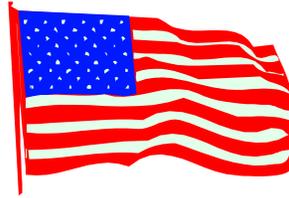


**CALIFORNIA BUILDING STANDARDS COMMISSION**

2525 Natomas Park Drive, Suite 130  
Sacramento, CA 95833-2936  
www.bsc.ca.gov  
(916) 263-0916  
FAX (916) 263-0959



Thank you for visiting the California Building Standards Commission's Web Site

**This document is the**

**October 1, 2002 Errata**

**To The  
2001 Edition of the California Code of Regulations  
Title 24, Part 5  
The California Plumbing Code**

**Should you decide to print these 76 pages, we strongly suggest that you do so on buff colored paper so that you will quickly recognize them as errata pages.**

**This page and the next "cover page" are single sided. Thereafter, all pages are double sided for placement into your copy of the 2001 California Plumbing Code.**

**Sorry, we cannot provide a seven-hole punch for your pages.**

**California Plumbing Code  
(Part 5, Title 24, California Code of Regulations)**

**October 1, 2002 Errata**

It is suggested that the section number as well as the page number be checked when inserting this material and removing the superseded material. In case of doubt, rely on the section numbers rather than the page numbers since the section numbers must run consecutively.

It is further suggested that the superseded material be retained with this revision record sheet so that the prior wording of any section can be easily ascertained.

Please keep the removed pages with this revision for future reference.

Remove Old Pages	Insert New Buff Colored Pages
vii – viii	vii – viii
xi – xii	xi – xii
xiii – xiv	xiii – xiv
xv – xvi	xv – xvi
xvii – xviii	xvii – xviii
xix – xx	xix – xx
xxi – xxii	xxi – xxii
xxiii – xxiv	xxiii – xxiv
xxv – xxvi	xxv – xxvi
3 – 4	3 – 4
5 – 6	5 – 6
9 – 10	9 – 10
11 – 12	11 – 12
15 – 16	15 – 16
17 – 18	17 – 18
19 – 20	19 – 20
21 – 22	21 – 22
23 – 24	23 – 24
25 – 26	25 – 26
37 – 38	37 – 38
43 – 44	43 – 44
55 – 56	55 – 56
63 – 64	63 – 64
69 – 70	69 – 70
71 – 72	71 – 72
79 – 80	79 – 80
85 – 86	85 – 86
107 – 108	107 – 108
111 – 112	111 – 112
145 – 146	145 – 146
147 – 148	147 – 148
153 – 154	153 – 154
169 – 170	169 – 170
179 – 180	179 – 180
185 – 186	185 – 186
History Note Appendix	History Note Appendix

# TABLE OF CONTENTS

<i>California Plumbing Code Preface</i> .....	iii	C A C A
<i>California Building Standards Commission Contact List</i> .....	iv	
UPC Forward.....	v	
<i>How to Distinguish Model Code Language from California Amendments</i> .....	vi	C A
Related Publications and Services.....	viii	
Membership in IAPMO .....	x	
Organization of IAPMO.....	x	
UPC Code Change Cycle.....	x	
How to Contact IAPMO .....	x	
Sample Ordinance for Adopting the 1997 UPC.....	xi	
<i>California Matrix Adoption Tables</i> .....	xii	C A
Chapter 1 — Administration.....	1	
Chapter 2 — Definitions .....	21	
Chapter 3 — General Regulations .....	31	
Chapter 4 — Plumbing Fixtures and Fixture Fittings .....	39	
Chapter 5 — Water Heaters.....	53	
Chapter 6 — Water Supply and Distribution .....	63	
Chapter 7 — Sanitary Drainage .....	83	
Chapter 8 — Indirect Wastes .....	97	
Chapter 9 — Vents .....	101	
Chapter 10 — Traps and Interceptors.....	105	
Chapter 11 — Storm Drainage .....	111	
Chapter 12 — Fuel Piping .....	123	
Chapter 13 — Medical Gas Systems .....	147	
Chapter 14 — Mandatory Referenced Standards .....	157	
<i>Chapter 15 — Piping Applications</i> .....	179	C A C A
<i>Chapter 16 — Plumbing Requirements for Accommodation of Physically Handicapped Person</i> .....	181	
Appendix A — Recommended Rules for Sizing the Water Supply System .....	185	
Appendix B — Explanatory Notes on Combination Waste and Vent Systems .....	201	
Appendix C — Sizing of Category I Venting Systems.....	203	
Appendix D — Sizing Stormwater Drainage Systems .....	223	
Appendix E — Manufactured/Mobile Home Parks and Recreational Vehicle Parks .....	231	
Appendix F — <i>Reserved</i>		
Appendix G — Graywater Systems for Single Family Dwellings .....	239	
<i>Appendix G-A Graywater Systems for Single Family Dwellings</i> .....	249	C A
Appendix H — Recommended Procedures for Design, Construction and Installation of Commercial Kitchen Grease Interceptors.....	261	
Appendix I — Installation Standards.....	265	
Appendix J — Reclaimed Water Systems for Non-Residential Buildings.....	361	
Appendix K — Private Sewage Disposal Systems.....	365	
Appendix L — Alternate Plumbing Systems.....	377	
Useful Tables .....	381	
Index .....	389	
<i>History Note Appendix</i> .....	417	C A

*The Documents Listed are Not by this Reference Adopted by The State of California.*

## RELATED PUBLICATIONS AND SERVICES

IAPMO provides a variety of other products which are useful for inspectors, building officials, architects, engineers, manufacturers, contractors, plumbers, and apprentices.

