0.005% or less. Current practice for new tower installations is to include drift eliminators and at least one manufacturer, Evapco, specifies equipment that limits losses to a maximum of 0.0001%.” The Cooling Technology Institute (CTI) has a test code for measuring drift that should be used to meet this requirement; “Isokinetic Drift Measurement Test Cost for Water Cooling Tower – ATC – 140”. The purpose of this code is to describe instrumentation and procedures for the testing and evaluation of drift from water-cooling towers. The code was revised in July 2011.

According to the CASE study, application of these code changes should result in a first year statewide water savings 32.3 million gallons in California (based on statewide annual sales of water-cooled chillers). Using the statewide average embedded energy value of 9.977 kWh/million gallons of water, the first year statewide energy savings is 323 MWh. Extracting this to an estimated national savings (based on population ratios), this code change could save 268 million gallons of water in the first year, and 2678 MWh.

**Cost Impact:** A cost-effectiveness analysis was performed as part of a Codes and Standards Enhancement Initiative (CASE) for Cooling Tower Water Savings, prepared by the California Statewide Utility Codes and Standards Program (attached).

From CASE: “Below are the present value costs and savings associated with the proposed measures installed on a 350 ton cooling tower over the 15 year analysis period.”

Table 11. Life Cycle Cost of Proposed Measures

Measure Name	Additional Costs- Current Measure Costs (Relative to Basecase) (\$)		PV of Additional Maintenance Costs (Savings) (Relative to Basecase) (PV\$)		PV of Water and Chemical Cost Savings - Per Proto Building (PV\$)	LCC Per Prototype Building (\$)	
	Per unit	Per Proto Building	Per unit	Per Proto Building		Based on Current Costs	Based on Post-Adoption Costs
Cooling Tower Measures	\$3,624	\$3,624	\$0	\$0	\$11,165	-\$7,540	-\$7,540

**Analysis:** A review of the standard proposed for inclusion in the code, [ATC-140-2011] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

**Public Hearing Results**

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**908.8 Cooling Towers.** Cooling towers greater than 150 tons in capacity shall comply with Section 908.8.1. ~~through 908.8.4.~~

**908.8.1 Conductivity or Flow-based Control.** Cooling towers shall include controls that maximize the cycles of concentration based on local water quality conditions. Such controls shall automate system bleed and chemical feed based on conductivity or in proportion to metered makeup volume, metered bleed volume, or bleed time.

~~**908.8.2 Flow Meter.** A water meter or sub-meter shall be installed to measure the volume of makeup water entering the cooling tower. Where both potable and non-potable water are supplied to the tower, a meter or sub-meter shall be installed to measure each source separately.~~

~~**908.8.3 Overflow Alarm.** Cooling towers shall include of an overflow alarm to prevent overflow of the sump in case of makeup water valve failure. Such overflow alarm shall send an audible signal or provide an alert by means of the Building Management System to the tower operator in case of sump overflow.~~

~~**908.8.4 Drift Eliminators.** Cooling towers shall be equipped with drift eliminators that achieve drift reduction to 0.002 percent of the circulated water volume. Drift eliminators shall be tested using the Isokinetic Drift Measurement Test Cost for Water Cooling Tower ATC – 140” testing code from the Cooling Technology Institute.~~

**Add new standard to Chapter 15 as follows:**

**ATC-140-2011** Isokinetic Drift Measurement Test Cost for Water Cooling Tower – ATC-140” testing code.

**Committee Reason:** Approval is based on the proponent's published reason. The modification eliminates a standard with which a limited number of testing agencies are able to conduct such testing. The modification simplifies the proposed text.

**Assembly Action:**

**None**

**Public Comments**

*Public Comment:*

**Tracy Quinn, Natural Resources Defense Council, representing self, requests Approval as Modified by this Public Comment.**

**Further modify the proposal as follows:**

**908.8 Cooling Towers.** Cooling towers, both open circuit and closed circuit type, and evaporative condensers greater than 150 tons in capacity shall comply with Sections 908.8.1 and 908.8.2.

**908.8.1 Conductivity or Flow-based Control of Cycles of Concentration.** Cooling towers and evaporative condensers shall include controls that maximize the cycles of concentration based on local water quality conditions. Such controls shall automate system bleed and chemical feed based on conductivity or in proportion to automate system bleed based on conductivity, fraction of metered makeup volume, metered bleed volume, recirculating pump run time, or bleed time.

**908.8.2 Drift Eliminators.** Cooling towers and evaporative condensers shall be equipped with drift eliminators that have a maximum drift rate of 0.005 percent of the circulated water flow rate as established in the equipment's design specifications.

*(Portions of proposal not shown remain unchanged)*

**Commenter's Reason:** The modifications in this comment provide clarifications and specificity that will be useful to code users and enforcement officials. Both open circuit and closed circuit cooling towers as well as evaporative condensers will clearly fall within the scope of this section. Paragraph 908.8.1 is modified to more objectively state the intent to automate the control of bleed operations, and the resulting cycles of concentration. New paragraph 908.8.2 addresses subject matter – drift eliminators – that was in the original M165-12 as submitted, before the floor modification to remove it was accepted at the code action hearing. NRDC and industry representatives supported the floor modification with the intention to work further to refine the original proposal's language on drift eliminators. By reducing the escape of liquid water and dissolved treatment chemicals, drift eliminators mitigate important health and safety concerns, including ice accumulation and the dispersion of chemicals, as well as reducing water loss. These objectives must be balanced with the need to maintain tower operation without excessive impedence that can degrade its efficiency. Drift eliminators are widely available today that can meet these objectives while achieving the drift reduction criterion stated in 908.8.2.

Baltimore Aircoil Company (BAC) is recognized as the world's largest manufacturer of evaporative cooling, thermal storage, and heat transfer equipment. BAC products are sold to the commercial building market as components for air conditioning systems, to the food industry for air conditioning and refrigeration applications, and to a broad range of industries for process and power equipment cooling. BAC has worked with NRDC as well as representatives of other organizations to develop a consensus proposal on cooling towers for the International Mechanical Code. As a result of these efforts, BAC supports the adoption of this consensus proposal in the IMC.

**Final Hearing Results**

**M165-12**

**AMPC**

---

# Code Change No: M166-12

## Original Proposal

**Section(s):** 917.2

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Delete text as follows:**

~~**917.2 Prohibited location.** Cooking appliances designed, tested, listed and labeled for use in commercial occupancies shall not be installed within dwelling units or within any area where domestic cooking operations occur.~~

**Reason:** Section 917.2 is redundant with Section 917.3 and there may be appliances that are listed for both domestic and commercial use and such appliances would be prohibited by current text. Current Section 917.3 captures the entire intent and is all that is needed.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M166-12**

**AS**

## Code Change No: M167-12

### Original Proposal

**Section(s): 918.6(NEW), 918.8, 601.5 (NEW)**

**Proponent:** Guy McMann, MCP, Jefferson County Colorado, Colorado Association of Plumbing and Mechanical Officials (CAPMO)  
(gmcmann@jeffco.us)

**Delete and substitute text as follows:**

**918.6 Prohibited sources.** ~~Outdoor or return air for forced air heating and cooling systems shall not be taken from the following locations:~~

- ~~1. Less 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, boiler room, furnace room or unconditioned attic.~~

#### **Exceptions:**

- ~~5.1 — Where return air intakes are located not less than 10 feet (3048 mm) from cooking appliances, and serve the kitchen area only, taking return air from a kitchen shall not be prohibited.~~
- ~~5.2 — Dedicated forced air systems serving only a garage shall not be prohibited from obtaining return air from the garage.~~
- ~~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.~~
- ~~7. A room or space containing a fuel burning *appliance* where such room or space serves as the sole source of return air.~~

#### **Exceptions:**

- ~~7.1. — This shall not apply where the fuel burning *appliance* is a direct vent *appliance*.~~
- ~~7.2. — This shall not apply where the room or space complies with the following requirements:~~

- ~~7.2.1. 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 fuelburning appliances therein.~~
- ~~7.2.2. 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.~~
- ~~7.2.3. 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.~~
- ~~7.3. 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 the appliances.~~

~~**918.8 Return-air limitation.** Return air from one *dwelling unit* shall not be discharged into another *dwelling unit*.~~

**918.6 Outdoor and Return air openings.** Outdoor intake openings shall be located in accordance with Section 401.4. Return air openings shall be located in accordance with Section 601.5.

**601.5. Return air openings.** Return air openings for heating, ventilation and air conditioning systems shall comply with all of the following:

1. Openings shall not be located less than 10 feet measured in any direction from an open combustion chamber or draft hood of another appliance located in the same room or space.
2. Return air shall not be taken from a hazardous or insanitary location or a refrigeration room as defined in this code.
3. The amount of return air taken from any room or space shall be not greater than the flow rate of supply air delivered to such room or space.
4. Return and transfer openings shall be sized in accordance with the appliance or equipment manufacturers' installation instructions, ACCA Manual D or the design of the *registered design professional*.
5. Return air from one dwelling unit shall not be discharged into or taken from another dwelling unit.
6. Taking return air from a crawl space shall not be accomplished through a direct connection to the return side of a forced air furnace. Transfer openings in the crawl space enclosure shall not be prohibited.
7. Return air shall not be taken from a closet, bathroom, toilet room, kitchen, garage, boiler room, furnace room or unconditioned attic.

**Exceptions:**

1. Taking return air from a kitchen is not prohibited where such return air openings serve the kitchen only, and are located not less than 10 feet from the cooking appliances.
2. Dedicated forced air systems serving only the garage shall not be prohibited from obtaining return air from the garage

**Reason:** This is an attempt to reorganize and delete language in this section that contains outdated legacy code language. This Section is much more complicated than it needs to be as the foremost concern regarding return air is to keep contaminants out of the openings and air stream. This section is long over-due for an overhaul the intent in which is to simplify the matter.

- This section is being relocated to more central location as the subject matter applies to more than just furnaces; it applies to air conditioning and ventilation systems as well. A simple reference to this new Section is all that will be required in the new 918.6. Outdoor air intake openings are already covered in 401.4 and do not need to be duplicated here.
- Existing item 1 and 2 dealt primarily with outdoor opening which can be referenced in 401.4.
  - Existing item 3 remains in its new location.
  - Existing item 4 will literally prevent a return air opening in most bedrooms as they are usually less than 25% of the area served. There is no technical justification for this benchmark. What significance would there be between 25% and 26% that will impact the return air system? There is no need for such an arbitrary benchmark. What's really important is not to take too much air out of a room as noted in the new #3.

- The size of any transfer should be according to design, not arbitrary, outdated numbers as in the existing #4
- Existing 5 and 6 remain in the new location.
- Item 7 has many problems and has been deleted in its entirety. It's a tortured approach as it attempts to describe a furnace in an enclosure with no return air duct along side a water heater all the while using the enclosure as a plenum utilizing louvered doors or openings to bring air back to the unit. This is not current practice and is prohibited. It calls for volume which is twice as much as current combustion requirements and is very difficult to explain the picture it attempts to deliver.
- Section 918.8 has been incorporated into the new location as #7.

All the usual requirements that can affect the quality and installation of return air openings are contained in this new location and in turn, simplifies the subject matter for the user. There are no new requirements.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify the proposal as follows:**

**918.6 Outdoor and Return air openings.** Outdoor intake openings shall be located in accordance with Section 401.4. Return air openings shall be located in accordance with Section 601.5.

**601.5. Return air openings.** Return air openings for heating, ventilation and air conditioning systems shall comply with all of the following:

1. Openings shall not be located less than 10 feet measured in any direction from an open combustion chamber or draft hood of another appliance located in the same room or space.
2. Return air shall not be taken from a hazardous or insanitary location or a refrigeration room as defined in this code.
3. The amount of return air taken from any room or space shall be not greater than the flow rate of supply air delivered to such room or space.
4. Return and transfer openings shall be sized in accordance with the appliance or equipment manufacturers' installation instructions, ACCA Manual D or the design of the *registered design professional*.
5. Return air from one dwelling unit shall not be discharged into or taken from another dwelling unit.
6. Taking return air from a crawl space shall not be accomplished through a direct connection to the return side of a forced air furnace. Transfer openings in the crawl space enclosure shall not be prohibited.
7. Return air shall not be taken from a closet, bathroom, toilet room, kitchen, garage, boiler room, furnace room or unconditioned attic.

**Exceptions:**

1. Taking return air from a kitchen is not prohibited where such return air openings serve the kitchen ~~only~~, and are located not less than 10 feet from the cooking appliances.
2. Dedicated forced air systems serving only the garage shall not be prohibited from obtaining return air from the garage

**Committee Reason:** Approval is based on the proponent's published reason. The modification deletes the word only because the return air system cannot be prevented from taking air from spaces other than the kitchen.

**Assembly Action:**

**None**

### Final Hearing Results

**M167-12**

**AM**

# Code Change No: M168-12

## Original Proposal

**Section(s):** 928.1

**Proponent:** Guy Tomberlin, Fairfax County VA, representing Fairfax County Virginia  
(guy.tomberlin@fairfaxcounty.gov)

**Revise as follows:**

**928.1 General.** Evaporative coolers equipment shall:

1. Be installed in accordance with the manufactures instructions.
2. Be installed on a level platform in accordance with section 304.10.
3. Have openings in exterior walls or roofs flashed in accordance with the *International Building Code*.
4. ~~Be provided with potable water backflow protection in accordance with section 608 of the *International Plumbing Code*.~~ Be provided with an approved water supply, sized for peak demand. The quality of water shall be provided in accordance with the equipment manufacturer's recommendations. The piping system and protection of the potable water supply system shall be installed as required by the *International Plumbing Code*.
5. Have air intake opening locations in accordance with Section 401.4.

**Reason:** This is consistent action in accordance with the proposal submitted to Section 908 for cooling towers. Various water resources are being utilized across the nation in many different ways. This is being done for many various reasons. Some are because of water shortages, others are in effort to simply conserve our precious resources and others are being done to constructively utilize rain water and properly treated re-use water. Technology provides us with the options for many different water reuses such as reclaimed and rainwater. This proposal clarifies that if the quality of water can be achieved then alternate sources shall be permitted. In addition if an interconnection or back up is provided with the potable system then proper cross connection contamination prevention shall be provided in accordance with the International Plumbing Code. Lastly, the piping system shall be installed according to the International Plumbing Code.

**Cost Impact:** reduces the cost below current requirements for the initial installation and throughout the life of the structure.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason and based on the action taken on M164-12.

**Assembly Action:**

**None**

## Final Hearing Results

**M168-12**

**AS**

# Code Change No: M169-12, Part I

## Original Proposal

**Section(s):** 923.1

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**THIS IS A 2 PART CODE CHANGE, BOTH PARTS WILL BE HEARD BY THE IMC COMMITTEE AS 2 SEPARATE CODE CHANGES, SEE THE TENTATIVE HEARING ORDERS FOR THIS COMMITTEE.**

### PART I-IMC

**Revise as follows:**

#### SECTION 923 SMALL CERAMIC KILNS

**923.1 General.** The provisions of this section shall apply to kilns that are used for ceramics, have a maximum interior volume of 20 cubic feet (0.566 m<sup>3</sup>) and are used for hobby and noncommercial purposes. Kilns shall be listed and labeled unless otherwise approved in accordance with Section 105.2. Electric kilns shall comply with UL 499. The approval of unlisted appliances in accordance with Section 105.2 shall be based upon approved engineering evaluation.

**Reason:** The code is silent on kilns over 20 cubic feet in volume. For example, if someone wanted to construct a very large gas-fired kiln, the code would provide no guidance and such appliance would likely be unlisted. A similar change is proposed for the IFGC.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M169-12, Part I**

**AS**

## Code Change No: M169-12, Part II

### Original Proposal

**Section(s):** 923.1

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**THIS IS A 2 PART CODE CHANGE, BOTH PARTS WILL BE HEARD BY THE IMC COMMITTEE AS 2 SEPARATE CODE CHANGES, SEE THE TENTATIVE HEARING ORDERS FOR THIS COMMITTEE.**

**PART II-IFGC**

### SECTION 629 SMALL CERAMIC KILNS

**629.1 General.** Ceramic Kilns with a maximum interior volume of 20 cubic feet and used for hobby and noncommercial purposes shall be installed in accordance with the manufacturer's installation instructions and the provisions of this code. Kilns shall comply with Section 301.3

**Reason:** The code is silent on kilns over 20 cubic feet in volume. For example, if someone wanted to construct a very large gas-fired kiln, the code would provide no guidance and such appliance would likely be unlisted. A similar change is proposed for the IMC.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M169-12, Part II**

**AS**

## Code Change No: **M171-12**

### Original Proposal

**Section(s):** 1003.1

**Proponent:** Gary L. Scribner, Deputy Chief, Missouri Division of Fire Safety, representing the National Board of Boiler & Pressure Vessel Inspectors  
(gary.scribner@dfs.dps.mo.gov)

**Revise as follows:**

**1003.1 General.** All pressure vessels, unless otherwise *approved* shall be constructed and certified in accordance with the ASME *Boiler and Pressure Vessel Codes*, ~~shall bear the label of an approved agency~~ and shall be installed in accordance with the manufacturer's instructions and nationally recognized standards. Directly fired pressure vessels shall meet the requirements of Section 1004.

**Reason:** This proposal provides language as contained in the ASME Boiler and Pressure Vessel Codes and gives the authority having jurisdiction the ability to approve other constructions while still adopting the IMC.

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

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M171-12**

**AS**

# Code Change No: M172-12

## Original Proposal

**Section(s):** 1003.3, Chapter 15

**Proponent:** Gary L. Scribner, Deputy Chief, Missouri Division of Fire Safety, representing the National Board of Boiler & Pressure Vessel Inspectors  
(gary.scribner@dfs.dps.mo.gov)

**Revise as follows:**

**1003.3 Welding.** Welding on pressure vessels shall be performed by ~~approved welders in compliance with nationally recognized standards.~~ an R-Stamp holder in accordance with the *National Board Inspection Code, Part 3* or in accordance with an *approved* standard.

**Add new standard to Chapter 15 as follows:**

National Board Inspection Code 2011, Part 3

**Reason:** The National Board R- Stamp program is the only nationally recognized standard for weld repairs and/or alterations to boilers and pressure vessels. The standard is also required by the U.S. Department of Transportation. Some state and local jurisdictions do have modified versions of the R stamp program that they utilize; the proposed wording covers both possibilities while clearly stating the nationally recognized standard.

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

**Analysis:** A review of the standard proposed for inclusion in the code, [National Board Inspection Code 2011, Part 3] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M172-12**

**AS**

## Code Change No: M173-12

### Original Proposal

#### Section(s): 1004.1

**Proponent:** Gary L. Scribner, Deputy Chief, Missouri Division of Fire Safety, representing the National Board of Boiler & Pressure Vessel Inspectors (gary.scribner@dfs.dps.mo.gov)

#### Revise as follows:

**1004.1 Standards.** ~~Oil-fired boilers and their control systems shall be listed and labeled in accordance with UL 726. Electric boilers and their control systems shall be listed and labeled in accordance with UL 834. Solid-fuel-fired boilers shall be listed and labeled in accordance with UL 2523. Boilers shall be designed and constructed in accordance with the requirements of ASME CSD-1 and as applicable, the ASME *Boiler and Pressure Vessel Code*, Section I or IV; NFPA 8501; NFPA 8502 or NFPA 8504. Boilers shall be designed, constructed and certified in accordance with the ASME *Boiler and Pressure Vessel Code*, Section I or IV. Controls and safety devices for boilers with fuel input ratings of 12,500,000 Btu/hr or less shall meet the requirements of ASME CSD-1. Controls and Safety devices for boilers with inputs greater than 12,500,000 shall meet the requirements of NFPA 85. Package oil fired boilers shall be listed and labeled in accordance with UL 726 or other approved standard. Packaged electric boilers shall be listed and labeled in accordance with UL 834 or other approved standard.~~

**Reason:** Current wording is not correct since ASME CSD-1 is not a construction standard. The proposed wording starts with the vessel construction requirements and continues with the acceptable standards for complete appliances. The proposed wording is no change from the intent of the previous wording. NFPA 8501, 8502 & 8504 have been combined into NFPA 85.

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

### Public Hearing Results

#### Committee Action:

Approved as Modified

#### Modify the proposal as follows:

##### 1004.1 Standards.

Boilers shall be designed, constructed and certified in accordance with the ASME *Boiler and Pressure Vessel Code*, Section I or IV. Controls and safety devices for boilers with fuel input ratings of 12,500,000 Btu/hr or less shall meet the requirements of ASME CSD-1. Controls and Safety devices for boilers with inputs greater than 12,500,000 shall meet the requirements of NFPA 85. Package oil fired boilers shall be listed and labeled in accordance with ~~UL 726 or other approved standard.~~ Packaged electric boilers shall be listed and labeled in accordance with ~~UL 834 or other approved standard.~~ Solid-fuel-fired boilers shall be listed and labeled in accordance with UL 2523

**Committee Reason:** Approval is based on the proponent's published reason. The modification deletes "other approved standards" because this text leaves the door wide open to unknown standards that could result in reduced safety. Another modification restores coverage for solid fuel-fired boilers because such boilers need to be regulated as well as other types of boilers.

#### Assembly Action:

None

### Final Hearing Results

M173-12

AM

## Code Change No: M175-12

### Original Proposal

**Section(s):** 1007.1, 1007.2, 1007.3

**Proponent:** Shawn Strausbaugh, Chair, Plumbing/Mechanical/Gas Code Action Committee

**Revise as follows:**

**1007.1 General.** All Steam and hot water boilers shall be protected with a low-water cutoff control except as required by Section 1007.2.

**1007.2 Flow sensing control.** Coil-type and water-tube-type boilers that require forced circulation of water through the boiler shall be protected with a flow sensing control.

**1007.2.3 Operation.** The Low-water cutoff controls and flow sensing controls required by Sections 1007.1 and 1007.2 shall automatically stop the combustion operation of the appliance when the water level drops below the lowest safe water level as established by the manufacturer or when water circulation stops, respectively.

**Reason:** There is no exception to Section 1007.1 for coil-type hot water supply boilers that require forced circulation and use flow switches to stop combustion when water flow is lost. Flow switches that monitor forced circulation through a water tube- or coil-type boiler provide the same function as a low-water cutoff and should be recognized as an alternative to a low-water cutoff.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance an assigned International Code or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the PMGCAC has held 2 open meetings, multiple conference calls and multiple workgroup calls which included members of the PMGCAC. Interested parties also participated in all of the meetings and conference calls to discuss and debate the proposed changes.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Public Comments

*Public Comment:*

**Bob Eugene, representing Underwriters Laboratories, LLC, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

**1007.1 General.** Steam and hot water boilers shall be protected with a low-water cutoff control.

**Exception:** A low-water cutoff is not required for coil-type and water-tube-type boilers that require forced circulation of water through the boiler and that are protected with a flow sensing control.

**1007.3 Operation.** The Low-water cutoff controls and flow sensing controls required by Sections 1007.1 and 1007.2 shall automatically stop the combustion operation of the appliance when the water level drops below the lowest safe water level as established by the manufacturer or when water circulation stops, respectively.

**Commenter's Reason:** The additional text clarifies that the flow sensing control is an exception to the general low-water cutoff control for the boilers specified.

<b>Final Hearing Results</b>
------------------------------

**M175-12**

**AMPC**

---

# Code Change No: M176-12

## Original Proposal

**Section(s):** 1008, 1008.1

**Proponent:** Gary L. Scribner, Deputy Chief, Missouri Division of Fire Safety, representing the National Board of Boiler & Pressure Vessel Inspectors  
(gary.scribner@dfs.dps.mo.gov)

**Revise as follows:**

### SECTION 1008 STEAM BOTTOM BLOWOFF VALVE

**Revise as follows:**

**1008.1 General.** Every steam boiler shall be equipped with a ~~quick-opening blowoff valve~~ bottom blowoff valve(s). The valve(s) shall be installed in the opening provided on the boiler. The minimum size of the valve(s) and associated piping shall be the size specified by the boiler manufacturer or the size of the boiler blowoff-valve opening. Where the maximum allowable working pressure of the boiler exceeds 100 psig, two bottom blowoff valves shall be provided consisting of either two slow opening valves in series or one quick opening valve and one slow opening in series with the quick opening valve installed closest to the boiler.

**Reason:** The proposed wording clarifies the type of valve. The term steam blowoff valve is confused with a safety or safety relieve valve. The proposed wording is consistent with *ASME Boiler & Pressure Vessel Codes* and the *National Board Inspection Code*. The proposed wording is consistent with *ASME Boiler & Pressure Vessel Codes* and *ASME Code for Pressure Piping*. (B31.1).

**Cost Impact:** This proposed change could have a cost impact of \$200 to \$2000 depending on the size of the boiler. The cost would include the cost of the valve and labor to install it. Boiler systems that are designed in accordance with the ASME Boiler & Pressure Vessel codes would not be impacted since they already meet this requirement.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

M176-12

AS

# Code Change No: M177-12

## Original Proposal

**Section(s):** 1009.2

**Proponent:** Gary L. Scribner, State of Missouri/Missouri Division of Fire Safety, the National Board of Boiler & Pressure Vessel Inspectors  
(gary.scribner@dfs.dps.mo.gov)

**Revise as follows:**

**1009.2 Closed-type expansion tanks.** Closed-type expansion tanks shall be installed in accordance with the manufacturer's instructions. Expansion tanks for systems designed to have an operating pressure in excess of 30 psi shall be constructed and certified in accordance with the ASME *Boiler and Pressure Vessel Codes*. The size of the tank shall be based on the capacity of the hot-water-heating system. The minimum size of the tank shall be determined in accordance with the following equation where all necessary information is known:

*(Portions of text not shown remain unchanged.)*

The minimum size of the tank shall be determined from Table 1009.2 where all necessary information is not known:

**TABLE 1009.2  
CLOSED-TYPE EXPANSION TANK SIZING**

<u>System Volume In gallons</u>	<u>Tank Capacities in gallons</u>	
	<u>Pressurized Diaphragm Type</u>	<u>Non-Pressurized Type</u>
<u>100</u>	<u>9</u>	<u>15</u>
<u>200</u>	<u>17</u>	<u>30</u>
<u>300</u>	<u>25</u>	<u>45</u>
<u>400</u>	<u>33</u>	<u>60</u>
<u>500</u>	<u>42</u>	<u>75</u>
<u>1,000</u>	<u>83</u>	<u>150</u>
<u>2,000</u>	<u>165</u>	<u>300</u>

**Reason:** The proposed wording is consistent with *ASME Boiler & Pressure Vessel Codes* Section IV, Paragraph HG-709.2 & Table 709.2.

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

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M177-12**

**AS**

## Code Change No: **M178-12**

### Original Proposal

**Section(s):** 1011.1

**Proponent:** Gary L. Scribner, Deputy Chief, Missouri Division of Fire Safety, representing the National Board of Boiler & Pressure Vessel Inspectors  
(gary.scribner@dfs.dps.mo.gov)

**Revise as follows:**

**1011.1 Tests.** Upon completion of the assembly and installation of boilers and pressure vessels, acceptance tests shall be conducted in accordance with the requirements of the ASME *Boiler and Pressure Vessel Code* or the manufacturer's requirements and such tests shall be approved. ~~Where field assembly of pressure vessels or boilers is required, a copy of the completed U-1 Manufacturer's Data Report required by the ASME *Boiler & Pressure Vessel Code* shall be submitted to the code official. A copy of all test documents along with all manufacturer's data reports required by the ASME *Boiler and Pressure Vessel Codes* shall be submitted to the code official.~~

**Reason:** Current wording requires a form U1-a which is an ASME manufacturer's data report for a pressure vessel only. There are several manufacturer's data reports depending on the type of vessel and the section of the code the vessel was built to. The proposed meets the current intent of the code without detailing each form required for each type of vessel.

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

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M178-12**

**AS**

## Code Change No: **M179-12**

### Original Proposal

**Section(s): 1101.10**

**Proponent:** David R. Scott, AIA, representing Target Corporation. (David.Scott@Target.com)

**Revise as follows:**

**1101.10 Locking access port caps.** Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps or shall be otherwise secured to prevent unauthorized access.

**Exception:** This section shall not apply to refrigerant circuit access ports on equipment installed in controlled areas such as on roof tops with locked and alarmed access hatches or doors.

**Reason:** Building roofs that secure equipment by means of locked and alarmed devices prevent unauthorized access to such areas.

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

### Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify the proposal as follows:**

**1101.10 Locking access port caps.** Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps or shall be otherwise secured to prevent unauthorized access.

**Exception:** This section shall not apply to refrigerant circuit access ports on equipment installed in controlled areas such as on roofs ~~tops~~ with locked ~~and alarmed~~ access hatches or doors.

**Committee Reason:** Approval is based on the proponent's published reason. The modification deletes the unnecessary term "tops" and eliminates the requirement for unnecessary alarms on doors and hatches.

**Assembly Action:**

**None**

### Final Hearing Results

**M179-12**

**AM**

## Code Change No: M181-12

### Original Proposal

**Section(s):** 1102.3 (NEW)

**Proponent:** Mona Casey, Founder, United Parents to Restrict Open Access to Refrigerant

**Add new text as follows:**

**1102.3 Access port protection.** Refrigerant access ports shall be protected in accordance with Section 1101.10 whenever refrigerant is added to or recovered from refrigeration or air conditioning systems.

**Reason:** The purpose of the code change proposal is to add requirements to the code for securing refrigerant access ports whenever intrusive access to the refrigeration or air conditioning units are necessary for adding or recovering refrigerant. This change compliments the current requirements in the code.

**Cost Impact:** The code change proposal will increase the cost of construction.

### Public Hearing Results

**Committee Action:**

**Disapproved**

**Committee Reason:** The proposed text is not enforceable since permits are not required to service refrigeration systems. Such text is appropriate for the IPMC.

**Assembly Action:**

**None**

### Public Comment

*Public Comment:*

**Mona Casey, representing United Parents to Restrict Open Access to Refrigerant, requests Approval as Submitted.**

**Commenter's Reason:** Refrigerant is a hot topic in the HVAC industry today. With public safety at the forefront, followed by environmental concerns and bottom line cost, refrigerant containment is more important than ever.

The age of social media and Internet access allows society the ability to learn about things they shouldn't be doing. Huffing refrigerant is a prime example of that. Statistics nationwide show there have been more than 2000 reported cases of huffing refrigerant since 2009, according to the American Association of Poison Control. In those cases, the individuals had to be hospitalized.

To minimize the impact of ozone depleting compounds on the environment, Refrigerant R22 is being phased out. The downside to that is Refrigerant R22 has tripled in price since November 2011.

For liability and financial reasons, many contractors are becoming 'Refrigerant Responsible', requiring strict charging practices for peak performance and the prevention of catastrophic failures in the refrigerant circuits. Additionally, tougher certification programs like NATE train new technicians on proper refrigerant charging, recovery and handling techniques. That said, any exposed refrigerant charging port is a weak link for containment. Exposed ports provide easy access to the general public and challenge the aforementioned concerns.

Although the building design standard addresses issues concerning sustainability, air quality, energy efficiency, and thermal, acoustic, and visual comfort, it fails to address the very thing the codes were founded on, public safety. Exposed ports pose a public safety issue. The code needs to address this mechanical issue so that going forward designers, engineers, technicians, property owners, and the public will all become refrigerant responsible. Thus, protecting the environment, minimizing costs associated with heating and cooling, preventing injuries, and most importantly, saving lives.

### Final Hearing Results

**M181-12**

**AS**

# Code Change No: M182-12

## Original Proposal

Section(s): 202, Table 1103.1, 1104.1

**Proponent:** Steve Ferguson, representing the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)

Revise as follows:

### SECTION 202 GENERAL DEFINITIONS

**FLAMMABILITY CLASSIFICATION.** Refrigerants shall be assigned to one of the three classes—1, 2 or 3— and one optional subclass (2L), in accordance with ASHRAE 34. For Classes 2, 2L, and 3, the heat of *combustion* shall be calculated assuming that *combustion* products are in the gas phase and in their most stable state.

**Class 1.** Refrigerants that do not show flame propagation when tested in air at 14.7 psia (101 kPa) and 70 140°F (24 60°C).

**Class 2.** Refrigerants having a lower flammability limit (LFL) of more than 0.00625 pound per cubic foot (0.10 kg/m<sup>3</sup>) at 70 140°F (24 60°C) and 14.7 psia (101 kPa) and a heat of *combustion* of less than 8,174 8169 Btu/lb (19 000 kJ/kg).

**Subclass 2L (Optional).** Refrigerants that meet the additional condition of having a maximum burning velocity of less than or equal to 3.9 in/s (10 cm/s) when tested at 73.4 °F (23°C) and 14.7 psia (101.3 kPa).

**Class 3.** Refrigerants that are highly flammable, having a LFL of less than or equal to 0.00625 pound per cubic foot (0.10 kg/m<sup>3</sup>) at 70 140°F (24 60°C) and 14.7 psia (101 kPa) or a heat of *combustion* greater than or equal to 8,174 8169 Btu/lb (19 000 kJ/kg).

**OCCUPATIONAL EXPOSURE LIMIT (OEL).** The time-weighted average (TWA) concentration for a normal eight-hour workday and a 40-hour workweek to which nearly all workers can be repeatedly exposed without adverse effect, based on the OSHA PEL, ACGIH TLV-TWA, AIHA WEEL, or consistent value.

**REFRIGERANT SAFETY CLASSIFICATIONS.** Groupings that indicate the toxicity and flammability classes in accordance with Section 1103.1. The classification group is made up of a letter (A or B) that indicates the toxicity class, followed by a number one or two alphanumeric characters (1, 2, 2L or 3) that indicates the flammability class. Refrigerant blends are similarly classified, based on the compositions at their worst cases of fractionation, as separately determined for toxicity and flammability. In some cases, the worst case of fractionation is the original formulation.

**Flammability.** See “FLAMMABILITY CLASSIFICATION” ~~Class 1 indicates refrigerants that do not show flame propagation in air when tested by prescribed methods at specified conditions. Classes 2 and 3 signify refrigerants with “lower flammability” and “higher flammability,” respectively; the distinction depends on both the LFL and heat of *combustion*.~~

**Toxicity.** See "TOXICITY CLASSIFICATION". ~~Classes A and B signify refrigerants with "lower toxicity" and "higher toxicity," respectively, based on prescribed measures of chronic (long-term, repeated exposures) toxicity.~~

**TOXICITY CLASSIFICATION.** Refrigerants shall be classified for toxicity to one of two classes in accordance with ASHRAE 34:

**Class A.** ~~Refrigerants for which toxicity has not been identified at concentrations that have an occupational exposure limit (OEL) of less than or equal to 400 parts per million (ppm) or greater, based on data used to determine Threshold Limit Value-Time Weighted Average (TLV-TWA) or consistent indices.~~

**Class B.** ~~Refrigerants for which there is evidence of toxicity at concentrations below that have an OEL of less than 400 ppm, based on data used to determine TLV-TWA or consistent indices.~~

[F] TABLE 1103.1  
REFRIGERANT CLASSIFICATION, AMOUNT AND OEL

CHEMICAL REFRIGERANT	FORMULA	CHEMICAL NAME OF BLEND	REFRIGERANT CLASSIFICATION	DEGREES OF HAZARD <sup>a</sup>	[M] AMOUNT OF REFRIGERANT PER OCCUPIED SPACE			
					Pounds per 1,000 cubic feet	ppm	g/m <sup>3</sup>	OEL <sup>e</sup>

11 <sup>d</sup>	CCl <sub>3</sub> F	trichlorofluoromethane	A1	2-0-0 <sup>b</sup>	0.39	1,100	6.2	C1,000
R-12 <sup>d</sup>	CCl <sub>2</sub> F <sub>2</sub>	dichlorodifluoromethane	A1	2-0-0 <sup>b</sup>	5.6	18,000	90	1,000
R-13 <sup>d</sup>	CCIF <sub>3</sub>	chlorotrifluoromethane	A1	2-0-0 <sup>b</sup>	—	—	—	1,000
R-13B1 <sup>d</sup>	CBrF <sub>3</sub>	bromotrifluoromethane	A1	2-0-0 <sup>b</sup>	—	—	—	1,000
R-14	CF <sub>4</sub>	tetrafluoromethane (carbon tetrafluoride)	A1	2-0-0 <sup>b</sup>	25	110,000	400	1,000
R-22	CHClF <sub>2</sub>	chlorodifluoromethane	A1	2-0-0 <sup>b</sup>	13	59,000	210	1,000
R-23	CHF <sub>3</sub>	trifluoromethane (fluoroform)	A1	2-0-0 <sup>b</sup>	7.3	41,000	120	1,000
R-32	CH <sub>2</sub> F <sub>2</sub>	Difluoromethane (methylene fluoride)	A2L	—	4.8	36,000	77	1,000
R-113 <sup>d</sup>	CCl <sub>2</sub> FCCIF <sub>2</sub>	1,1,2-trichloro-1,2,2-trifluoroethane	A1	2-0-0 <sup>b</sup>	1.2	2,600	20	1,000
R-114 <sup>d</sup>	CCIF <sub>2</sub> CCIF <sub>2</sub>	1,2-dichloro-1,1,2,2-tetrafluoroethane	A1	2-0-0 <sup>b</sup>	8.7	20,000	140	1,000
R-115	CCIF <sub>2</sub> CF <sub>3</sub>	chloropentafluoroethane	A1	—	47	120,000	760	1,000
R-116	CF <sub>3</sub> CF <sub>3</sub>	hexafluoroethane	A1	1-0-0	34	97,000	550	1,000
R-123	CHCl <sub>2</sub> CF <sub>3</sub>	2,2-dichloro-1,1,1-trifluoroethane	B1	2-0-0 <sup>b</sup>	3.5	9,100	57	50
R-124	CHClFCF <sub>3</sub>	2-chloro-1,1,1,2-tetrafluoroethane	A1	2-0-0 <sup>b</sup>	3.5	10,000	56	1,000
R-125	CHF <sub>2</sub> CF <sub>3</sub>	pentafluoroethane	A1	2-0-0 <sup>b</sup>	23	75,000	370	1,000
R-134a	CH <sub>2</sub> FCF <sub>3</sub>	1,1,1,2-tetrafluoroethane	A1	2-0-0 <sup>b</sup>	13	50,000	210	1,000
R-141b	CH <sub>3</sub> CCl <sub>2</sub> F	1,1-dichloro-1-fluoroethane	—	—	0.78	2,600	12	500
R-142b	CH <sub>3</sub> CCIF <sub>2</sub>	1-chloro-1,1-difluoroethane	A2	—	5.1	20,000	83	1,000
R-143a	CH <sub>3</sub> CF <sub>3</sub>	1,1,1-trifluoroethane	A2L	2-0-0 <sup>b</sup>	4.5	21,000	70	1,000
R-152a	CH <sub>3</sub> CHF <sub>2</sub>	1,1-difluoroethane	A2	1-4-0	<u>2.0</u>	12,000	32	1,000
R-170	CH <sub>3</sub> CH <sub>3</sub>	ethane	A3	2-4-0	0.54	7,000	8.7	1,000
R-E170	CH <sub>3</sub> OCH <sub>3</sub>	Methoxymethane (dimethyl ether)	A3	—	<u>1.0</u>	8,500	16	1,000
R-218	CF <sub>3</sub> CF <sub>2</sub> CF <sub>3</sub>	octafluoropropane	A1	2-0-0 <sup>b</sup>	43	90,000	690	1,000
R-227ea	CF <sub>3</sub> CHFCF <sub>3</sub>	1,1,1,2,3,3,3-heptafluoropropane	A1	—	36	84,000	580	1,000
R-236fa	CF <sub>3</sub> CH <sub>2</sub> CF <sub>3</sub>	1,1,1,3,3,3-hexafluoropropane	A1	2-0-0 <sup>b</sup>	21	55,000	340	1,000
R-245fa	CHF <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	1,1,1,3,3-pentafluoropropane	B1	2-0-0 <sup>b</sup>	12	34,000	190	300
R-290	CH <sub>3</sub> CH <sub>2</sub> CH <sub>3</sub>	propane	A3	2-4-0	0.56	5,300	9.5	1,000
R-C318	-(CF <sub>2</sub> ) <sub>4</sub> -	octafluorocyclobutane	A1	—	41	80,000	660	1,000

(continued)

**[F] TABLE 1103.1—continued  
REFRIGERANT CLASSIFICATION, AMOUNT AND OEL**

CHEMICAL REFRIGERANT	FORMULA	CHEMICAL NAME OF BLEND	REFRIGERANT CLASSIFICATION	DEGREES OF HAZARD <sup>a</sup>	[M] AMOUNT OF REFRIGERANT PER OCCUPIED SPACE			
					Pounds per 1,000 cubic feet	ppm	g/m <sup>3</sup>	OEL <sup>e</sup>
R-400 <sup>d</sup>	zeotrope	R-12/114 (50.0/50.0)	A1	2-0-0 <sup>b</sup>	10	28,000	160	1,000
R-400 <sup>d</sup>	zeotrope	R-12/114 (60.0/40.0)	A1		11	30,000	170	1,000
R-401A	zeotrope	R-22/152a/124 (53.0/13.0/34.0)	A1	2-0-0 <sup>b</sup>	6.6	27,000	110	1,000
R-401B	zeotrope	R-22/152a/124 (61.0/11.0/28.0)	A1	2-0-0 <sup>b</sup>	7.2	30,000	120	1,000
R-401C	zeotrope	R-22/152a/124 (33.0/15.0/52.0)	A1	2-0-0 <sup>b</sup>	5.2	20,000	84	1,000
R-402A	zeotrope	R-125/290/22 (60.0/2.0/38.0)	A1	2-0-0 <sup>b</sup>	<del>8.5</del> 17	<del>66,000</del> 33,000	<del>270</del> 140	1,000
R-402B	zeotrope	R-125/290/22 (38.0/2.0/60.0)	A1	2-0-0 <sup>b</sup>	15	63,000	240	1,000
R-403A	zeotrope	R-290/22/218 (5.0/75.0/20.0)	A2	2-0-0 <sup>b</sup>	7.6	33,000	120	1,000
R-403B	zeotrope	R-290/22/218 (5.0/56.0/39.0)	A1	2-0-0 <sup>b</sup>	18	70,000	290	1,000
R-404A	zeotrope	R-125/143a/134a (44.0/52.0/4.0)	A1	2-0-0 <sup>b</sup>	31	130,000	500	1,000
R-405A	zeotrope	R-22/152a/142b/C318 (45.0/7.0/5.5/2.5)	—	—	16	57,000	260	1,000
R-406A	zeotrope	R-22/600a/142b (55.0/4.0/41.0)	A2	—	4.7	21,000	25	1,000
R-407A	zeotrope	R-32/125/134a (20.0/40.0/40.0)	A1	2-0-0 <sup>b</sup>	<del>48</del> 19	<del>78,000</del> 83,000	<del>290</del> 300	1,000
R-407B	zeotrope	R-32/125/134a (10.0/70.0/20.0)	A1	2-0-0 <sup>b</sup>	<del>20</del> 21	<del>77,000</del> 79,000	<del>320</del> 330	1,000
R-407C	zeotrope	R-32/125/134a (23.0/25.0/52.0)	A1	2-0-0 <sup>b</sup>	<del>47</del> 18	<del>76,000</del> 81,000	<del>270</del> 290	1,000
R-407D	zeotrope	R-32/125/134a (15.0/15.0/70.0)	A1	2-0-0 <sup>b</sup>	<del>45</del> 16	<del>65,000</del> 68,000	<del>240</del> 250	1,000
R-407E	zeotrope	R-32/125/134a (25.0/15.0/60.0)	A1	2-0-0 <sup>b</sup>	<del>46</del> 17	<del>75,000</del> 80,000	<del>260</del> 280	1,000
R-407F	zeotrope	R-32/125/134a (30.0/30.0/40.0)	A1	:	20	95,000	320	1,000
R-408A	zeotrope	R-125/143a/22 (7.0/46.0/47.0)	A1	2-0-0 <sup>b</sup>	21	95,000	340	1,000
R-409A	zeotrope	R-22/124/142b (60.0/25.0/15.0)	A1	2-0-0 <sup>b</sup>	7.1	29,000	110	1,000
R-409B	zeotrope	R-22/124/142b (65.0/25.0/10.0)	A1	2-0-0 <sup>b</sup>	7.3	30,000	120	1,000
R-410A	zeotrope	R-32/125 (50.0/50.0)	A1	2-0-0 <sup>b</sup>	<del>25</del> 26	<del>130,000</del> 140,000	<del>390</del> 420	1,000