**IAPMO ORDER DESK**  
20001 WALNUT DRIVE SOUTH  
WALNUT, CA 91789-2825  
PHONE: 909-595-8449, EXT. 113, FAX: 909-594-3690  
FOR PUBLICATIONS ORDERS: 800-85-IAPMO

### **Uniform Plumbing Code — Spanish Edition:**

This UPC will assist the Spanish-speaking community in its utilization of the most widely adopted plumbing code in the world. The UPC was translated in response to numerous requests from jurisdictions throughout the US with large Spanish-speaking populations.

### **Uniform Plumbing Code on CD Rom:**

With this CD, the Code is fully indexed and searchable, making it easy to get to the critical information you need without leafing through bulky books or dealing with torn pages.

### **Uniform Plumbing Code Interpretations Manual:**

This increasingly popular manual is the result of ongoing work by IAPMO's Code Interpretations Committee. Updated annually, it contains hundreds of questions and answers. Many of these questions arise in the daily administration and enforcement of the code. Interpretation requests are accepted from active IAPMO members. Interpretation Request Forms are available in Official magazine or from IAPMO.

### **Uniform Plumbing Code Illustrated Training Manual:**

The UPC Illustrated Training Manual is an excellent reference for anyone involved in the plumbing industry. It has an extensive definitions section and several hundred comprehensive technical diagrams and illustrations. It serves as a textbook, and it also is useful as a valuable tool for explaining the intent and use of the Code.

### **Uniform Plumbing Code Study Guide:**

This book is the perfect complement to the UPC Illustrated Training Manual. Alone, it constitutes a complete chapter-by-chapter self-study course for learning the UPC. It has hundreds of questions, general practice exams, a section on plumbing math, numerous pipe sizing exercises, and a section on fitting identification. The questions and answers in the UPC Study Guide are kept current by IAPMO's Education Committee.

### **Dwelling Requirements of the Uniform Plumbing Code:**

This book contains the UPC requirements which apply to one and two family dwellings only. Its illustrations and photographs make it especially useful for combination dwelling inspectors and the do-it-yourselfer.

### **Cumulative Analysis of Uniform Plumbing Code Changes:**

An excellent reference for learning and understanding plumbing code changes adopted at the Annual Education and Business Conferences. It is also useful for parties preparing proposed code changes.

### **Uniform Mechanical Code**

The Uniform Mechanical Code contains complete requirements for the installation and maintenance of heating, ventilating, cooling, and refrigeration systems.

### **Uniform Mechanical Code Study Guide:**

Similar in design to the Uniform Plumbing Code Study Guide, the Uniform Mechanical Code Study Guide covers all aspects of the UMC in detail.

**Sample Ordinance for Adoption of the 2000 Uniform Plumbing Code**

Ordinance No. \_\_\_\_

An ordinance of the \_\_\_\_ (jurisdiction) adopting the 2000 edition of the "Uniform Plumbing Code", including IAPMO Installations Standards contained in Appendix I, regulating and controlling the design, construction, quality of materials, erection, installation, alteration, repair, location, relocation, replacement, addition to, use or maintenance of any plumbing system in the \_\_\_\_ (jurisdiction); providing for the issuance of permits and collection of fees therefore; repealing Ordinance No. \_\_\_\_ of the \_\_\_\_ (jurisdiction) and all other ordinances and parts of the ordinances in conflict therewith.

The \_\_\_\_ (governing body) of the \_\_\_\_ (jurisdiction) does ordain as follows:

**Section 1.** That certain documents, three (3) copies of which are on file in the office of the \_\_\_\_ (jurisdiction's keeper of records) and the \_\_\_\_ (jurisdiction), being marked and designated as "Uniform Plumbing Code", (including Appendix chapters \_\_\_\_ (fill in the applicable Appendix chapters) be and are hereby adopted as the code of the \_\_\_\_ (jurisdiction) for regulating the design, construction, quality of materials, erection, installation, alteration, repair, location, relocation, replacement, addition to, use or maintenance of plumbing systems in the \_\_\_\_ (jurisdiction) providing for the issuance of permits and collection of fees therefore; and each and all of the regulations, provisions, conditions and terms of such "Uniform Plumbing Code", 2000 edition, and Appendix I published by the International Association of Plumbing and Mechanical Officials, on file in the office of the \_\_\_\_ (jurisdiction) are hereby referred to, adopted and made a part hereof as if fully set out in this ordinance.

**Section 2.** (Incorporate penalties for violations. See Section 102.3.2.)

**Section 3.** That Ordinance No. \_\_\_\_ of \_\_\_\_ (jurisdiction) entitled (fill in here the complete title of the present plumbing ordinance or ordinances in effect at the present time so that they will be repealed by definite mention) and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

**Section 4.** That if any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The \_\_\_\_ (governing body) hereby declares that it would have passed this ordinance, each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

**Section 5.** That the \_\_\_\_ (jurisdiction's keeper of records) is hereby ordered and directed to cause this ordinance to be published. (An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

**Section 6.** That this ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect \_\_\_\_ (time period) from and after the date of its final passage and adoption.

## CALIFORNIA MATRIX ADOPTION TABLES

### Format of the Matrix Adoption Tables

The matrix adoption tables, which follow, show the user which agencies have adopted and/or amended given sections of model code. The building application determines which state agency’s adoptions apply. See Section 101.11 for building application and enforcement responsibilities.

Agencies are grouped together, based on either local or state, enforcement responsibilities. (e.g. regulations from DSA/AC are enforced both at the state and local levels; therefore, DSA/AC is listed twice in each adoption table indicating state enforcement responsibilities and local enforcement responsibilities.)

The side headings identify the scope of the state agencies’ adoption as follows:

### Adopt the Entire UPC Chapter without state amendments

If there is an “X” under a particular state agency’s acronym on this row, this means that particular state agency has adopted the entire model code chapter without any state amendments.

**Example:**

#### CHAPTER 2 — DEFINITIONS

ENFORCING AUTHORITY		LOCAL BUILDING OFFICIAL				LOCAL FIRE OFFICIAL	LOCAL HEALTH OFFICIAL	STATE AGENCY										
ADOPTING AGENCY	CEC	CA	HCD		DSA AC	SFM	DHS	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
			1/AC	1									2	1	2	3		
Adopt entire 2000 UPC chapter without amendments										X								

### Adopt the Entire UPC chapter as amended, state-amended sections are listed below:

If there is an “X” under a particular state agency’s acronym on this row, it means that particular state agency has adopted the entire model code chapter, with state amendments.

Each state-amended section that the agency has added to that particular chapter is listed. There will be an "X" in the column, by that particular section, under the agency's acronym, as well as an "X" by each section that the agency has adopted.

**Example:**

#### CHAPTER 2 — DEFINITIONS

ENFORCING AUTHORITY		LOCAL BUILDING OFFICIAL				LOCAL FIRE OFFICIAL	LOCAL HEALTH OFFICIAL	STATE AGENCY										
ADOPTING AGENCY	CEC	CA	HCD		DSA AC	SFM	DHS	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
			1/AC	1									2	1	2	3		
Adopt entire 2000 UPC chapter as amended (amendments listed below)				X	X							X	X	X	X			
202.0	CA			X	X	X						X	X	X	X			

**Adopts only those section which are listed below:**

If there is an "X" under a particular state agency's acronym on this row, it means that particular state agency is adopting only specific model code or state-amended sections within this chapter. There will be an "X" in the column under the agency's acronym, as well as an "X" by each section that the agency has adopted.

**Example:**

**CHAPTER 2 — DEFINITIONS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL		HCD			LOCAL FIRE OFFICIAL	LOCAL HEALTH OFFICIAL	STATE AGENCY												
	CEC	CA	1/AC	1	2			DSA AC	SFM	DHS	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH
Adopt only those sections which are listed below							X		X											
202.0 CA			X	X	X		X	X							X	X	X	X		
202.0 UPC							X						X							

**Legend of Abbreviations of Adopting State Agencies**

- CA Department of Consumer Affairs:
  - Board of Barbering and Cosmetology
  - Board of Veterinary Medicine Examiners
  - Board of Pharmacy
  - Acupuncture Examining Committee
  - Bureau of Home Furnishings
- HCD Department of Housing and Community Development
- DSA/AC Division of the State Architect/Access Compliance
- SFM Office of the State Fire Marshal
- DHS Department of Health Services
- AGR Department of Food and Agriculture
- BOC Board of Corrections
- BSC California Building Standards Commission
- SPCB Structural Pest Control Board
- DSA/SS Division of the State Architect/Structural Safety Section
- OSHPD Office of Statewide Health Planning and Development
- DOSH Division of Occupational Safety and Health
- SL State Library



**Chapter 1 – ADMINISTRATION (Cont.)**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL						LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD					DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
				1	1AC	2									1	2	3	4		
Adopt entire UPC chapter without amendments																				
Adopt entire UPC chapter as amended (amendments listed below)													X	X	X	X				
Adopt only those sections which are listed below	X	X	X	X	X	X	X	X	X	X	X	X								
103.5.5.1 CA			X	X																
103.5.5.2 CA			X	X																
103.9 CA							X													
103.9.1 CA							X													
103.9.2 CA							X													
103.9.3 CA							X													
103.9.4 CA							X													
103.9.5 CA							X													

\*DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 2 – DEFINITIONS**  
*Please refer to Chapter 2 for specific adoptions*

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL						LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD					DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				DOSH	SL
				1	1AC	2									1	2	3	4		
Adopt entire UPC chapter without amendments											X									
Adopt entire UPC chapter as amended (amendments listed below)			X	X	X							X	X	X	X	X				
Adopt only those sections which are listed below						X	X	X												
203.0 CA			X	X	X	X					X									
204.0 CA			X		X															
205.0 CA				X				X			X									
206.0 CA			X	X	X															
207.0 CA			X	X	X						X									
208.0 CA								X												
210.0 CA			X	X	X								X	X	X	X				
214.0 CA			X		X	X														
216.0 CA			X		X						X									
218.0 CA											X									
221.0 CA			X	X	X	X					X									
222.0 CA			X		X	X														
223.0 CA			X		X	X	X	X			X	X	X	X	X					
225.0 CA			X		X	X														

**Chapter 3  
GENERAL REGULATIONS**

ENFORCING AUTHORITY Adopting Agency	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL	LOCAL HEALTH OFFICIAL	STATE AGENCIES										
	CEC	CA	HCD		DSA AC	SFM	DHS	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	BL
			1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments					X						X							
Adopt entire UPC chapter as amended (amendments listed below)			X		X							X	X	X	X	X		
Adopt only those sections which are listed below						X												
301.2.5 CA			X															
301.2.6 CA					X													
301.1.3 CA			X		X													
303.0 (Exception) CA			X															
304.0 (Exception) CA			X															
311.9 CA													X	X	X	X		
311.10 CA													X		X	X		
311.11 CA			◆		◆	X												
311.12 CA													X	X		X		
316.1.6.1 CA			X		X													
316.2.4 CA			X		X							X	X	X	X	X		

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

The ◆ designation indicates that this State Fire Marshal's adoption of this Chapter or individual sections is (See Section 101.11.1 of the California Plumbing Code) applicable to structures subject to HCD 1 and/ or HCD 2. •