R-410B	zeotrope	R-32/125 (45.0/55.0)	A1	2-0-0 <sup>b</sup>	<del>24</del> <u>27</u>	<del>130,000</del> <u>140,000</u>	<del>390</del> <u>430</u>	1,000
R-411A	zeotrope	R-1270/22/152a (1.5/87.5/11.0)	A2	—	2.9	14,000	46	990
R-411B	zeotrope	R-1270/22/152a (3.0/94.0/3.0)	A2	—	2.8	13,000	45	980
R-412A	zeotrope	R-22/3218/142b (70.0/5.0/25.0)	A2	—	5.1	22,000	82	1,000
R-413A	zeotrope	R-218/134a/600a (9.0/88.0/3.0)	A2	—	5.8	22,000	94	1,000
R-414A	zeotrope	R-22/124/600a/142b (51.0/28.5/4.0/16.5)	A1	—	6.4	26,000	100	1,000
R-414B	zeotrope	R-22/124/600a/142b (50.0/39.0/1.5/9.5)	A1	—	<u>6.0</u>	23,000	95	1,000

(continued)

[F] TABLE 1103.1—continued  
REFRIGERANT CLASSIFICATION, AMOUNT AND OEL

CHEMICAL REFRIGERANT	FORMULA	CHEMICAL NAME OF BLEND	REFRIGERANT CLASSIFICATION	DEGREES OF HAZARD <sup>a</sup>	[M] AMOUNT OF REFRIGERANT PER OCCUPIED SPACE			
					Pounds per 1,000 cubic feet	ppm	g/m <sup>3</sup>	OEL <sup>e</sup>
R-415A	zeotrope	R-22/152a (82.0/18.0)	A2	—	<del>2.9</del> <u>4.2</u>	<del>57,000</del> <u>14,000</u>	<del>47</del> <u>490</u>	1,000
R-415B	zeotrope	R-22/152a (25.0/75.0)	A2	—	<del>2.1</del> <u>9.3</u>	<del>52,000</del> <u>12,000</u>	<del>34</del> <u>420</u>	1,000
R-416A	zeotrope	R-134a/124/600 (59.0/39.5/1.5)	A1	2-0-0 <sup>b</sup>	3.9	14,000	62	1,000
R-417A	zeotrope	R-125/134a/600 (46.6/50.0/3.4)	A1	2-0-0 <sup>b</sup>	3.5	13,000	56	1,000
R-417B	zeotrope	R-125/134a/600 (79.0/18.3/2.7)	A1	2	<u>4.3</u>	<u>15,000</u>	<u>70</u>	<u>1,000</u>
R-418A	zeotrope	R-290/22/152a (1.5/96.0/2.5)	A2	—	<del>4.8</del> <u>4.3</u>	<del>59,000</del> <u>22,000</u>	<del>77</del> <u>200</u>	1,000
R-419A	zeotrope	R-125/134a/E170 (77.0/19.0/4.0)	A2	—	<del>4.2</del> <u>4.9</u>	<del>70,000</del> <u>15,000</u>	<del>67</del> <u>340</u>	1,000
R-420A	zeotrope	R-134a/142b (88.0/12.0)	A1	2-0-0 <sup>b</sup>	12	45,000	190	1,000
R-421A	zeotrope	R-125/134a (58.0/42.0)	A1	2-0-0 <sup>b</sup>	17	61,000	280	1,000
R-421B	zeotrope	R-125/134a (85.0/15.0)	A1	2-0-0 <sup>b</sup>	21	69,000	330	1,000
R-422A	zeotrope	R-125/134a/600a (85.1/11.5/3.4)	A1	2-0-0 <sup>b</sup>	18	63,000	290	1,000
R-422B	zeotrope	R-125/134a/600a (55.0/42.0/3.0)	A1	2-0-0 <sup>b</sup>	16	<del>26,000</del> <u>56,000</u>	250	1,000
R-422C	zeotrope	R-125/134a/600a (82.0/15.0/3.0)	A1	2-0-0 <sup>b</sup>	18	62,000	290	1,000
R-422D	zeotrope	R-125/134a/600a (65.1/31.5/3.4)	A1	2-0-0 <sup>b</sup>	16	58,000	260	1,000

R-423A	zeotrope	R-134a/227ea (52.5/47.5)	A1	2-0-0 <sup>c</sup>	19	59,000	310	1,000
R-424A	zeotrope	R-125/134a/600a/600/601a (50.5/47.0/0.9/1.0/0.6)	A1	2-0-0 <sup>b</sup>	6.2	23,000	100	970
R-425A	<del>zeotrope</del> zeotrope	R-32/134a/227ea (18.5/69.5/12.0)	A1	2-0-0 <sup>b</sup>	16	<del>67,000</del> 72,000	<del>250</del> 260	1,000
R-426A	zeotrope	R-125/134a/600a/601a (5.1/93.0/1.3/0.6)	A1	—	5.2	20,000	83	990
R-427A	zeotrope	R-32/125/143a/134a (15.0/25.0/10.0/50.0)	A1	—	18	<del>76,000</del> 79,000	<del>280</del> 290	1,000
R-428A	zeotrope	R-125/143a/290/600a (77.5/20.0/0.6/1.9)	A1	—	23	83,000	370	1,000
R-429A	zeotrope	R-E170/152a/600a (60.0/10.0/30.0)	A3	—	0.81	6,300	13	1,000
R-430A	zeotrope	R-152a/600a (76.0/24.0)	A3	—	1.3	8,000	21	1,000
R-431A	zeotrope	R-290/152a (71.0/29.0)	A3	—	0.69	5,500	11	1,000
R-432A	zeotrope	R-1270/E170 (80.0/20.0)	A3	—	0.13	1,200	2.1	<del>740</del> 700
R-433A	zeotrope	R-1270/290 (30.0/70.0)	A3	—	0.34	3,100	5.5	880
R-433B	zeotrope	R-1270/290 (5.0/95.0)	A3	—	0.51	4,500	8.1	950
R-433C	zeotrope	R-1270/290 (25.0/75.0)	A3	—	0.41	3,600	6.6	790
R-434A	zeotrope	R-125/143a/600a (63.2/18.0/16.0/2.8)	A1	—	20	73,000	320	1,000
R-435A	zeotrope	R-E170/152a (80.0/20.0)	A3	—	1.1	8,500	17	1,000
R-436A	zeotrope	R-290/600a (56.0/44.0)	A3	—	0.50	4,000	8.1	1,000
R-436B	zeotrope	R-290/600a (52.0/48.0)	A3	—	0.51	4,000	8.1	1,000
R-437A	zeotrope	R-125/134a/600/601 (19.5/78.5/1.4/0.6)	A1	—	5.0	19,000	<del>84</del> 82	990
R-438A	zeotrope	R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6)	A1	-	4.9	<del>19,000</del> 20,000	79	990
R-439A	zeotrope	R-32/125/600a (50.0/47.0/3.0)	A2	:	4.7	26,000	76	990
R-440A	zeotrope	R-290/134a/152a (0.6/1.6/97.8)	A2	:	1.9	12,000	31	1,000
R-441A	zeotrope	R-170/290/600a/600 (3.1/54.8/6.0/36.1)	A3	:	0.39	3,200	6.3	1,000
R-442A	zeotrope	R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0)	A1	:	21	100,000	330	1,000

(continued)

**BLE 1103.1—continued**  
**REFRIGERANT CLASSIFICATION, AMOUNT AND OEL**

CHEMICAL REFRIGERANT	FORMULA	CHEMICAL NAME OF BLEND	REFRIGERANT CLASSIFICATION	DEGREES OF HAZARD <sup>a</sup>	[M] AMOUNT OF REFRIGERANT PER OCCUPIED SPACE			
					Pounds per 1,000 cubic feet	ppm	g/m <sup>3</sup>	OEL <sup>e</sup>
R-500 <sup>e</sup>	azeotrope	R-12/152a (73.8/26.2)	A1	2-0-0 <sup>b</sup>	7.6	30,000	120	1,000
R-501 <sup>d</sup>	azeotrope	R-22/12 (75.0/25.0)	A1	—	13	54,000	210	1,000
R-502 <sup>e</sup>	azeotrope	R-22/115 (48.8/51.2)	A1	2-0-0 <sup>b</sup>	21	73,000	330	1,000
R-503 <sup>e</sup>	azeotrope	R-23/13 (40.1/59.9)	—	2-0-0 <sup>b</sup>	—	—	—	1,000
R-504 <sup>d</sup>	azeotrope	R-32/115 (48.2/51.8)	—	—	<del>29</del> <u>28</u>	140,000	<del>460</del> <u>450</u>	1,000
R-507A	azeotrope	R-125/143a (50.0/50.0)	A1	2-0-0 <sup>b</sup>	32	130,000	520	1,000
R-508A	azeotrope	R-23/116 (39.0/61.0)	A1	2-0-0 <sup>b</sup>	14	55,000	220	1,000
R-508B	azeotrope	R-23/116 (46.0/54.0)	A1	2-0-0 <sup>b</sup>	13	52,000	200	1,000
R-509A	azeotrope	R-22/218 (44.0/56.0)	A1	2-0-0 <sup>b</sup>	24	75,000	390	1,000
R-510A	azeotrope	R-E170/600a (88.0/12.0)	A3	—	0.87	7,300	14	1,000
<u>R-511A</u>	<u>azeotrope</u>	<u>R-290/E170 (95.0/5.0)</u>	<u>A3</u>	<u>-</u>	<u>0.59</u>	<u>5,300</u>	<u>9.5</u>	<u>1,000</u>
<u>R-512A</u>	<u>azeotrope</u>	<u>R-134a/152a (5.0/95.0)</u>	<u>A2</u>	<u>-</u>	<u>1.9</u>	<u>11,000</u>	<u>31</u>	<u>1,000</u>
R-600	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	butane	A3	1-4-0	0.15	1,000	2.4	1,000
R-600a	CH(CH <sub>3</sub> ) <sub>2</sub> CH <sub>3</sub>	2-methylpropane (isobutane)	A3	2-4-0	<del>0.59</del> <u>0.6</u>	4,000	9.6	1,000
R-601	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	pentane	A3	—	0.18 <del>0.2</del>	1,000	2.9	600
R-601a	(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> CH <sub>3</sub>	2-methylbutane (isopentane)	A3	—	0.18 <del>0.2</del>	1,000	2.9	600
R-717	NH <sub>3</sub>	ammonia	<u>B2L</u>	3-3-0 <sup>c</sup>	0.014	320	0.22	25
R-718	H <sub>2</sub> O	water	A1	0-0-0	—	—	—	—
R-744	CO <sub>2</sub>	carbon dioxide	A1	2-0-0 <sup>b</sup>	4.5	40,000	72	5,000
R-1150	CH <sub>2</sub> =CH <sub>2</sub>	ethene (ethylene)	A3	1-4-2	—	—	—	200
R-1234yf	CF <sub>3</sub> CF=CH <sub>2</sub>	2,3,3,3-tetrafluoro-1 propene	<u>A2L</u>	—	4.7	16,000	75	500
<u>R-1234ze(E)</u>	<u>CF<sub>3</sub>CH=CHF</u>	<u>trans-1,3,3,3-tetrafluoro-1-propene</u>	<u>A2L</u>	<u>-</u>	<u>4.7</u>	<u>16,000</u>	<u>75</u>	<u>800</u>
R-1270	CH <sub>3</sub> CH=CH <sub>2</sub>	<u>Propene (propylene)</u>	A3	1-4-1	0.11	1,000	1.7	500

For SI: 1 pound = 0.454 kg, 1 cubic foot = 0.0283 m<sup>3</sup>.

- Degrees of hazard are for health, fire, and reactivity, respectively, in accordance with NFPA 704.
- Reduction to 1-0-0 is allowed if analysis satisfactory to the code official shows that the maximum concentration for a rupture or full loss of refrigerant charge would not exceed the IDLH, considering both the refrigerant quantity and room volume.
- For installations that are entirely outdoors, use 3-1-0.
- Class I ozone depleting substance; prohibited for new installations.
- Occupational Exposure Limit based on the OSHA PEL, ACGIH TLV-TWA, the AIHA WEEL or consistent value on a time-weighted average (TWA) basis (unless noted C for ceiling) for an 8 hr/d and 40 hr/wk.

## SECTION 1104 SYSTEM APPLICATION REQUIREMENTS

**1104.1 General.** The refrigerant, *occupancy* and system classification cited in this section shall be determined in accordance with Sections 1103.1, 1103.2 and 1103.3, respectively. ~~For refrigerant blends assigned dual classifications, as formulated and for the worst case of fractionation, the classifications for the worst case of fractionation shall be used.~~

**Reason:** ASHRAE recently added a new flammability classification, “2L”, to ANSI/ASHRAE Standard 34, Designation and Safety Classification of Refrigerants. Refrigerants classified as 2L meet the requirements for class 2 refrigerants and have a burning velocity of less than 3.9 in/s (10 cm/s). These refrigerants, while flammable, are difficult to ignite and have unstable flames that are easy to extinguish. The new classification was established to differentiate these refrigerants from other Class 2 refrigerants that burn more rapidly and present a larger risk if ignited. This change was precipitated by the need for refrigerants with a lower global warming potential, some of which are mildly flammable. A separate code change proposal is being submitted by ASHRAE based on changes to Standard 15, Safety Standard for Refrigeration Systems, that will provide the requirements for the use of class 2L refrigerants. The changes resulting from the additional of the new safety classification are included below along with other changes to update the IMC with new refrigerants and to correct some of the data in Table 1103.1.

### Section 202, GENERAL DEFINITIONS

The definition of FLAMMABILITY CLASSIFICATION is being updated to include the 2L classification. This is being added as an optional subclass of Class 2 so that only those manufacturers that want their refrigerant classified as 2L will have to measure the burning velocity. The test temperature for determining flame propagation and for measuring the LFL of a refrigerant has been increased to be consistent with common practice today and with the requirements of ANSI/ASHRAE Standard 34. The higher test temperature is a more conservative measure of the LFL.

The DEFINITION OF TOXICITY CLASSIFICATION is being modified to make it easier to understand. This is an editorial change and does not result in a change to the toxicity classification of any refrigerants in table 1103.1

A definition of OCCUPATIONAL EXPOSURE LIMITS (OEL) is being added because it used to determine the toxicity classification of a refrigerant. This is a generic term, and allows the use of OELs from various organizations that evaluate the toxicity of refrigerants and publish exposure limits, e.g. Workplace Environmental Exposure Limit (WEEL) from the American Industrial Hygiene Association (AIHA), Threshold Limit Values – Time Weighted Average (TLV-TWA) from the American Conference of Governmental Industrial Hygienists (ACGIH), Permissible Exposure Limits (PEL) from the National Institute for Occupational Safety and Health (NIOSH).

The definition for REFRIGERANT SAFETY CLASSIFICATIONS is being updated to include the new 2L flammability safety classification. The portions of this definition related to flammability classification and toxicity classification refer the reader to the other definitions rather than repeating the information as part of this definition as is done in the 2012 IMC.

### Table 1103.1 REFRIGERANT CLASSIFICATION, AMOUNT AND OEL

Several new refrigerants have been developed to replace ozone depleting substances and/or to replace refrigerants with a high global warming potential. Nine refrigerants have been added to ANSI/ASHRAE Standard 34 since publication of the 2012 IMC. These refrigerants are: R-407F, R-417B, R-439A, R-440A, R-441A, R-442A, R-511A, R-512A, and R-1234ze(E)

Corrections were made to the amount of refrigerant per occupied space for R-152a, R-E170, R-402A, R-415A, R-415B, R-417B, R-418A, R-419A, R-422B, R-436A, R-436B, R-437A, R-511A, R-512A, R-600, R-600a, R-601, R-601a, and R-1270. These changes are being made to correct errors in the 2012 IMC.

The cardiac sensitization NOEL for R-32 has been changed from 200,000 ppm to 350,000 ppm based on more recent studies using acceptable GLP methodology. This had no effect on the amount of refrigerant per occupied space for R-32 but did result in changes to the amount of refrigerant per occupied space for refrigerant blends containing R-32 and these have been changed accordingly (i.e. R-407A, R-407B, R-407C, R-407D, R-407E, R-410A, R-410B, R-425A, R-427A, R-438A, and R-504).

The flammability safety classifications for R-32, R-143a, R-717, and R-1234yf have been changed from 2 to 2L to reflect the addition of this new classification to ASHRAE Standard 34 for refrigerants which meet the criteria for class 2 and have a burning velocity of 3.9 in/s (10cm/s). One new refrigerant, R-1234ze(E), also has a flammability classification of 2L.

The compositions of several refrigerant blends have been updated to include the appropriate number of significant figures.

### SECTION 1104, SYSTEM APPLICATION REQUIREMENTS

The sentence referring to refrigerant blends with dual classifications is being deleted since the industry no longer assigns dual classifications to refrigerant blends. Today, the worst case fractionated formulation is used to determine a single safety classification for refrigerant blends and therefore the blends have a single classification.

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

**Public Hearing Results**

**Committee Action:**

**Approved as Modified**

**Modify the proposal as follows:**

**SECTION 202  
GENERAL DEFINITIONS**

**FLAMMABILITY CLASSIFICATION.** Refrigerants shall be assigned to one of the three classes—1, 2 or 3— and one optional subclass (2L), in accordance with ASHRAE 34. For Classes 2, 2L, and 3, the heat of *combustion* shall be calculated assuming that *combustion* products are in the gas phase and in their most stable state.

**Class 1.** Refrigerants that do not show flame propagation when tested in air at 14.7 psia (101 kPa) and 140°F (60°C).

**Class 2.** Refrigerants having a lower flammability limit (LFL) of more than 0.00625 pound per cubic foot (0.10 kg/m<sup>3</sup>) at 140°F (60°C) and 14.7 psia (101 kPa) and a heat of *combustion* of less than 8169 Btu/lb (19 000 kJ/kg).

**Subclass 2L (Optional).** Refrigerants that meet the additional condition of having a maximum burning velocity of less than or equal to 3.9 in/s (10 cm/s) when tested at 73.4 °F (23°C) and 14.7 psia (101.3 kPa).

**Class 3.** Refrigerants that are highly flammable, having a LFL of less than or equal to 0.00625 pound per cubic foot (0.10 kg/m<sup>3</sup>) at 140°F (60°C) and 14.7 psia (101 kPa) or a heat of *combustion* greater than or equal to 8169 Btu/lb (19 000 kJ/kg).

**OCCUPATIONAL EXPOSURE LIMIT (OEL).** The time-weighted average (TWA) concentration for a normal eight-hour workday and a 40-hour workweek to which nearly all workers can be repeatedly exposed without adverse effect, based on the OSHA PEL, ACGIH TLV-TWA, AIHA WEEL, or consistent value.

**REFRIGERANT SAFETY CLASSIFICATIONS.** Groupings that indicate the toxicity and flammability classes in accordance with Section 1103.1. The classification group is made up of a letter (A or B) that indicates the toxicity class, followed by a number one or two alphanumeric characters (1, 2, 2L or 3) that indicates the flammability class. Refrigerant blends are similarly classified, based on the compositions at their worst cases of fractionation, as separately determined for toxicity and flammability. In some cases, the worst case of fractionation is the original formulation.

**Flammability.** See “FLAMMABILITY CLASSIFICATION”

**Toxicity.** See “TOXICITY CLASSIFICATION”.

**TOXICITY CLASSIFICATION.** Refrigerants shall be classified for toxicity to one of two classes in accordance with ASHRAE 34:

**Class A.** Refrigerants that have an occupational exposure limit (OEL) of 400 parts per million (ppm) or greater.

**Class B.** Refrigerants that have an OEL of less than 400 ppm.

**Portions of Table 1103.1 not shown are unaffected by the modification to this proposal.**

[F] TABLE 1103.1  
REFRIGERANT CLASSIFICATION, AMOUNT AND OEL

CHEMICAL REFRIGERANT	FORMULA	CHEMICAL NAME OF BLEND	REFRIGERANT CLASSIFICATION	DEGREES OF HAZARD <sup>a</sup>	[M] AMOUNT OF REFRIGERANT PER OCCUPIED SPACE			
					Pounds per 1,000 cubic feet	ppm	g/m <sup>3</sup>	OEL <sup>e</sup>
R-32	CH <sub>2</sub> F <sub>2</sub>	Difluoromethane (methylene fluoride)	A2L <sup>f</sup>	—	4.8	36,000	77	1,000
R-143a	CH <sub>3</sub> CF <sub>3</sub>	1,1,1-trifluoroethane	A2L <sup>f</sup>	2-0-0 <sup>b</sup>	4.5	21,000	70	1,000
R-717	NH <sub>3</sub>	ammonia	B2L <sup>f</sup>	3-3-0 <sup>c</sup>	0.014	320	0.22	25
R-1234yf	CF <sub>3</sub> CF=CH <sub>2</sub>	2,3,3,3-tetrafluoro-1 propene	A2L <sup>f</sup>	—	4.7	16,000	75	500
R-1234ze(E)	CF <sub>3</sub> CH=CHF	trans-1,3,3,3-tetrafluoro-1-propene	A2L <sup>f</sup>	—	4.7	16,000	75	800

For SI: 1 pound = 0.454 kg, 1 cubic foot = 0.0283 m<sup>3</sup>.

- a. Degrees of hazard are for health, fire, and reactivity, respectively, in accordance with NFPA 704.
- b. Reduction to 1-0-0 is allowed if analysis satisfactory to the code official shows that the maximum concentration for a rupture or full loss of refrigerant charge would not exceed the IDLH, considering both the refrigerant quantity and room volume.
- c. For installations that are entirely outdoors, use 3-1-0.
- d. Class I ozone depleting substance; prohibited for new installations.
- e. Occupational Exposure Limit based on the OSHA PEL, ACGIH TLV-TWA, the AIHA WEEL or consistent value on a time-weighted average (TWA) basis (unless noted C for ceiling) for an 8 hr/d and 40 hr/wk.
- f. The ASHRAE Standard 34 flammability classification for this refrigerant is 2L, which is a subclass of Class 2.

**SECTION 1104  
SYSTEM APPLICATION REQUIREMENTS**

**1104.1 General.** The refrigerant, *occupancy* and system classification cited in this section shall be determined in accordance with Sections 1103.1, 1103.2 and 1103.3, respectively.

**Committee Reason:** Approval is based on the proponent's published reason. The proposed revisions keep the IMC in sync with ASHRAE 15. The modification deletes the 2L classification text because it is premature in ASHRAE 15 and likewise in the IMC.

**Assembly Action:**

**None**

**Final Hearing Results**

**M182-12**

**AM**

---

## Code Change No: **M184-12**

### Original Proposal

**Section(s):** 1106.3

**Proponent:** Jeffrey Shapiro, International Code Consultants, representing International Institute of Ammonia Refrigeration  
(jeff.shapiro@intlcodeconsultants.com)

**Revise as follows:**

**1106.3 Ammonia room ventilation.** Ventilation systems in ammonia machinery rooms shall be operated continuously at the ~~emergency~~ ventilation rate specified in ~~determined in accordance with~~ Section 1105.6.3-2.

**Exceptions:**

1. Machinery rooms equipped with a vapor detector that will automatically start the ventilation system at the ~~emergency~~ ventilation rate specified in ~~determined in accordance with~~ Section 1105.6.3-2, and that will actuate an alarm at a detection level not to exceed 1,000 ppm; or
2. Machinery rooms conforming to the Class 1, Division 2, *hazardous location* classification requirements of NFPA 70.

**Reason:** Editorial correction. A change to the 2009 code revised the ventilation rate requirements for ammonia, and the provisions are now contained in Section 1105.6.3.

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

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M184-12**

**AS**

## Code Change No: **M185-12**

### Original Proposal

**Section(s):** 1107.1, Chapter 15

**Proponent:** Walter J. Sperko, Sperko Engineering Services, Inc. representing Mechanical Contractors Association of America  
(Sperko@asme.org)

**Revise as follows:**

**1107.1 General.** The design of refrigerant piping shall be in accordance with ASME B31.5. ~~All~~ Refrigerant piping shall be installed, tested and placed in operation in accordance with this chapter.

**Add new standard to Chapter 15 as follows:**

ASME B31.5-2001 Refrigerant Piping and Heat Transfer Components

**Reason:** The present rules have no requirements for design, analysis, supports, stress limits or anything else regarding design of refrigerant piping. B31.5 is specifically written for refrigeration piping and provides appropriate design requirements. The addition of this requirement does not conflict with existing requirements in this chapter since it only governs design of the piping.

**Cost Impact:** None. Designers should be following B31.5 or similar standard already. Jurisdiction will not have to buy copies of B31.5 since the engineer will have to have a copy to demonstrate compliance and the change would not affect installation requirements.

**Analysis:** A review of the standard proposed for inclusion in the code, [ASME B31.5-2001] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason. The proposed text will provide a higher margin of safety.

**Assembly Action:**

**None**

### Final Hearing Results

**M185-12**

**AS**

# Code Change No: M188-12

## Original Proposal

**Section(s):** Table 1202.4, 1203.15, 1208, 1210 (New), 1211 (New), 1212 (New), 1213 (New), 1214 (New), 1215 (New), 1216 (New), Chapter 15

**Proponent:** Michael Cudahy, Plastic Pipe and Fittings Association  
(mikec@cmservnet.com)

**Revise as follows:**

**TABLE 1202.4  
HYDRONIC PIPE**

MATERIAL	STANDARD (see Chapter 15)
Polyethylene (PE) pipe, tubing and fittings (for ground source heat pump loop systems)	ASTM D 2513; ASTM D 3035; ASTM D 2447; ASTM D 2683; ASTM F 1055; ASTM D 2837; ASTM D 3350; ASTM D 1693

*(Portions of table not shown remain unchanged)*

~~**1203.15 Polyethylene plastic pipe and tubing for ground source heat pump loop systems.** Joints between polyethylene plastic pipe and tubing or fittings for ground source heat pump loop systems shall be heat fusion joints conforming to Section 1203.15.1, electrofusion joints conforming to Section 1203.15.2, or stab-type insertion joints conforming to Section 1203.15.3.~~

~~**1203.15.1 Heat fusion joints.** Joints shall be of the socket fusion, saddle fusion or butt fusion type, joined in accordance with ASTM D 2657. Joint surfaces shall be clean and free of moisture. Joint surfaces shall be heated to melt temperatures and joined. The joint shall be undisturbed until cool. Fittings shall be manufactured in accordance with ASTM D 2683 or ASTM D 3261.~~

~~**1203.15.2 Electrofusion joints.** Joints shall be of the electrofusion type. Joint surfaces shall be clean and free of moisture, and scoured to expose virgin resin. Joint surfaces shall be heated to melt temperatures for the period of time specified by the manufacturer. The joint shall be undisturbed until cool. Fittings shall be manufactured in accordance with ASTM F 1055.~~

~~**1203.15.3 Stab-type insert fittings.** Joint surfaces shall be clean and free of moisture. Pipe ends shall be chamfered and inserted into the fittings to full depth. Fittings shall be manufactured in accordance with ASTM F 1924.~~

## **SECTION 1208 TESTS**

~~**1208.1 General.** Hydronic piping systems other than groundsource heat pump loop systems shall be tested hydrostatically at one and one-half times the maximum system design pressure, but not less than 100 psi (689 kPa). The duration of each test shall be not less than 15 minutes, but not more than 20 minutes. Ground source heat pump loop systems shall be tested in accordance with Section 1208.1.1.~~

~~**1208.1.1 Ground source heat pump loop systems.** Before connection (header) trenches are backfilled, the assembled loop system shall be pressure tested with water at 100 psi (689 kPa) for 30 minutes with no observed leaks. Flow and pressure loss testing shall be performed and the actual flow rates and~~

pressure drops shall be compared to the calculated design values. If actual flow rate or pressure drop values differ from calculated design values by more than 10 percent, the problem shall be identified and corrected.

**SECTION 1210**  
**GROUND-SOURCE HEAT PUMP LOOP SYSTEMS**

**1210.1 Ground-Source Heat Pump-Loop Water Piping.** Ground source heat pump ground loop-piping and tubing material for water-based systems shall conform to the standards cited in this section.

**1210.2 Used materials.** Reused pipe, fittings, valves, and other materials shall not be permitted in ground-source heat pump loop systems.

**1210.3 Material rating.** Pipe and tubing shall be rated for the operating temperature and pressure of the ground source heat pump-loop system. Fittings shall be suitable for the pressure applications and recommended by the manufacturer for installation with the pipe and tubing material installed. Where used underground, materials shall be suitable for burial.

**1210.4 Piping and tubing materials standards.** Ground source heat pump ground-loop pipe and tubing shall conform to the standards listed in Table 1210.4.

**TABLE 1210.4**  
**GROUND SOURCE LOOP PIPE**

<b><u>MATERIAL</u></b>	<b><u>STANDARD (see Chapter 15)</u></b>
Chlorinated polyvinyl chloride (CPVC)	<u>ASTM D2846; ASTM F441; ASTM F442</u>
Cross-linked polyethylene (PEX)	<u>ASTM F876; ASTM F877</u> <u>CSA B137.5</u>
Polyethylene/aluminum/polyethylene (PE-AL-PE) pressure pipe	<u>ASTM F1282; CSA B137.9</u>
High Density Polyethylene (HDPE)	<u>ASTM D3035;</u> <u>ASTM D2737; ASTM F714;</u> <u>AWWA C901; CSA B137.1; CSA C448</u>
Polypropylene (PP-R)	<u>ASTM F2389; CSA B137.11</u>
Polyvinyl chloride (PVC)	<u>ASTM D1785; ASTM D2241</u>
Raised temperature polyethylene (PE-RT)	<u>ASTM F2623</u>

**1210.5 Fittings.** Ground source heat pump pipe fittings shall be approved for installation with the piping materials to be installed, shall conform to the standards listed in Table 1210.5 and if installed underground shall be suitable for burial.

**TABLE 1210.5**  
**GROUND SOURCE LOOP PIPE FITTINGS**

<b><u>PIPE MATERIAL</u></b>	<b><u>STANDARD (see Chapter 15)</u></b>
Chlorinated polyvinyl chloride (CPVC)	<u>ASTM D 2846; ASTM F437; ASTM F438; ASTM F439; CSA B137.6</u>
Cross-linked polyethylene (PEX)	<u>ASTM F 877; ASTM F1807; ASTM F 1960; ASTM F 2080; ASTM F2159; ASTM F2434; CSA B137.5</u>
Polyethylene/aluminum/polyethylene (PE-AL-PE)	<u>ASTM F 2434; ASTM F1282, CSA B137.9</u>

<u>PIPE MATERIAL</u>	<u>STANDARD (see Chapter 15)</u>
<u>High Density Polyethylene (HDPE)</u>	<u>ASTM D2683; ASTM D3261; ASTM F1055; CSA B137.1; CSA C448</u>
<u>Polypropylene (PP-R)</u>	<u>ASTM F2389; CSA B137.11</u>
<u>Polyvinyl chloride (PVC)</u>	<u>ASTM D2464; ASTM D2466; ASTM D2467; CSA B137.2; CSA B137.3</u>
<u>Raised temperature polyethylene (PE-RT)</u>	<u>ASTM D3261; ASTM F1807; ASTM F2159; B137.1</u>

## **SECTION 1211** **JOINTS AND CONNECTIONS**

**1211.1 Approval.** Joints and connections shall be of an approved type. Joints and connections shall be tight for the pressure of the ground source loop system. Joints used underground shall be approved for buried applications.

**1211.1.1 Joints between different piping materials.** Joints between different piping materials shall be made with approved transition fittings.

**1211.2 Preparation of pipe ends.** Pipe shall be cut square, reamed, and shall be free of burrs and obstructions. CPVC, PE, and PVC pipe shall be chamfered. Pipe ends shall have full-bore openings and shall not be undercut.

**1211.3 Joint preparation and installation.** Where required by Sections 1211.4 through 1211.6, the preparation and installation of mechanical and thermoplastic-welded joints shall comply with Sections 1211.3.1 and 1211.3.2.

**1211.3.1 Mechanical joints.** Mechanical joints shall be installed in accordance with the manufacturer's instructions.

**1211.3.2 Thermoplastic-welded joints.** Joint surfaces for thermo plastic-welded joints shall be cleaned by an approved procedure. Joints shall be welded in accordance with the manufacturer's instructions.

**1211.4 CPVC plastic pipe.** Joints between CPVC plastic pipe or fittings shall be solvent-cemented or threaded joints complying with Section 1203.3.

**1211.5 Cross-linked polyethylene (PEX) plastic tubing.** Joints between cross-linked polyethylene plastic tubing and fittings shall comply with Sections 1211.4.1 and 1211.4.2. Mechanical joints shall comply with Section 1211.3.

**1211.5.1 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.

**1211.5.2 Plastic-to-metal connections.** Soldering on the metal portion of the system shall be performed at least 18 inches (457 mm) from a plastic-to-metal adapter in the same water line.

**1211.6 Polyethylene plastic pipe and tubing for ground source heat pump loop systems.** Joints between polyethylene plastic pipe and tubing or fittings for ground source heat pump loop systems shall be heat fusion joints complying with Section 1211.6.1, electrofusion joints complying with Section 1211.6.2, or stab-type insertion joints complying with Section 1211.6.3.

**1211.6.1 Heat-fusion joints.** Joints shall be of the socket-fusion, saddle-fusion or butt-fusion type, joined in accordance with ASTM D 2657. Joint surfaces shall be clean and free of moisture. Joint surfaces shall be heated to melt temperatures and joined. The joint shall be undisturbed until cool. Fittings shall be manufactured in accordance with ASTM D 2683 or ASTM D 3261.

**1211.6.2 Electrofusion joints.** Joints shall be of the electrofusion type. Joint surfaces shall be clean and free of moisture, and scoured to expose virgin resin. Joint surfaces shall be heated to melt temperatures for the period of time specified by the manufacturer. The joint shall be undisturbed until cool. Fittings shall be manufactured in accordance with ASTM F 1055.

**1211.6.3 Stab-type insert fittings.** Joint surfaces shall be clean and free of moisture. Pipe ends shall be chamfered and inserted into the fittings to full depth. Fittings shall be manufactured in accordance with ASTM F 1924.

**1211.7 Polypropylene (PP) plastic.** Joints between PP plastic pipe and fittings shall comply with Sections 1211.7.1 and 1211.7.2.

**1211.7.1 Heat-fusion joints.** Heat-fusion joints for polypropylene (PP) pipe and tubing joints shall be installed with socket-type heat-fused polypropylene fittings, electrofusion polypropylene fittings or by butt fusion. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 2389.

**1211.7.2 Mechanical and compression sleeve joints.** Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions.

**1211.8 Raised temperature polyethylene (PE-RT) plastic tubing.** Joints between raised temperature polyethylene tubing and fittings shall comply with Sections 1211.8.1 and 1211.8.2. Mechanical joints shall comply with Section 1211.3.

**1211.8.1 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.

**1211.8.2 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.

**1211.9 PVC plastic pipe.** Joints between PVC plastic pipe and fittings shall be solvent-cemented or threaded joints comply with Section 1203.3.

## **SECTION 1212** **VALVES**

**1212.1 Where required.** Shutoff valves shall be installed in ground source-loop piping systems in the locations indicated in Sections 1212.1.1 through 1212.1.6.

**1212.1.1 Heat exchangers.** Shutoff valves shall be installed on the supply and return side of a heat exchanger.

**Exception:** Shutoff valves shall not be required where heat exchangers are integral with a boiler or are a component of a manufacturer's boiler and heat exchanger packaged unit and are capable of being isolated from the hydronic system by the supply and return valves required by Section 1005.1.

**1212.1.2 Central systems.** Shutoff valves shall be installed on the building supply and return of a central utility system.

**1212.1.3 Pressure vessels.** Shutoff valves shall be installed on the connection to any pressure vessel.

**1212.1.4 Pressure-reducing valves.** Shutoff valves shall be installed on both sides of a pressure-reducing valve.

**1212.1.5 Equipment and appliances.** Shutoff valves shall be installed on connections to mechanical *equipment* and appliances. This requirement does not apply to components of a ground source loop system such as pumps, air separators, metering devices, and similar *equipment*.

**1212.1.6 Expansion tanks.** Shutoff valves shall be installed at connections to nondiaphragm-type expansion tanks.

**1212.2 Reduced pressure.** A pressure relief valve shall be installed on the low-pressure side of a hydronic piping system that has been reduced in pressure. The relief valve shall be set at the maximum pressure of the system design. The valve shall be installed in accordance with Section 1006.

## **SECTION 1213** **PIPING INSTALLATION**

**1213.1 General.** Piping, valves, fittings, and connections shall be installed in accordance with the conditions of approval.

**1213.3 Protection of potable water.** Where ground source heat pump ground loop systems have a connection to a potable water supply, the potable water system shall be protected from backflow in accordance with the *International Plumbing Code*.

**1213.4 Pipe penetrations.** Openings for pipe penetrations in walls, floors and ceilings shall be larger than the penetrating pipe. Openings through concrete or masonry building elements shall be sleeved. The annular space surrounding pipe penetrations shall be protected in accordance with the *International Building Code*.

**1213.5 Clearance from combustibles.** A pipe in a ground source heat pump piping system having an exterior surface temperature exceeding 250°F (121°C) shall have a minimum *clearance* of 1 inch (25 mm) from combustible materials.

**1213.6 Contact with building material.** A ground source heat pump ground-loop piping system shall not be in direct contact with building materials that cause the piping or fitting material to degrade or corrode, or that interfere with the operation of the system.

**1213.7 Strains and stresses.** Piping shall be installed so as to prevent detrimental strains and stresses in the pipe. Provisions shall be made to protect piping from damage resulting from expansion, contraction and structural settlement. Piping shall be installed so as to avoid structural stresses or strains within building components.

**1213.7.1 Flood hazard.** Piping located in a flood hazard area shall be capable of resisting hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the *design flood elevation*.

**1213.8 Pipe support.** Pipe shall be supported in accordance with Section 305.

**1213.9 Velocities.** Ground source heat pump ground-loop systems shall be designed so that the flow velocities do not exceed the maximum flow velocity recommended by the pipe and fittings manufacturer and shall be controlled to reduce the possibility of water hammer.

**1213.10 Labeling and Marking.** Ground source heat pump ground-loop system piping shall be marked with tape, metal tags or other method where it enters a building indicating "GROUND SOURCE HEAT PUMP-LOOP SYSTEM". The marking shall indicate any antifreeze used in the system by name and concentration.

**1213.11 Chemical Compatibility.** Antifreeze and other materials used in the system shall be chemically compatible with the pipe, tubing, fittings, and mechanical systems.

**SECTION 1214**  
**WORKING FLUID**

**1214.1 Makeup water.** The transfer fluid shall be compatible with the makeup water supplied to the system.

**SECTION 1215**  
**TESTS**

**1215.1 Ground source heat pump loop systems.** Before connection header trenches are backfilled, the assembled loop system shall be pressure tested with water at 100 psi (689 kPa) for 30 minutes, but not more than 35 minutes, with no observed leaks. Flow and pressure loss testing shall be performed and the actual flow rates and pressure drops shall be compared to the calculated design values. If actual flow rate or pressure drop values differ from calculated design values by more than 10 percent, the cause shall be identified and corrective action taken.

**SECTION 1216**  
**EMBEDDED PIPING**

**1216.1 Pressurizing during installation.** Ground source heat pump ground loop piping to be embedded in concrete shall be pressure tested prior to pouring concrete. During pouring, the pipe shall be maintained at the proposed operating pressure.

**Add new standard as follows:**

CSA C448 SERIES-02-CAN/CSA-2002

Design and Installation of Earth Energy Systems - First Edition; Update 2: October 2009; Consolidated Reprint 10/2009

**Reason:** Water based geothermal PE piping is currently listed in the hydronics section where it doesn't quite fit. This special and growing application should have its own section, and it should cover other materials that could potentially be used. Green building rating systems are promoting geothermal ground loop heating and cooling systems, and the code should have more information. I am re-introducing this proposal to accomplish that and would accept friendly amendments to it for any other materials. While HDPE dominates the water based technology with an expected 95% of the systems, other materials can be utilized. Copper is used in direct expansion systems that do not run on water.

**Cost Impact:** None

**Analysis:** A review of the standard proposed for inclusion in the code, [CSA C448 SERIES-02-CAN/CSA-2002] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

**Public Hearing Results**

**Committee Action:**

**Approved as Modified**

**Modify as follows:**

**SECTION 1210**  
**PLASTIC PIPE GROUND-SOURCE HEAT PUMP LOOP SYSTEMS**

**1210.1 Plastic pipe** ground-source heat pump-loop water piping. Ground source heat pump ground loop-piping and tubing material for water-based systems shall conform to the standards cited in this section.

**SECTION 1215**  
**TESTS**

**1215.1 Ground source heat pump loop systems.** Before connection header trenches are backfilled, the assembled loop system shall be pressure tested with water at 100 psi (689 kPa) for ~~30~~ 15 minutes, ~~but not more than 35 minutes~~, with no observed leaks. Flow and pressure loss testing shall be performed and the actual flow rates and pressure drops shall be compared to the calculated design values. If actual flow rate or pressure drop values differ from calculated design values by more than 10 percent, the cause shall be identified and corrective action taken.

(Portions of proposal not shown remain unchanged)

**Committee Reason:** Approval is based on the proponent’s published reason. The modification adds “plastic pipe” to the titles to reflect the coverage of the text. The change to 15 minutes is consistent with current section 1208.

**Assembly Action:**

**None**

**Public Comments**

*Public Comment:*

**Jeremy Brown, representing NSF International, requests Approval as Modified by this Public Comment.**

**Further modify the proposal as follows:**

**TABLE 1210.4  
GROUND SOURCE LOOP PIPE**

MATERIAL	STANDARD (see Chapter 15)
Chlorinated polyvinyl chloride (CPVC)	ASTM D2846; ASTM F441; ASTM F442
Cross-linked polyethylene (PEX)	ASTM F876; ASTM F877 CSA B137.5
Polyethylene/aluminum/polyethylene (PE-AL-PE) pressure pipe	ASTM F1282; CSA B137.9
High Density Polyethylene (HDPE)	ASTM D3035; ASTM D2737; ASTM F714; AWWA C901; CSA B137.1; CSA C448; <u>NSF 358-1</u>
Polypropylene (PP-R)	ASTM F2389; CSA B137.11
Polyvinyl chloride (PVC)	ASTM D1785; ASTM D2241
Raised temperature polyethylene (PE-RT)	ASTM F2623

**TABLE 1210.5  
GROUND SOURCE LOOP PIPE  
FITTINGS**

PIPE MATERIAL	STANDARD (see Chapter 15)
Chlorinated polyvinyl chloride (CPVC)	ASTM D 2846; ASTM F437; ASTM F438; ASTM F439; CSA B137.6
Cross-linked polyethylene (PEX)	ASTM F 877; ASTM F1807; ASTM F 1960; ASTM F 2080; ASTM F2159; ASTM F2434; CSA B137.5
Polyethylene/aluminum/polyethylene (PE-AL-PE)	ASTM F 2434; ASTM F1282, CSA B137.9
High Density Polyethylene (HDPE)	ASTM D2683; ASTM D3261; ASTM F2389; ASTM F1055; CSA B137.1; <u>NSF 358-1</u>
Polypropylene (PP-R)	CSA B137.11; CSA C448
Polyvinyl chloride (PVC)	ASTM D2464; ASTM D2466; ASTM D2467; CSA B137.2; CSA B137.3
Raised temperature polyethylene (PE-RT)	ASTM D3261; ASTM F1807; ASTM F2159; B137.1

NSF 358-1 2011 Polyethylene Pipe and Fittings for Water-Based Ground-Source ‘Geothermal’ Heat Pump Systems

(Portions of proposal not shown remain unchanged)

**Commenter’s Reason:** I was the proponent of M-190, an identical proposal to M-188, with the exception of adding new NSF standards. At the time of the Code Hearing in Dallas, NSF 358-1 was not complete so the code change was disapproved. It is now complete and published. This is the American National Standard for Polyethylene Pipe and Fittings for Water-Based Ground-Source “Geothermal” Heat Pump Systems and should be included as an option in the code. This standard deals with specific performance requirements related to geothermal systems. The standard is written in mandatory language. ICC voting members may obtain a free copy of this NSF standard from [http://standards.nsf.org/apps/group\\_public/document.php?document\\_id=18123](http://standards.nsf.org/apps/group_public/document.php?document_id=18123) or by emailing [brown@nsf.org](mailto:brown@nsf.org).

**Final Hearing Results**

**M188-12**

**AMPC**

---

# Code Change No: **M189-12**

## Original Proposal

**Section(s):** Table 1202.4, Chapter 15

**Proponent:** James Gilchrist, P.E., Georg Fischer Sloane, LLC, representing GF Piping Systems (jim.gilchrist@georgfischer.com)

**Revise as follows:**

**Table 1202.4  
HYDRONIC PIPE**

MATERIAL	STANDARD (see Chapter 15)
Acrylonitrile butadiene styrene (ABS) plastic pipe	ASTM D 1527; <del>ASTM D 2282</del> <u>F2806</u>
.....	
<del>Polybutylene (PB) plastic pipe and tubing</del>	<del>ASTM D3309</del>
.....	
Polyethylene (PE) pipe, tubing and fittings (for ground source heat pump loop systems)	ASTM D 2513; ASTM D 3035; <del>ASTM D 2447</del> ; ASTM D 2683; ASTM F 1055; <del>ASTM D 2837</del> ; <del>ASTM D 3350</del> ; ASTM D 1693
.....	