**Chapter 4  
PLUMBING FIXTURES**

ENFORCING AUTHORITY  Adopting Agency	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL	LOCAL HEALTH OFFICIAL	STATE AGENCIES											
	CEC	CA	HCD			DSA AC	SFM	DHS	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
			1	1AC	2									1	2	3	4		
Adopt entire UPC chapter without amendments												X							
Adopt entire UPC chapter as amended (amendments listed below)			X	X	X					X			X						
Adopt only those sections which are listed below		X				X		X			X			X	X	X	X		
401.0-401.2 UPC														X	X	X	X		
402.0 CA			X		X														
402.1-402.2 UPC														X	X	X	X		
402.3 UPC			†	†	†														
402.4 UPC			†	†	†														
402.5 UPC			†	†	†														
402.5 CA														X	X	X	X		
402.6 UPC			†	†	†									X	X	X	X		
402.7 UPC			†	†	†														
402.7 CA														X	X	X	X		
402.8 UPC			†	†	†														
402.8 (w/ Exception) UPC														X	X	X	X		
402.9 UPC			†	†	†									X	X	X	X		
403.0-403.1 UPC														X	X	X	X		
404.0 UPC														X	X	X	X		
405.0-405.4 UPC														X	X	X	X		
406.0-406.3 UPC														X	X	X	X		
406.4 UPC			†	†	†									X	X	X	X		
407.0-407.3 UPC														X	X	X	X		
407.4.1 CA								X						X	X	X	X		
407.4.2 CA			X		X														
408.0-408.6 UPC														X	X	X	X		
408.7 UPC			†	†	†														
408.8 UPC														X	X	X	X		
409.0-409.2.4 UPC														X	X	X	X		
410.0 UPC														X	X	X	X		
411.0-411.3 UPC														X	X	X	X		
411.4 UPC			†	†	†									X	X	X	X		
411.5 UPC			†	†	†									X	X	X	X		
411.6 UPC			†	†	†									X	X	X	X		
412.0 (Note) CA						X													
412.0-412.1.2 UPC														X	X	X	X		
412.6 (Except #1) UPC			†	†	†														
412.6 (Except #2) CA				X															
412.6 (Except #3) CA					X														
412.7 (Except #1) UPC			†	†	†														
412.7 (Except #2) CA			X	X	X														
413.1 CA														X	X	X	X		
413.2 UPC														X	X	X	X		
413.3 UPC			†	†	†									X	X	X	X		
413.4 UPC														X	X	X	X		
413.5 UPC			†	†	†														
413.5.1 UPC			†	†	†									X	X	X	X		
413.5.2 UPC			†	†	†									X	X	X	X		
413.5.3 UPC			†	†	†									X	X	X	X		
413.6 UPC			†	†	†														
413.6.1 CA								X											
413.7 UPC			†	†	†														
413.10 CA		X																	
413.11 CA		X																	
413.12 CA								X											
414.0 UPC			†	†	†														
415.0-415.4 UPC														X	X	X	X		
417.0-417.2 UPC														X	X	X	X		
419.0 UPC														X	X	X	X		
420.0 UPC														X	X	X	X		
Table 4-1 (Except #1) CA				X	X														
Table 4-1 (Except #2) CA			X																
Table 4-1 CA						X			X	X				X	X	X	X		

This state agency adopts the entire chapter except for those sections indicated by the following symbol: †.

**Chapter 4 – PLUMBING FIXTURES (Cont.)**

ENFORCING AUTHORITY Adopting Agency	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	CEC	CA	HCD					DSA AC	DWR	AGR	BOC	BSC	DSS	OSHPD				* DOSH	SL
			1	1AC	2									1	2	3	4		
Adopt entire UPC chapter without amendments										X									
Adopt entire UPC chapter as amended (amendments listed below)			X	X	X			X			X								
Adopt only those sections which are listed below		X				X		X				X	X	X	X				
Table 4-2 CA					X					X		X	X	X	X				
Table 4-3 CA					X			X		X									
Table 4-4 CA					X					X									

This state agency adopts the entire chapter except for those sections indicated by the following symbol: †

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 5  
WATER HEATERS**

ENFORCING AUTHORITY Adopting Agency	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	CEC	CA	HCD					DSA AC	DWR	AGR	BOC	BSC	DSS	OSHPD				* DOSH	SL
			1	1AC	2									1	2	3	4		
Adopt entire UPC chapter without amendments						X					X	X	X	X	X				
Adopt entire UPC chapter as amended (amendments listed below)			X		X														
Adopt only those sections which are listed below																			
510.5.1. CA			X		X														

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 6  
WATER SUPPLY AND DISTRIBUTION**

ENFORCING AUTHORITY Adopting Agency	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL	LOCAL HEALTH OFFICIAL	STATE AGENCIES											
	CEC	CA	HCD			DSA AC	SFM	DHS	DWR	AGR	BOC	BSC	DSA SS	DSHPD				* DOSH	SL
			1	1AC	2									1	2	3	4		
Adopt entire UPC chapter without amendments												X							
Adopt entire UPC chapter as amended (amendments listed below)			X		X					X			X	X	X	X	X		
Adopt only those sections which are listed below							X												
601.1.1 w/ exceptions			X																
601.1.1 w/o exceptions					X														
601.2.2 CA			X		X														
601.2.3 CA			X		X														
601.4 CA			X		X														
601.5 CA		X																	
601.6 CA																			
601.6.1 CA										X									
601.6.2 CA										X									
601.6.3 CA										X									
601.6.4 CA										X									
601.6.5 CA										X									
601.6.6 CA										X									
601.6.7 CA										X									
601.6.7.1 CA										X									
601.6.8 CA										X									
601.7 CA										X									
601.7.1 CA										X									
601.7.2 CA										X									
601.7.3 CA										X									
601.8 CA										X									
601.9 CA										X									
601.9.1 CA										X									
601.9.1.1 CA										X									
601.9.1.2 CA										X									
601.9.2 CA										X									
601.9.3 CA										X									
601.9.3.1 CA										X									
601.9.4 CA										X									
603.4.12 CA			X		X														
603.4.18 CA			†		†		X												
603.4.18.1 CA			†		†														
603.4.18.2 CA			†		†														
603.4.18.3 CA			†		†														
603.4.18.4 CA			†		†														
603.4.18.5 CA			†		†														
604.1 CA			†		†							X	X	X	X	X			
604.1 except #1 CA													X	X	X	X			
604.1 except #2 CA							X		X		X	X							
604.1 except #3 CA													X	X	X	X			
604.1.1 CA			X		X														
604.1.2 CA			X																
604.11 UPC			†	†	†				†		†	†	†	†	†	†	†	†	†
604.11.1 UPC			†	†	†				†		†	†	†	†	†	†	†	†	†
604.11.2 UPC			†	†	†				†		†	†	†	†	†	†	†	†	†
605.8 CA													X	X		X			
606.1.3 UPC			†		†														
606.2.1 CA			†		†														
606.2.4 CA			X		X														
606.2.4.1 CA												X	X	X	X	X			
606.2.4.2 CA			X		X														
609.8 UPC			†		†														
609.10 UPC			†		†														
609.11 CA												X	X	X		X			
612.0 CA													X	X	X	X			
612.5 CA													X	X	X	X			
613.0 CA													X	X	X	X			
614.0 CA													X	X	X	X			
614.1 CA													X	X	X	X			
614.2 CA													X	X	X	X			
614.3 CA													X	X	X	X			

This state agency adopts the entire chapter except for those sections indicated by the following symbol: †.

**Chapter 6 – WATER SUPPLY AND DISTRIBUTION (Cont.)**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments										X									
Adopt entire UPC chapter as amended (amendments listed below)			X		X			X			X	X	X	X	X				
Adopt only those sections which are listed below							X												
814.4 CA											X								
Table 6-4 UPC			X		X														

This state agency adopts the entire chapter except for those sections indicated by the following symbol. †

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 7  
SANITARY DRAINAGE**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments										X									
Adopt entire UPC chapter as amended (amendments listed below)			X		X						X	X	X	X	X				
Adopt only those sections which are listed below																			
Table 7-3			X		X														
701.1.2.1 CA											X	X	X	X	X				
701.1.2.2 CA			X		X														
705.1.1.1 CA			X		X						X	X	X	X	X				
705.1.7 except CA			X		X														
705.1.9 except CA			X		X														
705.2.5 CA			X		X						X	X	X	X	X				
710.3.3.1 CA			X		X														
717.1 CA									X										
724.0 CA									X										
725.0 CA									X										
726.0 CA									X										
727.0 CA													X						

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 8  
INDIRECT WASTES**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments			X		X						X								
Adopt entire UPC chapter as amended (amendments listed below)											X	X	X	X	X				
Adopt only those sections which are listed below																			
811.2.1 CA											X								
815.2.1 CA												X	X	X	X				

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 9  
VENTS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES												
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHDPD				* DOSH	SL	
				1	1AC									2	1	2	3			4
Adopt entire UPC chapter without amendments											X	X								
Adopt entire UPC chapter as amended (amendments listed below)			X		X								X	X	X	X				
Adopt only those sections which are listed below																				
903.1.2.1 CA													X	X	X	X				
903.1.2.2 CA			X		X															
903.3.1 CA			X		X															

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 10  
TRAPS AND INTERCEPTORS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES												
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHDPD				* DOSH	SL	
				1	1AC									2	1	2	3			4
Adopt entire UPC chapter without amendments											X	X								
Adopt entire UPC chapter as amended (amendments listed below)			X	X	X				X				X	X	X	X				
Adopt only those sections which are listed below																				
1005.0 CA				X	X															
1010.1 CA									X											
1010.2 CA									X											
1010.3 CA									X											
1010.4 CA									X											
1013.0 UPC			†		†															
1014.1.1 CA													X	X	X	X				
1014.9 CA													X	X	X	X				
1014.10 CA													X	X	X	X				
1016.0 UPC			†		†															
1016.1 UPC			†		†															
1016.1.1 UPC			†		†															
1016.1.2 UPC			†		†															
1016.2 UPC			†		†															
1016.3 UPC			†		†															
1016.4 UPC			†		†															
1017.0 UPC			†		†															
1017.1 UPC			†		†															
1017.2 UPC			†		†															
1017.3 UPC			†		†															

This state agency adopts the entire chapter except for those sections indicated by the following symbol: †

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 11  
STORM DRAINAGE**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL						LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES										
	Adopting Agency	CEC	CA	HCD		DSA AC			DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments										X	X								
Adopt entire UPC chapter as amended (amendments listed below)			X		X							X	X	X	X				
Adopt only those sections which are listed below																			
1101.1.1 CA			X		X														
1101.3.1 CA			X		X														
1101.3.2 CA												X	X	X	X				
1101.3.3 CA			X		X														
1101.5.1.1 CA			X		X														
1102.1.2 CA												X	X	X	X				
1102.1.2.1 CA			X		X														

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 12  
FUEL PIPING**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL						LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES										
	Adopting Agency	CEC	CA	HCD		DSA AC			DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments							X				X								
Adopt entire UPC chapter as amended (amendments listed below)			X		X						X								
Adopt only those sections which are listed below																			
1202.2.1 CA											X								
1210.1 CA			X		X														
1211.2.1 CA											X								
1216.4 UPC			†		†														
1216.4.1 CA			X		X														

This state agency adopts the entire chapter except for those sections indicated by the following symbol: †

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 13  
MEDICAL GAS SYSTEMS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL						LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES										
	Adopting Agency	CEC	CA	HCD		DSA AC			DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments										X									
Adopt entire UPC chapter as amended (amendments listed below)																			
Adopt only those sections which are listed below							X					X	X	X	X				
1301.0 CA							X					X	X	X	X				

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

This state agency adopts the entire chapter except for those sections indicated by the following symbol: †.