*Portions not shown remain unchanged.*

**Add new standard to Chapter 15 as follows:**

**ASTM F2806-10**

**Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (Metric SDR-PR)**

**Reason:** Updates to this table are needed so that it is aligned with current ASTM standards for plastic pipe and fittings. Also, several standards are included which are incorporated into product standards but are not product standards themselves. For clarity these should be removed.

- D2282 was withdrawn in 2007 without replacement. ASTM F2806-10e1, "Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (Metric SDR-PR)," was approved in 2010.
- D3309 was withdrawn in 2010 without replacement. Polybutylene pipe is not currently manufactured or used in the United States for this application.
- D2447 was withdrawn in 2010 without replacement.
- ASTM D2837 - 11 "Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products," is a test method, not a specification for PE pipe and fittings.
- ASTM D3350 - 10a "Standard Specification for Polyethylene Plastics Pipe and Fittings Materials," is a specification for materials, not finished product.
- ASTM D1693 - 08 "Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics," is a test method, not a specification for PE pipe and fittings.

Copy of new standard, ASTM F2806-10e1, is attached in PDF form.

**Cost Impact:** The code change proposal will not increase the cost of construction. The change only aligns the code with current ASTM standards.

**Analysis:** A review of the standard proposed for inclusion in the code, [ASTM F2806-10] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M189-12**

**AS**

---

# Code Change No: M191-12

## Original Proposal

**Section(s):** Table 1202.4

**Proponent:** Pennie L. Feehan, Pennie L. Feehan Consulting, representing Copper Development Association  
(penniefeehan@me.com)

**Revise as follows:**

**TABLE 1202.4  
HYDRONIC PIPE**

<b>MATERIAL</b>	<b>STANDARD (see Chapter 15)</b>
Acrylonitrile butadiene styrene (ABS) plastic pipe	ASTM D 1527; ASTM D 2282
<del>Brass pipe</del>	<del>ASTM B 43</del>
<del>Brass tubing</del>	<del>ASTM B 135</del>
Copper or copper-alloy pipe	ASTM B 42; <u>ASTM B 43</u> ; ASTM B 302
Copper or copper-alloy tube (Type K, L or M)	ASTM B 75; ASTM B 88; <u>ASTM B 135</u> ASTM B 251

**Reason:** Brass pipe and tubing are copper alloys. Moving brass under the applicable heading cleans-up the table and provides the appropriate terminology and correct information to the end user.

**Cost Impact:** This code change will not increase the cost of construction.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M191-12**

**AS**

## Code Change No: **M192-12**

### Original Proposal

**Section(s):** Table 1202.5, Chapter 15

**Proponent:** Kevin J. Simko, Victaulic, representing Victaulic

**Revise as follows:**

MATERIAL	STANDARD
Brass	ASTM F 1974
Bronze	ASTM B 16.24
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.23; ASME B16.26; AS ME B16.29; ASTM B 75; ASTM B 152; ASTM B 584
Ductile iron and gray iron	ANSI/AWWA C110/A21.10; <u>A WWA C153/A21.53</u> ; ASTM A 395; ASTM A 536; ASTM F 1476; ASTM F 1548
Ductile Iron	ANSI/AWWA C153/A21.53
Gray Iron	ASTM A 126
Malleable iron	ASME B16.3
PEX fittings	ASTM F 877; ASTM F 1807; ASTM F 2159
Plastic	ASTM D 2466; ASTM D 2467; ASTM D 2468; ASTM F 438; ASTM F 439; ASTM F 877; ASTM F2389; ASTM F 2735
Steel	ASME B16.5; ASME B16.9; ASME B16.11; ASME B16.28; <u>ASTM A 53</u> ; <u>ASTM A 106</u> ; <u>ASTM A 234</u> ; <u>ASTM A 420</u> ; <u>ASTM A 536</u> ; <u>ASTM A 395</u> ; <u>ASTM F 1476</u> ; ASTM F 1548

*Portions not shown remain unchanged.*

**Add new standards to Chapter 15 as follows:**

ASTM A234 / A234M - 11a

Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service

ASTM A395 / A395M - 99(2009)

Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures

ASTM A536 - 84(2009)

Standard Specification for Ductile Iron Castings

ASTM B152 / B152M – 09

Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar

ASTM B584 – 11

Standard Specification for Copper Alloy Sand Castings for General Applications

ASTM F1548 - 01(2006)

Standard Specification for the Performance of Fittings for Use with Gasketed Mechanical Couplings Used in Piping Applications

AWWA C153/A21.53-06

Ductile-Iron Compact Fittings for Water Service

**Reason:** The materials currently listed in Table 1202.5 do not fully represent the materials being used for hydronic systems in the industry. The code is overly restrictive with regard to pipe materials and does not allow for the use of materials that offer improved mechanical and electrochemical properties compared with allowed materials. The addition of these standard materials will allow the use of high grade materials that provide improved performance, while still allowing the use of currently approved materials. Many of these materials are also currently referenced in other piping codes.

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

**Analysis:** A review of the standard proposed for inclusion in the code, [ASTM A234 / A234M - 11a, A395 / A395M - 99(2009), A536 - 84(2009), B152 / B152M - 09, B584 - 11, F1548 - 01(2006); AWWA C153/A21.53-06] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Public Comments**

*Public Comment:*

**Pennie L. Feehan, Pennie L. Feehan Consulting, representing CDA – Copper Development Association, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

**TABLE 1202.5  
HYDRONIC PIPE FITTINGS**

MATERIAL	STANDARD
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; <del>ASME B16.23;</del> ASME B16.26; <del>ASME B16.29;</del> ASTM B 75; ASTM B 152; <del>ASTM B 584</del>

*(Portions of code change not shown remain unchanged)*

**Commenter's Reason:** Brass and Bronze are copper alloys. Moving the standards under the applicable heading cleans-up the table and provides the appropriate terminology and correct information to the end user.

ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings - DWV and ASME B 16.29 - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings – DWV, are Drain, Waste, and Vent fittings and should not be listed in table 1202.5.

ASTM B 75 – Standard Specification for Seamless Copper Tube, ASTM B 152 – Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar, ASTM B584 – Standard Specification for Copper Alloy Sand Casting for General Applications, are tubing, plate, rolled bar, and general castings are not fittings and should not be listed in table 1202.5.

**Final Hearing Results**

**M192-12**

**AMPC**

# Code Change No: M193-12

## Original Proposal

**Section(s):** Table 1202.5

**Proponent:** Pennie L. Feehan, Pennie L. Feehan Consulting, representing Copper Development Association (penniefeehan@me.com)

**Revise as follows:**

**TABLE 1202.5  
HYDRONIC PIPE FITTINGS**

<b>MATERIAL</b>	<b>STANDARD</b>
Brass	ASTM F 1974
Bronze	ASTM B16.24
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; <del>ASME B16.23</del> ; ASME B16.26; <u>ASTM F1974</u> , <del>ASTM B16.24, ASME B16.29</del>

*(Portions of table not shown remain unchanged.)*

**Reason:** Brass and Bronze are copper alloys. Moving the standards under the applicable heading cleans-up the table and provides the appropriate terminology and correct information to the end user.

ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings - DWV and ASME B 16.29 - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings – DWV, are Drain, Waste, and Vent fittings and should not be listed here.

**Cost Impact:** This code change will not increase the cost of construction.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M193-12**

**AS**

# Code Change No: M194-12

## Original Proposal

**Section(s):** TABLE 1202.5, Chapter 15

**Proponent:** James Gilchrist, P.E., Georg Fischer Sloane, LLC, representing Georg Fischer Piping Systems  
(jim.gilchrist@georgfischer.com)

**Revise as follows:**

**Table 1202.5  
HYDRONIC PIPE FITINGS**

MATERIAL	STANDARD (see Chapter 15)
Thermoplastic Plastic	ASTM D 2466; ASTM D 2467; ASTM D 2468; ISO 15493 Annex A; ASTM F 438; ASTM F 439; ASTM F 877; ASTM F 2389; ASTM F 2735

*(Portions of table not shown remain unchanged.)*

**Add new standard to Chapter 15 as follows:**

ISO 15493 Annex A-2003

Plastics piping systems for industrial applications - Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) - Specifications for components and the system Metric series

**Reason:** Updates to this table are needed so that it is aligned with current ASTM and ISO standards for plastic pipe and fittings.

-Using the term "Thermoplastic" differentiates these materials from the newer material PEX, which is a thermoset.

-ASTM D2468 - 96a Standard "Specification for Acrylonitrile Butadiene Styrene (ABS) Plastic Pipe Fittings, Schedule 40" was withdrawn in 2003 without replacement.

-ISO 15493 Annex A defines ABS fittings that are compatible with hydronic cooling pipe. ISO 15493:2003 Plastics piping systems for industrial applications -- Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) -- Specifications for components and the system -- Metric series  
Copy of ISO 15493 is attached in PDF form.

**Cost Impact:** The code change proposal will not increase the cost of construction. The change only aligns the code with current standards.

**Analysis:** A review of the standard proposed for inclusion in the code, [ISO 15493 Annex A-2003] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

## Public Hearing Results

**Committee Action:**

**Approved as Modified**

**Modify the proposal as follows:**

**Table 1202.5  
HYDRONIC PIPE FITINGS**

MATERIAL	STANDARD (see Chapter 15)
Thermoplastic Plastic	ASTM D 2466; ASTM D 2467; ISO 15493 Annex A; ASTM F 438; ASTM F 439; ASTM F 877; ASTM F 2389; ASTM F 2735

(Portions of table not shown remain unchanged.)

**Add new standard to Chapter 15 as follows:**

~~ISO 15493 Annex A-2003~~

Plastics piping systems for industrial applications - Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) - Specifications for components and the system Metric series

**Committee Reason:** Approval is based on the proponent's published reason. ASTM D2468 is an obsolete standard. The modification restores the term "plastic" as it is more generic. It is not appropriate to reference only the annex of a product standard.

**Assembly Action:**

**None**

<b>Final Hearing Results</b>
------------------------------

**M194-12**

**AM**

---

# Code Change No: M197-12

## Original Proposal

**Section(s):** Table 1202.5, 1209.3.4(New), Chapter 15

**Proponent:** Larry Gill, P.Eng. IPEX USA LLC  
(larry.gill@ipexna.com)

**Revise as follows:**

### TABLE 1202.5 HYDRONIC PIPE FITINGS

MATERIAL	STANDARD (see chapter 15)
PE-RT fittings	ASTM F 1807, ASTM F 2098, ASTM F2159, ASTM F 2735, ASTM F2769

*(Portions of table not shown remain unchanged)*

### SECTION 1209 EMBEDDED PIPING

**1209.3.4 Polyethylene of raised temperature (PE-RT) joints.** PE-RT tubing shall be installed in continuous lengths or shall be joined by hydronic fittings listed in Table 1202.5.

**Add new standard to Chapter 15 as follows:**

ASTM F2098 – 08  
Standard Specification for Stainless Steel Clamps for Securing SDR9 Cross-linked Polyethylene (PEX) Tubing to Metal Insert and Plastic Insert Fittings

**Reason:** Add new requirements for PE-RT fittings. ASTM F1807, ASTM F2098, ASTM F2159, ASTM F2735 are fittings standards and ASTM F2769 is a standard for hot and cold water tubing and distribution systems and includes provisions for tubing, fittings, valves and manifolds.

**Cost Impact:** The proposed change will not increase the cost of construction.

**Analysis:** A review of the standard proposed for inclusion in the code, [ASTM F2098 - 08] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M197-12**

**AS**

## Code Change No: **M198-12**

### Original Proposal

**Section(s):** Table 1202.5, Chapter 15

**Proponent:** Julius Ballanco, P.E., JB Engineering and Code Consulting, P.C., Self

**Revise as follows:**

**TABLE 1202.5  
HYDRONIC PIPE FITTINGS**

Material	Standards
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.23; ASME B16.26; ASME B16.29, <u>ASME B16.51</u>

*(Portions of table not shown remain unchanged.)*

**Add referenced standards to Chapter 15 as follows:**

ASME B16.51-2011

Copper and Copper Alloy Press-Connect Pressure Fittings Table 605.5

**Reason:** This adds the new standard for copper press connect fittings. ASME B16.51 was published in December 2011. The standard regulates the size, design, and performance requirements for press connect fittings.

**Cost Impact:** This change does not increase the cost of construction.

**Analysis:** A review of the standard proposed for inclusion in the code, [ASME B16.51-2011] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M198-12**

**AS**

**Code Change No: M206-12**

**Original Proposal**

**Section(s):** 1209.3.2

**Proponent:** Pennie L. Feehan, Pennie L. Feehan Consulting, representing Copper Development Association  
(penniefeehan@me.com)

**Revise as follows:**

**1209.3.2 Copper tubing joints.** Copper tubing shall be joined by brazing complying with Section 1203.3.1. ~~with filler metals having a melting point of not less than 1,000°F (538°C).~~

**Reason:** The proposed language refers the end user to the appropriate code section with important language from the applicable standards.

**Cost Impact:** This code change will not increase the cost of construction.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M206-12**

**AS**

---

# Code Change No: M208-12

## Original Proposal

**Section(s):** Table 1302.3

**Proponent:** Pennie L. Feehan, Pennie L. Feehan Consulting, representing Copper Development Association (penniefeehan@me.com)

**Revise as follows:**

**TABLE 1302.3  
FUEL OIL PIPING**

<b>MATERIAL</b>	<b>STANDARD (see Chapter 15)</b>
Brass pipe	ASTM B 43
Brass tubing	ASTM B 135
Copper or copper-alloy pipe	ASTM B 42; <u>ASTM B 43</u> ; ASTM B 302
Copper or copper-alloy tube (Type K, L or M)	ASTM B 75; ASTM B 88; <u>ASTM B 135</u> ASTM B 280

*(Portions of table not shown remain unchanged)*

**Reason:** Brass pipe and tubing are copper alloys. Moving brass under the applicable heading cleans-up the table and provides the appropriate terminology and correct information to the end user.

**Cost Impact:** This code change will not increase the cost of construction.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M208-12**

**AS**

**Code Change No: M210-12**

**Original Proposal**

**Section(s):** 1303.3.2

**Proponent:** Robert Hall, SE Technical Manager, Viega, LLC, representing Viega LLC

**Revise as follows:**

**1303.3.2 MECHANICAL JOINTS.** Mechanical joints shall be installed in accordance with the manufacturer's instructions. Press connect joints shall conform to one of the standards listed in Table 1302.3.

**Reason:** ASME B16.51 is the standard for copper tube press connections for use in oil piping systems.

**Cost Impact:** None

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

**Final Hearing Results**

**M210-12**

**AS**

---

# Code Change No: M211-12

## Original Proposal

**Section(s):** 1303.7

**Proponent:** Robert Hall, SE Technical Manager, Viega, LLC, representing Viega LLC  
(Robert.hall@viega.com)

**Revise as follows:**

**1303.7 Copper or copper-alloy tubing.** Joints between copper or copper alloy pipe or fittings shall be brazed, or mechanical joints complying with Section 1303.3, press connect joints that conform to one of the standards in Table 1302.2 or flared joints. Flared joints shall be made by a tool designed for that operation.

**TABLE 1302.3  
FUEL OIL PIPING**

<b>MATERIAL</b>	<b>STANDARD (See Chapter 15)</b>
Copper or Copper alloy tubing	ASTM B 75; ASTM B 88; ASTM B 280; <u>ASME B16.51</u>

*(Portions of table not shown remain unchanged)*

**Add standard to Chapter 15 as follows:**

ASME B16.51-2012 Copper and copper-alloy press-connect pressure fittings

**Reason:** The proposed change refers the reader to Table 1303.2 which references ASME B16.51 the copper tube press connection fitting standard for use in oil piping systems. ASME B16.51 is the standard for copper tube press connections for use in oil piping systems.

**Cost Impact:** This proposal will not increase the cost of construction.

**Analysis:** A review of the standard proposed for inclusion in the code, [ASME B16.51-2012] with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

## Final Hearing Results

**M211-12**

**AS**

## Code Change No: **M215-12**

### Original Proposal

**Section(s):** 307.3 (New) (IPC [M]314.3 New)

**Proponent:** Guy McMann MCP, Jefferson County Colorado, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcmann@jeffco.us)

**Add new text as follows:**

**307.3 (IPC [M] 314.3) Condensate pumps.** Condensate pumps located in uninhabitable spaces, such as attics and crawl spaces, shall be connected to the appliance or equipment served such that when the pump fails, the appliance or equipment will be prevented from operating. Pumps shall be installed in accordance with the manufacturers' installation instructions.

**Reason:** Pumps that are not connected in this fashion will permit the appliances to keep operating, spilling waste water where ever the appliance is located. When this condition continues over time, it could result in damage to building components or other property. This overflow condition may result in mold issues among other things. Most pump manufacturers already have this feature incorporated into the pump but the code does not require it to be connected. Damage as a result of not connecting this feature could prove to be very costly. This is not as much of a concern when appliances are readily accessible to occupants where leakage may be noticed in a timely manner.

**Cost Impact:** None

### Public Hearing Results

This code change was contained in the Updates to the 2012 Proposed Changes posted on the ICC website. Please go to <http://www.iccsafe.org/cs/codes/Pages/12-13-ProposedChanges-A.aspx>

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Approval is based on the proponent's published reason.

**Assembly Action:**

**None**

### Final Hearing Results

**M215-12**

**AS**

## Code Change No: G8-12 Part II

### Original Proposal

Section(s): 202

PART II – IMC

Revise as follows:

### SECTION 202 DEFINITIONS

**IMC [B] DESIGN FLOOD ELEVATION.** The elevation of the “design flood,” including wave height, relative to the datum specified on the community’s legally designated flood hazard map. In areas designated as Zone AO, the *design flood elevation* shall be the elevation of the highest existing grade of the *building’s* perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number shall be taken as being equal to 2 feet (610 mm).

**Reason:** This definition is controlled by the IBC; this proposal brings the IPC, IMC, IFGC, and IPSDC, IEBC definitions in line with the term as defined by the IBC.

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

### Public Hearing Results

All parts of this code change were heard by the IBC Structural code development committee.

**Committee Action:**

Approved as Submitted

**Committee Reason:** Correlates the IMC definition of design flood elevation with the IBC definition.

**Assembly Action:**

None

### Final Hearing Results

G8-12 Part II

AS

## Code Change No: **FS104-12**

### Original Proposal

**Section: 717.3.1 (IMC 607.3.1)**

**Proponent:** Bob Eugene, representing Underwriters Laboratories (Robert.Eugene@ul.com)

**Revise as follows:**

**717.3.1 (IMC 607.3.1) Damper testing.** *Dampers* shall be listed and labeled in accordance with the standards in this section. *Fire dampers* shall comply with the requirements of UL 555. Only *fire dampers and ceiling radiation dampers* labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems designed to operate with fans on during a fire. *Smoke dampers* shall comply with the requirements of UL 555S. *Combination fire/smoke dampers* shall comply with the requirements of both UL 555 and UL 555S. *Ceiling radiation dampers* shall comply with the requirements of UL 555C or shall be tested as part of a fire-resistance-rated floor/ceiling or roof/ceiling assembly in accordance with ASTM E119 or UL 263.

**Reason:** The code currently requires ceiling radiation dampers to comply with the requirements of the 2006 edition of UL 555C, with revisions through May 2010, which includes performance requirements for ceiling radiation dampers intended for use in dynamic HVAC systems where the airflow is operational at the time of a fire. The UL 555C standard requires ceiling radiation dampers investigated for use in dynamic systems to be marked for dynamic system use, along with the established airflow and closure pressure. This proposal will require the use of ceiling radiation dampers labeled for use in dynamic systems in these applications.

**Cost Impact:** None

### Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The committee agreed that this was an appropriate addition as it identifies another type of damper for use in dynamic systems.

**Assembly Action:**

**None**

### Final Hearing Results

**FS104-12**

**AS**

# Code Change No: FS115-12

## Original Proposal

**Section: 717.6.2.1 (IMC 607.6.2.1)**

**Proponent:** Bob Eugene, representing Underwriters Laboratories (Robert.Eugene@ul.com)

**Revise as follows:**

**717.6.2.1 (IMC 607.6.2.1) Ceiling radiation dampers.** *Ceiling radiation dampers* shall be tested in accordance with Section 717.3.1. *Ceiling radiation dampers* shall be installed in accordance with the details *listed* in the fire-resistance-rated assembly and the manufacturer's installation instructions and the listing. *Ceiling radiation dampers* are not required where ~~either~~ one of the following applies:

1. Tests in accordance with ASTM E 119 or UL 263 have shown that *ceiling radiation dampers* are not necessary in order to maintain the *fire-resistance rating* of the assembly.
2. Where exhaust duct penetrations are protected in accordance with Section 714.4.1.2, are located within the cavity of a wall and do not pass through another *dwelling unit* or tenant space.
3. Where duct and air transfer openings are protected with a duct outlet protection system tested as part of a fire-resistance-rated assembly in accordance with ASTM E 119 or UL 263.

**Reason:** This proposal is intended to permit the use of duct protection methods other than ceiling radiation dampers for protecting ducts and air transfer openings through the ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly. The acceptance of the alternate duct protection systems is based on testing conducted in accordance with ASTM E 119 or UL 263. Although one could argue use the current Provision No. 1 of Section 717.6.2.1 to rationalize the use of alternate duct protection methods, this proposal makes it clear that alternate methods are permitted based on testing. Example of alternate protection methods include insulation and wrap materials.

**Cost Impact:** None

## Public Hearing Results

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The committee agreed that specifically allowing alternate duct protection systems, tested as part of the fire rated assembly in accordance with ASTM E119 or UL 263, was appropriate as an alternate to a ceiling radiation damper.

**Assembly Action:**

**None**

## Final Hearing Results

**FS115-12**

**AS**

## Code Change No: FS116-12

### Original Proposal

#### Section(s): 717.6.3 (IMC 607.6.3)

**Proponent:** Guy McMann MCP, Jefferson County Colorado, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcmann@jeffco.us)

#### Revise as follows:

**717.6.3 (IMC 607.6.3) Nonfire-resistance-rated floor assemblies.** Duct systems constructed of *approved* materials in accordance with the *International Mechanical Code* that penetrate nonfire-resistance-rated floor assemblies shall be protected by any of the following methods:

1. A shaft enclosure in accordance with Section 713.
2. The duct connects not more than two *stories*, and the *annular space* around the penetrating duct is protected with an *approved* noncombustible material that resists the free passage of flame and the products of combustion.
3. ~~The duct connects not more than three stories, and the annular space around the penetrating duct is protected with an approved noncombustible material that resists the free passage of flame and the products of combustion and a fire damper is installed at each floor line.~~

**Exception:** ~~Fire dampers are not required in ducts within individual residential dwelling units.~~

**Reason:** This text is in conflict with where fire-dampers are to be installed. Fire dampers are not tested or listed to be installed in this application. This is an apparent cost saving measure in an attempt to circumvent the requirements for shafting by installing fire-dampers in wood floors. The code has stood on the cherished principle that materials and products be installed in accordance with the manufacturer's instructions and the listings but in this case there are no instructions or listings to install the product. Code enforcement is placed in an awkward position to permit installations that violate listings. There needs to be other language installed in the code that achieves the desired outcome without resorting to violating listings. This is an inappropriate use of a product and it's difficult to defend the practice. A companion change has been submitted to the IMC committee

**Cost Impact:** None

### Public Hearing Results

#### Committee Action:

Approved as Modified

#### Modify proposal as follows:

**717.6.3 (IMC 607.6.3) Nonfire-resistance-rated floor assemblies.** Duct systems constructed of *approved* materials in accordance with the *International Mechanical Code* that penetrate nonfire-resistance-rated floor assemblies shall be protected by any of the following methods:

1. A shaft enclosure in accordance with Section 713.
2. The duct connects not more than two *stories*, and the *annular space* around the penetrating duct is protected with an *approved* noncombustible material that resists the free passage of flame and the products of combustion.
3. In floor assemblies comprised of noncombustible materials, a shaft shall not be required where the duct connects not more than three stories, and the annular space around the penetrating duct is protected with an approved noncombustible material that resists the free passage of flame and the products of combustion and a fire damper is installed at each floor line.

**Exception:** Fire dampers are not required in ducts within individual residential dwelling units.

**Committee Reason:** The committee agreed that method number 3 should not be applied to combustible floor assemblies as indicated in the proponent's reason statement. The modification clarifies that item 3 is applicable only to noncombustible floor assemblies.

#### Assembly Action:

None

**Final Hearing Results**

**FS116-12**

**AM**

---

# Code Change No: ADM6-13

## Original Proposal

Section: PART I - IBC: [A] 101.3; ICCPC: [A] 101.2.2; IFC: [A] 101.3; IFCG: [A] 101.4; IMC: [A] 101.3; IPC: [A] 101.3; IPSDC: [A] 101.6; IPMC: [A] 101.2  
PART II – IRC R101.3

**THIS IS A 2 PART CODE CHANGE. PART 1 WILL BE HEARD BY THE ADMINISTRATIVE PROVISIONS COMMITTEE AS ONE CODE CHANGE. PART II WILL BE HEARD BY THE RESIDENTIAL CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.**

**Proponent:** Carl F. Baldassarra, representing Rolf Jensen & Associates, Inc.  
(cbaldassarra@rjagroup.com)

### **PART I – IBC; ICCPC; IFC; IFCG; IMC; IPC; IPSDC; IPMC**

#### **Revise the International Building Code as follows:**

**IBC [A] 101.3 Intent.** The purpose of this code is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, *means of egress* facilities, stability, sanitation, adequate light and ventilation, energy conservation; to safeguard and safety to life and property from fire and other hazards attributed to the built environment; and, to safeguard provide safety to fire fighters and emergency responders during emergency operations.

#### **Revise the International Code Council Performance Code as follows:**

**ICCPC [A] 101.2.2 Fire.** Part III of this code establishes requirements necessary ~~to provide an acceptable level to~~ safeguard of life ~~safety~~ and property ~~protection~~ from the hazards of fire, explosion or dangerous conditions in all facilities, equipment and processes.

#### **Revise the International Fire Code as follows:**

**IFC [A] 101.3 Intent.** The purpose of this code is to establish the minimum requirements consistent with nationally recognized good practice for providing a reasonable level to safeguard of life ~~safety~~ and property ~~protection~~ from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises, and to safeguard provide safety to fire fighters and emergency responders during emergency operations.

#### **Revise the International Fuel Gas Code as follows:**

**IFGC [A] 101.4 Intent.** The purpose of this code is to provide minimum standards to safeguard life ~~or limb~~, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of fuel gas systems.

#### **Revise the International Mechanical Code as follows:**

**IMC [A] 101.3 Intent.** The purpose of this code is to provide minimum standards to safeguard life ~~or limb~~, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of mechanical systems.

**Revise the International Plumbing Code as follows:**

**IPC [A] 101.3 Intent.** The purpose of this code is to provide minimum standards to safeguard life ~~or limb~~, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing equipment and systems.

**Revise the International Private Sewage Disposal Code as follows:**

**IPSDC [A] 101.6 Intent.** The purpose of this code is to provide minimum standards to safeguard life ~~or limb~~, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of *private sewage disposal systems*.

**Revise the International Property Maintenance Code as follows:**

**IPMC [A] 101.2 Scope.** The provisions of this code shall apply to all existing residential and nonresidential structures and all existing *premises* and constitute minimum requirements and standards for *premises*, structures, equipment and facilities for light, *ventilation*, space, heating, sanitation, protection from the elements, to safeguard life safety, ~~safety~~ from fire and other hazards, and for safe and sanitary maintenance; the responsibility of *owners, operators and occupants*; the *occupancy* of existing structures and *premises*, and for administration, enforcement and penalties.

**PART II – IRC**

**Revise the International Residential Code as follows:**

**IRC R101.3 Intent.** The purpose of this code is to establish minimum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment and to safeguard ~~provide safety to~~ fire fighters and emergency responders during emergency operations.

**Reason:** The intent of this change is to make a minor, but important, clarification of the intent of the code. The section covering the “intent” of the IBC is often used by attorneys and others outside of the code community as the basis for various legal actions. Therefore, it is important that this section reflects both the intention of the code community and the relative level of safety that is reasonably provided through these regulations.

The proposal includes changes that make the levels of intended “safety” the same to the reader by using the same term “safeguard” (used in the first phrase) in the other two phrases. While the language using the term “safeguard” is, perhaps, somewhat vague, it is better than suggesting absolute “safety” can be provided to any person or property through the provisions of the code. There is no intention to reduce the level of safety provided by the code with this change. All users and beneficiaries of the code will be better served through this clarification.

**Cost Impact:** This code change proposal will not affect the cost of construction.

**Staff Analysis:** The section on Intent are also found in IEBC 101.3, IWUIC 101.3, IZC 101.2, IECC C101.3, IECC R101.3 and ISPSC 101.3.

**Public Hearing Results**

**PART I - IADMIN**

**Committee Action:**

**Disapproved**

**Committee Reason:** The committee agreed that the scope should be coordinated across the codes, however, they preferred the “reasonable level of life safety” language found in the IFC. The term ‘safeguard’ is not a match to “provide safety to.”

**Assembly Action:**

**None**

**PART II – IRC**

**HEARD BY IRC COMMITTEE**

**Committee Action:**

**Disapproved**

**Committee Reason:** The committee disapproved this code change proposal because they felt that the term 'safeguards is too vague, as the proponent notes. If the proposed requirements were used relative to emergency responders, they need to be further explained or narrowed.

**Assembly Action:**

**None**

**Public Comment(s)**

*Part I - Public Comment:*

**Carl F. Baldassarra, P.E., representing Rolf Jensen & Associates, Inc., requests Approval as Modified by this Public Comment.**

**Replace the proposal with the following:**

**Revise the International Building Code as follows:**

**IBC [A] 101.3 Intent.** The purpose of this code is to establish the minimum requirements to provide a reasonable level of safeguard the public health, safety and general welfare through structural strength, *means of egress* facilities, stability, sanitation, adequate light and ventilation, energy conservation; and safety to life and property from fire and other hazards attributed to the built environment; and, to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

**Revise the International Code Council Performance Code as follows:**

**ICCPC [A] 101.2.2 Fire.** Part III of this code establishes requirements necessary to provide a reasonable an acceptable level of life safety and property protection from the hazards of fire, explosion or dangerous conditions in all facilities, equipment and processes.

**Revise the International Fire Code as follows:**

**IFC [A] 101.3 Intent.** The purpose of this code is to establish the minimum requirements consistent with nationally recognized good practice for providing a reasonable level of life safety and property protection from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises, and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

**Revise the International Fuel Gas Code as follows:**

**IFGC [A] 101.4 Intent.** The purpose of this code is to ~~establish provide~~ minimum standards to provide a reasonable level of safety ~~safeguard life or limb~~, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of fuel gas systems.

**Revise the International Mechanical Code as follows:**

**IMC [A] 101.3 Intent.** The purpose of this code is to ~~establish provide~~ minimum standards to provide a reasonable level of safety ~~safeguard life or limb~~, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of mechanical systems.

**Revise the International Plumbing Code as follows:**

**IPC [A] 101.3 Intent.** The purpose of this code is to ~~establish provide~~ minimum standards to provide a reasonable level of safety ~~safeguard life or limb~~, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing equipment and systems.

**Revise the International Private Sewage Disposal Code as follows:**

**IPSDC [A] 101.6 Intent.** The purpose of this code is to ~~establish provide~~ minimum standards to provide a reasonable level of safety ~~safeguard life or limb~~, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of *private sewage disposal systems*.

**Revise the International Property Maintenance Code as follows:**

**IPMC [A] 101.2 Scope.** The provisions of this code shall apply to all existing residential and nonresidential structures and all existing *premises* and constitute minimum requirements and standards for *premises*, structures, equipment and facilities for light, *ventilation*, space, heating, sanitation, protection from the elements, a reasonable level of life safety, safety from fire and other

hazards, and for a reasonable level of ~~safe~~ and sanitary maintenance; the responsibility of *owners, operators* and *occupants*; the *occupancy* of existing structures and *premises*, and for administration, enforcement and penalties.

**Commenter's Reason:** The intent of this change is to make minor, but important, clarifications of the intent of the various ICC codes. It is important that these sections reflect both the intention of the code community and the relative level of safety that is reasonably provided through these regulations in a consistent manner. There is no intention to reduce the level of safety provided by the code with this change. All users and beneficiaries of the code will be better served through this clarification.

This modification addresses the reasons for disapproval of both Part I and Part II at the Code Development Hearing in Dallas. Specifically, the reason for Disapproval of Part I by the Administrative Provisions Committee was published as follows:

*The committee agreed that the scope should be coordinated across the codes, however, they preferred the "reasonable level of life safety" language found in the IFC. The term 'safeguard' is not a match to "provide safety to."*

Also, the reason for Disapproval of Part II by the International Residential Committee was published as follows:

*The committee disapproved this code change proposal because they felt that the term "safeguards" (sic) is too vague, as the proponent notes. If the proposed requirements were used relative to emergency responders, they need to be further explained or narrowed.*

As can be seen by the reviewing the revised proposals, the Committees' comments have been addressed and, therefore, the Proponent requests that the proposals for each code be Approved as Modified by this public comment.

<b>Final Hearing Results</b>
------------------------------

**ADM6-13, Part I  
ADM6-13, Part II**

**AMPC  
D**

---

## Code Change No: ADM21-13

### Original Proposal

Section: PART I - IBC 104.8; IEBC 104.8; IFC 103.4, 103.4.1; IFGC 103.4; IMC 103.4; IPC 103.4; IPSDC 103.4; IPMC 103.4; IWUIC 104.3; IZC 104.7;  
PART II - IRC 104.8;  
PART III - ISPSC 103.4

**THIS IS A 3 PART CODE CHANGE. PARTS I WILL BE HEARD BY THE ADMINISTRATIVE PROVISIONS COMMITTEE AS ONE CODE CHANGE. PART II WILL BE HEARD BY THE RESIDENTIAL CODE COMMITTEE. PART III WILL BE HEARD BY THE SWIMMING POOL AND SPA CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.**

**Proponent:** Mike Metheny, City of Aspen Colorado, representing Colorado Chapter Code Change Committee

**PART I – IBC; IEBC; IFC; IFGC; IMC; IPC; IPSDC; IPMC; IWUIC; IZC**

**Revise the International Building Code as follows:**

**IBC [A] 104.8 Liability.** The building official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be civilly or criminally rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

**IBC [A] 104.8.1 Legal defense.** Any suit or criminal complaint instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representative of the jurisdiction until the final termination of the proceedings. The building official or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

**Revise the International Existing Building Code as follows:**

**IEBC [A] 104.8 Liability.** The code official, member of the Board of Appeals, or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

**IEBC [A] 104.8.1 Legal defense.** Any suit or criminal complaint instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representative of the jurisdiction until the final termination of the proceedings. The code official or any subordinate shall not be liable for cost in any action, suit, or proceeding that is instituted in pursuance of the provisions of this code.

**Revise the International Fire Code as follows:**

**IFC [A] 103.4 Liability.** The fire code official, member of the board of appeals, officer or employee charged with the enforcement of this code, while acting for the jurisdiction, in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of an act or by reason of an act or omission in the discharge of official duties.

**IFC [A] 103.4.1 Legal defense.** Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representative of the jurisdiction until the final termination of the proceedings. The fire code official or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code; and any officer of the department of fire prevention, acting in good faith and without malice, shall be free from liability for acts performed under any of its provisions or by reason of any act or omission in the performance of official duties in connection therewith.

**Revise the International Fuel Gas Code as follows:**

**IFGC [A] 103.4 Liability.** The code official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of an act or by reason of an act or omission in the discharge of official duties.

**IFGC [A] 103.4.1 Legal defense.** Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representative of the jurisdiction until the final termination of the proceedings. The code official or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code.

**Revise the International Mechanical Code as follows:**

**IMC [A] 103.4 Liability.** The code official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally, and is hereby relieved from personal liability for any damage accruing to persons or property as a result of an act or by reason of an act or omission in the discharge of official duties.

**IMC [A] 103.4.1 Legal defense.** Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representative of the jurisdiction until the final termination of the proceedings. The code official or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code.

**Revise the International Plumbing Code as follows:**

**IPC [A] 103.4 Liability.** The code official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

**IPC [A] 103.4.1 Legal defense.** Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the

provisions of this code shall be defended by the legal representative of the jurisdiction until the final termination of the proceedings. The code official or any subordinate shall not be liable for costs in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

**Revise the International Private Sewage Disposal Code as follows:**

**IPSDC [A] 103.4 Liability.** The code official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

**IPSDC [A] 103.4.1 Legal defense.** Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representative of the jurisdiction until the final termination of the proceedings. The code official or any subordinate shall not be liable for costs in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

**Revise the International Property Maintenance Code as follows:**

**IPMC [A] 103.4 Liability.** The code official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction, in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of an act or by reason of an act or omission in the discharge of official duties.

**IPMC [A] 103.4.1 Legal defense.** Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representative of the jurisdiction until the final termination of the proceedings. The code official or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code.

**Revise the International Wildland-Urban Interface Code as follows:**

**IWUIC [A] 104.3 Liability of the code official.** The code official, member of the board of appeals or employee charged with the enforcement of this code, acting in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally personally liable for damages that may accrue to persons or property as a result of an act or by reason of an act or omission in the discharge of such duties.

**IWUIC [A] 104.3.1 Legal defense.** A suit or criminal complaint brought against the code official or employee because of such act or omission performed by the code official or employee in the enforcement of any provision of such codes or other pertinent laws or ordinances implemented through the enforcement of this code or enforced by the code enforcement agency shall be defended by this jurisdiction until final termination of such proceedings, and any judgment resulting there from shall be assumed by this jurisdiction. The code enforcement agency or its parent jurisdiction shall not be held as assuming any liability by reason of the inspections authorized by this code or any permits or certificates issued under this code.

**Revise the International Zoning Code as follows:**

**IZC [A] 104.7 Liability.** The code official, or designee, charged with the enforcement of this code, acting in good faith and without malice in the discharge of the duties described in this code, shall not be

personally civilly or criminally liable for any damage that may accrue to persons or property as a result of an act or by reason of an act or omission in the discharge of such duties.

**IFGC [A] 104.7.1 Legal defense.** A suit or criminal complaint brought against the code official or employee because such act or omission performed by the code official or employee in the enforcement of any provision of such codes or other pertinent laws or ordinances implemented through the enforcement of this code or enforced by the enforcement agency shall be defended by the jurisdiction until final termination of such proceedings, and any judgment resulting therefrom shall be assumed by the jurisdiction.

This code shall not be construed to relieve from or lessen the responsibility of any person owning, operating or controlling any building or parcel of land for any damages to persons or property caused by defects, nor shall the enforcement agency or its jurisdiction be held as assuming any such liability by reason of the reviews or permits issued under this code

## **PART II – IRC**

### **Revise the International Residential Code as follows:**

**IRC R104.8 Liability.** The building official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

**IRC R104.8.1 Legal defense.** Any suit or criminal complaint instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representative of the jurisdiction until the final termination of the proceedings. The building official or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

## **PART III – ISPSC**

### **Revise the International Swimming Pool and Spa Code as follows:**

**ISPSC 103.4 Liability.** The *code official*, member of the board of appeals or employee charged with the enforcement of this code, while acting for the *jurisdiction* in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

**ISPSC 103.4.1 Legal defense.** Any suit or criminal complaint instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representative of the jurisdiction until the final termination of the proceedings. The *code official* or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

**Reason:** An Inspector in Colorado was charged with criminally negligent homicide as well as in a civil case as a result of a carbon monoxide poisoning that occurred in 2008. The inspector found that he was not afforded sovereign immunity for criminal charges even though he was acting in good faith and without malice in the discharge of the duties required by the codes. The jurisdiction was forced to go to City Council to request supplemental funding for his defense. The cost to the jurisdiction in defending the case was in excess of \$260,000. The criminal case was eventually dismissed based on a motion that the statute of limitations had run. The criminal case was dismissed on its merits. As code officials we need to know that immunity extends to both criminal and civil actions while discharging our duties and providing for public safety and welfare.

The addition of the title to split the requirements in two parts is for consistency with the IFC.

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

**Public Hearing Results**

**PART I - IADMIN**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The addition of "or criminal complaint" protects code officials during performance of their jobs. The existing language of "lawful discharge of duties" would protect the jurisdiction from being liable if the code official was taking bribes or performing illegal acts.

**Assembly Action:**

**None**

**PART II – IRC**

**HEARD BY IRC COMMITTEE**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The committee approved this proposed code change because they felt that it is important to clearly state the code officials' personal liability and the recourse to personal defense. This is consistent with previous action taken on ADM21 Part I.

**Assembly Action:**

**None**

**PART III – ISPSC**

**HEARD BY THE ISPSC COMMITTEE**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Employees of building departments are doing the best that they can do every day. Such employees should be personally protected against civil and criminal actions while performing their duties.

**Assembly Action:**

**None**

**Final Hearing Results**

<b>ADM21-13, Part I</b>	<b>AS</b>
<b>ADM21-13, Part II</b>	<b>AS</b>
<b>ADM21-13, Part III</b>	<b>AS</b>

---

## Code Change No: ADM22-13

### Original Proposal

Section: PART I – IBC: [A] 104.10, [A] 105.1, [A] 106.1, [A] 107.3.4, [A] 110.1, [A] 115.2, 202, 901.5, 1004.3, 1703.4.1, 1703.6, 1703.6.1, 1704.2, 1704.2.4, 1707.1, 1803.6, 3306.8, 3401.2, G104.1, J106.1, K102.3;

ICCPC: [A] 103.3.1, [A] 103.3.1.1, [A] 103.3.1.2, [A] 103.3.1.3, [A] 103.3.1.4, [A] 103.3.1.5, [A] 103.3.1.6, [A] 103.3.1.7, [A] 103.3.1.8, [A] 103.3.1.9, [A] 103.3.4.1.4, [A] 103.3.1.4.6, [A] 103.3.4.2.3, [A] 103.3.8.3, [A] 103.3.9.1.4, [A] 103.3.9.2.3, [A] 103.3.10.1;

IEBC: [A] 104.6, [A] 104.10, [A] 105.1, [A] 106.6, [A] 110.2, [A] 111.3, [A] 114.2, [A] 115.3, [A] 115.4, [A] 116.5, [A] 117.1, [A] 117.3;

IFC: [A] 104.3, [A] 104.3.1, [A] 104.7.2, [A] 105.1.1, [A] 109.2, [A] 109.3.1, [A] 109.3.2, [A] 110.4, [A] 111.2, [A] 112.1;

IFGC: [A] 102.3, [A] 104.4, [A] 105.1, [A] 106.1, [A] 106.3, [A] 108.5, [A] 108.7.2;

IMC: [A] 102.3, [A] 104.4, [A] 105.1, [A] 106.1, [A] 106.3, [A] 108.5, [A] 108.7.2;

IPC: [A] 102.3, [A] 104.4, [A] 105.1, [A] 106.1, [A] 106.3, [A] 108.5, [A] 108.7.2;

IPSDC: [A] 102.5, [A] 104.4, [A] 105.1, [A] 108.5, [A] 108.7.2;

IPMC: [A] 101.2, [A] 102.2, [A] 104.3, [A] 105.1, [A] 107.2, [A] 107.6, [A] 108.2, [A] 108.2.1, [A] 108.3, [A] 108.4, [A] 108.5, [A] 108.6, [A] 109.5, [A] 110.1, [A] 110.3, [A] 112.2;

IWUIC: [A] 101.6, [A] 105.1, [A] 105.2, [A] 109.2.2, [A] 109.3, [A] 109.4.1, [A] 109.4.5.2, [A] 109.4.5.2.1, [A] 109.4.5.3, [A] 109.4.5.4, [A] 113.2, [A] 114.2;

IZC: [A] 103.3, [A] 107.7.3, [A] 109.1

PART II – IECC: C108.2;

PART III – IECC: R108.2;

PART IV – IRC: R104.6, R105.1, R110.3, R111.3, R114.1;

PART V – ISPSC 102.3, 104.6, 104.8, 105.1, 105.2, 107.5, 107.7.2;

**THIS IS A 5 PART CODE CHANGE. PARTS I WILL BE HEARD BY THE ADMINISTRATIVE PROVISIONS COMMITTEE AS ONE CODE CHANGE. PART II WILL BE HEARD BY THE ENERGY CONSERVATION CODE-COMMERCIAL COMMITTEE. PART III WILL BE HEARD BY THE ENERGY CONSERVATION CODE-RESIDENTIAL COMMITTEE. PART IV WILL BE HEARD BY THE RESIDENTIAL CODE COMMITTEE. PART V WILL BE HEARD BY THE SWIMMING POOL AND SPA CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.**

**Proponent:** Philip Brazil, P.E., S.E., Reid Middleton, Inc., representing Washington Association of Building Officials, Technical Code Development Committee (pbrazil@reidmiddleton.com)

**PART I – IBC; ICCPC; IEBC; IFC; IFGC; IMC; IPC; IPSDC; IPMC; IWUIC; IZC**

**Revise the International Building Code as follows:**

#### IBC SECTION 202 DEFINITIONS

**IBC [A] REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.** *A registered design professional engaged by the owner or the owner's authorized agent to review and coordinate certain aspects of the project, as determined by the building official, for compatibility with the design of the building or structure, including submittal documents prepared by others, deferred submittal documents and phased submittal documents.*

**Revise the International Building Code as follows:**

**IBC [A] 104.10 Modifications.** Wherever there are practical difficulties involved in carrying out the provisions of this code, the *building official* shall have the authority to grant modifications for individual cases, upon application of the owner or the owner's representative authorized agent, provided the *building official* shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the department of building safety.