**Chapter 14  
MANDATORY REFERENCED STANDARDS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments										X									
Adopt entire UPC chapter as amended (amendments listed below)			X		X	X					X	X	X	X	X				
Adopt only those sections which are listed below																			
Table 14-1	CA					X					X	X	X	X	X				

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 15  
PIPING APPLICATIONS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				* DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments																			
Adopt entire UPC chapter as amended (amendments listed below)			◆		◆	X													
Adopt only those sections which are listed below			X		X														
1501.2	CA		X		X														
1505.4	UPC					X													
1505.5	UPC					X													
1506.4	CA					X													
1506.5	CA					X													
1507.0	UPC					X													

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**Chapter 16  
PLUMBING REQUIREMENTS FOR ACCOMMODATION OF PHYSICALLY HANDICAPPED PERSON**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments																			
Adopt entire UPC chapter as amended (amendments listed below)																			
Adopt only those sections which are listed below						X													
1601.0	CA					X													

Chapter 15 of the 1998 California Plumbing Code "Plumbing Requirements for Design Safety for Accessibility" has been removed and incorporated into Chapter 11A of the 2000 California Building Code "Housing Accessibility". The ◆ designation indicates that this State Fire Marshal's adoption of this Chapter or individual sections is (See Section 101.11.1 of the California Plumbing Code) applicable to structures subject to HCD 1 and/ or HCD 2.

**APPENDIX A  
RECOMMENDED RULES FOR SIZING THE WATER SUPPLY SYSTEM**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPO				* DOSH	SL
				1	TAC									2	1	2	3		
Adopt entire UPC chapter without amendments										X	X	X	X	X					
Adopt entire UPC chapter as amended (amendments listed below)			X		X														
Adopt only those sections which are listed below							X												
Table A-2 Note	CA		X		X		X												

\* DOSH has not adopted the 2000 edition of the Uniform Plumbing Code. The 1995 edition of the California Plumbing Code remains effective.

**APPENDIX B  
EXPLANATORY NOTES ON COMBINATION WASTE AND VENT SYSTEMS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPO				DOSH	SL
				1	TAC									2	1	2	3		
Adopt entire UPC chapter without amendments										X	X	X	X	X					
Adopt entire UPC chapter as amended (amendments listed below)																			
Adopt only those sections which are listed below																			

**APPENDIX C  
SIZING OF CATEGORY I VENTING SYSTEMS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPO				DOSH	SL
				1	TAC									2	1	2	3		
Adopt entire UPC chapter without amendments			X		X							X	X	X	X				
Adopt entire UPC chapter as amended (amendments listed below)																			
Adopt only those sections which are listed below																			

**APPENDIX D  
SIZING STORMWATER DRAINAGE SYSTEMS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments				X		X								X	X	X	X		
Adopt entire UPC chapter as amended (amendments listed below)											X								
Adopt only those sections which are listed below																			
D1 (s.1)	CA										X								

**APPENDIX G  
GRAYWATER SYSTEMS FOR SINGLE FAMILY DWELLINGS**

**(NOT ADOPTED BY CBSC)**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments																			
Adopt entire UPC chapter as amended (amendments listed below)																			
Adopt only those sections which are listed below																			

**APPENDIX H  
RECOMMENDED PROCEDURES FOR DESIGN, CONSTRUCTION AND  
INSTALLATION OF COMMERCIAL KITCHEN GREASE INTERCEPTORS**

ENFORCING AUTHORITY	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL SFM	LOCAL HEALTH OFFICIAL DHS	STATE AGENCIES											
	Adopting Agency	CEC	CA	HCD				DSA AC	DWR	AGR	BOC	BSC	DSA SS	OSHPD				DOSH	SL
				1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments				X		X					X	X	X	X	X	X	X		
Adopt entire UPC chapter as amended (amendments listed below)																			
Adopt only those sections which are listed below																			



**APPENDIX I  
INSTALLATION STANDARDS  
(NOT ADOPTED BY CBSC)**

ENFORCING AUTHORITY  Adopting Agency	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL	LOCAL HEALTH OFFICIAL	STATE AGENCIES										
	CEC	CA	HCD		DSA AC	SFM	DHS	DWR	AGR	BOC	BSC	DSA SS	OSHPD				DOSH	SL
			1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments													X	X	X	X		
Adopt entire UPC chapter as amended (amendments listed below)			X		X													
Adopt only those sections which are listed below																		
301.0.1 CA			X		X													
301.0.1.1 CA			X		X													
301.0.2 CA			X		X													
301.0.2.1 CA			X		X													
301.0.2.2 CA			X		X													

**APPENDIX K  
PRIVATE SEWAGE DISPOSAL SYSTEM  
(NOT ADOPTED BY CBSC)**

ENFORCING AUTHORITY  Adopting Agency	LOCAL BUILDING OFFICIAL					LOCAL FIRE OFFICIAL	LOCAL HEALTH OFFICIAL	STATE AGENCIES										
	CEC	CA	HCD		DSA AC	SFM	DHS	DWR	AGR	BOC	BSC	DSA SS	OSHPD				DOSH	SL
			1	1AC									2	1	2	3		
Adopt entire UPC chapter without amendments			X		X							X						
Adopt entire UPC chapter as amended (amendments listed below)																		
Adopt only those sections which are listed below																		









Application-Organized Camps.

Authority Cited-H&SC § 18897.3.

Application-All hotels, motels lodging houses, apart - ment houses and dwellings, including congregate res - idences and buildings and structures accessory there - to.

Multiple-story structures existing on January 1, 1975, let for human habitation, including and limited to, hotels motels, apartment houses, less than 75 feet (22 860 mm) above the lowest floor level having build - ing access, wherein rooms used for sleeping are let above the ground floor.

Authority Cited-H&SC § 13143.2 and 17921.

Application-Certified family-care homes, out-of-home placement facilities, halfway houses, drug and/or alco - hol rehabilitation facilities and any building or struc - ture used or intended for use as a home or institu - tion for the housing of any person of any age when such person is referred to or placed within such home or institution for any age when such person is referred to or placed within such home or institution for protec - tive social care and supervision services by any gov - ernmental agency.