**IBC [A] 105.1 Required.** Any owner or owner's authorized agent who intends to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the *building official* and obtain the required *permit*.

**IBC [A] 106.1 Live loads posted.** Where the live loads for which each floor or portion thereof of a commercial or industrial building is or has been designed to exceed 50 psf (2.40 kN/m<sup>2</sup>), such design live loads shall be conspicuously posted by the owner or the owner's authorized agent in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices.

**IBC [A] 107.3.4 Design professional in responsible charge.** When it is required that documents be prepared by a *registered design professional*, the *building official* shall be authorized to require the owner or the owner's authorized agent to engage and designate on the building *permit* application a *registered design professional* who shall act as the *registered design professional in responsible charge*. If the circumstances require, the owner or the owner's authorized agent shall designate a substitute registered design professional in responsible charge who shall perform the duties required of the original *registered design professional in responsible charge*. The building official shall be notified in writing by the owner or the owner's authorized agent if the *registered design professional in responsible charge* is changed or is unable to continue to perform the duties.

The *registered design professional in responsible charge* shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.

**IBC [A] 110.1 General.** Construction or work for which a permit is required shall be subject to inspection by the *building official* and such construction or work shall remain accessible and exposed for inspection purposes until *approved*. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the ~~permit applicant~~ owner or the owner's authorized agent to cause the work to remain accessible and exposed for inspection purposes. Neither the *building official* nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

**IBC [A] 115.2 Issuance.** The stop work order shall be in writing and shall be given to the owner of the property involved, ~~or to the owner's~~ authorized agent, or ~~to the person~~ doing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order, and the conditions under which the cited work will be permitted to resume.

#### **Revise the International Building Code as follows:**

**IBC 901.5 Acceptance tests.** Fire protection systems shall be tested in accordance with the requirements of this code and the *International Fire Code*. When required, the tests shall be conducted in the presence of the building official. Tests required by this code, the *International Fire Code* and the standards listed in this code shall be conducted at the expense of the owner or the owner's ~~representative~~ authorized agent. It shall be unlawful to occupy portions of a structure until the required fire protection systems within that portion of the structure have been tested and approved.

**Revise the International Building Code as follows:**

**IBC 1004.3 (IFC [B] 1004.3) Posting of occupant load.** Every room or space that is an assembly occupancy shall have the occupant load of the room or space posted in a conspicuous place, near the main exit or exit access doorway from the room or space. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or the owner's authorized agent.

**Revise the International Building Code as follows:**

**IBC 1703.4.1 Research and investigation.** Sufficient technical data shall be submitted to the *building official* to substantiate the proposed use of any material or assembly. If it is determined that the evidence submitted is satisfactory proof of performance for the use intended, the *building official* shall approve the use of the material or assembly subject to the requirements of this code. The costs, reports and investigations required under these provisions shall be paid by the ~~applicant~~ owner or the owner's authorized agent.

**IBC 1703.6 Evaluation and follow-up inspection services.** Where structural components or other items regulated by this code are not visible for *inspection* after completion of a prefabricated assembly, the ~~applicant~~ owner or the owner's authorized agent shall submit a report of each prefabricated assembly. The report shall indicate the complete details of the assembly, including a description of the assembly and its components, the basis upon which the assembly is being evaluated, test results and similar information and other data as necessary for the *building official* to determine conformance to this code. Such a report shall be *approved* by the *building official*.

**IBC 1703.6.1 Follow-up inspection.** The ~~applicant~~ owner or the owner's authorized agent shall provide for *special inspections* of fabricated items in accordance with Section 1704.2.5.

**IBC 1704.2 Special Inspections.** Where application is made for construction as described in this section, the owner or the *registered design professional in responsible charge* acting as the owner's authorized agent shall employ one or more *approved agencies* to perform inspections during construction on the types of work listed under Section 1705. These inspections are in addition to the inspections specified in Section 110.

**Exceptions:**

1. *Special inspections* are not required for construction of a minor nature or as warranted by conditions in the jurisdiction as *approved* by the *building official*.
2. Unless otherwise required by the *building official*, *special inspections* are not required for Group U occupancies that are accessory to a residential occupancy including, but not limited to, those listed in Section 312.1.
3. Special inspections are not required for portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of Section 2211.7 or the conventional light-frame construction provisions of Section 2308.

**IBC 1704.2.4 Report requirement.** Special inspectors shall keep records of inspections. The special inspector shall furnish inspection reports to the *building official*, and to the *registered design professional in responsible charge*. Reports shall indicate that work inspected was or was not completed in conformance to *approved construction documents*. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the *building official* and to the *registered design professional in responsible charge* prior to the completion of that phase of the work. A final report documenting required *special inspections* and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon prior to the start of work by the ~~applicant and~~ owner or the owner's authorized agent to the *building official*.

**IBC 1707.1 General.** In the absence of *approved* rules or other *approved* standards, the *building official* shall make, or cause to be made, the necessary tests and investigations; or the *building official* shall accept duly authenticated reports from *approved agencies* in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.11. The cost of all tests and other investigations required under the provisions of this code shall be borne by the ~~applicant~~ owner or the owner's authorized agent.

**Revise the International Building Code as follows:**

**IBC 1803.6 Reporting.** Where geotechnical investigations are required, a written report of the investigations shall be submitted to the *building official* by the owner or owner's authorized agent at the time of *permit* application. This geotechnical report shall include, but need not be limited to, the following information:

1. A plot showing the location of the soil investigations.
2. A complete record of the soil boring and penetration test logs and soil samples.
3. A record of the soil profile.
4. Elevation of the water table, if encountered.
5. Recommendations for foundation type and design criteria, including but not limited to: bearing capacity of natural or compacted soil; provisions to mitigate the effects of expansive soils; mitigation of the effects of liquefaction, differential settlement and varying soil strength; and the effects of adjacent loads.
6. Expected total and differential settlement.
7. Deep foundation information in accordance with Section 1803.5.5.
8. Special design and construction provisions for foundations of structures founded on expansive soils, as necessary.
9. Compacted fill material properties and testing in accordance with Section 1803.5.8.
10. Controlled low-strength material properties and testing in accordance with Section 1803.5.9.

**Revise the International Building Code as follows:**

**IBC 3306.8 Repair, maintenance and removal.** Pedestrian protection required by this chapter shall be maintained in place and kept in good order for the entire length of time pedestrians are subject to being endangered. The *owner* or the *owner's* authorized agent, upon the completion of the construction activity, shall immediately remove walkways, debris and other obstructions and leave such public property in as good a condition as it was before such work was commenced.

**Revise the International Building Code as follows:**

**IBC 3401.2 Maintenance.** Buildings and structures, and parts thereof, shall be maintained in a safe and sanitary condition. Devices or safeguards which are required by this code shall be maintained in conformance with the code edition under which installed. The owner or the owner's ~~designated~~ authorized agent shall be responsible for the maintenance of buildings and structures. To determine compliance with this subsection, the building official shall have the authority to require a building or structure to be reinspected. The requirements of this chapter shall not provide the basis for removal or abrogation of fire protection and safety systems and devices in existing structures.

**Revise the International Building Code as follows:**

**IBC G104.1 Required.** Any person, owner or owner's authorized agent who intends to conduct any development in a flood hazard area shall first make application to the *building official* and shall obtain the required *permit*.

**Revise the International Building Code as follows:**

**IBC J106.1 Maximum slope.** The slope of cut surfaces shall be no steeper than is safe for the intended use, and shall be no steeper than two units horizontal to one unit vertical (50-percent slope) unless the owner or the owner's authorized agent furnishes a geotechnical report justifying a steeper slope.

**Exceptions:**

1. A cut surface shall be permitted to be at a slope of 1.5 units horizontal to one unit vertical (67-percent slope) provided that all of the following are met:
  - 1.1. It is not intended to support structures or surcharges.
  - 1.2. It is adequately protected against erosion.
  - 1.3. It is no more than 8 feet (2438 mm) in height.
  - 1.4. It is approved by the building code official.
  - 1.5. Ground water is not encountered.
2. A cut surface in bedrock shall be permitted to be at a slope of one unit horizontal to one unit vertical (100-percent slope).

**Revise the International Building Code as follows:**

**IBC K102.3 Maintenance.** Electrical systems, equipment, materials and appurtenances, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe, hazard-free condition. Devices or safeguards that are required by this code shall be maintained in compliance with the code edition under which installed. The owner or the owner's ~~designated~~ authorized agent shall be responsible for the maintenance of the electrical systems and equipment. To determine compliance with this provision, the *building official* shall have the authority to require that the electrical systems and equipment be reinspected.

**Revise the International Code Council Performance Code as follows:**

**ICCPC [A] 103.3.1 Building owner's or the owner's authorized agent responsibility.**

**ICCPC [A] 103.3.1.1 Design professional.** The owner or the owner's authorized agent shall have the responsibility of retaining and furnishing the services of a design professional, who shall be in responsible charge of preparing and coordinating a complete and comprehensive set of design documents and other services required to prepare reports and other documents in accordance with this code. If the services required by this section are not provided, the use of this code is prohibited.

**ICCPC [A] 103.3.1.2 Principal design professional.** When the project requires the services of multiple design professionals, a principal design professional shall be retained and furnished, who shall have the contractual responsibility and authority over all required design professional disciplines to prepare and coordinate a complete and comprehensive set of design documents for the project.

**ICCPC [A] 103.3.1.3 Peer review.** The owner or the owner's authorized agent shall be responsible for retaining and furnishing the services of a design professional or recognized expert, who will perform as a peer reviewer, when required and approved by the code official. See Section 103.3.6.3 of this code.

**ICCPC [A] 103.3.1.4 Costs.** The costs of all special services, including contract review, when required by the code official, shall be borne by the owner or the owner's authorized agent.

**ICCPC [A] 103.3.1.5 Document retention.** The owner or the owner's authorized agent shall retain on the premises all documents and reports required by this code and make them available to the code official upon request.

**ICCPC [A] 103.3.1.6 Maintenance.** The owner or the owner's authorized agent is responsible to operate and maintain a building, structure or facility designed and built under this code in accordance with the bounding conditions and the operations and maintenance manual.

**ICCPC [A] 103.3.1.7 Changes.** The owner or the owner's authorized agent shall be responsible to ensure that any change to the facility, process or system does not increase the hazard level beyond that originally designed without approval and that all changes shall be documented in accordance with this code.

**ICCPC [A] 103.3.1.8 Special expert.** Where the scope of work is limited or focused in an area that does not require the services of a design professional or the special knowledge and skills associated with the practice of architecture or engineering, a special expert may be employed by the owner or the owner's authorized agent as the person in responsible charge of the limited or focused activity. It is the intent of this code that the individual shall possess the qualification characteristics required in Appendix D.

**ICCPC [A] 103.3.1.9 Occupant requirements.** The owner or the owner's authorized agent is responsible and accountable to ensure that all occupants and employees who are required to take certain actions or perform certain functions in accordance with a performance-based design possess the required knowledge and skills and are empowered to perform those actions.

**ICCPC [A] 103.3.4.1.4 Deed restriction.** Design features with bounding conditions that require continued maintenance or supervision by the owner or the owner's authorized agent throughout the life of the building, facility or process as conditions of compliance with the objectives of this code, shall be recorded as a deed restriction until released by the code official. When required by the code official, the deed restriction shall be modified to reflect specific changes.

**ICCPC [A] 103.3.4.1.6 Emergency response capabilities.** Design documentation shall clearly describe the level of response expected by emergency responders under the direct control of the owner or the owner's authorized agent. Emergency response capabilities, staffing levels, training requirements and equipment availability shall be documented as a bounding condition.

**ICCPC [A] 103.3.4.2.3 Operations and maintenance manual.** The operations and maintenance manual shall identify system and component commissioning requirements and the required interactions between these systems. The manual shall identify for the facility owner or the owner's authorized agent and the facility operator those actions that need to be performed on a regular basis to ensure that the components of the performance-based design are in place and operating properly. Furthermore, the operations and maintenance manual shall identify the restrictions or limitations placed upon the use and operation of the facility in order to stay within the bounding conditions of the performance-based design. The operations and maintenance manual shall be submitted at the time of the design documents submittal, unless the code official approves another time based upon the type of project and data needed for a composite review. The operations and maintenance manual shall address but not be limited to the following:

1. Description of critical systems.
2. Description of required system interactions.
3. Occupant responsibilities.
4. Occupant and staff training requirements.
5. Periodic operational requirements.
6. Periodic maintenance requirements.
7. Periodic testing requirements.
8. Limitations on facility operations (due to bounding conditions).
9. Report format for recording maintenance and operation data.
10. System and component commissioning requirements.

**ICCPC [A] 103.3.8.3 Deed restrictions.** Design features with bounding conditions determined by the design professional to require continued operation and maintenance by the owner or the owner's authorized agent throughout the life of the building as conditions of compliance with the objectives of this code shall be recorded as a deed restriction as required by the code official until released by the code official.

**ICCPC [A] 103.3.9.1.4 Revocation and renewal.** Failure of the building owner or the owner's authorized agent to demonstrate to the code official that the building is being operated and maintained in compliance with Sections 103.3.1.6 and 103.3.9.1 is cause to revoke or not renew a certificate of occupancy.

**ICCPC [A] 103.3.9.2.3 Revocation and renewal.** Failure of the owner or the owner's authorized agent to demonstrate compliance with this section is cause to revoke or not renew the certificate of compliance.

**ICCPC [A] 103.3.10 Maintenance.**

**ICCPC [A] 103.3.10.1 Owner's or the owner's authorized agent responsibility.** The owner or the owner's authorized agent is responsible for maintaining the building or facility in accordance with the approved documents.

**Revise the International Existing Building Code as follows:**

**IEBC [A] 104.6 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the *code official* has reasonable cause to believe that there exists in a structure or upon a premises a condition which is contrary to or in violation of this code which makes the structure or premises unsafe, *dangerous*, or hazardous, the *code official* is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises be unoccupied, the *code official* shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or control of the structure or premises and request entry. If entry is refused, the *code official* shall have recourse to the remedies provided by law to secure entry.

**IEBC [A] 104.10 Modifications.** Wherever there are practical difficulties involved in carrying out the provisions of this code, the *code official* shall have the authority to grant modifications for individual cases upon application of the owner or owner's authorized representative, provided the *code official* shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code, and that such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the Department of Building Safety.

**IEBC [A] 105.1 Required.** Any owner or owner's authorized agent who intends to *repair*, add to, alter, relocate, demolish, or change the occupancy of a building or to *repair*, install, add, alter, remove, convert, or replace any electrical, gas, mechanical, or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the *code official* and obtain the required permit.

**IEBC [A] 106.6 Design professional in responsible charge.** When it is required that documents be prepared by a registered design professional, the *code official* shall be authorized to require the owner or the owner's authorized agent to engage and designate on the building permit application a registered design professional who shall act as the *registered design professional in responsible charge*. If the circumstances require, the owner or the owner's authorized agent shall designate a substitute *registered design professional in responsible charge* who shall perform the duties required of the original *registered design professional in responsible charge*. The *code official* shall be notified in writing by the owner or the owner's authorized agent if the *registered design professional in responsible charge* is changed or is unable to continue to perform the duties. The *registered design professional in responsible charge* shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building. Where structural observation is required, the inspection program shall name the individual or firms who are to perform structural observation and describe the stages of construction at which structural observation is to occur.

**IEBC [A] 110.2 Certificate issued.** After the *code official* inspects the building and finds no violations of the provisions of this code or other laws that are enforced by the Department of Building Safety, the *code official* shall issue a certificate of occupancy that shall contain the following:

1. The building permit number.
2. The address of the structure.
3. The name and address of the owner or the owner's authorized agent.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.
6. The name of the *code official*.
7. The edition of the code under which the permit was issued.
8. The use and occupancy in accordance with the provisions of the *International Building Code*.
9. The type of construction as defined in the *International Building Code*.
10. The design occupant load and any impact the *alteration* has on the design occupant load of the area not within the scope of the work.
11. If fire protection systems are provided, whether the fire protection systems are required.
12. Any special stipulations and conditions of the building permit.

**IEBC [A] 111.3 Authority to disconnect service utilities.** The *code official* shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards in case of emergency where necessary to eliminate an immediate hazard to life or property or when such utility connection has been made without the approval required by Section 111.1 or 111.2. The *code official* shall notify the serving utility and, wherever possible, the owner or the owner's authorized agent and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnecting, the owner or occupant of the building, structure or service system shall be notified in writing, as soon as practical thereafter.

**IEBC [A] 114.2 Issuance.** The stop work order shall be in writing and shall be given to the owner or the owner's authorized agent of the property involved ~~or to the owner's agent~~, or to the person doing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order and the conditions under which the cited work will be permitted to resume.

**IEBC [A] 115.3 Notice.** If an *unsafe* condition is found, the *code official* shall serve on the owner, the owner's authorized agent, or person in control of the structure a written notice that describes the condition deemed *unsafe* and specifies the required *repairs* or improvements to be made to abate the *unsafe* condition, or that requires the *unsafe* building to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the *code official* acceptance or rejection of the terms of the order.

**IEBC [A] 115.4 Method of service.** Such notice shall be deemed properly served if a copy thereof is delivered to the owner or the owner's authorized agent personally; sent by certified or registered mail addressed to the owner or the owner's authorized agent at the last known address with the return receipt requested; or delivered in any other manner as prescribed by local law. If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner upon the owner's authorized agent or upon the person responsible for the structure shall constitute service of notice upon the owner.

**IEBC [A] 116.5 Costs of emergency repairs.** Costs incurred in the performance of emergency work shall be paid by the jurisdiction. The legal counsel of the jurisdiction shall institute appropriate action against the owner of the premises or the owner's authorized agent where the unsafe structure is or was located for the recovery of such costs.

**IEBC [A] 117.1 General.** The *code official* shall order the owner of any premises or the owner's authorized agent upon which is located any structure that in the *code official's* judgment is so old, dilapidated, or has become so out of *repair* as to be *dangerous*, unsafe, insanitary, or otherwise unfit for human habitation or occupancy, and such that it is unreasonable to *repair* the structure, to demolish and remove such structure; or if such structure is capable of being made safe by *repairs*, to *repair* and make safe and sanitary or to demolish and remove at the owner's or the owner's authorized agent's option; or where there has been a cessation of normal construction of any structure for a period of more than two years, to demolish and remove such structure.

**IEBC [A] 117.3 Failure to comply.** If the owner or the owner's authorized agent of a premises fails to comply with a demolition order within the time prescribed, the *code official* shall cause the structure to be demolished and removed, either through an available public agency or by contract or arrangement with private persons, and the cost of such demolition and removal shall be charged against the real estate upon which the structure is located and shall be a lien upon such real estate.

**Revise the International Fire Code as follows:**

**IFC [A] 104.3 Right of entry.** Whenever it is necessary to make an inspection to enforce the provisions of this code, or whenever the *fire code official* has reasonable cause to believe that there exists in a building or upon any premises any conditions or violations of this code which make the building or premises unsafe, dangerous or hazardous, the *fire code official* shall have the authority to enter the building or premises at all reasonable times to inspect or to perform the duties imposed upon the *fire code official* by this code. If such building or premises is occupied, the *fire code official* shall present credentials to the occupant and request entry. If such building or premises is unoccupied, the *fire code official* shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or control of the building or premises and request entry. If entry is refused, the *fire code official* has recourse to every remedy provided by law to secure entry.

**IFC [A] 104.3.1 Warrant.** When the *fire code official* has first obtained a proper inspection warrant or other remedy provided by law to secure entry, an owner, the owner's authorized agent or occupant or person having charge, care or control of the building or premises shall not fail or neglect, after proper request is made as herein provided, to permit entry therein by the *fire code official* for the purpose of inspection and examination pursuant to this code.

**IFC [A] 104.7.2 Technical assistance.** To determine the acceptability of technologies, processes, products, facilities, materials and uses attending the design, operation or use of a building or premises subject to inspection by the *fire code official*, the *fire code official* is authorized to require the owner or owner's authorized agent to provide, without charge to the jurisdiction, a technical opinion and report. The opinion and report shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the *fire code official* and shall analyze the fire safety properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon, to recommend necessary changes. The *fire code official* is authorized to require design submittals to be prepared by, and bear the stamp of, a registered design professional.

**IFC [A] 105.1.1 Permits required.** Any property owner or owner's authorized agent who intends to conduct an operation or business, or install or modify systems and equipment which is regulated by this code, or to cause any such work to be done, shall first make application to the *fire code official* and obtain the required permit.

**IFC [A] 109.2 Owner/occupant responsibility.** Correction and abatement of violations of this code shall be the responsibility of the owner or the owner's authorized agent. If an occupant creates, or allows to be created, hazardous conditions in violation of this code, the occupant shall be held responsible for the abatement of such hazardous conditions.

**IFC [A] 109.3.1 Service.** A notice of violation issued pursuant to this code shall be served upon the owner, the owner's authorized agent, operator, occupant or other person responsible for the condition or

violation, either by personal service, mail or by delivering the same to, and leaving it with, some person of responsibility upon the premises. For unattended or abandoned locations, a copy of such notice of violation shall be posted on the premises in a conspicuous place at or near the entrance to such premises and the notice of violation shall be mailed by certified mail with return receipt requested or a certificate of mailing, to the last known address of the *owner*, the owner's authorized agent, or occupant ~~or both~~.

**IFC [A] 109.3.2 Compliance with orders and notices.** A notice of violation issued or served as provided by this code shall be complied with by the *owner*, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation to which the notice of violation pertains.

**IFC [A] 110.4 Abatement.** The *owner*, the owner's authorized agent, operator or occupant of a building or premises deemed unsafe by the *fire code official* shall abate or cause to be abated or corrected such unsafe conditions either by repair, rehabilitation, demolition or other *approved* corrective action.

**IFC [A] 111.2 Issuance.** A stop work order shall be in writing and shall be given to the *owner* of the property, or to the *owner's* authorized agent, or to the person doing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order, and the conditions under which the cited work is authorized to resume.

**IFC [A] 112.1 Authority to disconnect service utilities.** The *fire code official* shall have the authority to authorize disconnection of utility service to the building, structure or system in order to safely execute emergency operations or to eliminate an immediate hazard. The *fire code official* shall notify the serving utility and, whenever possible, the *owner* ~~or the owner's authorized agent~~ and occupant of the building, structure or service system of the decision to disconnect prior to taking such action if not notified prior to disconnection. The *owner*, the owner's authorized agent or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.

#### **Revise the International Fuel Gas Code as follows:**

**IFGC [A] 102.3 Maintenance.** Installations, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe condition. Devices or safeguards which are required by this code shall be maintained in compliance with the code edition under which they were installed. The owner or the owner's authorized ~~designated~~ agent shall be responsible for maintenance of installations. To determine compliance with this provision, the code official shall have the authority to require an installation to be reinspected.

**IFGC [A] 104.4 Right of entry.** Whenever it is necessary to make an inspection to enforce the provisions of this code, or whenever the code official has reasonable cause to believe that there exists in a building or upon any premises any conditions or violations of this code that make the building or premises unsafe, dangerous or hazardous, the code official shall have the authority to enter the building or premises at all reasonable times to inspect or to perform the duties imposed upon the code official by this code. If such building or premises is occupied, the code official shall present credentials to the occupant and request entry. If such building or premises is unoccupied, the code official shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or control of the building or premises and request entry. If entry is refused, the code official has recourse to every remedy provided by law to secure entry.

When the code official has first obtained a proper inspection warrant or other remedy provided by law to secure entry, an owner, the owner's authorized agent, ~~or~~ occupant or person having charge, care or control of the building or premises shall not fail or neglect, after proper request is made as herein provided, to promptly permit entry therein by the code official for the purpose of inspection and examination pursuant to this code.

**IFGC [A] 105.1 Modifications.** Whenever there are practical difficulties involved in carrying out the provisions of this code, the code official shall have the authority to grant modifications for individual cases, upon application of the owner or owner's authorized agent ~~representative~~, provided that the code official shall first find that special individual reason makes the strict letter of this code impractical and that

such modification is in compliance with the intent and purpose of this code and does not lessen health, life and fire safety requirements. The details of action granting modifications shall be recorded and entered in the files of the Department of Inspection.

**IFGC [A] 106.1 Where required.** An owner, owner's authorized agent or contractor who desires to erect, install, enlarge, alter, repair, remove, convert or replace an installation regulated by this code, or to cause such work to be done, shall first make application to the code official and obtain the required permit for the work.

**Exception:** Where *appliance* and *equipment* replacements and repairs are required to be performed in an emergency situation, the permit application shall be submitted within the next working business day of the Department of Inspection.

**IFGC [A] 106.3 Application for permit.** Each application for a permit, with the required fee, shall be filed with the code official on a form furnished for that purpose and shall contain a general description of the proposed work and its location. The application shall be signed by the owner or an owner's authorized agent. The permit application shall indicate the proposed *occupancy* of all parts of the building and of that portion of the site or lot, if any, not covered by the building or structure and shall contain such other information required by the code official.

**IFGC [A] 108.5 Stop work orders.** Upon notice from the code official that work is being done contrary to the provisions of this code or in a dangerous or unsafe manner, such work shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, the owner's authorized agent, or the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work on the system after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable for a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.

**IFGC [A] 108.7.2 Authority to disconnect service utilities.** The code official shall have the authority to require disconnection of utility service to the building, structure or system regulated by the technical codes in case of emergency where necessary to eliminate an immediate hazard to life or property. The code official shall notify the serving utility, and wherever possible, the owner or the owner's authorized agent and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnection, the owner or occupant of the building, structure or service system shall be notified in writing, as soon as practicable thereafter.

#### **Revise the International Mechanical Code as follows:**

**IMC [A] 102.3 Maintenance.** Mechanical systems, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe and sanitary condition. Devices or safeguards which are required by this code shall be maintained in compliance with the code edition under which they were installed. The owner or the owner's authorized designated agent shall be responsible for maintenance of mechanical systems. To determine compliance with this provision, the code official shall have the authority to require a mechanical system to be reinspected.

The inspection for maintenance of HVAC systems shall be done in accordance with ASHRAE/ACCA/ANSI Standard 180.

**IMC [A] 104.4 Right of entry.** Whenever it is necessary to make an inspection to enforce the provisions of this code, or whenever the code official has reasonable cause to believe that there exists in a building or upon any premises any conditions or violations of this code which make the building or premises unsafe, insanitary, dangerous or hazardous, the code official shall have the authority to enter the building or premises at all reasonable times to inspect or to perform the duties imposed upon the code official by this code. If such building or premises is occupied, the code official shall present credentials to the occupant and request entry. If such building or premises is unoccupied, the code official shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or

control of the building or premises and request entry. If entry is refused, the code official has recourse to every remedy provided by law to secure entry.

When the code official has first obtained a proper inspection warrant or other remedy provided by law to secure entry, an owner, the owner's authorized agent or occupant or person having charge, care or control of the building or premises shall not fail or neglect, after proper request is made as herein provided, to promptly permit entry therein by the code official for the purpose of inspection and examination pursuant to this code.

**IMC [A] 105.1 Modifications.** Whenever there are practical difficulties involved in carrying out the provisions of this code, the code official shall have the authority to grant modifications for individual cases upon application of the owner or owner's authorized agent representative, provided that the code official shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and does not lessen health, life and fire safety requirements. The details of action granting modifications shall be recorded and entered in the files of the mechanical inspection department.

**IMC [A] 106.1 When required.** An owner, owner's authorized agent or contractor who desires to erect, install, enlarge, alter, repair, remove, convert or replace a mechanical system, the installation of which is regulated by this code, or to cause such work to be done, shall first make application to the code official and obtain the required permit for the work.

**Exception:** Where *equipment* and *appliance* replacements or repairs must be performed in an emergency situation, the permit application shall be submitted within the next working business day of the department of mechanical inspection.

**IMC [A] 106.3 Application for permit.** Each application for a permit, with the required fee, shall be filed with the code official on a form furnished for that purpose and shall contain a general description of the proposed work and its location. The application shall be signed by the owner or ~~an~~ the owner's authorized agent. The permit application shall indicate the proposed *occupancy* of all parts of the building and of that portion of the site or lot, if any, not covered by the building or structure and shall contain such other information required by the code official.

**IMC [A] 108.5 Stop work orders.** Upon notice from the code official that mechanical work is being done contrary to the provisions of this code or in a dangerous or unsafe manner, such work shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or to the owner's authorized agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work on the system after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable for a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.

**IMC [A] 108.7.2 Authority to order disconnection of energy sources.** The code official shall have the authority to order disconnection of energy sources supplied to a building, structure or mechanical system regulated by this code, when it is determined that the mechanical system or any portion thereof has become hazardous or unsafe. Written notice of such order to disconnect service and the causes therefor shall be given within 24 hours to the owner, the owner's authorized agent and occupant of such building, structure or premises, provided, however, that in cases of immediate danger to life or property, such disconnection shall be made immediately without such notice. Where energy sources are provided by a public utility, the code official shall immediately notify the serving utility in writing of the issuance of such order to disconnect.

**Revise the International Plumbing Code as follows:**

**IPC [A] 102.3 Maintenance.** All plumbing systems, materials and appurtenances, both existing and new, and all parts thereof, shall be maintained in proper operating condition in accordance with the original design in a safe and sanitary condition. All devices or safeguards required by this code shall be maintained in compliance with the code edition under which they were installed.

The owner or the owner's authorized ~~designated~~ agent shall be responsible for maintenance of plumbing systems. To determine compliance with this provision, the code official shall have the authority to require any plumbing system to be reinspected.

**IPC [A] 104.4 Right of entry.** Whenever it is necessary to make an inspection to enforce the provisions of this code, or whenever the code official has reasonable cause to believe that there exists in any building or upon any premises any conditions or violations of this code that make the building or premises unsafe, insanitary, dangerous or hazardous, the code official shall have the authority to enter the building or premises at all reasonable times to inspect or to perform the duties imposed upon the code official by this code. If such building or premises is occupied, the code official shall present credentials to the occupant and request entry. If such building or premises is unoccupied, the code official shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or control of the building or premises and request entry. If entry is refused, the code official shall have recourse to every remedy provided by law to secure entry.

When the code official shall have first obtained a proper inspection warrant or other remedy provided by law to secure entry, no owner, owner's authorized agent, or occupant or person having charge, care or control of any building or premises shall fail or neglect, after proper request is made as herein provided, to promptly permit entry therein by the code official for the purpose of inspection and examination pursuant to this code.

**IPC [A] 105.1 Modifications.** Whenever there are practical difficulties involved in carrying out the provisions of this code, the code official shall have the authority to grant modifications for individual cases, upon application of the owner or owner's ~~representative~~ authorized agent, provided the code official shall first find that special individual reason makes the strict letter of this code impractical and the modification conforms to the intent and purpose of this code and that such modification does not lessen health, life and fire safety requirements. The details of action granting modifications shall be recorded and entered in the files of the plumbing inspection department.

**IPC [A] 106.1 When required.** Any owner, owner's authorized agent or contractor who desires to construct, enlarge, alter, repair, move, demolish or change the *occupancy* of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the code official and obtain the required permit for the work.

**IPC [A] 106.3 Application for permit.** Each application for a permit, with the required fee, shall be filed with the code official on a form furnished for that purpose and shall contain a general description of the proposed work and its location. The application shall be signed by the owner or an owner's authorized agent. The permit application shall indicate the proposed *occupancy* of all parts of the building and of that portion of the site or lot, if any, not covered by the building or structure and shall contain such other information required by the code official.

**IPC [A] 108.5 Stop work orders.** Upon notice from the code official, work on any plumbing system that is being done contrary to the provisions of this code or in a dangerous or unsafe manner shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or to the owner's authorized agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.

**IPC [A] 108.7.2 Authority to disconnect service utilities.** The code official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by the technical codes in case of an emergency, where necessary, to eliminate an immediate danger to life or property. Where possible, the owner or an owner's authorized agent and occupant of the building, structure or service system shall be notified of the decision to disconnect utility service prior to taking such action. If not notified prior to disconnecting, the owner, an owner's authorized agent or occupant of the building, structure or service systems shall be notified in writing, as soon as practical thereafter.

**Revise the International Private Sewage Disposal Code as follows:**

**IPSDC [A] 102.5 Maintenance.** *Private sewage disposal systems*, materials and appurtenances, both existing and new, and all parts thereof shall be maintained in proper operating condition in accordance with the original design in a safe and sanitary condition. Devices or safeguards that are required by this code shall be maintained in compliance with the code edition under which they were installed. The owner or the owner's authorized ~~designated~~ agent shall be responsible for maintenance of *private sewage disposal systems*. To determine compliance with this provision, the code official shall have the authority to require reinspection of any *private sewage disposal system*.

**IPSDC [A] 104.4 Right of entry.** Whenever it is necessary to make an inspection to enforce the provisions of this code, or whenever the code official has reasonable cause to believe that there exists in any building or upon any premises any conditions or violations of this code that make the building or premises unsafe, insanitary, dangerous or hazardous, the code official shall have the authority to enter the building or premises at all reasonable times to inspect or to perform the duties imposed on the code official by this code. If such building or premises is occupied, the code official shall present credentials to the occupant and request entry. If such building or premises is unoccupied, the code official shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or control of the building or premises and request entry. If entry is refused, the code official has recourse to every remedy provided by law to secure entry.

When the code official shall have first obtained a proper inspection warrant or other remedy provided by law to secure entry, no owner, owner's authorized agent or occupant or person having charge, care or control of any building or premises shall fail or neglect, after proper request is made as herein provided, to promptly permit entry therein by the code official for the purpose of inspection and examination pursuant to this code.

**IPSDC [A] 105.1 Modifications.** Whenever there are practical difficulties involved in carrying out the provisions of this code, the code official shall have the authority to grant modifications for individual cases, upon application of the owner or owner's ~~representative~~ authorized agent provided that the code official shall first find that special individual reason makes the strict letter of this code impractical, the modification is in conformity with the intent and purpose of this code and such modification does not lessen health and fire- and life-safety requirements. The details of action granting modifications shall be recorded and entered in the files of the Private Sewage Disposal Inspection Department.

**IPSDC [A] 108.5 Stop work orders.** Upon notice from the code official, work on any *private sewage disposal system* that is being done contrary to the provisions of this code or in a dangerous or unsafe manner shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, to the owner's authorized agent or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work on the system after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.

**IPSDC [A] 108.7.2 Authority to disconnect service utilities.** The code official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by the technical codes in case of emergency, where necessary, to eliminate an immediate danger to life or property.

Where possible, the owner, the owner's authorized agent and occupant of the building, structure or service system shall be notified of the decision to disconnect utility service prior to taking such action. If not notified prior to disconnecting, the owner or occupant of the building, structure or service systems shall be notified in writing as soon as is practical thereafter.

**Revise the International Property Maintenance Code as follows:**

**IPMC [A] 101.2 Scope.** The provisions of this code shall apply to all existing residential and nonresidential structures and all existing *premises* and constitute minimum requirements and standards for *premises*, structures, equipment and facilities for light, *ventilation*, space, heating, sanitation, protection from the elements, life safety, safety from fire and other hazards, and for safe and sanitary maintenance; the responsibility of *owners*, an owner's authorized agent, *operators* and *occupants*; the *occupancy* of existing structures and *premises*, and for administration, enforcement and penalties.

**IPMC [A] 102.2 Maintenance.** Equipment, systems, devices and safeguards required by this code or a previous regulation or code under which the structure or *premises* was constructed, altered or repaired shall be maintained in good working order. No *owner*, owner's authorized agent, *operator* or *occupant* shall cause any service, facility, equipment or utility which is required under this section to be removed from or shut off from or discontinued for any occupied dwelling, except for such temporary interruption as necessary while repairs or alterations are in progress. The requirements of this code are not intended to provide the basis for removal or abrogation of fire protection and safety systems and devices in existing structures. Except as otherwise specified herein, the *owner* or the *owner's authorized designated agent* shall be responsible for the maintenance of buildings, structures and *premises*.

**IPMC [A] 104.3 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or whenever the *code official* has reasonable cause to believe that there exists in a *structure* or upon a *premises* a condition in violation of this code, the *code official* is authorized to enter the structure or *premises* at reasonable times to inspect or perform the duties imposed by this code, provided that if such *structure* or *premises* is occupied the *code official* shall present credentials to the *occupant* and request entry. If such structure or *premises* is unoccupied, the *code official* shall first make a reasonable effort to locate the *owner*, the owner's authorized agent or other person having charge or control of the *structure* or *premises* and request entry. If entry is refused, the *code official* shall have recourse to the remedies provided by law to secure entry.

**IPMC [A] 105.1 Modifications.** Whenever there are practical difficulties involved in carrying out the provisions of this code, the *code official* shall have the authority to grant modifications for individual cases upon application of the *owner* or *owner's authorized agent representative*, provided the *code official* shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, life and fire safety requirements. The details of action granting modifications shall be recorded and entered in the department files.

**IPMC [A] 107.2 Form.** Such notice prescribed in Section 107.1 shall be in accordance with all of the following:

1. Be in writing.
2. Include a description of the real estate sufficient for identification.
3. Include a statement of the violation or violations and why the notice is being issued.
4. Include a correction order allowing a reasonable time to make the repairs and improvements required to bring the *dwelling unit* or structure into compliance with the provisions of this code.
5. Inform the property *owner* or the owner's authorized agent of the right to appeal.
6. Include a statement of the right to file a lien in accordance with Section 106.3.

**IPMC [A] 107.6 Transfer of ownership.** It shall be unlawful for the *owner* of any *dwelling unit* or structure who has received a compliance order or upon whom a notice of violation has been served to sell, transfer, mortgage, lease or otherwise dispose of such *dwelling unit* or structure to another until the

provisions of the compliance order or notice of violation have been complied with, or until such owner or the owner's authorized agent shall first furnish the grantee, transferee, mortgagee or lessee a true copy of any compliance order or notice of violation issued by the *code official* and shall furnish to the *code official* a signed and notarized statement from the grantee, transferee, mortgagee or lessee, acknowledging the receipt of such compliance order or notice of violation and fully accepting the responsibility without condition for making the corrections or repairs required by such compliance order or notice of violation.

**IPMC [A] 108.2 Closing of vacant structures.** If the structure is vacant and unfit for human habitation and *occupancy*, and is not in danger of structural collapse, the *code official* is authorized to post a placard of condemnation on the *premises* and order the structure closed up so as not to be an attractive nuisance. Upon failure of the owner or the owner's authorized agent to close up the *premises* within the time specified in the order, the *code official* shall cause the *premises* to be closed and secured through any available public agency or by contract or arrangement by private persons and the cost thereof shall be charged against the real estate upon which the structure is located and shall be a lien upon such real estate and may be collected by any other legal resource.

**IPMC [A] 108.2.1 Authority to disconnect service utilities.** The *code official* shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section 102.7 in case of emergency where necessary to eliminate an immediate hazard to life or property or when such utility connection has been made without approval. The *code official* shall notify the serving utility and, whenever possible, the owner or the owner's authorized agent and *occupant* of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnection the owner, the owner's authorized agent or *occupant* of the building structure or service system shall be notified in writing as soon as practical thereafter.

**IPMC [A] 108.3 Notice.** Whenever the *code official* has *condemned* a structure or equipment under the provisions of this section, notice shall be posted in a conspicuous place in or about the structure affected by such notice and served on the owner, the owner's authorized agent or the person or persons responsible for the structure or equipment in accordance with Section 107.3. If the notice pertains to equipment, it shall also be placed on the *condemned* equipment. The notice shall be in the form prescribed in Section 107.2.

**IPMC [A] 108.4 Placarding.** Upon failure of the owner or the owner's authorized agent or person responsible to comply with the notice provisions within the time given, the *code official* shall post on the *premises* or on defective equipment a placard bearing the word "Condemned" and a statement of the penalties provided for occupying the *premises*, operating the equipment or removing the placard.

**IPMC [A] 108.5 Prohibited occupancy.** Any occupied structure *condemned* and placarded by the *code official* shall be vacated as ordered by the *code official*. Any person who shall occupy a placarded *premises* or shall operate placarded equipment, and any owner, the owner's authorized agent or any person responsible for the *premises* who shall let anyone occupy a placarded *premises* or operate placarded equipment shall be liable for the penalties provided by this code.

**IPMC [A] 108.6 Abatement methods.** The owner, the owner's authorized agent, operator or *occupant* of a building, *premises* or equipment deemed unsafe by the *code official* shall abate or cause to be abated or corrected such unsafe conditions either by repair, rehabilitation, demolition or other *approved* corrective action.

**IPMC [A] 109.5 Costs of emergency repairs.** Costs incurred in the performance of emergency work shall be paid by the jurisdiction. The legal counsel of the jurisdiction shall institute appropriate action against the owner of the *premises* or the owner's authorized agent where the unsafe structure is or was located for the recovery of such costs.

**IPMC [A] 110.1 General.** The *code official* shall order the owner of any *premises* or the owner's authorized agent, upon which is located any structure, which in the *code official* judgment after review is

so deteriorated or dilapidated or has become so out of repair as to be dangerous, unsafe, insanitary or otherwise unfit for human habitation or occupancy, and such that it is unreasonable to repair the structure, to demolish and remove such structure; or if such structure is capable of being made safe by repairs, to repair and make safe and sanitary, or to board up and hold for future repair or to demolish and remove at the *owner's* option; or where there has been a cessation of normal construction of any structure for a period of more than two years, the *code official* shall order the *owner* or the owner's authorized agent to demolish and remove such structure, or board up until future repair. Boarding the building up for future repair shall not extend beyond one year, unless *approved* by the building official.

**IPMC [A] 110.3 Failure to comply.** If the *owner* of a *premises* or the owner's authorized agent, fails to comply with a demolition order within the time prescribed, the *code official* shall cause the structure to be demolished and removed, either through an available public agency or by contract or arrangement with private persons, and the cost of such demolition and removal shall be charged against the real estate upon which the structure is located and shall be a lien upon such real estate.

**IPMC [A] 112.2 Issuance.** A stop work order shall be in writing and shall be given to the *owner* of the property, to the *owner's* authorized agent, or to the person doing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order and the conditions under which the cited work is authorized to resume.

**Revise the International Wildland-Urban Interface Code as follows:**

**IWUIC [A] 101.6 Maintenance.** All buildings, structures, landscape materials, vegetation, *defensible space* or other devices or safeguards required by this code shall be maintained in conformance to the code edition under which installed. The owner or the owner's authorized designated agent shall be responsible for the maintenance of buildings, structures, landscape materials and vegetation.

**IWUIC [A] 105.1 Practical difficulties.** When there are practical difficulties involved in carrying out the provisions of this code, the code official is authorized to grant modifications for individual cases on application in writing by the owner or a duly owner's authorized representative agent. The code official shall first find that a special individual reason makes enforcement of the strict letter of this code impractical, the modification is in conformance to the intent and purpose of this code, and the modification does not lessen any fire protection requirements or any degree of structural integrity. The details of any action granting modifications shall be recorded and entered into the files of the code enforcement agency.

**IWUIC [A] 105.2 Technical assistance.** To determine the acceptability of technologies, processes, products, facilities, materials and uses attending the design, operation or use of a building or premises subject to the inspection of the code official, the code official is authorized to require the owner, the owner's authorized agent, or the person in possession or control of the building or premises to provide, without charge to the jurisdiction, a technical opinion and report. The opinion and report shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the code official and the or the owner's authorized agent and shall analyze the fire safety of the design, operation or use of the building or premises, the facilities and appurtenances situated thereon and fuel management for purposes of establishing fire hazard severity to recommend necessary changes.

**IWUIC [A] 109.2.2 Service of orders and notices.** Orders and notices authorized or required by this code shall be given or served on the owner, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation either by verbal notification, personal service, or delivering the same to, and leaving it with, a person of suitable age and discretion on the premises; or, if no such person is found on the premises, by affixing a copy thereof in a conspicuous place on the door to the entrance of said premises and by mailing a copy thereof to such person by registered or certified mail to the person's last known address.

Orders or notices that are given verbally shall be confirmed by service in writing as herein provided.

**IWUIC [A] 109.3 Right of entry.** Whenever necessary to make an inspection to enforce any of the provisions of this code, or whenever the code official has reasonable cause to believe that there exists in any building or on any premises any condition that makes such building or premises unsafe, the code official is authorized to enter such building or premises at all reasonable times to inspect the same or to perform any duty authorized by this code, provided that if such building or premises is occupied, the code official shall first present proper credentials and request entry; and if such building or premises is unoccupied, the code official shall first make a reasonable effort to locate the owner, the owner's authorized agent, or other persons having charge or control of the building or premises and request entry. If such entry is refused, the code official shall have recourse to every remedy provided by law to secure entry. Owners, the owner's authorized agent, occupants or any other persons having charge, care or control of any building or premises, shall, after proper request is made as herein provided, promptly permit entry therein by the code official for the purpose of inspection and examination pursuant to this code.

**IWUIC [A] 109.4.1 General compliance.** Orders and notices issued or served as provided by this code shall be complied with by the owner, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation to which the corrective order or notice pertains.

If the building or premises is not occupied, such corrective orders or notices shall be complied with by the owner or the owner's authorized agent.

**IWUIC [A] 109.4.5.2 Notice.** Where an unsafe condition is found, the code official shall serve on the owner, owner's authorized agent or person in control of the building, structure or premises, a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, or that requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified, or their designee, to declare within a stipulated time to the code official acceptance or rejection of the terms of the order.

**IWUIC [A] 109.4.5.2.1 Method of service.** Such notice shall be deemed properly served if a copy thereof is (a) delivered to the owner or the owner's authorized agent personally; (b) sent by certified or registered mail addressed to the owner or the owner's authorized agent at the last known address with the return receipt requested; or (c) delivered in any other manner as prescribed by local law. If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner upon the owner's authorized agent or upon the person responsible for the structure shall constitute service of notice upon the owner.

**IWUIC [A] 109.4.5.3 Placarding.** Upon failure of the owner, the owner's authorized agent, or person responsible to comply with the notice provisions within the time given, the code official shall post on the premises or on defective equipment a placard bearing the word "UNSAFE" and a statement of the penalties provided for occupying the premises, operating the equipment or removing the placard.

**IWUIC [A] 109.4.5.4 Abatement.** The owner, the owner's authorized agent, operator or occupant of a building, structure or premises deemed unsafe by the code official shall abate or correct or cause to be abated or corrected such unsafe conditions either by repair, rehabilitation, demolition or other *approved* corrective action.

**IWUIC [A] 113.2 Authority to disconnect service utilities.** The code official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section 102.4 in case of emergency where necessary to eliminate an immediate hazard to life or property or when such utility connection has been made without the release required by Section 113.1. The code official shall notify the serving utility and whenever possible the owner or the owner's authorized agent and occupant of the building, structure or service system of the decision to disconnect prior to taking such action if not notified prior to disconnection. The owner, the owner's authorized agent or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.

**IWUIC [A] 114.2 Issuance.** The stop work order shall be in writing and shall be given to the owner of the property involved, to the owner's authorized agent or to the person doing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order and the conditions under which the cited work will be permitted to resume.

**Revise the International Zoning Code as follows:**

**IZC [A] 103.3 Maintenance.** All buildings or uses, both existing and new, and all parts thereof, shall be maintained. The owner or owner's authorized designated agent shall be responsible for the maintenance of buildings and parcels of land. To determine compliance with this section, the code official shall be permitted to cause any structure or use to be inspected.

**IZC [A] 107.7.3 Variance review criteria.** The board of adjustment shall be permitted to approve, approve with conditions or deny a request for a variance. Each request for a variance shall be consistent with the following criteria:

1. Limitations on the use of the property due to physical, topographical and geologic features.
2. The grant of the variance will not grant any special privilege to the property owner or the owner's authorized agent.
3. The applicant can demonstrate that without a variance there can be no reasonable use of the property.
4. The grant of the variance is not based solely on economic reasons.
5. The necessity for the variance was not created by the property owner or the owner's authorized agent.
6. The variance requested is the minimum variance necessary to allow reasonable use of the property.
7. The grant of the variance will not be injurious to the public health, safety or welfare.
8. The property subject to the variance request possesses one or more unique characteristics generally not applicable to similarly situated properties.

**IZC [A] 109.1 Hearings.** Upon receipt of an application in proper form, the code official shall arrange to advertise the time and place of public hearing. Such advertisement shall be given by at least one publication in a newspaper of general circulation within the jurisdiction. Such notice shall state the nature of the request, the location of the property, and the time and place of hearing. Reasonable effort shall also be made to give notice by regular mail of the time and place of hearing to each surrounding property owner or the owner's authorized agent; the extent of the area to be notified shall be set by the code official. A notice of such hearing shall be posted in a conspicuous manner on the subject property.

**PART II – IECC-COMMERCIAL**

**Revise the International Energy Conservation Code-Commercial as follows:**

**IECC C108.2 Issuance.** The stop work order shall be in writing and shall be given to the owner of the property involved, or to the owner's authorized agent, or to the person doing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order, and the conditions under which the cited work will be permitted to resume.

**PART III – IECC-RESIDENTIAL**

**Revise the International Energy Conservation Code-Residential as follows:**

**IECC R108.2 Issuance.** The stop work order shall be in writing and shall be given to the owner of the property involved, or to the owner's authorized agent, or to the person doing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order, and the conditions under which the cited work will be permitted to resume.

## PART IV – IRC

### Revise the International Residential Code as follows:

**IRC R104.6 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the *building official* has reasonable cause to believe that there exists in a structure or upon a premises a condition which is contrary to or in violation of this code which makes the structure or premises unsafe, dangerous or hazardous, the *building official* or designee is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises be unoccupied, the *building official* shall first make a reasonable effort to locate the owner, the owner's authorized agent, or other person having charge or control of the structure or premises and request entry. If entry is refused, the *building official* shall have recourse to the remedies provided by law to secure entry.

**IRC R105.1 Required.** Any owner or owner's authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the *building official* and obtain the required *permit*.

**IRC R110.3 Certificate issued.** After the *building official* inspects the building or structure and finds no violations of the provisions of this code or other laws that are enforced by the department of building safety, the *building official* shall issue a certificate of occupancy which shall contain the following:

1. The building *permit* number.
2. The address of the structure.
3. The name and address of the owner or the owner's authorized agent.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code.
6. The name of the *building official*.
7. The edition of the code under which the *permit* was issued.
8. If an automatic sprinkler system is provided and whether the sprinkler system is required.
9. Any special stipulations and conditions of the building *permit*.

**IRC R111.3 Authority to disconnect service utilities.** The *building official* shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section R102.4 in case of emergency where necessary to eliminate an immediate hazard to life or property or when such utility connection has been made without the approval required by Section R111.1 or R111.2. The *building official* shall notify the serving utility and whenever possible the owner or the owner's authorized agent and occupant of the building, structure or service system of the decision to disconnect prior to taking such action if not notified prior to disconnection. The owner, the owner's authorized agent, or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.

**IRC R114.1 Notice to owner or the owner's authorized agent.** Upon notice from the *building official* that work on any building or structure is being prosecuted contrary to the provisions of this code or in an unsafe and dangerous manner, such work shall be immediately stopped. The stop work order shall be in writing and shall be given to the owner of the property involved, or to the owner's authorized agent or to the person doing the work and shall state the conditions under which work will be permitted to resume.

## PART V – ISPCS

### Revise the International Swimming Pool and Spa Code as follows:

**ISPSC 102.3 Maintenance.** All *aquatic vessel* and related mechanical, electrical and plumbing systems, both existing and new, and all parts thereof, shall be maintained in proper operating condition in accordance with the original design in a safe and sanitary condition. All devices or safeguards required by this code shall be maintained in compliance with the code edition under which they were installed.

The *owner* or the *owner's* authorized designated agent shall be responsible for maintenance of all systems. To determine compliance with this provision, the *code official* shall have the authority to require any system to be reinspected.

**ISPSC 104.6 Right of entry.** Where it is necessary to make an inspection to enforce the provisions of this code, or where the *code official* has reasonable cause to believe that there exists in a structure or upon a premises a condition which is contrary to or in violation of this code which makes the structure or premises unsafe, dangerous or hazardous, the *code official* is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises is unoccupied, the *code official* shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or control of the structure or premises and request entry. If entry is refused, the *code official* shall have recourse to the remedies provided by law to secure entry.

**ISPSC 104.8 Modifications.** Wherever there are practical difficulties involved in carrying out the provisions of this code, the *code official* shall have the authority to grant modifications for individual cases, upon application of the owner or owner's authorized agent representative, provided the *code official* shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen sustainability, health, accessibility, life safety and structural requirements. The details of action granting modifications shall be recorded and entered in the files of the department of building safety.

**ISPSC 105.1 When required.** Any *owner*, or owner's authorized agent who desires to construct, enlarge, alter, *repair*, move, or demolish an *aquatic vessel* or to erect, install, enlarge, alter, repair, remove, convert or replace any system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the *code official* and obtain the required *permit* for the work.

**ISPSC 105.2 Application for permit.** Each application for a permit, with the required fee, shall be filed with the *code official* on a form furnished for that purpose and shall contain a general description of the proposed work and its location. The application shall be signed by the owner or ~~an~~ the owner's authorized agent. The permit application shall contain such other information required by the *code official*.

**ISPSC 107.5 Stop work orders.** Upon notice from the *code official*, work on any system that is being done contrary to the provisions of this code or in a dangerous or unsafe manner shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or to the owner's authorized agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the *code official* shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.

**ISPSC 107.7.2 Authority to disconnect service utilities.** The *code official* shall have the authority to authorize disconnection of utility service to the *aquatic vessel* regulated by the technical codes in case of an emergency, where necessary, to eliminate an immediate danger to life or property. Where possible, the owner or the owner's authorized agent and occupant of the building where the aquatic vessel is located shall be notified of the decision to disconnect utility service prior to taking such action. If not notified prior to disconnecting, the owner or the owner's authorized agent or occupant of the building shall be notified in writing, as soon as practical thereafter.

**Reason:** The purpose for the proposal is to update the references to “applicant” and “owner” throughout the building code by changing them to the “owner or the owner’s authorized agent” where it is warranted. In Section 110.1, “the permit applicant” is changed to “the owner or the owner’s authorized agent” because the latter should be responsible to keep the work accessible and exposed for inspection. In Sections 1703.4.1 and 1707.1, “the applicant” is changed to “the owner or the owner’s authorized agent” because the latter should be responsible for the costs of required tests, reports and investigations. In Sections 1703.6 and 1704.2.4, “the applicant” is changed to “the owner or the owner’s authorized agent” because the latter should be responsible for submitting required reports to the building official. In Section 1703.6.1, the applicant” is changed to “the owner or the owner’s authorized agent” for consistency with Section 1704.2 that requires the latter to employ the approved agencies. In Section 1803.6, the “owner or authorized agent” is changed to the “permit applicant” because it should be permissible for the latter to submit the geotechnical report with the other submittal documents at the time of permit application. The 2012 IBC contains additional references to “owner” but, based on the context in which they are used, it is not considered appropriate or useful to revise the language in conjunction with this proposal (e.g., from “the owner” to “the owner or the owner’s authorized agent”). See Sections 101.4.4, 104.6, 111.2, 112.3, 116.3, 116.4, 402.3, 913.4, 1107.4-Exc. 1, 1607.7.4, 3108.2, 3307.1, 3412.4, 3412.4.1, G101.2, G105.6-Item 3, K103.1 and L101.3. The 2012 IBC contains additional references to “applicant” but, based on the context in which they are used, it is also not considered appropriate or useful to revise the language in conjunction with this proposal (e.g., from “the applicant” to “the owner or the owner’s authorized agent”). See Sections 104.10.1-Item 5, 105.1.1, 105.3, 107.3.1, 109.3, 109.5, 1612.3.1, 1612.3.2, 1704.2.3, 1704.3, G103.3, G103.4, G103.5.1, G103.6, G104.2, G105.7-Item 5 and J104.1. All instances in the 2012 IBC of “applicant” and “owner,” other than listed above, are included in this proposal.

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

**Staff analysis:** This proposal for IBC indicate a correlative change throughout the code for the changes in Chapter 1. If this proposal is approved, similar revisions will be completed in the other chapters of the codes where the terms similar to “owner and owner’s authorized agent”.

**Public Hearing Results**

**PART I - IADMIN**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The proposal provides a consistent and proper designation of “owner and owner’s authorized agent” throughout the codes. The proposal will eliminate the confusion called by so many different terms being used in the codes to mean the same person.

**Assembly Action:**

**None**

**PART II – IECC – Commercial  
HEARD BY IECC COMMERCIAL COMMITTEE**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Provides consistency in use of terminology within the code and with the use of the terms in the other International Codes.

**Assembly Action:**

**None**

**PART III – IECC – Residential  
HEARD BY IECC RESIDENTIAL COMMITTEE**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** This proposed language would clarify the intent of the code.

**Assembly Action:**

**None**

**PART IV - IRC  
HEARD BY IRC COMMITTEE**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The committee approved this proposed code change because they felt that it clarifies who is referenced and distinguishes authorized as a legal status.

**Assembly Action:**

**None**

**PART V - ISPSC  
HEARD BY THE ISPSC COMMITTEE**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The committee agreed with the proponent's reason statement.

**Assembly Action:**

**None**

<b>Final Hearing Results</b>
------------------------------

<b>ADM22-13, Part I</b>	<b>AS</b>
<b>ADM22-13, Part II</b>	<b>AS</b>
<b>ADM22-13, Part III</b>	<b>AS</b>
<b>ADM22-13, Part IV</b>	<b>AS</b>
<b>ADM22-13, Part V</b>	<b>AS</b>

---

## Code Change No: ADM23-13

### Original Proposal

Section: PART I - IBC: [A] 104.11; IEBC: [A] 104.11 IFC: [A] 104.9; IFGC: [A] 105.2; IMC: [A] 105.2; IPC: [A] 105.2; IPSDC: [A] 105.2; IPMC: [A] 105.2; IWUIC: [A] 105.3  
PART II - IRC: R104.11;  
PART III - ISPSC 104.9

**THIS IS A 3 PART CODE CHANGE. PARTS I WILL BE HEARD BY THE ADMINISTRATIVE PROVISIONS COMMITTEE AS ONE CODE CHANGE. PART II WILL BE HEARD BY THE RESIDENTIAL CODE COMMITTEE. PART III WILL BE HEARD BY THE SWIMMING POOL AND SPA CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.**

**Proponent:** Larry Wainright, Qualtim, representing Structural Building Components Association (lwainright@qualtim.com)

**PART I – IBC; IEBC; IFC; IFGC; IMC; IPC; IPSDC; IPMC; IWUIC**

**Revise the International Building Code as follows:**

**IBC [A] 104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

**Revise the International Existing Building Code as follows:**

**IEBC [A] 104.11 Alternative materials, design and methods of construction, and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design, or method of construction shall be approved where the *code official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability, and safety. Where the alternative material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons the alternative was not approved.

**Revise the International Fire Code as follows:**

**IFC [A] 104.9 Alternative materials and methods.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. The *fire code official* is authorized to approve an alternative material or method of construction where the *fire code official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, *fire resistance*, durability and safety. Where the alternative

material, design or method of construction is not approved, the fire code official shall respond in writing, stating the reasons the alternative was not approved.

**Revise the International Fuel Gas Code as follows:**

**IFGC [A] 105.2 Alternative materials, methods, appliances and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material or method of construction shall be *approved* where the code official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons the alternative was not approved.

**Revise the International Mechanical Code as follows:**

**IMC [A] 105.2 Alternative materials, methods, equipment and appliances.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material or method of construction shall be *approved* where the code official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons the alternative was not approved.

**Revise the International Plumbing Code as follows:**

**IPC [A] 105.2 Alternative materials, methods and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material or method of construction shall be *approved* where the code official finds that the proposed alternative material, method or equipment complies with the intent of the provisions of this code and is at least the equivalent of that prescribed in this code. Where the alternative material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons the alternative was not approved.

**Revise the International Private Sewage Disposal Code as follows:**

**IPSDC [A] 105.2 Alternative materials, methods and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material or method of construction shall be *approved* where the code official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons the alternative was not approved.

**Revise the International Property Maintenance Code as follows:**

**IPMC [A] 105.2 Alternative materials, methods and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material or method of construction shall be *approved* where the *code official* finds that the proposed

design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons the alternative was not approved.

#### **Revise the International Wildland-Urban Interface Code as follows:**

**IWUIC [A] 105.3 Alternative materials or methods.** The code official, in concurrence with approval from the *building official* and fire chief, is authorized to approve alternative materials or methods, provided that the code official finds that the proposed design, use or operation satisfactorily complies with the intent of this code and that the alternative is, for the purpose intended, at least equivalent to the level of quality, strength, effectiveness, fire resistance, durability and safety prescribed by this code. Approvals under the authority herein contained shall be subject to the approval of the *building official* whenever the alternate material or method involves matters regulated by the *International Building Code*.

The code official shall require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding its use. The details of any action granting approval of an alternate shall be recorded and entered in the files of the code enforcement agency. Where the alternative material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons the alternative was not approved.

#### **PART II – IRC**

##### **Revise the International Residential Code as follows:**

**IRC R104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code. Compliance with the specific performance-based provisions of the International Codes in lieu of specific requirements of this code shall also be permitted as an alternate. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

#### **PART III – ISPSC**

##### **Revise the International Swimming Pool and Spa Code as follows:**

**ISPSC 104.9 Alternative materials, methods and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material or method of construction shall be approved where the *code official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, durability and safety. Where the alternative material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons the alternative was not approved.

**Reason:** the language added is similar to that included at 105.3.1 when a permit application is rejected. This proposed change assumes that the non-approval of an alternative method is not the same as the non-approval of a permit, i.e., the permit application may have been approved but an alternative method might not be approved until a later date. However, the reasons for responding to the applicant in writing are the same, as noted in the Commentary to section 105.3.1: 'In order to ensure effective communication and due process of law, the reasons for denial of an application for a permit are required to be in writing. Further, the language is coordinated across all of the I-codes for consistency of enforcement.'

**Cost Impact:** This proposal will not increase the cost of construction.

**Public Hearing Results**

**PART I - IADMIN**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The additional language protects the designer, clarifies the decisions and helps in the appeals process. It is good practice for the code official to respond in writing to keep accountability for alternative materials.

**Assembly Action:**

**None**

**PART II – IRC**

**HEARD BY IRC COMMITTEE**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The committee approved this proposed code change because they felt that it is important to know the reason each time there is input given back. This is a learning experience on behalf of the design professional. The design professional understands what needs to be modified so the plans can be approved. It is important to have a paper trail for posterity.

**Assembly Action:**

**None**

**PART III – ISPSC**

**HEARD BY THE ISPSC COMMITTEE**

**Committee Action:**

**Disapproved**

**Committee Reason:** Requiring written reasons for disapproval for every alternative design, material or method will be a paperwork nightmare for smaller issues. The code official can make the determination as to when a response in writing is prudent.

**Assembly Action:**

**None**

**Final Hearing Results**

<b>ADM23-13, Part I</b>	<b>AS</b>
<b>ADM23-13, Part II</b>	<b>AS</b>
<b>ADM23-13, Part III</b>	<b>D</b>

---

## Code Change No: ADM26-13

### Original Proposal

**Section:** IFC: [A] 105.1.4 (New), [A] 105.1.4.1 (New); IFGC: [A] 106.1.1 (New), [A] 106.1.2 (New); IMC: [A] 106.1.1 (New), [A] 106.1.2 (New); IPC: [A] 106.1.1 (New), [A] 106.1.2 (New); IPSDC: [A] 106.1.1 (New), [A] 106.1.2 (New)

**Proponent:** Anthony C. Apfelbeck, CBO, CFPS, City of Altamonte Springs Building/Fire Safety Division, representing self (ACApfelbeck@Altamonte.org)

#### Add new text to the International Fire Code as follows:

**IFC [A] 105.1.4 Annual permit.** In lieu of an individual construction permit for each alteration to an already approved system or equipment installation, the fire code official is authorized to issue an annual permit upon application therefor to any person, firm or corporation regularly employing one or more qualified tradespersons in the building, structure or on the premises owned or operated by the applicant for the permit.

**IFC [A] 105.1.4.1 Annual permit records.** The person to whom an annual permit is used shall keep a detailed record of alterations made under such annual permit. The fire code official shall have access to such records at all times or such records shall be filed with the fire code official as designated.

#### Revise the International Fuel Gas Code as follows:

**IFGC [A] 106.1.1 Annual permit.** In lieu of an individual construction permit for each alteration to an already approved system or equipment installation, the code official is authorized to issue an annual permit upon application therefor to any person, firm or corporation regularly employing one or more qualified tradespersons in the building, structure or on the premises owned or operated by the applicant for the permit.

**IFGC [A] 106.1.2 Annual permit records.** The person to whom an annual permit is used shall keep a detailed record of alterations made under such annual permit. The code official shall have access to such records at all times or such records shall be filed with the code official as designated.

#### Revise the International Mechanical Code as follows:

**IMC [A] 106.1.1 Annual permit.** In lieu of an individual construction permit for each alteration to an already approved system or equipment installation, the code official is authorized to issue an annual permit upon application therefor to any person, firm or corporation regularly employing one or more qualified tradespersons in the building, structure or on the premises owned or operated by the applicant for the permit.

**IMC [A] 106.1.2 Annual permit records.** The person to whom an annual permit is used shall keep a detailed record of alterations made under such annual permit. The code official shall have access to such records at all times or such records shall be filed with the code official as designated.

#### Revise the International Plumbing Code as follows:

**IPC [A] 106.1.1 Annual permit.** In lieu of an individual construction permit for each alteration to an already approved system or equipment installation, the code official is authorized to issue an annual permit upon application therefor to any person, firm or corporation regularly employing one or more

qualified tradespersons in the building, structure or on the premises owned or operated by the applicant for the permit.

**IPC [A] 106.1.2 Annual permit records.** The person to whom an annual permit is used shall keep a detailed record of alterations made under such annual permit. The code official shall have access to such records at all times or such records shall be filed with the code official as designated.

**Revise the International Private Sewage Disposal Code as follows:**

**IPSDC [A] 106.1.1 Annual permit.** In lieu of an individual construction permit for each alteration to an already approved system or equipment installation, the code official is authorized to issue an annual permit upon application therefor to any person, firm or corporation regularly employing one or more qualified tradespersons in the building, structure or on the premises owned or operated by the applicant for the permit.

**IPSDC [A] 106.1.2 Annual permit records.** The person to whom an annual permit is used shall keep a detailed record of alterations made under such annual permit. The code official shall have access to such records at all times or such records shall be filed with the code official as designated.

**Reason:** This proposed language is identical to the current language in section 105.1.1 and 105.1.2 of the IBC with the exception that the title of the code official is changes and that the list of systems have been removed from the types of permits. There is similar language in the IEBC, Section 105.1.1 and 105.1.2. The need for this language in the IFC and other codes is similar to the justification for it being present in the IBC. If annual permits can be issued for MEP system upon approval of the Building Official, annual permits should be able to be issued for fire systems regulated by the IFC upon the approval of the Fire Official.

The idea for this proposal was originally brought up as an issue for the IFC and fire code officials. However, once it was identified that there is Permit section in the IFGC, IMC, IPC and IPSDC, it seemed appropriate to extend this proposal.

**Cost Impact:** This code change will reduce the cost of construction. In situations where the issuance of annual permit for fire protection systems is appropriate, there will be a direct cost saving to the contractor in avoiding the need for individual permits.

**Staff analysis:** Permit sections are also found in the IWUIC and Pool codes.

**Public Hearing Results**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The additional language to the IFC, IFGC, IMC, IPC and IPSDC will coordinate with provisions in the IBC. This allowance will be handy for projects with continual work. If this option is used, the building owner will be responsible for providing records, such as inspections, so that compliance can be tracked by the jurisdiction.

**Assembly Action:**

**None**

**Final Hearing Results**

**ADM26-13**

**AS**

# Code Change No: ADM55-13

## Original Proposal

**Section:** PART I - IBC: 202, IFC: 202, IFGC: 202, IMC: 202, IPC: 202, IPMC: 202, IWUIC: 202  
PART II - IECC: C202;  
PART III - IECC: R202 (IRC N1101.9);  
PART IV - IRC: R202;  
PART V - ISPSC 202.

**THIS IS A 5 PART CODE CHANGE. PARTS I WILL BE HEARD BY THE ADMINISTRATIVE PROVISIONS COMMITTEE AS ONE CODE CHANGE. PART II WILL BE HEARD BY THE ENERGY CONSERVATION CODE-COMMERCIAL COMMITTEE. PART III WILL BE HEARD BY THE ENERGY CONSERVATION CODE-RESIDENTIAL COMMITTEE. PART IV WILL BE HEARD BY THE RESIDENTIAL CODE COMMITTEE. PART V WILL BE HEARD BY THE SWIMMING POOL AND SPA CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.**

**Proponent:** Philip Brazil, P.E., Reid Middletonw, Inc., representing Washington Association of Building Officials, Technical Code Development (pbrazil@reidmiddleton.com)

### **PART I – IBC; IFC; IFCG; IMC; IPC; IPMC; IWUIC**

**Revise the International Building Code as follows:**

#### **IBC SECTION 202 DEFINITIONS**

**[A] APPROVED.** Acceptable to the *building official* ~~or authority having jurisdiction.~~

**[A] PERMIT.** An official document or certificate issued by the ~~authority having jurisdiction which~~ building official that authorizes performance of a specified activity.

**Revise the International Fire Code as follows:**

#### **IFC SECTION 202 DEFINITIONS**

**[A] APPROVED.** Acceptable to the *fire code official*.

**[A] PERMIT.** An official document or certificate issued by the ~~authority having jurisdiction which~~ fire code official that authorizes performance of a specified activity.

**Revise the International Fuel Gas Code as follows:**

#### **IFGC SECTION 202 DEFINITIONS**

**[A] APPROVED.** Acceptable to the *code official* ~~or authority having jurisdiction.~~

**Revise the International Mechanical Code as follows:**

#### **IMC SECTION 202**

## DEFINITIONS

**[A] APPROVED.** Acceptable to the *code official* ~~or authority having jurisdiction.~~

Revise the International Plumbing Code as follows:

### IPC SECTION 202 DEFINITIONS

**[A] APPROVED.** Acceptable to the *code official* ~~or authority having jurisdiction.~~

Revise the International Property Maintenance Code as follows:

### IPMC SECTION 202 DEFINITIONS

**[A] APPROVED.** Acceptable to ~~Approved by~~ the *code official*.

Revise the International Wildland-Urban Interface Code as follows:

### IWUICC SECTION 202 DEFINITIONS

**[A] APPROVED.** Acceptable to the code official ~~Approval by the code official as the result of review, investigation or tests conducted by the code official or by reason of accepted principles or tests by national authorities, or technical or scientific organizations.~~

## PART II – IECC-COMMERCIAL

Revise the International Energy Conservation Code-Commercial as follows:

### IECC SECTION C202 GENERAL DEFINITIONS

**APPROVED.** Acceptable to ~~Approval by~~ the code official ~~as the result of investigation and tests conducted by him or her, or by reason of accepted principles or tests by national recognized organizations.~~

## PART III – IECC-RESIDENTIAL

Revise the International Energy Conservation Code-Residential as follows:

### IECC SECTION R202 (IRC N1101.9) GENERAL DEFINITIONS

**APPROVED.** Acceptable to ~~Approval by~~ the code official ~~as the result of investigation and tests conducted by him or her, or by reason of accepted principles or tests by national recognized organizations.~~

## PART IV – IRC

Revise the International Residential Code as follows:

### IRC SECTION R202 DEFINITIONS

**APPROVED.** Acceptable to the *building official*.

**PERMIT.** An official document or certificate issued by the ~~authority having jurisdiction~~ building official that authorizes performance of a specified activity.

**PART V – ISPC**

**Revise the International Swimming Pool and Spa Code as follows:**

**ISPC SECTION 202  
DEFINITIONS**

**APPROVED.** Acceptable to the *code official* ~~or authority having jurisdiction~~.

**PERMIT.** An official document or certificate issued by the ~~authority having jurisdiction~~ building official that authorizes performance of a specified activity.

**Reason:** The purpose for the proposal is to clarify the meaning of the definitions for “approved” and “permit” by specifying the building official rather than the “authority having jurisdiction.” The provisions of the building code consistently identify the building official as the official in charge of administration and enforcement of the building code. The only instances of “authority having jurisdiction” in the 2012 IBC are in this proposal.

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

**Public Hearing Results**

**PART I - IADMIN**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The phrase ‘authority having jurisdiction’ is already addressed in the definition for code official, therefore, it can be removed from the definition for the term permit and approved. This revision would coordinate the codes and is preferred to the options for the term ‘approved’ offered in ADM53 and ADM 54.

**Assembly Action:**

**None**

**PART II – IECC – Commercial  
HEARD BY IECC COMMERCIAL COMMITTEE**

**Committee Action:**

**Disapproved**

**Committee Reason:** Current text provides the code official guidance regarding what approved means and how something is ‘approved’. This proposal removes that guidance.

**Assembly Action:**

**None**

**PART III – IECC – Residential  
HEARD BY IECC RESIDENTIAL COMMITTEE**

**Committee Action:**

**Disapproved**

**Committee Reason:** The proposed text would diminish guidance to the code official regarding needed information for approval.

**Assembly Action:**

**None**

**PART IV - IRC  
HEARD BY IRC COMMITTEE**

**Committee Action:**

**Disapproved**

**Committee Reason:** The committee disapproved this code change proposal because the authority having jurisdiction issues the permit and the building official is the representative of that authority.

**Assembly Action:** **None**

**PART V - ISPSC  
HEARD BY THE ISPSC COMMITTEE**

**Committee Action:** **Disapproved**

**Committee Reason:** The permitting of pools might not be controlled by the building official. This proposal removes the flexibility for other authorities having jurisdiction to do permitting and to approve items.

**Assembly Action:** **None**

**Public Comment(s)**

*Part II - Public Comment:*

**Maureen Traxler, City of Seattle Department of Planning & Development, representing Washington Association of Building Officials Technical Code Development Committee, requests Approval as Submitted.**

**Commenter's Reason:** This proposal would make the definition of "approved" in the IECC consistent with the definition in the Building, Fire, Fuel Gas, Mechanical, Plumbing, Property Maintenance and Wildland Urban Interface codes as approved in Part I of this proposal. The committees disapproved these 2 parts of the proposal because they felt that building officials need guidance to make approvals. However, the other codes do not include the language the Energy Code Committees found necessary. We can see no reason building officials would need additional guidance to make approvals under the Energy Code. The language provides minimal guidance in any case. It doesn't require anything other than what a building official would normally do. "Accepted principles" and "tests by national recognized organizations" are typical standards for approvals. The deleted language allows "investigations" without defining what constitutes an investigation. Presumably making a phone call or reviewing manufacturer information could be considered investigation.

*Part III - Public Comment:*

**Maureen Traxler, City of Seattle Department of Planning & Development, representing Washington Association of Building Officials Technical Code Development Committee, requests Approval as Submitted.**

**Commenter's Reason:** This proposal would make the definition of "approved" in the IECC consistent with the definition in the Building, Fire, Fuel Gas, Mechanical, Plumbing, Property Maintenance and Wildland Urban Interface codes as approved in Part I of this proposal. The committees disapproved these 2 parts of the proposal because they felt that building officials need guidance to make approvals. However, the other codes do not include the language the Energy Code Committees found necessary. We can see no reason building officials would need additional guidance to make approvals under the Energy Code. The language provides minimal guidance in any case. It doesn't require anything other than what a building official would normally do. "Accepted principles" and "tests by national recognized organizations" are typical standards for approvals. The deleted language allows "investigations" without defining what constitutes an investigation. Presumably making a phone call or reviewing manufacturer information could be considered investigation.

*Part IV - Public Comment:*

**Maureen Traxler, City of Seattle Department of Planning & Development, representing Washington Association of Building Officials Technical Code Development Committee, requests Approval as Submitted.**

**Commenter's Reason:** The provisions of the International Codes consistently identify the building official as the official in charge of administration and enforcement of the codes. See IRC Section 104 reprinted below. The term "authority having jurisdiction" is not defined and is not used anywhere else in the International Codes. Using it in the definition makes code officials vulnerable to challenges to their authority. It's important that the code state clearly and unequivocally that the code official has ultimate authority to make approvals. This change will make the IRC definitions consistent with the definitions in 7 other codes that were approved in Part I— IBC; IFBC; IFGC; IMC; IPC; IPMC; IWUIC.

The reason for disapproval of this part of the proposal misinterprets Chapter 1 of the IRC. Section 104 clearly gives the code official authority sole responsibility to administer this code.

**SECTION R104  
DUTIES AND POWERS OF THE BUILDING OFFICIAL**

**R104.1 General.** The *building official* is hereby authorized and directed to enforce the provisions of this code. The *building official* shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in conformance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

**R104.2 Applications and permits.** The *building official* shall receive applications, review *construction documents* and issue permits for the erection and alteration of buildings and structures, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

*Part V - Public Comment:*

**Maureen Traxler, City of Seattle Dept of Planning & Development, representing Washington Association of Building Officials Technical Code Development Committee, requests Approval as Modified by this Public Comments.**

**Modify the proposal as follows:**

**ISPSC SECTION 202  
DEFINITIONS**

**APPROVED.** Acceptable to the *code official*.

**PERMIT.** An official document or certificate issued by the building code official that authorizes performance of a specified activity.

**Commenter's Reason:** The provisions of the codes consistently identify the code official as the person in charge of administration and enforcement of the codes. See ISPSC Section 104 reprinted below. The term "authority having jurisdiction" is not defined and is not used anywhere else in the International Codes. Using it in the definition makes code officials vulnerable to challenges to their authority. It's important that the code state clearly and unequivocally that the code official has ultimate authority to make approvals and issue permits. This change will make the ISPSC definitions consistent with the definitions in 7 other codes that were approved in Part I— IBC; IFC; IFGC; IMC; IPC; IPMC; IWUIC.

The reason for disapproval of this part of the proposal misinterprets Chapter 1 of the ISPSC. Section 104 clearly gives the code official authority sole authority to administer this code. Even if other agencies issue permits related to pools and spas, the code official retains responsibility for enforcing the ISPSC and issuing permits under the International Codes. If other agencies issue permits in some jurisdictions, the code official, by definition, may authorize others to perform duties. "**CODE OFFICIAL.** The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative." Disapproval of this proposal would result in inconsistency within the ISPSC between the definition and Section 104, as well as making this Code inconsistent with the other codes.

**SECTION 104  
DUTIES AND POWERS OF THE CODE OFFICIAL**

**104.1 General.** The *code official* is hereby authorized and directed to enforce the provisions of this code. The code official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

**104.2 Applications and permits.** The code official shall receive applications, review construction documents and issue permits for the erection, alteration, demolition and moving of aquatic vessels, related mechanical, electrical, plumbing systems, to inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

**Final Hearing Results**

<b>ADM55-13, Part I</b>	<b>AS</b>
<b>ADM55-13, Part II</b>	<b>D</b>
<b>ADM55-13, Part III</b>	<b>D</b>
<b>ADM55-13, Part IV</b>	<b>D</b>
<b>ADM55-13, Part V</b>	<b>D</b>

---

# Code Change No: ADM57-13

## Original Proposal

Section: PART I - IFGC: 202, IMC: 202, IPC: 202  
PART II - IECC: C202 (New);  
PART III - IECC: R202 (IRC N1101.9)(New)

**THIS IS A 3 PART CODE CHANGE. PARTS I WILL BE HEARD BY THE ADMINISTRATIVE PROVISIONS COMMITTEE AS ONE CODE CHANGE. PART II WILL BE HEARD BY THE ENERGY CONSERVATION CODE-COMMERCIAL COMMITTEE. PART III WILL BE HEARD BY THE ENERGY CONSERVATION CODE-RESIDENTIAL COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.**

**Proponent:** Brenda A. Thompson, Clark County Development Services, Clark County, Nevada, representing Sustainable/Energy/High Performance Code Action Committee (bat@clarkcounty.gov)

### **PART I – IBC; IFGC; IMC; IPC**

**Revise the International Building Code as follows:**

#### **IBC SECTION 202 DEFINITIONS**

**[A] APPROVED AGENCY.** An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by the building official.

**Revise the International Fuel Gas Code as follows:**

#### **IFGC SECTION 202 GENERAL DEFINITIONS**

**[A] APPROVED AGENCY.** An established and recognized agency ~~that is approved by the code official~~ and regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by the code official.

**Revise the International Mechanical Code as follows:**

#### **IMC SECTION 202 GENERAL DEFINITIONS**

**[A] APPROVED AGENCY.** An established and recognized agency ~~that is approved by the code official~~ and regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by the code official.

**Revise the International Plumbing Code as follows:**

#### **IPC SECTION 202 GENERAL DEFINITIONS**

**[A] APPROVED AGENCY.** An established and recognized agency ~~that is approved by the code official~~ and regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by the code official.

## PART II – IECC-COMMERCIAL

Add a new definition to the International Energy Conservation Code-Commercial as follows:

### IECC SECTION C202 GENERAL DEFINITIONS

**APPROVED AGENCY.** An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by the code official.

## PART III – IECC-RESIDENTIAL

Add a new definition to the International Energy Conservation Code-Residential as follows:

### IECC SECTION R202 (IRC N1101.9) GENERAL DEFINITIONS

**APPROVED AGENCY.** An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by the code official.

**Reason:** This proposal was submitted by the ICC Sustainability Energy and High Performance Code Action Committee (SEHPCAC). The SEHPCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portion thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the SEHPCAC has held 3 open meetings and over 30 workgroup calls which included members of the SEHPCAC as well as any interested party to discuss and debate proposed changes and public comments. Related documentation and reports are posted on the SEHPCAC website at: <http://www.iccsafe.org/cs/SEHPCAC/Pages/default.aspx>.

Reasons for this specific proposal:

Part I – These revisions are for consistency across codes with the defined term.

Part II and III - The term 'approved agency' is used in the IECC, but not defined. While the term is defined in the *International Building Code*, and therefore available for application to the IECC, the SEHPCAC believes that the definition should be included in the IECC so that it is readily available for code users and the term is consistently applied.

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

**Staff analysis:** The term "Approved Agency" is currently defined in the IBC, IFGC, IMC, IPC, IRC, ISPSC and IgCC. In the IBC, IPC, IMC and IPC, this definition is scoped to Administration. The term proposed for the IECC is the same as defined in the IRC and the ISPSC.

### Public Hearing Results

#### PART I - IADMIN

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The term 'approved agency' should be consistent throughout the codes.

**Assembly Action:**

**None**

#### PART II – IECC – Commercial HEARD BY IECC COMMERCIAL COMMITTEE

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** Adding the definition for 'approved agency' provides a definition to a term already used in this code. This would also be consistent with the other International Codes.

**Assembly Action:**

**None**

**PART III – IECC – Residential  
HEARD BY IECC RESIDENTIAL COMMITTEE**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The proposal provides a consistent definition of 'approved agency' throughout all of the I-Codes.