Authority Cited-H&SC §13143.6.

Application-Tents, awnings or other fabric enclosures used in connection with any occupancy.

Authority Cited-H&SC § 13116.

Fire alarm devices, equipment and systems in connec - tion with any occupancy.

Authority Cited-H&SC § 13114.

Hazardous materials

Authority Cited-H&SC § 13143.9.

Flammable and combustible liquids

Authority Cited-H&SC § 13143.6

Enforcing Agency-The responsibility for enforcement of building standards adopted by the State Fire Marshal and published in the California Building Standards Code relating to fire and panic safety and other regulations of the Office of the State Fire Marshal shall be as follows:

1. The city, county, or city and county with jurisdic - tion in the area affected by the standard or regulation shall delegate the enforcement of the building stan - dards relating to fire and panic safety and other regu - lations of the State Fire Marshal as they relate to Group R, Division 3 dwellings to either of the follow - ing:

1.1 The chief of the fire authority of the city, county or city and county, or an authorized representative.

1.2 The chief building official of the city, county, or city and county, or an authorized representative.

2. The chief of any city or county fire department or of

any fire-protection district, and authorized representa - tives, shall enforce within the jurisdiction the building standards and other regulations of the state marshal, except those described in Items 1 and 4.

3. The State Fire Marshal shall have authority to enforce the building standards and other regulations of the State Fire Marshal in areas outside of corporate cities and districts providing fire-protection services.

4. The State Fire Marshal shall have authority to enforce the building standards and other regulations of the State Fire Marshal in corporate cities and dis - tricts providing fire-protection services on request of the chief fire official or the governing body.

5. Any fee charged pursuant to the enforcement authority of this section shall not exceed the estimated reasonable<sup>3</sup> cost of providing the service for which the fee is charged pursuant to § 66014 of the Government Code.

101.11.14 [For SHB/DSA]

SHB – State Historical Building Code Advisory Board-DSA.

Application-Qualified historical buildings and struc - tures and their associated sites.

Enforcing Agency-State or local agency specified by the applicable provisions of law.

Authority Cited-H&SC § 18959.5.

Reference-H&SC § 18950 through 18961.

101.11.15 [For SL]

SL – State Librarian.

Application-Public library construction and renova - tion using funds from the CA Library Construction and Renovation Bond Act of 1988.

Enforcing Agency-State librarian.

Authority Cited-Education Code § 19960.

Reference-Education Code § 19950 through 19981.

101.12 [For HCD 1] Local Variances.

The applicable subsection of Health and Safety Code Section 17958.5 is repeated here for clarity and reads as follows:

Section 17958.5 Except as provided in Section 17922.6, in adopting the ordinances or regulations pursuant to Section 17958, a city or county may make such changes or modification in the requirements con - tained in the provisions published in the California Building Standards Code and the other regulations adopted pursuant to Section 17922 as it determines, pursuant to the provisions of Section 17958.7, are rea - sonably necessary because of local climatic, geological, or topographical conditions.

For purposes of this subdivision, a city and coun - ty may make reasonably necessary modifications to the requirements, adopted pursuant to Section 17922,

17922, contained in the provisions of the code and regulations on the basis of local conditions.

**101.13 [For HCD 1] Findings, Filings, and Rejection of Modifications.**

The applicable subsections of Health and Safety Code Section 17958.7 are repeated here for clarity and read as follows:

**Section 17958.7 (a)** Except as provided in Section 17922.6, the governing body of a city or county, before making any modifications or changes pursuant to pursuant to Section 17958.5, shall make an express finding that such modifications or changes are reasonably necessary because of local climatic, geological or topographical conditions. Such a finding shall be available as a public record. A copy of those findings, together with the modification or change expressly marked and identified to which each such finding refers shall be filed with the California Building Standards Commission. No modification or change shall become effective or operative for any purposes until the finding and the modification or change have been filed with the California Building Standards Commission.

**(b)** The California Building Standards Commission may reject a modification or change filed by the governing body of a city or county if no finding was submitted.

**101.14 [For HCD 1 & HCD 2 SFM] Ratification by City Council.**

The applicable subsections of Health and Safety Code Section 13869.7 are repeated here for clarity and read as follows:

**Section 13869.7. (a)** Any fire-protection district organized pursuant to Part 2.7 (commencing with Section 13800) of Division 12 may adopt building standards relating to fire and panic safety that are more stringent than those building standards adopted by the State Fire Marshal and contained in the California Building Standards Code. For these purposes, the district board shall be deemed a legislative body and the district shall be deemed a local agency. Any changes or modifications that are more stringent than the requirements published in the California Building Standards Code relating to fire and panic safety shall be subject to subdivision (b) of Section 18941.5.

**(b)** Any fire protection district that proposes to adopt an ordinance pursuant to this section shall, not less than 30 days prior to noticing a proposed ordinance for public hearing, provide a copy of that ordinance, together with the adopted findings made pursuant to subdivision (a), to the city, county, or city and county where the ordinance apply. The city, county, or city and county, may provide the district with written comments, which shall become a part of the fire protection district's public hearing record.

tection district's public hearing record.

**(c)** The fire-protection district shall transmit the adopted ordinance to the city, county, or city and county where the ordinance will apply. The legislative body of the city, county, or city and county, may ratify, modify or deny an adopted ordinance and transmit its determination to the district within 15 days of the determination. Any modification or denial of an adopted ordinance shall include a written statement describing the reasons for any modification or denial. No ordinance adopted by the district shall be effective until ratification by the city, county, or city and county where the ordinance applies. Upon ratification of an adopted ordinance, the city, county, or city and county, shall file a copy of the findings of the city, county, or city and county, together with the adopted ordinance expressly marked and identified to which each finding refers, with the Department of Housing and Community Development.