**Assembly Action:**

**None**

<b>Final Hearing Results</b>
------------------------------

<b>ADM57-13, Part I</b>	<b>AS</b>
<b>ADM57-13, Part II</b>	<b>AS</b>
<b>ADM57-13, Part III</b>	<b>AS</b>

---

# Code Change No: ADM62-13

## Original Proposal

<b>ADM62-13</b>								
<b>IBC, IECC, IEBC, IFC, IFGC, IgCC, IMC, IPC, IPMC, IRC, and the ISPSC</b>								
<p>The following table provides a comprehensive list of all standards that the respective standards promulgators have indicated have been, or will be, updated from the listing in the 2012 Editions of the International Codes. According to Section 4.5.1 of ICC Council Policy #CP 28, Code Development Policy, the updating of standards referenced by the Codes shall be accomplished administratively by the Administrative code development committee. Therefore, referenced standards that are to be updated for the 2015 edition of any of the I-Codes are listed in this single code change proposal. Note that the table below indicates the change to the standard, and the code or codes in which each standard appears. The list includes standards that the promulgators have already updated or will have updated by December 1, 2014.</p> <p><i>*4.5.1 Standards referenced in the I-Codes: The updating of standards referenced by the Codes shall be accomplished administratively by the Administrative code development committee in accordance with these full procedures except that the deadline for availability of the updated standard and receipt by the Secretariat shall be December 1 of the third year of each code cycle. The published version of the new edition of the Code which references the standard will refer to the updated edition of the standard. If the standard is not available by the deadline, the edition of the standard as referenced by the newly published Code shall revert back to the reference contained in the previous edition and an errata to the Code issued. Multiple standards to be updated may be included in a single proposal.</i></p>								
<b>AA</b>		<b>Aluminum Association</b>						
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>						
ADM 1-2010 2015	Aluminum Design Manual: Part I Specification for Aluminum Structures	IBC						
<b>AAMA</b>		<b>American Architectural Manufacturers Association</b>						
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>						
450-09 10	Voluntary Performance Rating Method for Muller Fenestration Assemblies	IRC						
506-08 11	Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products	IRC						
711-07 13	Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration Products	IRC						
1402-86 09	Standard Specification for Aluminum Siding, Soffit and Fascia	IBC						

<b>ACCA</b>		<b>Air Conditioning Contractors of America</b>						
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>						
Manual D-09 <u>2011</u>	Residential Duct Systems	IMC	IRC					
Manual J- <del>2011</del>	Residential Load Calculation - Eighth Edition	IRC	IECC-R					
Manual S- <del>40</del> <u>13</u>	Residential Equipment Selection	IRC	IECC-R					
180- <del>2008</del> <u>2012</u>	Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems	IMC	IRC					
183-2007 (reaffirmed 2011)	Peak Cooling and Heating Load Calculations in Buildings Except Low-Rise Residential Buildings	IMC	IECC					
<b>ACI</b>		<b>American Concrete Institute</b>						
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>						
216.1- <del>07</del> <u>14</u>	<del>Standard Method Code</del> Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies	IBC						
304.2R- <del>04</del> <u>96</u>	Placing Concrete by Pumping Methods (Reapproved 2008)	ISPSC						
305.1- <del>06</del> <u>14</u>	Specification for Hot Weather Concreting	ISPSC						
308.1- <del>98</del> <u>11</u>	<del>Standard</del> Specification for Curing Concrete	ISPSC						
318- <del>44</del> <u>14</u>	Building Code Requirements for Structural Concrete	IBC	IRC	ISPSC				
332- <del>40</del> <u>14</u>	Residential Code Requirements for Structural Concrete Construction	IRC						
506.2- <del>95</del> <u>13</u>	Specification for Shotcrete	ISPSC						
530- <del>44</del> <u>13</u>	Building Code Requirements for Masonry Structures	IBC	IRC					
530.1- <del>44</del> <u>13</u>	Specifications for Masonry Structures	IBC	IRC					
<b>AF&amp;PA AWC</b>		<b>American Forest &amp; Paper Association American Wood Council</b>						
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>						
AF&PA AWC STJR— <del>2012</del> <u>2015</u>	Span Tables for Joists and Rafters	IBC	IRC					
ANSI/AF&PA AWC WFCM— <del>2012</del> <u>2015</u>	Wood Frame Construction Manual for One- and Two-Family Dwellings	IBC	IRC					
ANSI/AWC NDS- <del>2012</del> <u>2015</u>	National Design Specification (NDS) for Wood Construction - with 2012 Supplement	IBC	IRC					
ANSI/AF&PA AWC SDPWS— <del>2008</del> <u>2015</u>	Special Design Provisions for Wind and Seismic	IBC						
AF&PA AWC WCD No. 4-2003	Wood Construction Data-Plank and Beam Framing for Residential Buildings	IBC						

ANSI/AF&PA- AWC PWF—2007-2015	Permanent Wood Foundation Design Specification	IBC	IRC						
<b>AHRI</b>	<b>Air Conditioning, Heating and Refrigeration Institute</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
210/240-2008 <u>with Addenda 1 and 2</u>	<u>Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment</u>	IECC-C							
310/380-2004 (CSA - C744-04)	Standard for Packaged Terminal Air-Conditioners and Heat Pumps	IECC-C							
340/360-2007 <u>with Addendum 2</u>	<u>Performance Rating of Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment</u>	IECC-C							
365 (I-P)-2009	Commercial and Industrial Unitary Air-Conditioning Condensing Units	IECC-C							
366 (SI)-2009	Commercial and Industrial Unitary Air-Conditioning Condensing Units	IECC-C							
400-2001 <u>with Addenda 1 and 2</u>	<u>Liquid to Liquid Heat Exchangers with Addendum 2</u>	IECC-C							
440-2008	<u>Performance Rating of Room Fan-Coils</u>	IECC-C							
460-2005	<u>Performance Rating of Remote Mechanical-Draft Air-Cooled Refrigerant Condensers</u>	IECC-C							
550/590-03 2011 <u>with Addendum 1</u>	<u>Performance Rating of Water-Chilling Packages and Heat Pump Water-Heating Packages Using the Vapor Compression Cycle with Addenda</u>	IECC-C							
700- 2006 2011 <u>with Addendum 1</u>	<u>Purity Specifications for Fluorocarbon and Other Refrigerants</u>	IECC-C							
870-2009 05	<u>Performance Rating of Direct Geexchange Heat Pumps</u>	IECC-C							
1160-08 (I-P) 09	Performance Rating of Heat Pump z21.56	IECC-C	ISPSC						
11601 (SI)- 08 -2011	Performance Rating of Heat Pump Pool Heaters	IECC-C	ISPSC						
13256-1(2005) (2011)	<del>Water-Source Heat Pumps—</del> Water-to-Air and Brine-to-Air Heat Pumps – Testing and Rating for Performance: <del>Part 1—</del>	IECC-C							
13256-2(1998) (2011)	<del>Water-source Heat Pumps</del> Water-to-Water and Brine-to-water Heat Pumps - Testing and Rating For Performance: <del>Part 2:</del>	IECC-C							

<b>AISI</b>									
<b>American Iron and Steel Institute</b>									
Standard Reference Number	Title	Referenced in Code(s):							
<u>AISI S100-07/S2-40 12</u>	North American Specification for the Design of Cold Formed Steel Structural Members with <del>Supplement 2, dated 2010</del> <u>Supplement 2, dated 2012</u>	IBC	IRC						
<u>AISI S110-07/S1-09 (2012)</u>	Standard for Seismic Design of Cold-Formed Steel Structural Systems-Special Moment Frames, <u>2007</u> with Supplement 1, dated 2009, <u>(2012)</u>	IBC							
<u>AISI S200-07 2012</u>	North American Standard for Cold-Formed Steel Framing - General Provisions	IBC							
<u>AISI S210-07 2012</u>	North American Standard for Cold-formed Steel Framing-Floor and Roof System Design, <u>2007</u> , <u>(2012)</u>	IBC							
<u>AISI S211-07/S1-12 (2012)</u>	North American Standard for Cold-Formed Steel Framing-Wall Stud Design, <u>2007</u> , including Supplement 1, dated 2012, <u>(2012)</u>	IBC							
<u>AISI S212-07 (2012)</u>	North American Standard for Cold-Formed Steel Framing-Header Design, <u>2007</u> , <u>(2012)</u>	IBC							
<u>AISI S213-07/S1-09 (2012)</u>	North American Standard for Cold-Formed Steel Framing-Lateral Design, with Supplement 1, dated 2009, <u>(2012)</u>	IBC							
<u>AISI S214-07 12</u>	North American Standard for Cold-Formed Steel Framing - Truss Design with Supplement 2, dated <del>2008</del> , <u>2012</u>	IBC							
<u>AISI S230-07-07/S2-08/S3-12 (2012)</u>	Standard for Cold-formed Steel Framing-Prescriptive Method for One- and Two-family Dwellings, <u>2007</u> , with Supplement 2 3, dated <del>2008</del> dated 2012, <u>(2012)</u>	IRC	IBC						
<b>AITC</b>									
<b>American Institute of Timber Construction</b> (Please note that the AITC is no longer promulgating ICC standards. Standards previously promulgated by AITC are now being handled by APA and WCLIB.)									
Standard Reference Number	Title	Referenced in Code(s):							
<b>ALI</b>									
<b>Automotive Lift Institute</b>									
Standard Reference Number	Title	Referenced in Code(s):							

ALI/ALCTV-2006 2011	Standard for Automotive Lifts - Safety Requirements for Construction, Testing, and Validation (ANSI)	IBC							
<b>AMCA</b>	<b>Air Movement and Control Association International</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
205-40 12	Energy Efficiency Classification for Fans	IgCC							
220-05 08	Laboratory Methods of Testing Air Curtain Units for Aerodynamic Performance Rating	IgCC							
500D-40 12	Laboratory Methods for Testing Dampers for Rating	IECC-C							
<b>ANSI</b>	<b>American National Standards Institute</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
Z97.1- 09 2014	Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test	IBC	IRC						
ANSI A137.1-88 2012	American National Standard Specifications for Ceramic Tile	IBC	IRC						
Z21.50/CSA 2.22-2007 2012	Vented Gas Fireplaces	IRC	IFGC	IgCC					
Z21.88/CSA 2.33-09 2015	Vented Gas Fireplace Heaters	IRC	IFGC	IgCC					
LC 1/CSA 6.26-2005 2013	Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST)	IFGC							
LC 4/CSA 6.32-2007 2012	Press-Connect Metallic Fittings for Use in Fuel Gas Distribution Systems	IFGC	IRC						
Z21.1-2005 2010	Household Gas Cooking Appliances	IFGC	IRC						
Z21.5.1/CSA 7.1-2006 2014	Gas Clothes Dryers - Volume I - Type 1 Clothes Dryer	IFGC	IRC						
Z21.5.2/CSA 7.2-2005 2014	Gas Clothes Dryers - Volume II - Type 2 Clothes Dryer	IFGC							
Z21.10.1/CSA 4.1-2009 2012	Gas Water Heaters - Volume I - Storage Water Heaters with Input Ratings of 75,000 Btu per Hour or Less	IFGC	IRC						
Z21.10.3/CSA 4.3-2004 2011	Gas Water Heaters - Volume III - Storage Water Heaters with Input Ratings Above 75,000 Btu per Hour, Circulating or Instantaneous	IFGC	IRC						
Z21.11.2-2007 2011	Gas-Fired Room Heaters - Volume II - Unvented Room Heaters	IFGC	IRC						
Z21.13/CSA 4.9-2010 2011	Gas-Fired Low Pressure Steam and Hot Water Boilers	IFGC	IRC						
A21.40.1/CSA 2.91-96 (R2002 2011)	Gas-Fired Heat Activated Air Conditioning and Heat Pump Appliances	IFGC	IRC						
Z21.40.2/CSA 2.92-96 (R2002 2011)	Air-Conditioning and Heat Pump Appliances (Thermal Combustion)	IFGC	IRC						
Z21.42-1993 (R2002) 2014	Gas-Fired Illuminating Appliances	IFGC	IRC						

Z21.47/CSA 2.3-2007 2012	Gas-Fired Central Furnaces	IFGC	IRC						
Z21.50/CSA 2.22-2006 2012	Vented Gas Fireplaces	IFGC	IRC						
Z21.56/CSA 4.7-2007 2013	Gas-Fired Pool Heaters	IFGC	ISPSC	IRC					
Z21.58/CSA 1.6-2003 2013	Outdoor Cooking Gas Appliances	IFGC	IRC						
Z21.60/CSA 2.26-2003 2012	Decorative Gas Appliances for Installation in Solid-fuel Burning Fireplaces	IFGC	IRC						
Z21.80/CSA 6.22-2003 (R2008) 2011	Line Pressure Regulators	IFGC	IRC						
Z21.84-2002 2012	Manually-lighted, Natural Gas Decorative Gas Appliances for Installation in Solid Fuel Burning Fireplaces	IFGC	IRC						
Z21.88/CSA 2.33-2009 2015	Vented Gas Fireplace Heaters	IFGC	IRC						
Z21.97-2009 2012	Outdoor Decorative Appliances	IFGC	IRC						
Z83.4/CSA 3.7-2003 2012	Non-Recirculating Direct Gas-fired Industrial Air Heaters	IFGC							
Z83.6-90 (R1998) withdrawn replaced with Z83.19 & Z83.20	Gas-fired Infrared Heaters	IFGC	IRC						
Z83.11/CSA 1.8-2006 2013	Gas Food Service Equipment	IFGC							
Z83.18-2004 2012	Recirculating Direct Gas-fired Industrial Air Heaters	IFGC							
Z83.19-2001 (R2005 2009)	Gas-fired High Intensity Infrared Heaters	IFGC	IRC						
Z124.1-95-replaced with CSA B45.5-11/ IAPMO Z124-11	Plastic <del>Bathtub Units</del> Plumbing Fixtures	IPC	IRC						
Z124.1.2-2005-replaced with CSA B45.5-11/ IAPMO Z124-11	Plastic <del>Bathtub and Shower Units</del> Plumbing Fixtures	IPC	IRC						
Z124.2-95-replaced with CSA B45.5-11/ IAPMO Z124-11	Plastic <del>Shower Receptors and Shower Stalls</del> Plumbing Fixtures	IPC	IRC						
Z124.3-95-replaced with CSA B45.5-11/ IAPMO Z124-11	Plastic <del>Lavatories</del> Plumbing Fixtures	IPC	IRC						
Z124.4-96-replaced with CSA B45.5-11/ IAPMO Z124-11	Plastic <del>Water Closet Bowls and Tanks</del> Plumbing Fixtures	IPC	IRC						
Z124.6-97 replaced with CSA B45.5-11/ IAPMO Z124-11	Plastic <del>Sinks</del> Plumbing Fixtures	IPC	IRC						
Z124.7-97 replaced with IAPMO Z124.7-2012	Prefabricated Plastic Spa Shells	ISPSC							
Z124.9-94-replaced with CSA B45.5-11/ IAPMO Z124-11	Plastic <del>Urinal Fixtures</del> Plumbing Fixtures	IPC	IRC						
<b>APA</b>	<b>APA -The Engineered Wood Association</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
ANSI/AITC A 190.1 – 07 12	Structural Glued-Laminated Timber	IBC	IRC	IgCC					
APA E30-03 11	Engineered Wood Construction Guide	IRC							
APA PDS 04 12	Panel Design Specification	IBC							
APA PDS Supplement 5-08 12	Design and Fabrication of All-Plywood Beams (revised 2008 2013)	IBC							

APA PDS Supplement 1- <del>90</del> 12	Design and Fabrication of Plywood Curved Panels (revised <del>1995</del> 2013)	IBC							
APA PDS Supplement 4- <del>90</del> 12	Design and Fabrication of Plywood Sandwich Panels (revised <del>1993</del> 2013)	IBC							
APA PDS Supplement 3- <del>90</del> 12	Design and Fabrication of Plywood Stressed-skin Panels (revised <del>1996</del> 2013)	IBC							
APA PDS Supplement 2- <del>92</del> 12	Design and Fabrication of Glued Plywood-lumber Beams (revised <del>1998</del> 2013)	IBC							
EWS R540- <del>02</del> 12	Builders Tips: Proper Storage and Handling of Glulam Beams	IBC							
EWS S475- <del>04</del> 07	Glued Laminated Beam Design Tables	IBC							
EWS S560- <del>03</del> 10	Field Notching and Drilling of Glued Laminated Timber Beams	IBC							
EWS T300- <del>05</del> 07	Glulam Connection Details	IBC							
EWS X440- <del>03</del> 08	Product Guide - Glulam	IBC							
<b>API</b>	<b>API –American Petroleum Institute</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
Publ 2009 <u>7<sup>th</sup> Edition</u> (2002, R2012)	Safe Welding and Cutting Practices in Refineries, Gas Plants and Petrochemical Plants	IFC							
Publ 2023 <u>3<sup>rd</sup> Edition</u> (R2001, R2006)	Guide for Safe Storage and Handling of Heated Petroleum-Derived Asphalt Products and Crude Oil Residue	IFC							
Publ 2028 <u>3<sup>rd</sup> Edition</u> (2002, R2012)	Flame Arrestors in Piping Systems	IFC							
Publ 2201 <u>5<sup>th</sup> Edition</u> (2003, 2010)	Procedures for Welding or Hot Tapping on Equipment in Service	IFC							
RP 651 ( <del>1997</del> ) <u>3<sup>rd</sup> Edition</u> (2007)	Cathodic Protection of Aboveground Petroleum Storage Tanks	IFC							
RP 752 ( <del>2003</del> ) <u>3<sup>rd</sup> Edition</u> (2009)	Management of Hazards Associated with Location of Process Plant Buildings, CMA Manager's Guide	IFC							
RP 1604 (1996) <u>3<sup>rd</sup> Edition</u> , R2010)	Closure of Underground Petroleum Storage Tanks	IFC							
RP 1615 ( <del>1996</del> ) <u>6th Edition</u> (2011)	Installation of Underground Petroleum Storage Systems	IFC							
RP 2001 ( <del>2005</del> ) <u>9<sup>th</sup> Edition</u> (2012)	Fire Protection in Refineries	IFC							
RP 2350 ( <del>2005</del> ) <u>4th Edition</u> (2012)	Overfill Protection for Storage Tanks in Petroleum Facilities, 3rd Edition	IFC							
RP 2003 ( <del>1998</del> ) <u>7<sup>th</sup> Edition</u> (2008)	Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents	IFC							
Spec 12P <u>3<sup>rd</sup> Edition</u> ( <del>1995</del> ) (Reaffirmed 2009)	Specification for Fiberglass Reinforced Plastic Tanks	IFC							
Std 653 ( <del>2004</del> ) <u>4<sup>th</sup> Edition</u> (2009) (2009)	Tank Inspection, Repair, Alteration and Reconstruction	IFC							
Std 2015 <u>6<sup>th</sup> Edition</u> (2001, R2006)	Safe Entry and Cleaning of Petroleum Storage Tanks	IFC							

Std 2000 6 <sup>th</sup> Edition (1998) 2009	Venting Atmosphere and Low-pressure Storage Tanks: Nonrefrigerated and Refrigerated	IFC							
<b>APHA</b>		<b>American Public Health Association</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
2005 2012	Standard Methods for Examination of Water and Waste water 24 <sup>th</sup> 2nd Edition	IgCC							
<b>APSP</b>		<b>The Association of Pool &amp; Spa Professionals</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
ANSI/NSPI APSP/ICC 3-99 2013	Standard for Permanently Installed Residential Spas	IRC							
ANSI/NSPI APSP/ICC 4-2007 2012	Standard for Above-ground/On-ground residential swimming pools	IRC							
ANSI/NSPI APSP/ICC 5-2003 2011	Standard for Residential In-Ground Swimming Pools	IRC							
ANSI/NSPI APSP/ICC 6-2009 2013	Standard for Residential Portable Spas	IRC							
ANSI/APSP/ICC 7-06 2013	Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins	IBC	IRC	ISPSC					
ANSI/APSP/ICC 14-11	Portable Spa Energy Efficiency Standard	IPSPC							
ANSI/APSP/ICC 15-11	Standard for Energy Efficiency for Residential Inground Swimming Pools and Spas <u>with Addenda A Approved 2013</u>	ISPSC							
ANSI/APSP/ICC16-11	Standard for Suction Fittings for Use in Swimming Pools, Wading Pools, Spas and Hot Tubs	ISPSC							
<b>ASABE</b>		<b>American Society of Agricultural &amp; Biological Engineers</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
EP 559.1 1997 W/Corr. 1 DEC 1996 (R2008) AUG2010	Design Requirements and Bending Properties for Mechanically Laminated Wood Column Assemblies	IBC							
EP 486.4 2 DEC 1999 (R2005) OCT2012	Shallow Post and Pier Foundation Design	IBC							
EP542-FEB1999 99(R2009)	Procedures for Using and Reporting Data Obtained with the Soil Cone Penetrometer	IgCC							

S313.3-99 FEB1999 (R2009)	Soil Cone Penetrometer	IgCC							
<b>ASCE/SEI</b>		<b>American Society of Civil Engineers/Structural Engineers Institute</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
5-44 13	Building Code Requirements for Masonry Structures	IBC	IRC						
6-11 13	Specification for Masonry Structures	IBC	IRC						
7-10	Minimum Design Loads for Buildings and Other Structures with Supplement No. 1	IBC	IEBC	IRC					
8-02 14	Standard Specification for the Design of Cold-formed Stainless Steel Structural Members	IBC							
24-05 13	Flood Resistant Design and Construction	IBC	ISPSC	IRC					
29-05 14	Standard Calculation Methods for Structural Fire Protection	IBC							
<del>31-03</del> 41-13 Note: will be incorporated into ASCE 41-13	Seismic Evaluation and Retrofit Rehabilitation of Existing Buildings	IEBC							
32-01	Design and Construction of Frost Protected Shallow Foundations	IBC	IRC						
41-06 13	Seismic Evaluation and Retrofit Rehabilitation of Existing Buildings	IEBC							
<b>ASHRAE</b>		<b>American Society of Heating, Refrigerating and Air Conditioning Engineers</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
15-2010 2013	Safety Standard for Refrigeration Systems	IMC							
34-2010 2013	Designation and Safety Classification of Refrigerants	IRC	IMC						
52.2-2007 2012	Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size	IgCC							
55-2004 2010	Thermal Environmental Conditions on Human Occupancy	IgCC							
62.1-2010 2013	Ventilation for Acceptable Indoor Air Quality	IMC	IECC	IEBC	IgCC				
90.1-2010 2013	Energy Standard for Buildings Except Low-Rise Residential Buildings including Addendum G (ANSI/ASHRAE/IESNA 90.1-2007)	IECC	IgCC						

140-2040 <u>11</u>	Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs	IECC							
146- <del>2006</del> <u>2011</u>	Testing for Rating Pool Heaters	IECC							
180- <del>08</del> <u>2012</u>	Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems	IMC							
ANSI/ASHRAE/ACCA 183-2007 (RA2011)	Peak Cooling and Heating Load Calculations in Buildings, Except Low-rise Residential Buildings	IECC							
ASHRAE- <del>2004</del> <u>2012</u>	HVAC Systems and Equipment Handbook - 2004	IMC	IECC						
ASHRAE- <del>2009</del> <u>2013</u>	ASHRAE Handbook of Fundamentals	IRC	IECC-R	IMC					
13256-1( <del>2005</del> ) 1998 (RA 2012)	Water-source Heat Pumps - Testing and Rating for Performance - Part 1: Water-to-Air and Brine-to-Air Heat Pumps (ANSI/ASHRAE/IESNA 90.1-2004)	IECC							
<b>ASME</b>	<b>American Society of Mechanical Engineers</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
ASME A17.1/CSA B44— <del>2007</del> <u>2013</u>	Safety Code for Elevators and Escalators	IBC	IFC	IEBC	IRC	IPMC			
A112.1.3-2000(Reaffirmed 2005 <u>11</u> )	Air Gap Fittings for Use with Plumbing Fixtures, Appliances, and Appurtenances	IPC	IRC						
A112.3.4-2000 (Reaffirmed 2004) replaced with ASME A112.3.4-2013/CSA B45.9-13	Macerating Toilet Systems and Related Components	IPC	IRC						
A112.4.1- <del>1993 (Reaffirmed 2002)</del> - <u>2009</u>	Water Heater Relief Valve Drain Tubes	IPC	IRC						
A112.4.2- <del>2003 (R2008)</del> <u>2009</u>	Water Closet Personal Hygiene Devices	IPC							
A112.4.3-1999 (Reaffirmed 2004 <u>10</u> )	Plastic Fittings for Connecting Water Closets to the Sanitary Drainage System	IPC	IRC						
A112.6.1M-1997 (Reaffirmed 2002 <u>08</u> )	Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use	IPC	IRC						
A112.6.2-2000 (Reaffirmed 2004 <u>10</u> )	Framing-Affixed Supports for Off-the-Floor Water Closets with Concealed Tanks	IPC	IRC						
A112.6.3-2001(Reaffirmed 2007)	Floor and Trench Drains	IPC	IRC						
A112.6.7- <del>2001(Reaffirmed 2007)</del> - <u>2010</u>	Enameled and Epoxy Coated Cast Iron and PVC Plastic Sanitary Floor Sinks	IPC							
A112.6.9- <u>2005 (R2010)</u>	Siphonic Roof Drains	IPC							
ASME A112.18.1- <del>2005</del> <u>2012</u> / CSA B125.1- <del>2005</del> <u>2012</u>	Plumbing Supply Fittings	IPC	IRC						
ASME A112.18.2- <del>2005</del> <u>2011</u> / CSA B125.2- <del>2005</del> <u>2011</u>	Plumbing Waste Fittings	IPC	IRC						
ASME A112.19.1-2013/ CSA B45.2- <del>08</del> <u>13</u>	Enameled Cast-Iron and Enameled Steel Plumbing Fixtures	IPC	IRC						

ASME A112.19.2-2008 <u>2013</u> / CSA B45.1-08 <u>13</u>	Ceramic Plumbing Fixtures	IPC	IRC						
ASME A112.19.3-2008/ CSA B45.4-08(R2013)	Stainless-Steel Plumbing Fixtures	IPC	IRC						
ASME A112.19.5-2011/ CSA/B45.15-09 <u>11</u>	<del>Flush Valves and Spuds</del> <u>Trim</u> for Water Closets, Urinals, <del>Bowls</del> and Tanks	IPC	IRC						
ASME A112.19.7-2012/ CSA B45.10-09 <u>2012</u>	Hydromassage Bathtubs <del>Appliances</del> Systems	IPC	IRC						
B16.1-2005 <u>2010</u>	<del>Cast Gray Iron Pipe Flanges and Flanged Fittings, Classes 25, 125 and 250</del>	IFGC							
B16.3-2006 <u>2011</u>	Malleable Iron Threaded Fittings Classes 150 and 300	IPC	IRC	IMC					
B16.4-2006 <u>2011</u>	Gray Iron Threaded Fittings <del>Class 125 and 250</del>	IPC	IRC						
B16.5-2003 <u>2009</u>	Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24	IMC							
B16.11-2005 <u>2011</u>	Forged Fittings, Socket-Welding and Threaded	IPC	IRC	IMC					
B16.12-1998 (Reaffirmed 2006)- <u>2009</u>	Cast Iron Threaded Drainage Fittings	IPC	IRC						
B16.15-2006 <u>2011</u>	Cast Bronze Threaded Fittings	IRC	IMC	IPC	IPSPC				
B16.18-2001 (Reaffirmed 2005)- <u>2012</u>	Cast Copper Alloy Solder Joint Pressure Fittings	IPC	IBC	IRC	IMC	IFC			
B16.20-1998(Reaffirmed 2007)-	Metallic Gaskets for Pipe Flanges: Ring-Joint, Spiral-Wound, and Jacketed	IFGC							
B16.22-2001(Reaffirmed 2005) (R2010)	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings	IPC	IBC	IRC	IFC	IMC			
B16.23-2002 (Reaffirmed 2006) <u>2011</u>	Cast Copper Alloy Solder Joint Drainage Fittings: DWV	IPC	IRC	IMC					
B16.24-2006 <u>2011</u>	Cast Copper Alloy Pipe Flanges and Flanged Fittings: Class 150, 300, 400, 600, 900, 1500 and 2500	IMC							
B16.26-2006 <u>2011</u>	Cast Copper Alloy Fittings for Flared Copper Tubes	IPC	IRC	IMC					
B16.29-2007 <u>2012</u>	Wrought Copper and Wrought-Copper-Alloy Solder Joint Drainage Fittings - (DWV)	IPC	IRC	IMC					
B16.33-2002(Reaffirmed 2007) <u>2012</u>	Manually Operated Metallic Gas Valves for Use in Gas Piping Systems up to 125 psig (Sizes 1/2 through 2)	IFGC	IRC						
B31.1-2007 <u>2012</u>	Power Piping	IFC							
B31.3-2004 <u>2012</u>	Process Piping	IBC	IFC						
B31.4-2006 <u>2012</u>	Pipeline Transportation Systems for Liquid Hydrocarbons and other Liquids	IFC							
B31.9-08 <u>2011</u>	Building Services Piping	IFC	IMC						
ASSE 1016/ASME A112.1016/CSA B125.16-2011 is a replacement for ASSE 1016-2010	Performance Requirements for <u>Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations</u>	IPC	IRC	lgCC					
BPVC-2007 <u>2010/2011 addenda</u>	Boiler & Pressure Vessel Code	IFC	IMC	IFGC	IRC				
CSD-1-2009 <u>2011</u>	Controls and Safety Devices for Automatically Fired Boilers	IMC							

<b>ASPE</b>		<b>American Society of Plumbing Engineers</b>						
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>						
45-2007 2013	Siphonic Roof Drainage Systems	IPC						
<b>ASSE</b>		<b>American Society of Sanitary Engineering</b>						
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>						
4016-2010 ASSE 1016/ASME A112.1016/CSA B125.16-2011	Performance Requirements for Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations	IPC	IRC	IgCC				
<b>ASTM</b>		<b>ASTM International</b>						
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>						
A53/A 53M-07-12	Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless	IPC	IMC	IRC	IFGC			
A74-09 12	Specification for Cast Iron Soil Pipe and Fittings	IPC	IRC	IPSDC				
A82/A 2M-05a 07	Specification for Steel Wire, Plain, for Concrete Reinforcement	IRC						
A106/A 106M-08 11	Specification for Seamless Carbon Steel Pipe for High-Temperature Service	IMC	IRC	IFGC				
A123/A 123M-02 12	Specification of Zinc (Hot-Dip Galvanized) Coating on Iron and Steel Products	IBC						
A126-04(2009)	Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings	IMC	IRC					
A153/A153M-05 09	Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware	IBC	IRC					
A182-10a- 12A	Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings and Valves and Parts for High-Temperature Service	ISPSC						
A185/A 185M-06E04 07	Specification for Steel Welded Wire Reinforcement, Plain for Concrete	IBC						
A240/A 240M-09 12	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications	IBC	IRC	IPSPC				
A252-98(2007) 10	Specification for Welded and Seamless Steel Pipe Piles	IBC						
A283/A 283M-03(2007) 12	Specification for Low and Intermediate Tensile Strength Carbon Steel Plates	IBC						
A307-07b 10	Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength	IBC	IRC					
A312/A 312M-08a 12A	Specification for Seamless, and Welded, and Heavily Cold Worked Austenitic Stainless Steel	IPC	IRC	ISPSC				

	Pipes								
A377-03 <u>2003(2008)e1*</u>	Index of Specification for Ductile-Iron Pressure Pipe	IRC							
A403-40a <u>12</u>	Standard Specification for Wrought Austenitic Stainless Steel Pipe Fittings	ISPSC							
A416/A 416M-06 <u>12A</u>	Specification for Steel Strand, Uncoated Seven-Wire for Prestressed Concrete	IBC							
A420/A 420M-07 <u>10A</u>	Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service	IMC							
A421/A 421M- 05 <u>10</u>	Specification for Uncoated Stress-Relieved Steel Wire for Prestressed Concrete	IBC							
A435/A 435M-90 ( <del>2007</del> ) <u>2012</u>	Specification for Straight-Beam Ultrasonic Examination of Steel Plates	IBC							
A463M/A 463M-06 <u>10</u>	Specification for Steel Sheet, Aluminum-Coated, by the Hot Dip Process	IBC	IRC						
A480/A480M-06b <u>12</u>	Specification for General Requirements for Flat-Rolled Stainless and Heat-/Resisting Steel Plate, Sheet and Strip	IBC							
A496-05 <u>07</u>	Specification for Steel Wire, Deformed for Concrete Reinforcement	IBC							
A497 A497M-06e04 <u>07</u>	Specification for Steel Welded Reinforcement Deformed for Concrete	IBC							
A510-08 <u>11</u>	Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, Alloy Steel	IBC	IRC						
A572/A 572M-07 <u>12</u>	Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel	IBC							
A588/A 588M-05 <u>40</u>	Specification for High-Strength Low-Alloy Structural Steel with 50 ksi (345 Mpa) Minimum Yield Point, with Atmospheric Corrosion Resistance	IBC							
A615/A 615M-09 <u>12</u>	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement	IBC	IRC						
A653/A 653M-08 <u>11</u>	Specification for Steel Sheet, Zinc-Coated Galvanized or Zinc-Iron Alloy-Coated Galvannealed by the Hot-Dip Process	IBC	IRC						
A690/690M-07(2012)	Standard Specification for High Strength Low-Alloy Nickel, Copper Phosphorus Steel H-Piles and Sheet Piling with Atmospheric Corrosion Resistance for Use in Marine Environments	IBC							
A706/A 706M-09B	Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement	IBC	IRC						
A722/A 722M-07 <u>12</u>	Specification for Uncoated High-Strength Steel Bar for Prestressing Concrete	IBC							

A733-2003(2009)e1*	Specification for Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples	IPC						
A755/A 755M-03(2008) 2011	Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process and Prepainted by the Coil-coating Process for Exterior Exposed Building Products	IBC	IRC					
A767/A 767M-05 09	Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement	IBC						
A775/A 775M-07b	Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process and Prepainted by the Coil-coating Process for Exterior Exposed Building Products	IBC						
A778-01(2009)e1	Specification for Welded Unannealed Austenitic Stainless Steel Tubular Products	IPC	IRC					
A792/A 792M-08 10	Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process	IBC	IRC					
A875/A 875M-06 10	Standard Specification for Steel Sheet Zinc-5%, Aluminum Alloy-Coated by the Hot-Dip Process	IBC	IRC					
A888-09 11	Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Application	IPC	IPSDC	IRC				
A913/A 913M-07 11	Specification for High-Strength Low-Alloy Steel Shapes of Structural Quality, Produced by Quenching and Self-Tempering Process (QST)	IBC						
A924/A 924M-08a 2010a	Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot Dip Process	IBC	IRC					
A951/A951M-06 11	Specification for Steel Wire Masonry Joint Reinforcement	IRC						
A992/A 992M-06a 11	Standard Specification for Structural Shapes	IBC						
A996/A 996M-2009b	Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement	IRC						
A1003/A 1003M-08 12	Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-formed Framing Members	IRC						
A1008/A1008M-07 12	Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, Solution Hardened and Bake Hardenable	IBC						
B42-02e04 10	Specification for Seamless Copper Pipe, Standard Sizes	IPC	IBC	IRC	IFC			
B43-98(2004) 09	Specification for Seamless Red Brass Pipe, Standard Sizes	IPC	IBC	IRC	IFC	IMC		
B68-02 11	Specification for Seamless Copper Tube, Bright Annealed	IBC	IFC	IMC				
B75-02 11	Specification for Seamless Copper Tube	IPC	IPSDC	IRC	IMC			

B88-03 09	Specification for Seamless Copper Water Tube	IPC	IBC	IPSDC	IRC	IMC	IFC	IPSPC
B101-07 12	Specification for Lead-Coated Copper Sheet and Strip for Building Construction	IBC	IRC					
B135-08a 10	Specification for Seamless Brass Tube	IRC	IMC					
B152/B 152M-06a 09	Specification for Copper Sheet, Strip Plate and Rolled Bar	IPC						
B209-07 10	Specification for Aluminum and Aluminum-Alloy Steel and Plate	IBC	IRC					
B210-04 12	Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes	IFGC						
B227-04 10	Specification for Hard-Drawn Copper-Clad Steel Wire	IRC						
B241/B 241M-02 10	Specification for Aluminum and Aluminum-Alloy, Seamless Pipe and Seamless Extruded Tube	IFGC						
B251-02e04 10	Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube	IPC	IPSDC	IBC	IFC	IRC	IMC	
B302-07 12	Specification for Threadless Copper Pipe, Standard Sizes	IPC	IRC	IMC				
B370-09 12	Specification for <del>Cold-Rolled</del> Copper Sheet and Strip for Building Construction	IBC	IRC					
B447-07 12a	Specification for Welded Copper Tube	IPC	IRC					
B633-07 11	Specification for Electrodeposited Coatings of Zinc on Iron and Steel	IRC						
B687-99(2005)e04 (2011)	Specification for Brass, Copper, and Chromium-Plated Pipe Nipples	IPC						
B695-04(2009)	Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel	IBC	IRC					
B813-00(2009) 10	Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube	IPC	IPSDC	IRC	IMC			
B828-02(2010)	Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings	IPC	IPSDC	IRC				
C4-04e04 (2009)	Specification for Clay Drain Tile and Perforated Clay Drain Tile	IPC	IPSDC	IRC				
C5-03 10	Specification for Quicklime for Structural Purposes	IBC	IRC					
C14-07 11	Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe	IPC	IPSDC	IRC				
C22/C 22M-00(2005)e04 (2010)	Specification for Gypsum	IBC	IRC					
C27-98(2008)	Specification for <del>Standard</del> Classification of Fireclay and High-Alumina Refractory Brick	IBC	IRC					
C28/C 28M-00(2005) 10	Specification for Gypsum Plasters	IBC	IRC					
C31/C 31M-08b 12	Practice for Making and Curing Concrete Test Specimens in the Field	IBC						
C33/C33M-08 11a	Specification for Concrete Aggregates	IBC	IRC					

C34-03 10	Specification for Structural Clay Load-Bearing Wall Tile	IBC	IRC					
C35-01(2005)/C35M-1995(2009)	Specification for Inorganic Aggregates for Use in Gypsum Plaster	IBC	IRC					
<del>C36/C 36M-03</del> Withdrawn Replaced	Specification for Gypsum Wallboard	IBC						
<del>C37/C 37M-04</del> Withdrawn Replaced	Specification for Gypsum Lath	IBC						
C42/C 42M-04 12	Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete	IBC						
C55-06e04 2011	Specification for Concrete Building Brick	IBC	IRC					
C56-05 2010	Specification for Structural Clay Non-Load-Bearing Tile	IBC						
C59/C 59M-00(2006)	Specification for Gypsum Casting Plaster and Molding Plaster	IBC	IRC					
C61/C 61M-00(2006) (2011)	Specification for Gypsum Keene's Cement	<del>IBC</del>	IRC					
<del>C62-08 12</del>	Specification for Building Brick (Solid Masonry Units Made From Clay or Shale)	IBC	IRC					
C67-08 12	Test Methods of Sampling and Testing Brick and Structural Clay Tile	IBC						
C73-05 10	Specification for Calcium Silicate Face Brick (Sand-Lime Brick)	IBC	IRC					
C76-08a 12a	Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe	IPC	IPSDC	IRC				
<del>C90-08 12</del>	Specification for Loadbearing Concrete Masonry Units	IBC	IRC	IECC				
C91-05 12	Specification for Masonry Cement	IBC	IRC					
C94/C 94M-09 12	Specification for Ready-Mixed Concrete	IBC	IRC					
C109/C 109M-05 2001b	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)	IBC						
C126-99(2005) 12	Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units	IBC						
C129-06 11	Specification for Nonload-bearing Concrete Masonry Units	IBC	IRC					
C140-08a 2012a	Test Method Sampling and Testing Concrete Masonry Units and Related Units	IBC	IRC					
C143/C 143M-08 2010a	Test Method for Slump of Hydraulic Cement Concrete	IRC						
<del>C145-85</del> <i>Withdrawn Combined</i>	Specification for Solid-Load Bearing Concrete Masonry Units	IRC						
C150-07-12	Specification for Portland Cement	IBC	IRC					
C172/C172M-08 10	Practice for Sampling Freshly Mixed Concrete	IBC						

C199-84 <del>(2005)</del> (2011)	Test Method for Pier Test for Refractory Mortars	IBC	IRC				
C203-5a (2012)	Standard Test Methods for Breaking Load and Flexural Properties of Block-type Thermal Insulation	IRC					
C206-03(2009)	Specification for Finishing Hydrated Lime	IBC					
C207-06 2011	Specification for Hydrated Lime for Masonry Purposes	IBC	IRC				
C208-2008a 12	Specification for Cellulosic Fiber Insulating Board	IBC	IRC				
C212-00(2006)10	Specification for Structural Clay Facing Tile	IBC					
C216-07a 12	Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale)	IBC	IRC				
C270-08a 12a	Specification for Mortar for Unit Masonry	IBC	IRC				
C272-01(2007)/C272M-12	Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions	IRC					
C273/C273M-07a 11	Standard Test Method for Shear Properties of Sandwich Core Materials	IRC					
C296-00(2004) /C296M-00(2009)e1	Specification for Asbestos-Cement Pressure Pipe	IPC	IRC				
C315-07(2011)	Specification for Clay Flue Liners and Chimney Pots	IBC	IRC	IMC	IFGC		
C317/C 317M-00(2005) 2010	Specification for Gypsum Concrete	IBC					
C330-05/C330-2009	Specification for Lightweight Aggregates for Structural Concrete	IBC					
C331-05 /C331M-2010	Specification for Lightweight Aggregates for Concrete Masonry Units	IBC					
C406-06e04 /C406M-2010	Specification for Roofing Slate	IBC	IRC				
C411-05 11	Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation	IRC	IMC				
C425-04(2009)	Specification for Compression Joints for Vitrified Clay Pipe and Fittings	IPC	IPSDC	IRC			
C428/C428M-05(200611)e1	Specification for Asbestos-Cement Nonpressure Sewer Pipe	IPC	IPSDC	IRC			
C443-05a-12	Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets	IPC	IPSDC	IRC			
C472-99(2004) (2009)	Specification for Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete	IBC					
C473-07 12	Test Methods for Physical Testing of Gypsum Panel Products	IBC					
C474-05 12	Test Methods for Joint Treatment Materials for Gypsum Board Construction	IBC					
C475/C 475M-02(2007) 12	Specification for Joint Compound and Joint Tape for Finishing	IBC	IRC				

	Gypsum Wall Board							
C476-08 10	Specification for Grout for Masonry	IRC						
C496/C496M-96 11	Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens	IEBC						
C503-08a 10	Specification for Marble Dimension Stone (Exterior)	IBC						
C508/C508M-00(2004) (2009)e1	Specification for Asbestos-Cement Underdrain Pipe	IPC	IRC					
C514-04(2009)e1	Specification for Nails for the Application of Gypsum Board	IBC	IRC					
C516-08a	Specification for Vermiculite Loose Fill Thermal Insulation	IBC						
C518-04 10	Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus	IBC	IECC					
C547-07e1 12	Specification for Mineral Fiber Pipe Insulation	IBC						
C549-06(2012)	Specification for Perlite Loose Fill Insulation	IBC						
C552-07 12b	Standard Specification for Cellular Glass Thermal Insulation	IBC	IRC					
C557-03(2009)e01	Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing	IBC	IRC					
C564-08 12	Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings	IPC	IPSDC	IRC				
C568-08a 10	Specification for Limestone Dimension Stone	IBC						
C578-08b12a	Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation	IBC	IRC					
C587-04(2009)	Specification for Gypsum Veneer Plaster	IBC	IRC					
C595/C95M-08a 2012e1	Specification for Blended Hydraulic Cements	IBC	IRC					
C615/C615M-03 2011	Specification for Granite Dimension Stone	IBC						
C616/C616M-08a 2010	Specification for Quartz Dimension Stone	IBC						
C629-08 2010	Specification for Slate Dimension Stone	IBC						
C630/C 630M-03 <i>Withdrawn replaced by C1396/C1396M-11</i>	Specification for Water-Resistant Gypsum Backing Board	IBC	IRC					
C635/C635M-07 12	Specification for the Manufacturer, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings	IBC						
C645-08a 11A	Specification for Nonstructural Steel Framing Members	IBC	IRC					
C652-09 12	Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale)	IBC	IRC					
C685/C 685M-07 11	Specification for Concrete Made by Volumetric Batching and	IRC						

	Continuous Mixing							
C700-07a 11	Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated	IPC	IPSDC	IRC				
C726-05e4 12	Standard Specification for Mineral Wool Roof Insulation Board	IBC						
C728-05(2010)	Standard Specification for Perlite Thermal Insulation Board	IBC	IRC					
C744-08 11	Specification for Prefaced Concrete and Calcium Silicate Masonry Units	IBC						
C754-08 11	Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products	IBC						
C836/C836M-06 12	Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course	IBC	IRC					
C840-08 11	Specification for Application and Finishing of Gypsum Board	IBC						
C841-03(2008)E1	Specification for Installation of Interior Lathing and Furring	IBC						
C842-05(2010)E1	Specification for Application of Interior Gypsum Plaster	IBC						
C843-99(2006) (2012)	Specification for Application of Gypsum Veneer Plaster	IBC	IRC					
C844-04(2010)	Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster	IBC	IRC					
C847-09 12	Specification for Metal Lath	IBC	IRC					
C887-05(2010)	Specification for Packaged, Dry, Combined Materials for Surface Bonding Mortar	IBC	IRC					
C897-05(2009)	Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters	IBC	IRC					
C920-08 11	Standard Specification for Elastomeric Joint Sealants	IBC	IRC	IgCC				
C926-06 12A	Specification for Application of Portland Cement-Based Plaster	IBC	IRC					
C931/C 931M-04 <i>Withdrawn Replaced by C1396/C1396M-11</i>	Specification for Exterior Gypsum Soffit Board	IBC						
C932-06	Specification for Surface-Applied Bonding Compounds Agents for Exterior Plastering	IBC						
C933-07b 11	Specification for Welded Wire Lath	IBC						

C946-94 (2004) 10	Specification for <del>Practice for</del> Construction of Dry-stacked, Surface-Bonded Walls	IBC						
C954-07 11	Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 inch (0.84 mm) to 0.112 inch (2.84 mm) in Thickness	IBC	IRC					
C955-09 11C	Standard Specification for Load-bearing Transverse and Axial Steel Studs, Runners Tracks, and Bracing or Bridging, for Screw Application of Gypsum Panel Products and Metal Plaster Bases	IBC	IRC					
C956-04(2010)	Specification for Installation of Cast-in-Place Reinforced Gypsum Concrete	IBC						
C957-06 10	Specification for High-Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with Integral Wearing Surface	IBC	IRC					
C989/C989M-06 12A	Specification for <del>Ground</del> <del>Granulated Blast-Furnace</del> Slag Cement for Use in Concrete and Mortars	IBC						
C1007-08a-11a	Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories	IBC						
C1019-09 11	Test Method for Sampling and Testing Grout	IBC						
C1029-08 10	Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation	IBC	IRC					
C1032-06(2011)	Specification for Woven Wire Plaster Base	IBC	IRC					
C1047-09 10A	Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base	IBC	IRC					
C1053-00(2005) (2010)	Specification for Borosilicate Glass Pipe and Fittings for Drain, Waste, and Vent (DWV) Applications	IPC						
C1063-08 12C	Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster	IBC	IRC					
C1088-09	Specification for Thin Veneer Brick Units Made From Clay or Shale	IBC						
C1072-06 11	Standard Text Method for Measurement of Masonry Flexural Bond Strength	IBC						
C1107/C1107-08 11	Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)	IRC						

C1116/C1116M-08a 10	Standard Specification for Fiber - Reinforced Concrete and Shotcrete	IRC						
C1157-08a 11	<u>Standard Performance Specification for Hydraulic Cement</u>	IBC						
C1167-03 11	Specification for Clay Roof Tiles	IBC	IRC					
C1173-08 10	Specification for Flexible Transition Couplings for Underground Piping Systems	IPC	IPSDC	IRC				
C1178/C 1178M-06 11	Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel	IBC	IRC					
C1186-08	Specification for Flat <del>Non-asbestos</del> Fiber Cement Sheets	IBC	IRC					
C1218/C1218M-99(2008)	Test Method for Water-Soluble Chloride in Mortar and Concrete	IBC						
C1240-05 12	Specification for Silica Fume Used in Cementitious Mixtures	IBC						
C1261-07 10	Specification for Firebox Brick for Residential Fireplaces	IBC	IRC					
C1277-08 11	Specification for Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings	IPC	IPSDC	IRC				
C1278/C1278M-07a(2011)	Specification for Fiber-Reinforced Gypsum Panels	IBC	IRC					
C1280-09 12A	Specification for Application of <u>Exterior Gypsum Panel Products for Use as Sheathing</u>	IBC						
C1283-07a 11	Practice for Installing Clay Flue Lining	IBC	IRC					
C1288-99(2004)e1 2010	Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets	IBC	IRC					
C1289-08-12a	Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board	IBC	IRC					
C1314-07 11A	Test Method for Compressive Strength of Masonry Prisms	IBC						
C1325-08b	Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement <del>Interior Substrate Sheets</del> Backer Units	IBC	IRC					
C1328/C1328M-05 12	Specification for Plastic (Stucco Cement)	IBC	IRC					

C1364-07 10B	Standard Specification for Architectural Cast Stone	IBC						
C1371-04A(2010)E1	Standard Test Method For Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers	IECC	IgCC					
C1373/C1373-03 11	Standard Practice for Determination of Thermal Resistance of Attic Insulation Systems Under Simulated Winter Conditions	IECC						
C1396/1396M-06a 11	Specification for Gypsum Ceiling Board	IBC	IRC					
C1405-08 12	Standard Specification for Glazed Brick (Single Fired, Solid Brick Units)	IBC						
C1492-03(2009)	Standard Specification for Concrete Roof Tile	IBC	IRC					
C1513-04 12	Standard Specification for Concrete Roof Tile	IRC						
C1540-08 11	Specification for Heavy Duty Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings	IPC						
C1611/C 1611M-05-09BE1	Standard Test Method for Slump Flow of Self-Consolidating Concrete	IBC						
C1629/C1692M-06(2011)	Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels	IBC						
C1658/C1658-06 12	Standard Specification for Glass Mat Gypsum Panels	IBC	IRC					
C1563-08	Standard Test Method for Gaskets for Use in Connection with Hub and Spigot Cast Iron Soil Pipe and Fittings for Sanitary Drain, Waste, Vent and Storm Piping Applications	IPC						
D25-09(2005)12	Specification for Round Timber Piles	IBC						
D56-05(2010)	Test Method for Flash Point by Tag Closed Tester	IBC						
D86-09 2011b	Test Method for Distillation of Petroleum Products at Atmospheric Pressure	IBC	IFC					
D92-05a 12	Test Method for Flash and Fire Points by Cleveland Open Cup Tester	IFC						
D93-08 11	Test Method for Flash Point by Pensky-Martens Closed Cup Tester	IBC	IFC	IMC				

D226/D226M-06 09	Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing	IBC	IRC				
D227/D227M-03(2011)E1	Specification for Coal-Tar-Saturated Organic Felt Used in Roofing and Waterproofing	IBC	IRC				
D635-06 10	Test Method for Rate of Burning and/or Extent and Time of Burning of <del>Self-Supporting</del> Plastics in a Horizontal Position	IBC					
D1003-07 11e1	Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics	IECC					
D1248-05 12	Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable	IRC					
D1557-07 12	Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft <sup>3</sup> (2,700kN-m/m <sup>3</sup> ))	IBC					
D1593-09	Non-rigid vinyl chloride plastic <u>film and sheeting</u>	ISPSC					
D1621-04a 10	Standard Test Method for Compressive Properties Of Rigid Cellular Plastics	IRC					
D1623-03 09	Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics	IRC					
D1693-08 12	Test Method for Environmental Stress-Cracking of Ethylene Plastics	IRC	IMC				
D1784-08 11	Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds	IRC					
D1785-06 12	Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120	IPC	IMC	IRC	ISPSC		
D1863/D1863M-05(2011)E1	Specification for Mineral Aggregate Used on Built-Up Roofs	IBC	IRC				
D1869-95 (2005)e1 (2010)	Specification for Rubber Rings for Asbestos-Cement Pipe	IPC	IPSDC	IRC			
D1929-96(2001)e01-12	Test Method for Determining Ignition <del>Properties</del> <u>Temperature</u> of Plastics	IBC					
D1970/D1970M-09 11	Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roof Underlayment for Ice Dam Protection	IBC	IRC				
D2126-04 09	Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging	IRC					
D2216-05 10	Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass	IBC					
D2235-04 (2011)	Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings	IPC	IPSDC	IMC	IRC		

D2239-03 12	Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter	IPC	IRC					
D2241-05 09	Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR-Series)	IPC	IRC	IMC	ISPSC			
D2412-02(2008) 11	Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading	IRC	IMC					
D2487-06e1 2011	Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)	IBC						
D2513-08b 12	Specification for Thermoplastic Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings	IRC	IMC	IFGC				
D2559-04 12A	Standard Specification for Adhesives for <del>Structural Laminated Bonded Structural</del> Wood Products for Use under Exterior (West Use) Exposure Conditions	IRC						
D2564-04e04 12	Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems	IPC	IPSDC	IRC	IMC			
D2626/D2626M-04(2012)E1	Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing	IBC	IRC					
D2661-08 11	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings	IPC	IPSDC	IRC				
D2665-09 12	Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings	IPC	IPSDC	IRC				
D2672-96a(2003) (2009)	Specification for Joints for IPS PVC Pipe Using Solvent Cement	IPC	IRC	ISPSC				
D2683-04 10	Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing	IPC	IRC	IMC				
D2729-03 11	Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings	IRC	IPC	IPSDC				
D2737-03 12E1	Specification for Polyethylene (PE) Plastic Tubing	IPC	IRC					
D2822/D2822M-05(2011)E1	Specification for Asphalt Roof Cement, Asbestos Containing	IBC	IRC					
D2823/D2823M-05 (2011)E1	Specification for Asphalt Roof Coatings, Asbestos Containing	IBC	IRC					
D2824-06(2012)E1	Specification for Aluminum-Pigmented Asphalt Roof Coatings, Non-fibered, Asbestos Fibered, and Fibered without Asbestos	IRC	IBC					
D2837-08 11	Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products	IRC	IMC					
D2843-99(2004)e04 10	Test for Density of Smoke from the Burning or Decomposition of Plastics	IBC						
D2846/D 2846M-09BE1	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic	IPC	IRC	IMC	ISPSC			

	Hot- and Cold-Water Distribution Systems							
D2855-96(2002) (2010)	Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings	IPC	IPSDC	IRC				
D2859-06 (2011)	Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials	IBC	IFC					
D2898-(04) 10	Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing	IBC	IRC	IWUIC				
D2949-04a(2008) 10	Specification for 3.25-in. Outside Diameter Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings	IPC	IPSDC	IRC				
D2974-07a-A	Standard Test Methods for Moisture, Ash and Organic Matter of Peat and other Organic Soils	IgCC						
D3035-08 12	Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter	IPC	IRC	IMC				
D3139-98(2005) 2011	Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals	IPC						
D3161/D3161M-09 12	Test Method for a Wind Resistance of Asphalt Shingles (Fan Induced Method)	IBC	IRC					
D3200-74(2005) 2012	Standard Specification and Test Method for Establishing Recommended Design Stresses for Round Timber Construction Poles	IBC						
D3201-08AE1	Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood-Based Products	IBC	IRC	IWUIC				
D3261-03 12	Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings Plastic Pipe and Tubings	IMC	IPC					
D3278-1996(2004)e1 (2011)	Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus	IBC	IFC	IMC				
D3311-08 11	Specification for Drain, Waste and Vent (DWV) Plastic Fittings Patterns	IPC	IRC					
D3350-08 12	Specification for Polyethylene Plastics Pipe and Fittings Materials	IRC	IMC					
D3462/3462M-09 10A	Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules	IBC	IRC					
D3679-09 11	Specification for Rigid Poly (Vinyl Chloride) (PVC) Siding	IBC	IRC					
D3689-07	Test Methods for Deep Foundations Piles Under Static Axial Tensile Load	IBC						
D3737-08 09E1	Practice for Establishing Allowable Properties for Structural Glued Laminated Timber (Glulam)	IBC	IRC					
D3805/D3805M-97(2003)e1 (2009)	Standard Guide for Application of Aluminum-Pigmented Asphalt Roof Coatings	IBC						
D3909/D3909M-97b(2004) 2012e1	Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules	IBC	IRC	IWUIC				
D3957-06 09	Standard Practices for Establishing Stress Grades for Structural Members Used In Log	IBC	IRC					

	Buildings							
<u>D4022/D4022M-2007(2012)E1</u>	Specification for Coal Tar Roof Cement, Asbestos Containing	IBC	IRC					
<u>D4068-04 09</u>	Specification for Chlorinated Polyethylene (CPE) Sheeting for Concealed Water-Containment Membrane	IPC	IRC					
<u>D4272-08a 09</u>	Test Method for Total Energy Impact of Plastic Films by Dart Drop	IBC						
<u>D4318-05 10</u>	Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils	IBC	IRC					
<u>D4434/D4434M-09 12</u>	Specification for Poly (Vinyl Chloride) Sheet Roofing	IBC	IRC					
<u>D4479/D4479M-07(2012)E1</u>	Specification for Asphalt Roof Coatings - Asbestos-Free	IBC	IRC					
<u>D4551-96 (2008)e1 12</u>	Specification for Poly (Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane	IPC	IRC					
<u>D4586/D4586M-07(2012)E1</u>	Specification for Asphalt Roof Cement, Asbestos-Free	IBC	IRC					
<u>D4601/D4601M-08 042012E1</u>	Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing	IBC	IRC					
<u>D4637/D4637M-08 12</u>	Specification for EPDM Sheet Used in Single-Ply Roof Membrane	IBC	IRC					
<u>D4829-08a 11</u>	Test Method for Expansion Index of Soils	IBC	IRC					
<u>D4869/D4869M-05(2011)e01</u>	Specification for Asphalt-Saturated (Organic Felt) Underlayment Used in Steep Slope Roofing	IBC	IRC					
<u>D4897/D4897M-01(2009)</u>	Specification for Asphalt-Coated Glass-Fiber Venting Base Sheet Used in Roofing	IBC	IRC					
<u>D4945-08 12</u>	Test Methods for High-Strain Dynamic Testing of Deep Foundations	IBC						
<u>D5019-07a</u> Withdrawn/no replacement	Specification for Reinforced CSM Polymeric Sheet Used in Roofing Membrane	IBC	IRC					
<u>D5055-40 12</u>	Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists	IBC	IRC	IgCC				
<u>D5197-09E1</u>	Test Method for Determination of Formaldehyde and Other Carbonyl Compounds in Air (Active Sampler Methodology)	IgCC						
<u>D5456-40 12</u>	Standard Specification for Evaluation of Structural Composite Lumber Products	IBC	IRC	IgCC				
<u>D5516-03 09</u>	Test Method of Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to the Elevated Temperatures	IBC	IRC					
<u>D5643/D5643M-06 (2012)E1</u>	Specification for Coal Tar Roof Cement, Asbestos-Free	IBC	IRC					
<u>D5664-08 10</u>	Test Methods for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength	IBC	IRC					

	Properties of Fire-Retardant Treated Lumber						
D6162-2000a(2008)	Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements	IBC	IRC				
D6164/D6164M-05e1 11	Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements	IBC	IRC				
D6222/D6222M-08 11	Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements	IBC	IRC				
D6223D6223M-02(2009)E1	Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements	IBC	IRC				
D6662-09	Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards	IWUIC					
D6694-08	Standard Specification for Liquid-applied Silicone Coating Used In Spray Polyurethane Foam Roofing Systems	IBC	IRC				
D6698-07 12	Standard Test Method for On-Line Measurement of Turbidity Below 5 NTU in Water	IgCC					
D6754/D6745M-02 10	Standard Specification for Ketone Ethylene Ester Based Sheet Roofing	IBC	IRC				
D6757-07	Standard Specification for <del>Inorganic</del> Underlayment Felt Containing Inorganic Fibers used in Steep-Slope Roofing Products	IBC	IRC				
D6878-08e1/D6878-11A	Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing	IBC	IRC				
D6886-44 12	Standard Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis	IgCC					
D7032-08 10a	Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)	IRC	IWUIC				
D7158-08e1/D7158M 2011	Standard Test Method for Wind Resistance of Sealed Asphalt Shingles (Uplift Force/Uplift Resistance Method)	IBC	IRC				
E84-09 2012c	Test Method for Surface Burning Characteristics of Building Materials	IBC	IFC	IRC	IMC		
E96/E96M-05 10	Test Method for Water Vapor Transmission of Materials	IBC	IRC				
E108-07a 2011	Test Methods for Fire Tests of Roof Coverings	IBC	IRC				
E119-2008a 2012a	Standard Test Methods for Fire Tests of Building Construction and Materials	IBC	IRC	IMC	IWUIC		

E136-09 <u>2012</u>	Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C	IBC	IRC	IMC	IWUIC			
E519-00e1-/E519M <u>2010</u>	Standard Test Method for Diagonal Tension (Shear) in Masonry Assemblages	IEBC						
E605-93(2006) (2011)	Test Method for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members	IBC						
E681-04 <u>2009</u>	Test Method for Concentration Limits of Flammability of Chemicals (Vapors and Gases)	IBC	IFC					
E736-00(2006) (2011)	Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members	IBC						
E779-03 <u>10</u>	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization	IECC	IgCC					
E814-08b <u>2011a</u>	Test Method of Fire Tests of Through-Penetration Firestops	IBC	IRC	IMC				
E970-08a <u>2010</u>	Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source	IBC	IRC					
E1300-07e04 <u>12AE1</u>	Practice for Determining Load Resistance of Glass in Buildings	IBC						
E1332-90(2003)	Standard Classification for the Determination of Outdoor-Indoor Transmission Class	IgCC						
E1354-09 <u>2011b</u>	Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter	IBC	IFC					
E1465-08A	Standard Practice for Radon Control Options for the Design and Construction of New Low-Rise Residential Buildings	IRC						
E1509-04 <u>12</u>	Standard Specification for Room Heaters, Pellet Fuel-Burning Type	IRC	IMC	IgCC				
E1529-06 <u>10</u>	Test Method for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies	IFC						
E1537-07 <u>12</u>	Test Method for Fire Testing of Upholstered Furniture	IFC						
E1590-07 <u>12</u>	Test Method for Fire Testing of Mattresses	IFC						
E1592-05(2012)	Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference	IBC						
E1602-03 <u>02(2010)E1</u>	Guide for Construction of Solid Fuel-Burning Masonry Heaters	IBC	IRC					
E1643-40 <u>11</u>	Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders <u>used in Contact with Earth or Granular Fill Under Concrete Slabs</u>	IgCC						

E1677-05 <u>11</u>	Standard Specification for an Air Retarder (AR) Material or System for Low-Rise Framed Building Walls	IECC						
E1966-07A(2011)	Test Method for Fire resistant Joint Systems	IBC	IFC					
E1980-04 <u>11</u>	Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-sloped Opaque Surfaces	IECC	IgCC					
E1996-09 <u>12</u>	Specification for Performance of Exterior Windows, <del>Glazed</del> Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes	IBC	IRC	IFC				
E2072-04 <u>10</u>	Standard Specification for Photoluminescent (Phosphorescent) Safety Markings	IBC	IFC					
E2174-09 <u>10AE1</u>	Standard Practice for On-Site Inspection of Installed Fire Stops	IBC	IEBC					
E2178-03 <u>11</u>	Standard Test Method for Air Permeance of Building Materials	IRC	IECC					
E2231-04 <u>09</u>	Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess to Surface Burning Characteristics	IRC	IMC					
E2273-03(2011)	Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies	IBC	IRC					
E2307 -04 <u>12</u>	Standard Test Method for Determining Fire Resistance of a Perimeter <del>Fire Barriers Joint System Between an Exterior Wall Assembly and a Floor Assembly</del> Using the Intermediate-Scale, Multi-story Test Apparatus <sup>1</sup> .	IBC						
E2336-04(2009)	Standard Test Methods Fire Resistive Grease Duct Enclosure Systems	IMC						
E2357-05 <u>11</u>	Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies	IECC						
E2393-09 <u>10A</u>	Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barrier	IBC	IEBC					
E2404—08 <u>12</u>	Standard Practice for Specimen Preparation and Mounting of <del>Textile, Paper or Vinyl</del> Wall or Ceiling Coverings to Assess Surface Burning Characteristics	IBC	IFC					
E2568—09e1	Standard Specification of PB Exterior Insulation and Finish Systems ( <del>EIFS</del> )	IBC	IRC					
E2573—07a <u>12</u>	Standard Practice for Specimen Preparation and Mounting of Site-fabricated Stretch Systems to Assess Surface Burning Characteristics	IBC	IFC					
E2599-09 <u>11</u>	Standard Practice for Specimen Preparation and Mounting of Reflective Insulation <del>Materials</del> and <del>Vinyl Stretch Ceiling Materials</del> <del>Radiant Barrier</del> for Building Applications to Assess	IBC						

	Surface Burning Characteristics							
E2634-08 <u>11</u>	Standard Specification for Flat Wall Insulating Concrete Form (ICF) Systems	IBC	IRC					
F409-02(2008) <u>12</u>	Specification for Thermoplastic Accessible and Replaceable Plastic Tube and Tubular Fittings	IPC	IRC					
F437-06 <u>09</u>	Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	IPC	IRC	IMC	ISPSC			
F438-04 <u>09</u>	Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40	IPC	IRC	IMC	ISPSC			
F439-06 <u>12</u>	Specification for <del>Socket-Type</del> Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	IPC	IRC	IMC	ISPSC			
F441/F 441M-02(2008) <u>12</u>	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80	IPC	IRC	IMC				
F442/F 442M-09(2005) <u>12</u>	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)	IPC	IRC	IMC				
F477-08 <u>10</u>	Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe	IPC	IPSDC	IRC				
F493-04 <u>10</u>	Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings	IPC	IRC	IMC				
F547-06 (2012)	Terminology of Nails for Use with Wood and Wood-based Materials	IBC						
F656-08 <u>10</u>	Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings	IPC	IPSDC	IRC				
F714-08 <u>12E1</u>	Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter	IPC	IRC	IMC				
F876-08 <u>10E1</u>	Specification for Crosslinked Polyethylene (PEX) Tubing	IPC	IRC	IMC				
F877-07 <u>11</u>	Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems	IPC	IRC	IMC				
F891-07 <u>10</u>	Specification for Coextruded Poly (Vinyl Chloride) (PVC) Plastic Pipe with a Cellular Core	IPC	IPSDC	IRC				
F1055-08(2006) <u>11</u>	Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene Pipe and Tubing	IPC	IRC	IMC				
F1281-07 <u>11</u>	Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX)	IPC	IRC	IMC				

	Pressure Pipe							
F1282-06 10	Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe	IPC	IMC	IRC				
F1346-91 (2003) (2010)	Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs	IBC	IRC	IPMC	IgCC	ISPSC		
F1484-06 12	Standard Test Methods for Performance of Steam Cookers	IgCC						
F1488-03 09E1	Specification for Coextruded Composite Pipe	IPC	IPSDC	IRC	IgCC			
F1496-99(2005)e4 12	Standard Test Method for Performance of Convection Ovens	IgCC						
F1499-04(2008) 12	Specification for Coextruded Composite Drain, Waste, and Vent Pipe (DWV)	IPSDC						
F1667-05 11A E1	Specification for Driven Fasteners: Nails, Spikes, and Staples	IBC	IRC					
F1673-04(2005) 10	Standard Specification for Polyvinylidene Fluoride (PVDF) Corrosive Waste Drainage Systems	IPC						
F1807-08 12	Specifications for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing	IPC	IRC	IMC				
F1924-06 12	Standard Specification for Plastic Mechanical Fittings for Use on Outside Diameter Controlled Polyethylene Gas Distribution Pipe and Tubing	IMC						
F1960-99 12	Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) Tubing	IPC	IRC	IMC				
F1974-08 09	Specification for Metal Insert Fittings for Polyethylene/Aluminum/Polyethylene and Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene Composite Pressure Pipe	IPC	IRC	IMC				
F1986-01(2006) (2011)	Specification for Multilayer Pipe, Type 2, Compression Fittings and Compression Joints for Hot and Cold Drinking Water Systems	IPC	IRC					
F2080-08 09	Specification for Cold-Expansion Fittings with Metal Compression-Sleeves for Cross-linked Polyethylene (PEX) Pipe	IPC	IRC					

F2098-08	Standard Specification for Stainless Steel Clamps for <u>Securing SDR9 Cross-Linked Polyethylene (PEX) Tubing to Metal Insert and Plastic Insert Fittings</u>	IPC	IRC						
F2159-05 11	Specification for Plastic Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing <u>and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing</u>	IPC							
F2200—05 11B	Standard Specification for Automated Vehicular Gate Construction	IRC	IFC						
F2262-05 09	Standard Specification for Cross-linked Polyethylene/Aluminum/Cross-linked Polyethylene Tubing OD Controlled SDR9	IPC	IRC						
F2306/F 2306M-08 11	Specification for 12" to 60" 300 to 1500 mm annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications	IPC							
F2387-04(2012)	Standard Specification for Manufactured Safety Vacuum Release Systems, Swimming (SVRS) for Pools, Spas and Hot Tubs	IBC							
F2389-07-04 10	Specification for Pressure-Rated Polypropylene (PP) Piping Systems	IPC	IRC	IMC					
F2434-08 09	Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp ring for SDR9 Cross-Linked Polyethylene (PEX) Tubing and SDR9 Cross-Linked Polyethylene/Aluminum/Cross-Linked Polyethylene (PEX-AL-PEX) Tubing	IPC	IRC	IMC					
F2735-09	Standard Specification for <u>Plastic Insert Fittings</u> for SDR9 Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing	IMC	IPC	IRC					
F2769-09 10	Polyethylene of Raised Temperature (PE-RT) Plastic Hot and Cold-Water Tubing and Distribution Systems	IMC	IPC	IRC					
<b>AWCI</b>	<b>The Association of the Wall &amp; Ceiling Industries International</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
12-B-98 04	<del>Technical Manual 12-B</del> Standard Practice for the Testing and Inspection of Field Applied Thin Film Intumescent Fire-Resistive Materials; an Annotated Guide, <del>First</del> Second Edition	IBC							
<b>AWPA</b>	<b>American Wood Protection Association</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							

M4—08 11	Standard for the Care of Preservative-Treated Wood Products	IBC	IRC						
U1—11 14	USE CATEGORY SYSTEM: User Specification for Treated Wood except Section 6, Commodity Specification H	IBC	IRC						
<b>AWS</b>	<b>American Welding Society</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
A5.8-04M/A5.8:2011	Specifications for Filler Metals for Brazing and Braze Welding	IRC	IMC	IPC					
D1.3-98/D1.3M:2008	Structural Welding Code-Sheet Steel	IBC							
D1.4-1998 /D1.4M:2011	Structural Welding Code - Reinforcing Steel <u>Including Metal Inserts and Connections in Reinforced Concrete Construction</u>	IBC							
<b>AWWA</b>	<b>American Water Works Association</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
C104-99/A21.4-08	<del>Standard for</del> Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water	IRC	IPC						
C110/A21.10-03 12	<del>Standard for</del> Ductile-Iron and Gray-Iron Fittings, 3 in through 48 Inches for Water	IRC	IPC	IMC					
C111-09/A21.11-12	<del>Standard for</del> Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings	IPC	IFGC						
C115-A21.15-99 11	<del>Standard for</del> Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges	IRC	IPC	IMC					
C151/A21.51-02 09	<del>Standard for</del> Ductile-Iron Pipe, Centrifugally Cast for Water	IRC	IPC	IMC					
C153/A21.53-00 11	<del>Standard for</del> Ductile-Iron Compact Fittings for Water Service	IRC	IPC	IMC					
C510-00 07	Double Check Valve Backflow Prevention Assembly	IRC	IPC						
C511-00 07	Reduced-Pressure Principle Backflow Prevention Assembly	IRC	IPC						
C651-99 05	Disinfecting Water Mains	IPC							
C652-02 11	Disinfection of Water-Storage Facilities	IPC							
<b>BHMA</b>	<b>Builders Hardware Manufacturers' Association</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							

A 156.19-2007 <u>2013</u>	Power Assist and Low Energy Power Operated Doors	IBC	IFC							
<b>CDPH</b>		<b>California Department of Public Health</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
CDPH Section 01350	<del>EHLB</del> Standard Method for the Testing and Evaluation of <del>VOC</del> Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1(2010)	IgCC								
<b>CGA</b>		<b>Compressed Gas Association</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
C-7 (2004) (2011)	Guide to Preparation of Precautionary Labeling and Marking of Compressed Gas Containers	IFC								
ANSI/CGA P-18-2006	Standard for Bulk Inert Gas Systems at Consumer Sites (an American National Standard)	IFC								
P-20 (2003) (2009)	Standard for Classification of Toxic Mixtures	IFC								
P-23 (2003) (2008)	Standard for Categorizing Gas Mixtures Containing Flammable and Nonflammable Components	IFC								
S-1.1 (2005) (2011)	Pressure Relief Device Standards - Part 1 - Cylinders for Compressed Gases	IFC	IFGC							
S-1.3 (2005) (2008)	Pressure Relief Device Standards - Part 3 - Stationary Storage Containers for Compressed Gases	IFC	IFGC							
<b>CPA</b>		<b>Composite Panel Association</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
A135.4-2004 <u>2012</u>	Basic Hardboard	IBC	IRC							
A135.5-2004 <u>2012</u>	Prefinished Hardboard Paneling	IBC	IRC							
A135.6-2006 <u>2012</u>	<del>Hardboard</del> Engineered Wood Siding	IBC	IRC							
A208.1-99 <u>2009</u>	Particleboard	IBC	IRC							
<b>CRRC</b>		<b>Cool Roof Rating Council</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
CRRC-1-2040 <u>12</u>	Cool Roof Rating Council Standard	IgCC								
<b>CSA</b>		<b>Canadian Standards Association CSA Group</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								

ASME A17.1/CSA B44—2013	Safety Code for Elevators and Escalators	IBC	IFC	IEBC	IRC	IPMC				
ASME A112.18.1-2005 2012/ CSA B125.1-2005 2012	Plumbing Supply Fittings	IPC	IRC							
ASME A112.18.2-2005 2011/ CSA B125.2-2005 2011	Plumbing Waste Fittings	IRC	IPC							
ASME A112.19.1 2013/ CSA B45.2-08 13	Enameled Cast-Iron and Enameled Steel Plumbing Fixtures	IRC	IPC							
A112.19.2-2008 2013/ CSA B45.1-08 13	Ceramic Plumbing Fixtures	IPC	IRC							
ASME A112.19.3-2008/ CSA B45.4-08(R2013)	Stainless-Steel Plumbing Fixtures	IRC	IPC							
ASME A112.19.5-2011/ CSA/B45.15-09 11	Flush Valves and Spuds Trim for Water Closets, Urinals, Bowls and Tanks	IPC	IRC							
ASME A112.19.7-2012/ CSA B45.10-09 2012	Hydromassage Bathtubs Appliances Systems	IPC	IRC							
ASME A112.3.4-2013/CSA B45.9-99(R2008) 13	Macerating Systems and Related Components	IRC	IPC							
ASSE 1016/ASME A112.1016/CSA B125.16-2011 is a replacement for ASSE 1016-2010	Performance Requirements for Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations	IPC	IRC	IgCC						
CSA B45.5-02 (R2008) 11/ IAPMO Z124-2011	Plastic Plumbing Fixtures	IRC	IPC							
B64.1.1-04 11	Vacuum Breakers, Atmospheric Type (AVB)	IRC	IPC							
B64.1.2-07 11	Pressure Vacuum Breakers (PVB)	IRC	IPC							
B64.1.3-07 11	Spill Resistant Pressure Vacuum Breakers (SRPVB)	IPC	IRC							
B64.2-04 11	Vacuum Breakers, Hose Connection Type (HCVP)	IRC	IPC							
B64.2.1-07 11	Vacuum Breakers, Hose Connection (HCVB) with Manual Draining Feature	IRC	IPC							
B64.2.1.1-07 11	Hose Connection Dual Check Vacuum Breakers (HCDVB)	IRC	IPC							
B64.2.2-04 11	Vacuum Breakers, Hose Connection Type (HCVP) with Automatic Draining Feature	IRC	IPC							
B64.3-07 11	Dual Check Valve Backflow Preventers Atmospheric Port (DCAP)	IRC	IPC							
B64.4-07 11	Reduced Pressure Principle Backflow Preventers (RP)	IRC	IPC							
B64.4.1-07 11	Reduced Pressure Principle for Fire Systems (RPF)	IRC	IPC							
B64.5-07 11	Double Check Backflow Preventers (DCVA)	IRC	IPC							
B64.5.1-07 11	Double Check Valve Backflow Preventers for Fire Systems (DCVAF)	IRC	IPC							
B64.6-07 11	Dual Backflow Preventers Check Valve (DuC)	IPC	IRC							
B64.7-07 11	Laboratory Faucet Vacuum Breakers (LFVB)	IRC	IPC							
B64.10.1-07 11	Manual for the Selection, Installation, Maintenance and Field Testing of Backflow Preventers	IPC								

	Devices								
B79-08 (R2013)	Commercial and Residential Drains, and Cleanouts	IPC							
CSA B125.3-2005 12	Plumbing Fittings	IRC	IPC						
B137.1-05 13	Polyethylene (PE) Pipe , Tubing and Fittings for Cold Water Pressure Services	IRC	IPC						
B137.2-05 13	Polyvinylchloride PVC Injection-Moulded Gasketed Fittings for Pressure Applications	IRC	IPC	ISPSC					
B137.3-05 13	Rigid Poly (Vinyl Chloride) (PVC) Pipe for Pressure Applications	IRC	IPC	IPSDC					
B137.5-05 13	Cross-Linked Polyethylene (PEX) Tubing Systems for Pressure Applications	IRC	IPC						
B137.6-05 13	Chlorinated Polyvinylchloride CPVC Pipe, Tubing and Fittings for Hot and Cold Water Distribution Systems	IRC	IPC	ISPSC					
B137.9-02 13	Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure-Pipe Systems	IRC	IPC	IMC					
B137.10M-05 13	Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Composite Pressure-Pipe Systems	IRC	IPC	IMC					
B137.11-05 13	Polypropylene (PP-R) Pipe and Fittings for Pressure Applications	IRC	IPC						
B181.1-06 11	Acrylonitrile-butadiene-stryrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings	IRC	IPC	IPSDC					
B181.2-06 11	Polyvinylchloride PVC Drain, and chlorinated polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings	IRC	IPC	IPSDC					
B181.3-06 11	Polyolefin and polyvinylidene fluoride (PVDF) Laboratory Drainage Systems	IRC	IPC						
B182.1- 06 11	Plastic drain and sewer pipe and pipe fittings	IPC	IPSDC						
B182.2-06 11	PSM type polyvinylchloride (PVC) sewer pipe and fittings	IRC	IPC	IPSDC					
B182.4-06 11	Profile polyvinylchloride PVC Sewer Pipe and Fittings	IRC	IPC	IPSDC					
B182.6-06 11	Profile Polyethylene (PE) Sewer Pipe and Fittings for leak proof sewer applications	IRC	IPC						
B182.8-06 11	Profile Polyethylene (PE) Storm Sewer and Drainage Pipe and Fittings	IRC	IPC						
B356-00(2005) 10	Water Pressure Reducing Valves for Domestic Water Supply Systems	IPC	IRC						
B481.1-07 12	Testing and Rating of Grease Interceptors Using Lard	IPC							
B602-05 10	Mechanical Couplings for Drain, Waste, and Vent Pipe and Sewer Pipe	IRC	IPC	IPSDC					
CAN/CSA A257.1M-92 2009	Circular Concrete Culvert, Storm Drain, Sewer Pipe and Fittings	IRC	IPC	IPSDC					

CAN/CSA A257.2M-92 2009	Reinforced Circular Concrete Culvert, Storm Drain, Sewer Pipe and Fittings	IRC	IPC	IPSDC						
CAN/CSA A257.3M-92 2009	Joints for Circular Concrete Sewer and Culvert Pipe, Manhole Sections, and Fittings Using Rubber Gaskets	IRC	IPC	IPSDC						
B137.11-05 13	Polypropylene (PP-R) Pipe and Fittings for Pressure Applications	IRC	IPC							
B45.3-02 (R2008)	Porcelain Enameled Steel Plumbing Fixtures	IRC	IPC							
0437-Series-93 (R2006)	Standards on OSB and Waferboard (Reaffirmed 2001)	IRC								
ANSI CSA America FC 1-2003 2012 to be relocated under ANSI	Stationary Fuel Cell Power Systems	IFGC	IMC	IRC						
CAN/CSA B366.1-2009 2011	Solid-Fuel-Fired Central Heating Appliances	IgCC								
B483.1-07 14	Drinking Water Treatment Systems	IRC	IPC							
CSA C22.2 No. 218.1-M89(R2006 2011)	Spas, Hot Tubs and Associated Equipment	ISPSC								
C22.2 No. 236 05 -11 (R2009) M89(R2006)	Heating and Cooling Equipment (binational standard with UL 1995)	ISPSC								
C22.2 No. 108-01 (R2010)	Liquid Pump	ISPSC								
<b>CTI</b>	<b>Cooling Technology Institute</b>									
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
STD-201 (2009 11)	Standard for Certification of Water Cooling Tower Thermal Performance	IECC								
<b>DASMA</b>	<b>Door and Access Systems Manufacturers</b>									
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
105-92(R2004) -13	Test Method for Thermal Transmittance and Air Infiltration of Garage Doors	IECC								
107-97 (R2004 2012)	Room Fire Test Standard for Garage Doors Using Foam Plastic Insulation	IBC								
108-05 12	Standard Method for Testing Sectional Garage Doors and Rolling Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference	IBC	IRC							
115-05 12	Standard Method for Testing Sectional Garage Doors and Rolling Doors: Determination of Structural Performance Under Missile Impact and Cyclic Wind	IBC	IRC							

	Pressure									
<b>FEMA</b>		<b>Federal Emergency Management Agency</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
FEMA P646-08 12	Guidelines for Design of Structures for Vertical Evacuation from Tsunamis	IBC								
FEMA- FA/ TB-2-08	Flood-D damage Resistant Materials Requirements	IRC								
FIA TB 11—04 FEMA-TB 11—01	Crawlspace Construction for Buildings Located in Special Flood Hazard Area	IBC	IRC							
<b>FM</b>		<b>FM Global</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
FM 4470 2009, 2013	Approval Standard for Single-Ply Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction Covers.	IBC								
4474-04 11	American National Standard for Evaluating the Simulated Wind Uplift Resistance of Roof/Ceiling Assemblies, -Plastic Interior Finish Materials, Plastic Exterior Building Panels, Wall/Ceiling Coating Systems, Interior or Exterior Finish Systems Using Static Positive and/or Negative Differential Pressures	IBC								
4880 (2006) 2010	Approval Standard for Class 1 Rating of Evaluating Insulated Wall or Wall and Roof/Ceiling Panels, Assemblies, Plastic Interior Finish Materials, Plastic Exterior Building, Wall/Ceiling or Coatings Systems, Interior or and Exterior Finish Systems	IBC	IRC							
<b>GA</b>		<b>Gypsum Association</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
GA 216-07 13	Application and Finishing of Gypsum Panel Products	IBC								

GA-253-07 <u>12</u>	Recommended Standard Specification for the Application of Gypsum Sheathing	IRC								
GA-600-09 <u>12</u>	Fire- Resistance Design Manual, 48 <sup>th</sup> 20 <sup>th</sup> Edition	IBC								
<b>HPVA</b>	<b>Hardwood Plywood and Veneer Association</b>									
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
HP-1-2009 <u>2013</u>	Standard for Hardwood and Decorative Plywood	IBC	IRC	IgCC						
<b>IAPMO</b>	<b>International Association of Plumbing and Mechanical Officials</b>									
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
CSA B45.5-11/ IAPMO Z124-2011 replaces ANSI Z124.1, 1.2, 2, 3, 4, 6, 9	Plastic Plumbing Fixtures	IRC	IPC							
IAPMO Z124.7-2012 replaces ANSI Z124.7-97	Prefabricated Plastic Spa Shells	ISPSC								
<b>ICC</b>	<b>International Code Council</b>									
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
ICC A117.1-09 <u>14</u>	Accessible and Usable Buildings and Facilities	IBC	IFC	IZC	IEBC	IRC				
IBC-42 <u>15</u>	International Building Code	IRC	IFC	IMC	IPC	IPSDC	IFGC	IECC		IEBC IWUIC
IECC-42 <u>15</u>	International Energy Conservation Code	IBC	IRC	IMC	IPC	IFGC	IgCC	ISPSC		
IEBC-42 <u>15</u>	International Existing Building Code	IBC	IMC	IPMC	IgCC					
IFC-42 <u>15</u>	International Fire Code	IBC	IRC	IMC	IPC	IFGC	IECC	IEBC		IPMC
IFGC-42 <u>15</u>	International Fuel Gas Code	IBC	IRC	IFC	IMC	IPC	IECC	IEBC		IPMC
IMC-42 <u>15</u>	International Mechanical Code	IBC	IRC	IFC	IPC	IFGC	IECC	IEBC		IPMC
ICCPC-42 <u>15</u>	International Performance Code	IgCC								
IPC-42 <u>15</u>	International Plumbing Code	IBC	IRC	IFC	IMC	IPSDC	IFGC	IEBC		IPMC
IPSDC-42 <u>15</u>	International Private Sewage Disposal Code	IBC	IPC	IRC						
IPMC-42 <u>15</u>	International Property Maintenance Code	IBC	IRC	IFC	IEBC					
IRC-42 <u>15</u>	International Residential Code	IBC	IFC	IMC	IFGC	IEBC	IPC	IPMC		IgCC
IWUIC-42 <u>15</u>	International Wildland-Urban Interface Code	IBC	IFC							
IZC-42 <u>15</u>	International Zoning Code	IBC	IMC							
ICC 500-08 <u>14</u>	ICC/NSSA Standard on the Design and Construction of Storm Shelters	IBC	IRC							

ICC 600-08 14	Standard for Residential Construction In High Wind Regions	IBC	IRC						
ICC 700-2008 12	National Green Building Standard	IgCC							
IgCC-42 15	International Green Construction Code	IBC	ICCPC	IEBC	IECC	IFC	IFGC	IMC	IPC
<b>IES</b>		<b>Illuminating Engineering Society</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
TM-15-07 11	Luminaire Classification System for Outdoor Luminaires	IgCC							
<b>IIAR</b>		<b>International Institute of Ammonia Refrigeration</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
2-99 2014 (Addendum A-2005)	Addendum A to Equipment, Design, and Installation of Ammonia Mechanical Refrigerating Systems	IMC							
<b>ISEA</b>		<b>International Safety Equipment Association</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
ANSI/ISEA Z358.1-98 2009	Emergency Eyewash and Shower Equipment	IPC							
<b>MSS</b>		<b>Manufacturers Standardization Society of the Valve and Fittings Industry</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
MSS SP-6-04 2012	Standard Finishes for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings	IFGC							
ANSI MSS SP-58 4993 2009	Pipe Hangers and Supports –Materials, Design, Manufacture, Selection, Application, and Installation	IRC	IFGC						
SP-69-2002 ANSI/MSS SP-58-2009	Pipe Hangers and Supports – <u>Materials, Design, Manufacture, Selection and Application and Installation</u> <i>(SP69 will be withdrawn in 2014 and ANSI MSS SP-58-2009 replaces it)</i>	IMC							
<b>NFPA</b>		<b>National Fire Protection Association</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							

10-40 <u>13</u>	Standard for Portable Fire Extinguishers	IFC	IBC						
13-40 <u>13</u>	Standard for the Installation of Sprinkler Systems	IFC	IBC						
13D-40 <u>13</u>	Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes	IFC	IRC	IBC					
13R- 40 <u>13</u>	Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies Up to and Including Four Stories in Height	IFC	IBC	IEBC					
14-40 <u>13</u>	Standard for the Installation of Standpipe, Private Hydrants and Hose Systems	IFC	IBC						
15-12	Standard for the Water Spray Fixed Systems for Fire Protection	IFC							
16-11	Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems	IFC	IBC						
17-09 <u>13</u>	Standard for Dry Chemical Extinguishing Systems	IFC	IBC						
17A-09 <u>13</u>	Standard for Wet Chemical Extinguishing Systems	IFC	IBC						
20- 40 <u>13</u>	Standard for the Installation of Stationary Pumps for Fire Protection	IFC	IBC						
22-08 <u>13</u>	Standard for the Water Tanks for Private Fire Protection	IFC							
24- 40 <u>13</u>	Standard for the Installation of Private Fire Service Mains and Their Appurtenances	IFC							
25-44 <u>13</u>	Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems	IFC	IPMC						
30A-42 <u>15</u>	Code for Motor Fuel Dispensing Facilities and Repair Garages	IFC	IMC	IFGC					
30B-42 <u>15</u>	Code for the Manufacture and Storage of Aerosol Products	IFC							
31-44 <u>15</u>	Standard for the Installation of Oil-Burning Equipment	IFC	IRC	IMC	IBC				

32-44 <u>15</u>	Drycleaning Plants	IFC	IBC						
33-44 <u>15</u>	<u>Standard for Spray Application Using Flammable or Combustible Materials</u>	IFC							
34-44 <u>15</u>	<u>Standard for Dipping and Coating Processes Using Flammable or Combustible Liquids</u>	IFC							
35-44 <u>15</u>	<u>Standard for Manufacture of Organic Coatings</u>	IFC							
37-40 <u>14</u>	Installation and Use of Stationary Combustion Engines and Gas Turbines	IMC	IFGC						
40-44 <u>15</u>	Standard for the Storage and Handling of Cellulose Nitrate Film	IFC	IBC						
45-44 <u>15</u>	Standard on Fire Protection for Laboratories Using Chemicals	IMC							
50-04 replaced with 55-13 that incorporates NFPA 50	<del>Bulk Oxygen Systems at Consumer Sites</del> <u>Compressed Gases and Cryogenic Fluids Code</u>	IPC							
51- <del>07</del> 13	<u>Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes</u>	IFC	IPC	IFGC					
51A-12	<u>Standard for Acetylene Cylinder Charging Plants</u>	IFC							
52-40 <u>13</u>	Vehicular Fuel <u>Gaseous</u> System Code	IFC							
55-40 <u>13</u>	<del>Standard for the Storage, Use and Handling of Compressed Gases and Cryogenic Fluids Code in Portable and Stationary Containers Cylinders and Tanks</del>	IFC							
58-44 <u>13</u>	Liquefied Petroleum Gas Code	IFC	IBC	IRC	IMC	IFGC			
59A 40 <u>13</u>	<u>Standard for the Production, Storage and Handling of Liquefied Natural Gas (LNG)</u>	IFC							
61- <del>08</del> 13	Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities	IFC	IBC						

69-08 <u>14</u>	Standard on Explosion Prevention Systems	IFC	IMC						
72- 40 <u>13</u>	National Fire Alarm and Signaling Code	IFC	IBC	IRC	IMC	IEBC	IgCC	IWUIC	
80- 40 <u>13</u>	Standard for Fire Doors and Other Opening Protectives	IFC	IBC						
82-09 <u>14</u>	Standard on Incinerators, Waste and Linen Handling Systems and Equipment, 2009 Edition	IMC	IFGC	IBC	IRC				
85-11	Boiler and Construction Combustion Systems Hazards Code	IFC	IBC	IRC	IFGC				
86-44 <u>15</u>	Standard for Ovens and Furnaces	IFC							
88A-44 <u>15</u>	Standard for Parking Structures	IFGC							
91-40 <u>15</u>	Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids	IMC							
92B- 09 <u>12</u>	Smoke Control Management Systems in Malls, Atria, and Large Spaces	IFC	IBC	IMC					
96-44 <u>13</u>	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operation	IMC							
99-42 <u>15</u>	Health Care Facilities Code	IBC	IFC	IEBC	IBC				
101-42 <u>15</u>	Life Safety Code	IBC	IFC	IEBC					
105-40 <u>15</u>	Installation Standard of for Smoke Door Assemblies and Other Opening Protectives	IBC	IFC						
110-40 <u>15</u>	Standard for Emergency and Standby Power Systems	IFC	IBC	IECC					
111-40 <u>15</u>	Standard on Stored Electrical Energy Emergency and Standby Power Systems	IFC	IECC	IBC					
120-40 <u>15</u>	Standard for Fire Prevention and Control in Coal Mines	IFC	IBC						
160-44 <u>15</u>	Standard for the Use of Flame Effects Before an Audience	IFC							
170-09 <u>15</u>	Standard for Fire Safety and Emergency Symbols	IFC	IBC						

204-07 15	Standard for Smoke and Heat Venting	IFC							
211-40 13	Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances	IFC	IBC	IRC	IMC	IFGC			
221-09 15	Standard for High Challenge Fire Walls, Fire Walls and Fire Barrier Walls, 2009 Edition	IBC							
241-09 13	Standard for Safeguarding Construction, Alteration, and Demolition Operations	IFC							
253-44 15	Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source	IBC	IFC						
259-08 13	Standard Test Method for Potential Heat of Building Materials	IBC	IRC						
260-09 13	Standard Methods of Tests and Classification System for Cigarette Ignition Resistance of Components of Upholstered Furniture	IFC							
261-09 13	Standard Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes	IFC							
262-44 15	Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces	IMC							
274-09 13	Standard Test Method to Evaluate Fire Performance Characteristics of Pipe Insulation	IMC							
275-40 13	Standard Method of Fire Tests for the Evaluation of Thermal Barriers Used Over <del>Foam Plastic Insulation</del>	IBC	IRC						
285-11	Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible	IBC							

	Components								
286-44 15	Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth	IFC	IBC	IRC					
288-12	Standard Methods of Fire Tests of <del>Floor</del> Horizontal Fire Door Assemblies Installed in Horizontally Fire-Resistance-Rated Floor Systems	IBC							
289-09 13	Standard Method of Fire Test for Individual Fuel Packages	IFC	IBC						
318-09 15	Standard for the Protection of Semiconductor Fabrication Facilities	IFC							
385- 07 12	Standard for Tank Vehicles for Flammable and Combustible Liquids	IFC							
407-12	<del>Standard for</del> Aircraft Fuel Servicing	IFC							
409-44 15	Aircraft Hangers	IFC	IBC	IFGC					
430-04 400-13	<del>Storage of Liquid and Solid Oxidizers</del> Hazardous Material Code	IFC							
484-42 15	Standard for Combustible Metals	IFC	IBC						
490-10 400-13	Storage of Ammonium Nitrate Hazardous Material Code	IFC							
495-40 13	Explosive Materials Code	IFC							
498-40 13	Standard for Safe Havens and Interchange Lots for Vehicles Transporting Explosives	IFC							
501-40 13	Standard on Manufactured Housing	IRC							
505-44 13	Fire Safety Standard Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operations	IFC							
654-06 13	Standard for Prevention of Fire & Dust Explosions from the Manufacturing, Processing, and	IBC	IFC						

	Handling of Combustible Particulate Solids								
655-12	<u>Standard for the Prevention of Sulfur Fires and Explosions</u>	IBC	IFC						
664-12	<u>Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities</u>	IBC	IFC						
701-10	<u>Standard Methods of Fire Tests for Flame-Propagation of Textiles and Films</u>	IFC	IBC						
703- <del>42</del> 15	<u>Standard for Fire Retardant Treated Wood and Fire Retardant Coatings for Building Materials</u>	IFC							
704-12	<u>Standard System for the Identification of the Hazards of Materials for Emergency Response</u>	IFC	IMC	IBC					
720- <del>09</del> 15	<u>Standard for the Installation of Carbon Monoxide (CO) Warning Equipment Dwelling Units</u>	IFC	IBC	IRC					
750-40 13	<u>Standard on Water Mist Fire Protection Systems</u>	IFC	IMC	IFGC					
853-40 15	<u>Installation of Stationary Fuel Cell Power Systems</u>	IRC							
1122- <del>08</del> 13	<u>Code for Model Rocketry</u>	IFC							
1123-40 13	<u>Code for Fireworks Display</u>	IFC							
1124- <del>08</del> 13	<u>Code for the Manufacturing, Transportation, Storage and Retail Sales of Fireworks and Pyrotechnic Articles</u>	IFC	IBC						
1125-12	<u>Code for the Manufacture of Model Rocket and High Power Rocket Motors</u>	IFC							
1126-44 15	<u>Standard for the Use of Pyrotechnics Before a Proximate Audience</u>	IFC							
1127- <del>08</del> 13	<u>Code for High Power Rocketry</u>	IFC							
1142-12	<u>Standard on Water Supply for Suburban and Rural Fire Fighting</u>	IFC							
2001-12	<u>Standard on Clean Agent Fire Extinguishing</u>	IFC	IBC						

	Systems									
<b>NSF</b>		<b>NSF International</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
3- <del>2008</del> 2010	Commercial Warewashing Equipment	IPC	IgCC							
14- <del>2008e</del> 2011	Plastics Piping System Components and Related Materials	IRC	IPC	ISPSC						
18- <del>2007</del> 2012	Manual Food and Beverage Dispensing Equipment	IPC								
40- <del>2000</del> 2012	Residential Wastewater Treatment Systems	IPSDC								
41- <del>1999</del> 2011	Nonliquid Saturated Treatment Systems (Composing Toilets)	IPSDC								
42- <del>2007ae</del> -2011	Drinking Water Treatment Units - Aesthetic Effects	IRC	IPC							
44- <del>2007</del> 2012	Residential Cation Exchange Water Softeners	IRC	IPC	IgCC						
50- <del>2009</del> 2012	Equipment for Swimming Pools, Spas, Hot Tubs, and other Recreational Water Facilities	IgCC	ISPSC							
53- <del>2007a</del> 2011a	Drinking Water Treatment Units - Health Effects	IRC	IPC							
58- <del>2007</del> 2012	Reverse Osmosis Drinking Water Treatment Systems	IRC	IPC	IgCC						
61- <del>2008</del> 2012	Drinking Water System Components - Health Effects	IRC	IPC	IgCC						
62- <del>2007</del> 2012	Drinking Water Distillation Systems	IPC								
350-2011	Onsite Residential and Commercial Water Reuse Treatment Systems	IgCC								
<b>PCA</b>		<b>Portland Cement Association</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>								
100-07 12	Prescriptive Design of Exterior Concrete Walls for One and Two-Family Dwellings (Pub. No. EB241)	IRC								
<b>PCI</b>		<b>Prestressed Concrete Institute</b>								

Standard Reference Number	Title	Referenced in Code(s):							
MNL 124-89 11	Design for Fire Resistance of Precast Prestressed Concrete	IBC							
<b>PDI</b>		<b>Plumbing and Draining Institute</b>							
Standard Reference Number	Title	Referenced in Code(s):							
PDI G101 (2003) 2012	Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data	IPC							
<b>PTI</b>		<b>Post-Tensioning Institute</b>							
Standard Reference Number	Title	Referenced in Code(s):							
PTI DC -2007 10.5-12	Standard Requirements for Design and Analysis of Shallow Post-tensioned Concrete Foundation on Expansive Soils, Second Edition	IBC							
PTI DC 2007 10.5-12	Standard Requirements for Design and Analysis of Shallow Post-Tensioned Concrete Foundations on Expansive Soils, Third Edition	IBC							
<b>RMI</b>		<b>Rack Manufacturers Institute</b>							
Standard Reference Number	Title	Referenced in Code(s):							
ANSI/MH16.1-08 12	Specification for Design, Testing and Utilization of Industrial Steel Storage Racks	IBC							
<b>SBCA</b>		<b>Structural Building Components Association</b>							
Standard Reference Number	Title	Referenced in Code(s):							
BCSI-2008 2013	Building Component Safety Information Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected	IRC							

	Wood Trusses								
CFS-BCSI-2008	<u>Cold Formed Steel Building Component Safety Information (CFSBCSI) Guide to Good Practice for Handling, Installing &amp; Bracing of Cold-formed Steel Trusses</u>	IRC							
<b>SMACNA</b>		<b>Sheet Metal &amp; Air Conditioning Contractors National Assoc. Inc.</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
SMACNA- <del>85</del> 2012	HVAC Air Duct Leakage Test Manual <u>2nd Edition</u>	IECC-C	IgCC						
SMACNA- <del>ANSI-2005</del> 2015	HVAC Duct Construction Standards - Metal and Flexible <u>4<sup>th</sup> Edition (ANSI)</u>	IMC							
<b>SPRI</b>		<b>Single-Ply Roofing Institute</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
ANSI/SPRI RP-4- <del>08</del> 13	Wind Design Guide for Ballasted Single-ply Roofing Systems	IBC							
ANSI/SPRI/FM4435-ES-1- <del>03</del> 11	Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems	IBC							
<b>TIA</b>		<b>Telecommunications Industry Association</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
222-G-2005	Structural Standards for Antenna Supporting Structures and Antennas, including - Addendum 1, 222-G-1 dated 2007, <u>and Addendum 2, 222-G-2 Dated 2009, Addendum 3, 222-3 dated 2013, and Addendum 4, 222-G-4 dated 2014</u>	IBC							
<b>TMS</b>		<b>The Masonry Society</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
216- <del>07</del> 2013	Standard Method for Determining Fire Resistance of	IBC							

	Concrete and Masonry Construction Assemblies								
302-07 2012	Standard Method for Determining the Sound Transmission Class Rating for Masonry Walls	IBC	IRC	IgCC					
402-44 2013	Building Code for Masonry Structures	IBC	IRC						
403-40 2013	Direct Design Handbook for Masonry Structures	IBC	IRC						
602-44 2013	Specification for Masonry Structures	IBC	IRC						
<b>TPI</b>	<b>Truss Plate Institute</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
TPI 1-2007 2012	National Design Standards for Metal Plate Connected Wood Truss Construction	IBC	IRC						
<b>UL</b>	<b>Underwriters Laboratories</b>								
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
9-2009	Fire Tests of Window Assemblies, <del>with Revisions through April 2005</del>	IBC							
14B-2008	Sliding Hardware for Standard Horizontally Mounted Tin Clad Fire Doors <del>with Revisions through July 2000</del>	IBC							
14C-2006	Swinging Hardware for Standard Tin Clad Fire Doors Mounted Singly and in Pairs, <u>with revisions through December 2008</u>	IBC							
17-2008	Vent or Chimney Connector Dampers for Oil-Fired Appliances, <u>with Revisions through January 2010</u>	IRC	IMC						
80-2007	Steel Tanks for Oil-Burner Fuels and Other Combustible Liquids <u>with Revisions through August 2009</u>	IRC	IFC						

103- <del>2004</del> 2010	Factory-Built Chimneys, for Residential Type and Building Heating Appliances with Revisions through July 2012	IBC	IMC	IFGC	IRC				
127- <del>08</del> 2011	Factory-Built Fireplaces - with Revisions through January 2010	IBC	IRC	IMC					
142-06	Steel Aboveground Tanks for Flammable and Combustible Liquids with Revisions through February 2010	IFC							
174-04	Household Electric Storage Tank Water Heaters - with Revisions through May 2006 September 2012	IRC	IMC						
180- <del>03</del> 2012	Liquid-level Indicating Guarges for Oil Burner Fuels- with revision through March 2007 and Other Combustible Liquids	IRC	IMC						
197- <del>2003</del> 2010	Commercial Electric Cooking Appliances - with revisions through March 2006 June 2011	IMC							
217-2006	Single and Multiple Stations Smoke Alarms - with revisions through April 2010 2012	IBC	IRC	IFC					
263- <del>03</del> 2011	Standard for Fire Test of Building Construction and Materials with revisions through October 2007	IBC	IRC	IWUIC	IMC				
294-1999	Access Control Systems Units with Revisions through September 2010	IBC	IFC						
300-2005 (R2010)	Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Equipment with Revisions through July 16, 2010	IBC	IFC						
305- <del>97</del> 2012	Panic Hardware	IBC	IFC						
325-2002	Door, Drapery, Gate, Louver and Window Operators and Systems - with Revisions through	IBC	IFC	IRC					

	<u>February 2010</u> <u>January 2012</u>								
372-2007	Automatic Electrical Controls for Household and Similar Use - Part 2: Particular Requirements for Burner Ignition Systems and Components with revisions through <u>July 25, 2011</u> <u>2012</u>	ISPSC							
378-06	<u>Draft Equipment, with Revisions through January 2010</u>	IRC	IMC						
391- <del>2006</del> <u>2010</u>	Solid-Fuel and Combination-Fuel Central and Supplementary Furnaces	IMC							
412- <del>2004</del> <u>2011</u>	Refrigeration Unit Coolers - with Revisions through <u>January 2009</u> August 2012	IMC							
499-05	Electric Heating Appliances-with revisions through <u>January 2009</u> April 2012	IMC							
555-2006	Fire Dampers-with revisions through <u>May 2010</u> <u>2012</u>	IBC	IMC						
555S-1999	Smoke Dampers - with Revisions through <u>May 2010</u> <u>2012</u>	IBC	IMC						
641- <del>1995</del> <u>2010</u>	Type L Low-Temperature Venting Systems - <u>with Revisions through July 2009</u>	IBC	IRC	IMC	IFGC				
651- <del>05</del> <u>2011</u>	Schedule 40 and Schedule 80 Rigid PVC Conduit and Fittings with revisions through <u>March 2010</u> <u>2012</u>	IFGC	IRC						
705-2004 <u>Revision 5</u>	Standard for Power Ventilators <u>with revisions through March 2012</u>	IMC							
710B-2004 <u>2011</u>	Recirculating Systems <u>with Revisions through December 2009</u>	IBC	IFC	IMC					
723-08	Standard for Test for Surface Burning Characteristics of Building Materials <u>with Revisions through September 2010</u>	<u>IBC</u>	IFC	IWUIC	IRC				

726-1995	Oil-Fired Boiler Assemblies - with Revisions through <del>April 2010</del> 2011	IRC	IMC	IECC					
729-03	Oil-Fired Floor Furnaces with revisions through <del>April 2010</del> August 2012	IRC	IMC						
730-03	Oil-Fired Wall Furnaces with revisions through <del>April 2010</del> August 2012	IRC	IMC						
731-1995	Oil-Fired Unit Heaters with Revisions through <del>April 2010</del> August 2012	IMC	IECC-C						
737-07 2011	Fireplaces Stoves- with Revisions through January 2010	IRC	IMC						
793-08	Automatically Operated Roof Vents For Smoke and Heat with Revisions through September 2011	IBC	IFC						
795-2006 2011	Commercial-Industrial Gas Heating Equipment with revisions through <del>April 2010</del> September 2012	IRC	IFGC						
842-07	Valves for Flammable Fluids, with Revisions through April 2011	IRC	IMC						
858-05	Household Electric Ranges - with Revisions through <del>May 2010</del> April 2012	IMC	IRC						
864-03	Standard for Control Units and Accessories for Fire Alarm Systems-with Revisions through <del>February 2010</del> August 2012	IBC	IFC						
867-09 2011	Electrostatic Air Cleaners-with Revisions through February 2010	IMC							
873-2007	Temperature-Indicating and -Regulating Equipment, with revisions through July 25, 2011-2012	ISPSC							
875-09	Electric Day Bath Heaters with revisions through <del>October 2009</del> November 2011	IMC	IRC						
896-1993	Oil-Burning Stoves - with Revisions	IRC	IMC						

	through May 2010 <u>August 2012</u>								
900-04	Air Filter Units- with revisions through <del>November 2009</del> <u>February 2012</u>	IFC	IMC						
907- <del>94</del> 2010	Fireplace Accessories - with revisions through <del>July 2006</del> <u>April</u> <u>2010</u>	IMC							
924-06	Emergency Lighting and Power Equipment with revisions through <del>January 2009</del> <u>February 2011</u>	IBC	IFC						
959- <del>2004</del> 2010	Medium Heat Appliance Factory- Built Chimneys - <del>with Revisions</del> <del>through June 2010</del>	IRC	IMC	IFGC					
1004-1- <del>08</del> 2012	Standard for Rotating Electrical Machines General Requirements with revisions through June 23, 2011	ISPSC							
1026- <del>07</del> 2012	Electric Household Cooking and Food Services Appliances	IRC							
1037-99	Antitheft Alarms and Devices <del>with</del> <u>Revisions through</u> <u>December 2009</u>	IFC							
1040-1996	Fire Test of Insulated Wall Construction - with Revisions through September 2007 <u>October 2012</u>	IBC	IRC						
1042- <del>94</del> 2009	Electric Baseboard Heating Equipment- with revisions through <del>February</del> <del>2008</del> <u>June 2010</u>	IRC							
1046- <del>00</del> 2010	Grease Filters for Exhaust Ducts <del>with</del> <u>revisions through</u> <u>January 2012</u>	IMC							
1081-2008	Standard for Swimming Pool Pumps, Filters and Chlorinators, with revisions through <del>March 31, 2010</del> <u>November 2011</u>	ISPSC							
1240-2005	Electric Commercial Clothes-Drying Equipment - with Revisions through <del>October 2009</del> <u>February 2011</u>	IMC							
1261-2001	Electric Water Heaters for Pools and Tubs - with Revisions through	IRC	IMC	ISPSC					

	<u>June 16, 2010</u> <u>July 2012</u>								
1275-2005	Flammable Liquid Storage Cabinets with Revisions through <del>May 2006</del> February 2010	IFC							
1315-95	Standard for Safety for Metal Waste Paper containers- with Revisions through <del>August 2007</del> September 2012	IFC							
1363-2007	Relocatable Power Taps - with revisions through <del>October 2009</del> September 2012	IFC							
1453-04	Electric Booster and Commercial Storage Tank Water Heaters - with Revisions through December 2009 <u>July 2011</u>	IRC	IMC						
1482-40 <u>2011</u>	Solid-Fuel Type Room Heaters	IBC	IRC	IMC	IgCC				
1563-2009	Standard for Electric Hot Tubs, Spas and Association Equipment with revisions through <del>March 31, 2010</del> July 2012	ISPSC							
1673- <del>06</del> <u>2010</u>	Electric Space Heating Cables-with revision through <del>July 2003</del> <u>October 2011</u>	IRC							
1693- <del>02</del> <u>2010</u>	Electric Radiant Heating Panels and Heating Panel Sets, with Revisions through <u>October 2011</u>	IRC							
1703-02	Flat-plate Photovoltaic Modules and Panels - with revisions through <del>April 2008</del> <u>May 2012</u>	IBC							
1738- <del>06</del> <u>2010</u>	Venting Systems for Gas-Burning Appliances, Categories II, III and IV, with Revisions <u>through May 2011</u>	IRC	IFGC						
1741- <del>09</del> <u>2010</u>	Inverters, Converters, Controllers and Interconnection System Equipment with Distributed	IRC							

	Energy Resources- with revisions through November 2005								
1815-09 2012	Standard for Nonducted Heat Recovery Ventilators	IMC							
1897-2004 2012	Uplift Tests for Roof Covering Systems with revisions through May 2008	IBC							
1978-05 2010	Grease Ducts	IMC							
1994-04	Luminous Egress Path Marking Systems with Revisions through April 2010 November 2010	IBC	IFC						
1995-2005 2011	Heating and Cooling Equipment, with revisions through July 2009	IRC	IMC	ISPSC					
1996-04 2009	Electric Duct Heaters-with revisions through July 2009 November 2011	IRC	IMC						
2017-2008	Standards for General-Purpose Signaling Devices and Systems-with Revisions through October 2009 May 2011	IBC	IRC						
2024-2008 2011	Standard for Safety Optical-Fiber and Communications Cable Raceway with Revisions through April 2011	IMC							
2158-1997	For Electric Clothes Dryers - with Revisions through March 2009	IMC							
2158A-2006 2010	Outline of Investigation for Clothes Dryer Transition Duct	IRC	IMC						
2200-98 2012	Stationary Engine Generator Assemblies with Revisions through December 2009	IBC	IFC	IMC	IFGC				

2208-2005 2010	Solvent Distillation Units - with Revisions through December 2009 March 2011	IFC							
2221-2004 2010	Tests of Fire Resistive Grease Duct Enclosure Assemblies	IMC							
2335-04 2010	Fire Tests of Storage Pallets-with Revisions through March 2010 September 2012	IFC							
2518-02 2005	Air Dispersion System Materials	IMC							
2523-09	Standard for Solid Fuel-Fired Hydronic Heating Appliances, Water Heaters, and Boilers, with Revisions through October 2011	IRC	IgCC	IMC					
<b>ULC/CAN</b>		<b>Underwriters Laboratories Canada</b>							
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>							
CAN/ULC S102.2-1988 2010	Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies -with 2000 Revisions	IBC	IRC						
<p><b>Reason:</b> The CP 28 Code Development Policy, Section 4.5.1 requires the updating of referenced standards to be accomplished administratively, and be processed as a Code Change Proposal for consideration by the Administrative Code Change Committee. In September 2012, a letter was sent to each developer of standard that is referenced in the International Codes, asking them to provide ICC with a list of their standards in order to update to the current edition. Above is the list of referenced standards that are to be updated based upon responses from standards developer.</p> <p><b>Public Hearing: Committee: AS AM D Assembly: ASF AMF DF</b></p>									

**Public Hearing Results**

**Committee Action:**

**Approved as Modified**

Errata to this proposal is contained in the [Updates to the 2013 Proposed Changes](http://www.iccsafe.org/cs/codes/Documents/2012-2014Cycle/Proposed-B/00-CompleteGroupB-MonographUpdates.pdf) posted on the ICC website. Please go to <http://www.iccsafe.org/cs/codes/Documents/2012-2014Cycle/Proposed-B/00-CompleteGroupB-MonographUpdates.pdf> for more information

The following is errata that was not posted to the ICC website.

ASTM D5019, while withdrawn by ASTM, is still referenced in the IBC and IRC, so it will remain in the list of referenced standards. This standard will be removed from this update proposal.

<b>ASTM</b>	<b>ASTM International</b>	
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>
D5019-07a	Specification for Reinforced CSM Polymeric Sheet Used in Roofing Membrane	IBC, IRC

FM 4470 was indicated in the posted errata as being updated to 2013, however, the correct reference is 2012.

<b>FM</b>		<b>FM Global</b>	
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>	
FM 4470 <del>2009</del> 2012	Approval Standard for Single-Ply Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.	IBC	

The following revisions are modifications to the proposal.

The following standards were in the automatic update code change proposals. Revise the referenced edition as follows.

<b>AISI</b>		<b>American Iron and Steel Institute</b>	
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>	
AISI S110-07/S1-09 (2012)	Standard for Seismic Design of Cold-Formed Steel Structural Systems-Special Moment Frames, 2007 with Supplement 1, dated 2009, (Reaffirmed 2012)	IBC	
AISI S210-07 [2012]	North American Standard for Cold-formed Steel Framing-Floor and Roof System Design, 2007, (Reaffirmed 2012)	IBC	
AISI S211-07/S1-12 (2012)	North American Standard for Cold-Formed Steel Framing-Wall Stud Design, 2007, including Supplement 1, dated 2012, (Reaffirmed 2012)	IBC	
AISI S212-07 (2012)	North American Standard for Cold-Formed Steel Framing-Header Design, 2007, (Reaffirmed 2012)	IBC	
AISI S213-07/S1-09 (2012)	North American Standard for Cold-Formed Steel Framing-Lateral Design, with Supplement 1, dated 2009, (Reaffirmed 2012)	IBC	
AISI S230-07-07/S2-08 /S3-12 (2012)	Standard for Cold-formed Steel Framing-Prescriptive Method for One- and Two-family Dwellings, 2007, with Supplement 2 3, dated 2008 dated 2012, (Reaffirmed 2012)	IBC, IRC	

The following standards will be removed from the automatic update code change proposal. The current edition will remain the referenced edition.

<b>ACI</b>		<b>American Concrete Institute</b>	
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>	
318-11	Building Code Requirements for Structural Concrete	IBC, IRC, ISPSC	

<b>ICC</b>		<b>International Code Council</b>	
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>	
ICC A117.1-2009	Accessible and Useable Buildings and Facilities	IBC, IEBC, IFC, IRC, IZC	

The following standard is not referenced and should be removed from the IMC Chapter 15.

<b>NFPA</b>		<b>National Fire Protection Association</b>	
<b>Standard Reference Number</b>	<b>Title</b>	<b>Referenced in Code(s):</b>	
<del>NFPA 274-09</del>	<del>Standard Test Method to Evaluate Fire</del>	IMC	

**Committee Reason:** The proponent indicated that AISI standard references were not revised and updated, but were instead reviewed and reaffirmed in 2012. The committee agreed that it is important to clarify this in the reference.

The committee agreed that the edition of ACI 318 should remain at 2011 instead of being updated to 2014. The specific references to sections in the ACI 318 in the International Codes are coordinated with the 2011 edition. The 2014 edition will be substantially reformatted and renumbered. The 2014 edition must be finalized before it is possible to verify that the references will still be complete and accurate. Some of the revisions to references may be considered technical revisions. This correlation may need to be done as part of the Group A codes changes next cycle. If possible to address this in the public comments for Group B, it should be done.

The committee agreed that the edition of ICC A117.1 should remain 2009 instead of being updated to 2014. The ICC A117.1 is undergoing significant changes in relation to the sizes required for accessibility. At the time of the hearings, the standard has not yet reached the stage of a public draft. Once the revisions are finalized, the scoping requirements in the IBC must be reviewed to understand the full impact on spaces and buildings. Since some of the coordination may include revisions to the codes, the reference of the new edition should be delayed to allow for this coordination effort in the Group A and Group B code change cycles.

The proponent pointed out that NFPA 274 is no longer referenced anywhere in the IMC, however, it is still included in the IMC Chapter 15. Rather than being included in the automatic update proposal, it should be removed from the IMC Chapter 15.

The committee approved the automatic updates for the remainder of the standards listed in the proposal. The proposed updates to the standard are consistent with the ICC policies for updates.

A question was raised during the testimony regarding the updating of NFPA 70, National Electrical Code. NFPA 70 will be automatically updated from the 2011 edition to the 2014 edition. The ICC Board of Directors have identified NFPA 70 as a member of the ICC family of codes, therefore, it will not be indicated in the automatic update proposal.

**Assembly Action**

**None**

<b>Public Comment(s)</b>
--------------------------

*Public Comment 1:*

**Matthew Senecal, P.E., representing the American Concrete Institute (ACI), requests Approval as Modified by this Public Comment.**

**Further modify the proposal as follows:**

**ACI**

318 - 44-14                      Building Code Requirements for Structural Concrete

**Commenter's Reason:** At the Dallas Committee Action Hearings, a decision was made to retain the reference to ACI 318-11 instead of updating to the latest edition, ACI 318-14. This was based upon a concern expressed on the floor that, because ACI 318 is going through reorganization, specific ACI 318 section numbers cited within the 2015 IBC may become inconsistent with ACI 318-14, thereby causing confusion to the user..

On July 1, 2013, ACI assembled a task group consisting of the concerned parties to review this issue in detail. The group concluded that if the specific ACI 318 section numbers cited in the 2015 IBC can be editorially changed to the correct ACI 318-14 section numbers, then any potential problem to the user will be avoided.

Editorial changes of this kind are allowed according to Section 4.4 of CP#28. The 318-14 section references compatible with the 2015 IBC have been determined and will be forwarded to ICC Staff for inclusion in the 2015 IBC, and other ICC Codes as appropriate.

It is important to note that there are no technical changes in ACI 318-14 that affect the eight modifications in 2015 IBC Section 1905 or any other provision of the 2015 IBC. This means only the editorial changes discussed above are required to make ACI 318-14 compatible with the 2015 IBC.

**ASTM**

*Public Comment 2:*

**Marcelo M. Hirschler, representing GBH International, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

E814-08b 2013                      Test Method of Fire Tests of Through-Penetration Firestops

E1537-42 2013 Test Method for Fire Testing of Upholstered Furniture

**Commenter's Reason:** Standards date updates

*Public Comment 3:*

**Marcelo M. Hirschler, representing GBH International, and Steve Mawn, representing ASTM International, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

D6662-09 2013 Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards  
E84-2042e 2013A Test Method for Surface Burning Characteristics of Building Materials  
E1354-2044b 2013 Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter  
E1590-42 2013 Test Method for Fire Testing of Mattresses  
E2404—42 2013E1 Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Vinyl Wall or Ceiling Coverings to Assess Surface Burning Characteristics

**Commenter's Reason:** Standards date updates

*Public Comment 4:*

**Steve Mawn, representing ASTM International, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

A74-42 13A Specification for Cast Iron Soil Pipe and Fittings  
A182-42A 13 Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings and Valves and Parts for High-Temperature Service  
A240/A 240M-42- 13A Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications  
A283/A 283M-12A Specification for Low and Intermediate Tensile Strength Carbon Steel Plates  
A307-40 12 Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength  
A312/A 312M-42A 13A Specification for Seamless, and Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes  
A403-42 13 Standard Specification for Wrought Austenitic Stainless Steel Pipe Fittings  
A480/A480M-42 13 Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip  
A510-44 13 Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, Alloy Steel  
A572/A 572M-12A Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel  
A588/A 588M-05 10 Specification for High-Strength Low-Alloy Structural Steel with 50 ksi (345 Mpa) Minimum Yield Point, with Atmospheric Corrosion Resistance  
A875/A 875M-40 13 Standard Specification for Steel Sheet Zinc-5%, Aluminum Alloy-Coated by the Hot-Dip Process

A888-44 <u>13A</u>	Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Application
A924/A 924M- <del>2010a</del> <u>13</u>	Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot Dip Process
A1003/A 1003M- <del>42</del> <u>13A</u>	Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-formed Framing Members
A1008/A1008M-12A	Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, Solution Hardened and Bake Hardenable
B152/B 152M- <del>09</del> <u>13</u>	Specification for Copper Sheet, Strip Plate and Rolled Bar
B241/B 241M- <del>40</del> <u>12E1</u>	Specification for Aluminum and Aluminum-Alloy, Seamless Pipe and Seamless Extruded Tube
B633-44 <u>13</u>	Specification for Electrodeposited Coatings of Zinc on Iron and Steel
C33/C33M- <del>41a</del> <u>13</u>	Specification for Concrete Aggregates
C34- <del>40</del> <u>12</u>	Specification for Structural Clay Load-Bearing Wall Tile
C42/C 42M- <del>42</del> <u>13</u>	Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
C56- <del>2010</del> <u>12</u>	Specification for Limestone Dimension Stone
C59/C 59M-00( <del>2006</del> ) ( <u>2011</u> )	Specification for Gypsum Casting Plaster and Molding Plaster
C62- <del>08</del> <u>13</u>	Specification for Slate Dimension Stone
C67- <del>42</del> <u>13</u>	Test Methods of Sampling and Testing Brick and Structural Clay Tile
C76- <del>42a</del> <u>13A</u>	Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
C90- <del>42</del> <u>13</u>	Specification for Loadbearing Concrete Masonry Units
C94/C 94M- <del>42</del> <u>13</u>	Specification for Construction of Dry-stacked, Surface-Bonded Walls
C109/C 109M- <del>2004b</del> <u>12</u>	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
C126- <del>42</del> <u>13</u>	Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units
C140- <del>2012a</del> <u>13</u>	Test Method Sampling and Testing Concrete Masonry Units and Related Units
C143/C 143M- <del>2010a</del> <u>12</u>	Test Method for Slump of Hydraulic Cement Concrete
C207- <del>2011</del> <u>06(2011)</u>	Specification for Hydrated Lime for Masonry Purposes
C216- <del>42</del> <u>13</u>	Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale)
C317/C 317M-00( <u>2010</u> )	Specification for Gypsum Concrete
C330-/C330M-2009	Specification for Lightweight Aggregates for Structural Concrete
C474- <del>42</del> - <u>13</u>	Test Methods for Joint Treatment Materials for Gypsum Board Construction
C578—12a <b><u>b</u></b>	Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
C587-04( <u>2009</u> )	Specification for Gypsum Veneer Plaster
C595/C95M- <del>2012a</del> <u>13</u>	Specification for Blended Hydraulic Cements
C615/C615M- <del>2011</del> <u>11</u>	Specification for Granite Dimension Stone
C616/C616M- <del>2010</del> <u>10</u>	Specification for Quartz Dimension Stone

C629- <del>2010</del> -10	Specification for Slate Dimension Stone
C635/C635M- <del>42</del> 13	Specification for the Manufacturer, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings
C645-44A 13	Specification for Nonstructural Steel Framing Members
C652- <del>42</del> 13	Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale)
C700-44 13	Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
C728-05 ( <del>2010</del> ) (2013)	Standard Specification for Perlite Thermal Insulation Board
C926- <del>42A</del> 13	Specification for Application of Portland Cement-Based Plaster
C932-06(2013)	Specification for Surface-Applied Bonding Compounds <del>Agents</del> for Exterior Plastering
C933-44 13	Specification for Welded Wire Lath
C1019-44 13	Test Method for Sampling and Testing Grout
C1029- <del>40</del> 13	Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation
C1063-12C D	Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
C1072-44 13	Standard Text Method for Measurement of Masonry Flexural Bond Strength
C1088- <del>09</del> 13	Specification for Thin Veneer Brick Units Made From Clay or Shale
C1107/C1107M -44 13	Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
C1116/C1116M-10A	Standard Specification for Fiber - Reinforced Concrete and Shotcrete
C1157/C1157M-11	Standard Performance Specification for Hydraulic Cement
C1173-10E1	Specification for Flexible Transition Couplings for Underground Piping Systems
C1186-08(2012)	Specification for Flat Fiber Cement Sheets
C1277-44 12	Specification for Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings
C1280- <del>42A</del> 13	Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing
C1289- <del>42a</del> 13E1	Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
C1314-44A 12	Test Method for Compressive Strength of Masonry Prisms
C1396/1396M-44 2013	Specification for Gypsum Ceiling Board
C1513- <del>42</del> 2013	Standard Specification for Concrete Roof Tile
C1563- <del>08</del> 2013	Standard Test Method for Gaskets for Use in Connection with Hub and Spigot Cast Iron Soil Pipe and Fittings for Sanitary Drain, Waste, Vent and Storm Piping Applications
D86- <del>2011b</del> 2012	Test Method for Distillation of Petroleum Products at Atmospheric Pressure
D92- <del>20</del> 12b	Test Method for Flash and Fire Points by Cleveland Open Cup Tester
D93-44 2012	Test Method for Flash Point by Pensky-Martens Closed Cup Tester
D1693- <del>42</del> 2013	Test Method for Environmental Stress-Cracking of Ethylene Plastics
D1970/D1970M-44 2013	Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roof Underlayment for Ice Dam Protection
D2239- <del>20</del> 12A	Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter
D2513- <del>42</del> 2013E1	Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings

D2683- <del>2010</del> <u>E1</u>	Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing
D2737- <del>2012</del> <u>E4A</u>	Specification for Polyethylene (PE) Plastic Tubing
D2974- <del>07A</del> <u>2013</u>	Standard Test Methods for Moisture, Ash and Organic Matter of Peat and other Organic Soils
D3035- <del>2012</del> <u>E1</u>	Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter
D3161/ <del>D3161M-42</del> <u>2013</u>	Test Method for a Wind Resistance of Asphalt Shingles (Fan Induced Method)
D3201- <del>08A</del> <u>E4</u> <u>2013</u>	Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood-Based Products
D3350- <del>08</del> <u>2012</u> <u>E1</u>	Specification for Polyethylene Plastics Pipe and Fittings Materials
D3689- <del>07</del> <u>2013</u> <u>E1</u>	Test Methods for Deep Foundations Under Static Axial Tensile Load
D3737- <del>09</del> <u>E4</u> <u>2012</u>	Practice for Establishing Allowable Properties for Structural Glued Laminated Timber (Glulam)
D4637/ <del>D4637M-42</del> <u>2013</u>	Specification for EPDM Sheet Used in Single-Ply Roof Membrane
D5055- <del>42</del> <u>2013</u>	Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists
D5456- <del>42</del> <u>2013</u>	Standard Specification for Evaluation of Structural Composite Lumber Products
D6223/ <del>D6223M-02(2009)</del> <u>(2011)</u> <u>E1</u>	Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements
D6757- <del>07</del> <u>2013</u>	Standard Specification for Underlayment Felt Containing Inorganic Fibers used in Steep-Slope Roofing
E96/ <del>E96M-40</del> <u>2013</u>	Test Method for Water Vapor Transmission of Materials
E1332-90( <del>2003</del> <u>10A</u> )	Standard Classification for the Determination of Outdoor-Indoor Transmission Class
E1529- <del>40</del> <u>2013</u>	Test Method for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies
E1537- <del>42</del> <u>2013</u>	Test Method for Fire Testing of Upholstered Furniture
E1996- <del>2012</del> <u>A</u>	Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes
E2178- <del>44</del> <u>2013</u>	Standard Test Method for Air Permeance of Building Materials
E2307- <del>42</del> <u>2010</u>	Standard Test Method for Determining Fire Resistance of a Perimeter Joint System Between an Exterior Wall Assembly and a Floor Assembly Using the Intermediate-Scale, Multi-story Test Apparatus <sup>1</sup>
E2336-04( <del>2013</del> )	Standard Test Methods Fire Resistive Grease Duct Enclosure Systems
F441/ <del>F 441M-42</del> <u>2013</u>	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80
F442/ <del>F 442M-42</del> <u>2013</u>	Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)
F714- <del>42</del> <u>E4</u> <u>2013</u>	Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter
F876- <del>40</del> <u>E4</u> <u>2013</u>	Specification for Crosslinked Polyethylene (PEX) Tubing
F877- <del>2011</del> <u>A</u>	Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems
F1055- <del>44</del> <u>2013</u>	Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene Pipe and Tubing
F1496- <del>42</del> <u>2013</u>	Standard Test Method for Performance of Convection Ovens

F1807-42 <u>2013</u>	Specifications for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing
F2080-09 <u>2012</u>	Specification for Cold-Expansion Fittings with Metal Compression-Sleeves for Cross-linked Polyethylene (PEX) Pipe
F2200—14B <u>2013</u>	Standard Specification for Automated Vehicular Gate Construction
F2306/F 2306M-44 <u>2013</u>	Specification for 12" to 60" 300 to 1500 mm annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications

**Commenter's Reason:** Further revisions to ASTM Standards.

### **ICC**

*Public Comment 5:*

**Jonathan Humble, representing ICC Reference Standards Committee, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

ICC A117.1 – ~~2009~~ 2014 Accessible and Usable Buildings and Facilities

**Commenter's Reason (Humble):** The ICC Reference Standards Committee (ICC-REF), a committee organized to review standards and provide an opinion of standards compliance based on Council Policy 28, requests that ADM 62-13 be further modified with the incorporation of ICC A117.1-2014 edition.

The ICC-REF disagrees with the ADM code development committee reasons for reverting back to the 2009 edition of ICC A117.1. Contrary to the code development committee's reason concerning significant changes, Section 4.5.1 of the Council Policy does not stipulate any restrictions to modifications to a standards updating. Rather, the intent is that an updated standard should coordinate with the various I-codes in which the standard is referenced. Since this standard is referenced generically in each of the referenced I-codes, and not specifically by individual section number, it is believed that the update will not yield the coordination issues cited in the code development committee's recommendation.

We therefore recommend that ADM62-13 be further modified by the updating of ICC A117.1 to the 2014 edition.

*Public Comment 6:*

**Kenneth Schoonover, KMS Associates, Inc. representing self, requests Approval as Modified by this Public Comment.**

**Approve the proposed update to ICC/ANSI A117.1-14 for the IBC and the IRC. Retain the reference to ICC/ANSI A117.1-2009 for the IZC, IFC and IEBC.**

**Commenter's Reason:** ICC/ANSI A117.1 Standard is going through its normal revision cycle, which is expected to be complete before the end of this code development cycle. The new edition of A117.1 will be published and available for reference in the 2015 International Codes.

While it is true that there are significant changes, that is not a good reason to freeze the I-Codes reference at the 2009 Edition of the standard. ICC Council Policy #CP28-05 specifically allows an administrative update of a standard to be approved, based upon completion before Dec. 1 of 2014. We anticipate that this standard will be published and available well before December 1, 2014. In writing this rule for completion of a referenced standard a full year after the update is approved, ICC is specifically allowing for completion of technical work on a standard to be completed, with no qualifications regarding the progress of that work. The revisions underway for A117.1 will not impact the content of the 2015 I-Codes. Further, there are a number of reasons why the update to this standard should be approved:

1. If the revisions in question are included in the new standard, there is no good reason not to move forward with them. The changes will have been well vetted, the benefits of the changes have already been established, and the basis for the changes will have been well substantiated.

2. The potential impact on design and construction is no reason delay implementation. It will be several years before the new edition of the I-Codes are widely adopted and enforced. The changes are significant, but not so dramatic as to cause a major upheaval in the design and construction industry. This would not be the first time, or the last, that changes in codes and standards will have had such effect. Designers and builders can and will adapt, and there will be sufficient time to adapt for those who choose to be proactive and plan ahead.

3. There are many other changes and improvements in the standard that will be delayed if the standard is not updated. Among them are revisions that will correlate to a great extent the I-Codes with the new 2010 ADA Standards, which are now adopted and in force. The I-Codes have long sought to be as technically consistent as possible with the ADA Accessibility Guidelines. Designers,

builders and building owners benefit from having model codes that match the federal accessibility requirements. Failure to update the standard will be a lost opportunity to continue that benefit.

4. The A117 Committee has, to date, agreed to minimize the impact of the changes on housing. The proposals under consideration by the committee include exceptions to Chapter 10 of the Standard that will limit the spatial impact Accessible, Type A and Type B units.

**Analysis:** Availability of older editions of a standard are determined by the policies of the standard promulgator. The IFC references the A117.1 in Sections 907.5.2.3.4 (Visible alarms) Group R-2, 1007.9 (Accessible means of egress) Signage and 1010.1 Ramps. Chapters 9 and 10 are repeated in the IBC and IFC. The IZC references the A117.1 in Sections 801.2.4 and 801.3.1. The references are specific to requirements for passenger loading zones and accessible parking spaces. Accessible parking requirements and passenger loading zones are also addressed in the IBC, Section 1106.

*Public Comment 7:*

**Steve Orlowski, representing National Association of Home Builders (NAHB), and Tim Ryan, representing the International Association of Building Officials (IABO), requests Approved as Modified by the Code Committee.**

**Commenter's Reason:** During the code development hearing, the committee agreed that there was a need to modify the list of referenced standard, specifically the updating of the A117.1 standard. CP policy 28 allows for standards that are already referenced in the I-Codes to be updated, even if they are still under development, provide they are completed before December 1, 2014. There are several standards that have been changed or are currently being changed without any opportunity to determine whether the standard should still be referenced in the code or the ability to change the code to reflect changes that have occurred in the standard.

For example the A117 standard is currently discussing changes that may possibly change the required dimensions of clear floor space and dimensions along the accessible route significantly. Without the opportunity to fully understand how existing buildings that were built in accordance with the previous edition of the standard and how the proposed changes will interact with ADA and FHA requirements, NAHB encourages the final assembly to support the modification approved by the committee to not update the reference to the 2014 A117.1 standard.

*Public Comment 8:*

**Robert Eugene, representing UL LLC, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

705-2004 ~~Revision 5~~ Standard for Power Ventilators with revisions through March 2012

**Commenter's Reason:** This modification provides no technical change. The re-formatting provides consistency with the formatting of the other UL referenced standards.

*Public Comment 9:*

**Robert Eugene, representing UL LLC, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

1703-02 Flat-plate Photovoltaic Modules and Panels - with revisions through ~~May 2012~~ November 2014

**Commenter's Reason:** This modification will incorporate additional fire testing provisions. It will also include various clarifications and editorial revisions to the standard.

*Public Comment 10:*

**Robert Eugene, representing UL LLC, requests Approval as Modified by this Public Comment.**

**Modify the proposal as follows:**

14B-2008 Sliding Hardware for Standard Horizontally Mounted Tin Clad Fire Doors with revisions through May 3, 2013

14C-2006 Swinging Hardware for Standard Tin Clad Fire Doors Mounted Singly and in Pairs, with revisions through ~~December 2008~~ May 2013

181A-05 <u>2013</u>	Closure Systems for Use with Rigid Air Ducts and Air Connectors— <del>with Revisions through February 2008</del>
181B-05- <u>2013</u>	Closure Systems for Use with Flexible Air Ducts and Air Connectors— <del>with Revisions through February 2008</del>
268— <del>06</del> <u>2009</u>	Smoke Detectors for Fire <del>Prevention Signaling Alarm Systems</del> — <del>with revisions through October 2003</del>
325-2002	Door, Drapery, Gate, Louver and Window Operators and Systems - with Revisions through <del>January 2012</del> <u>June 2013</u>
343-2008	Pumps for Oil-Burning Appliances — <u>with revisions through June 2013</u>
441-2010	Gas Vents— <del>with Revisions through August 2006</del>
471- <del>06</del> <u>2010</u>	Commercial Refrigerators and Freezers— <del>with Revisions through October 2008</del> <u>December 2012</u>
499-05	Electric Heating Appliances-with revisions through <del>April 2012</del> <u>February 2013</u>
508-99	Industrial Control Equipment— <del>with Revisions through September 2008</del> <u>March 2013</u>
641- <del>1995</del> <u>2010</u>	Type L Low-Temperature Venting Systems <u>with revisions through May 2013</u>
710- <del>95</del> <u>2012</u>	Exhaust Hoods for Commercial Cooking Equipment— <del>with Revisions through December 2009</del>
834-04	Heating, Water Supply and Power Boilers Electric— <del>with Revisions through December 2009</del> <u>January 2013</u>
842-07	Valves for Flammable Fluids, with Revisions through <del>April 2011</del> <u>October 2012</u>
867- <del>00</del> <u>2011</u>	Electrostatic Air Cleaners- <u>with Revisions through February 2013</u>
923— <del>2008</del> <u>2013</u>	Microwave Cooking Appliances— <del>with Revisions through June 2010</del>
1042- <del>94</del> <u>2009</u>	Electric Baseboard Heating Equipment-with revisions through <del>June 2010</del> <u>2013</u>
1081-2008	Standard for Swimming Pool Pumps, Filters and Chlorinators, with revisions through <del>November 2011</del> <u>May 2013</u>
1240-2012	Electric Commercial Clothes-Drying Equipment - with Revisions through <del>February 2011</del> <u>October 2012</u>
1313-93	Standard for Nonmetallic Safety Cans for Petroleum Products— <del>with Revisions through August 2007</del> <u>November 2012</u>
1479-03	Fire Tests of Through-penetration Firestops— <del>with Revisions through March 2010</del> <u>October 2012</u>
1618-09	Wall Protectors, Floor Protectors and Hearth Extensions — <u>with revisions through May 2013</u>
1715-97	Fire Test of Interior Finish Material— <del>with Revisions through April 2008</del> <u>January 2013</u>
1812- <del>2009</del> <u>2013</u>	Standard for Ducted Heat Recovery Ventilators— <del>with Revisions through June 2010</del>
1820-04	Fire Test of Pneumatic Tubing for Flame and Smoke Characteristics— <del>with Revisions through February 2009</del> <u>May 2013</u>
1887-04	Fire Tests of Plastic Sprinkler Pipe for Visible Flame and Smoke Characteristics— <del>with Revisions through February 2009</del> <u>May 2013</u>
2075-04 <u>2013</u>	Standard for Gas and Vapor Detectors and Sensors— <del>with revisions through September 2007</del>
2079-04	Tests for Fire Resistance of Building Joint Systems— <del>with Revisions through June 2008</del> <u>December 2012</u>
2085-97	Protected Above-ground Tanks for Flammable and Combustible Liquids— <del>with Revisions through December 1999</del> <u>September 2010</u>
2200-2012	Stationary Engine Generator Assemblies-- <u>with Revisions through June 2013</u>
2360-00	Test Methods for Determining the Combustibility Characteristics of Plastics Used in Semi-Conductor Tool Construction— <del>with Revisions through June, 2008</del> <u>May 2013</u>

2523-09

Standard for Solid Fuel-Fired Hydronic Heating Appliances, Water Heaters, and Boilers, with Revisions through ~~October 2014~~ February 2013

**Commenter's Reason:** This modification provides additional updates to referenced standards revision dates and titles as applicable.

**Final Hearing Results**

**ADM62-13**

**AMPC1,2,3,4,8,9,10**

---