**102.0 Organization and Enforcement**

**102.1 Administrative Authority**

The Administrative Authority shall be the Authority duly appointed to enforce this Code.

**102.2 Duties and Powers of the Administrative Authority**

**102.2.1** The Administrative Authority may appoint such assistants, deputies, inspectors, or other employees as are necessary to carry out the functions of the department and this Code.

**102.2.1.1 [For SFM]** Pursuant to Health and Safety Code Section 13146, the responsibility for enforcement of building standards adopted by the state fire marshal and published in the California Building Standards Code relating to fire and panic safety and other regulations of the state fire marshal shall be as follows:

1. The same agency or entity to whom authority to enforce building standards not related to fire and panic safety is delegated by the city, county, or city and county with jurisdiction the area affected by the building standard shall enforce within its jurisdiction the building standards and other regulations of the state fire marshal as they relate to Group R, Division 3 Occupancies, as defined in Section 310 of Part 2 of the California Building Standards Code.
2. The chief of any city or county fire department or of any fire district, and his or her authorized representatives, shall enforce within its jurisdiction the building standards and other regulations of the state fire marshal, except those described in Section 108.1 or 108.4.
3. The state fire marshal shall have authority to enforce such building standards and other regulations of the state fire marshal in areas outside of corporate





permit, or if the work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of one hundred eighty (180) days. Before such work can be recommenced, a new permit shall first be obtained to do so, and the fee therefor shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original plans and specifications for such work, and provided further, that such suspensions or abandonment has not exceeded one year.

Any permittee holding an unexpired permit may apply for an extension of the time within which work may commence under that permit when the permittee is unable to commence work within the time required by this section for good and satisfactory reasons. The Administrative Authority may extend the time for action by the permittee for a period not exceeding one hundred eighty (180) days upon written request by the permittee showing that circumstances beyond the control of the permittee have prevented action from being taken. No permit shall be extended more than once. In order to renew action on a permit after expiration, the permittee shall pay a new full permit fee.

**103.3.5 Suspension or Revocation.** The Administrative Authority may, in writing, suspend or revoke a permit issued under the provisions of this Code whenever the permit is issued in error or on the basis of incorrect information supplied or in violation of other ordinance or regulation of the jurisdiction.

#### 103.4 Fees

**103.4.1 Permit Fees.** Fees shall be assessed in accordance with the provisions of this section and as set forth in the fee schedule Table 1-1. The fees are to be determined and adopted by this jurisdiction.

**103.4.2 Plan Review Fees.** When a plan or other data is required to be submitted by 103.2.2, a plan review fee shall be paid at the time of submitting plans and specifications for review. The plan review fees for plumbing work shall be determined and adopted by this jurisdiction.

The plan review fees specified in this subsection are separate fees from the permit fees specified in this section and are in addition to the permit fees.

When plans are incomplete or changed so as to require additional review, a fee shall be charged at the rate shown in Table 1-1.

**103.4.3 Expiration of Plan Review.**

Applications for which no permit is issued within one hundred eighty (180) days following the date of application shall expire by limitation and plans and other data submitted for review may thereafter be returned to the applicant or destroyed by the Administrative Authority. The Administrative Authority may exceed the time for action by the applicant for a period not to exceed one hundred eighty (180) days upon request by the applicant showing that circumstances beyond the control of the applicant have prevented action from being taken. No application shall be extended more than once. In order to renew action on an application after expiration, the applicant shall resubmit plans and pay a new plan review fee.

#### 103.4.4 Investigation Fees: Work Without a Permit

**103.4.4.1** Whenever any work for which a permit is required by this Code has been commenced without first obtaining said permit, a special investigation shall be made before a permit may be issued for such work.

**103.4.4.2** An investigation fee, in addition to the permit fee, shall be collected whether or not a permit is then or subsequently issued. The investigation fee shall be equal to the amount of the permit fee that would be required by this Code if a permit were to be issued. The payment of such investigation fee shall not exempt any person from compliance with all other provisions of this Code, nor from any penalty prescribed by law.

#### 103.4.5 Fee Refunds

**103.4.5.1** The Administrative Authority may authorize the refunding of any fee paid hereunder which was erroneously paid or collected.

**103.4.5.2** The Administrative Authority may authorize the refunding of not more than a percentage, as determined by this jurisdiction when no work has been done under a permit issued in accordance with this Code.

**103.4.5.3** The Administrative Authority may authorize refunding of not more than a percentage, as determined by this jurisdiction, when an applicant for a permit for which a plan review fee has been paid is withdrawn or cancelled before any plan review effort has been expanded.

The Administrative Authority shall not authorize the refunding of any fee paid except upon written application filed by the original permittee not later than one



C  
A  
C  
A  
C  
A  
C  
A  
C  
A

plumbing system is in accordance with approved plans.

**103.5.1.2.2 [For HCD 1 & HCD 2] Scope.**

All new plumbing work and such portions of existing systems as may effected by new work, or any changes, shall be inspected by the Administrative Authority to insure compliance with all the requirements of this Code.

**103.5.1.3 Covering or Using.** No plumbing or drainage system, building sewer, private sewer disposal system or part thereof, shall be covered, concealed, or put into use until it has been tested, inspected, and accepted as prescribed in this Code.

**103.5.1.4 Uncovering.** Any drainage or plumbing system, building sewer, private sewage disposal system, or part thereof, which is installed, altered, or repaired is covered or concealed before being inspected, tested, and approved as prescribed in this Code, it shall be uncovered for inspection after notice to uncover the work has been issued to the responsible person by the Administrative Authority.

**103.5.2 Operation of Plumbing Equipment.**

The requirements of this section shall not be considered to prohibit the operation of any plumbing installed to replace existing equipment or fixtures serving an occupied portion of the building in the event a request for inspection of such equipment or fixture has been filed with the Administrative Authority not more than seventy-two (72) hours after such replacement work is completed, and before any portion of such plumbing system is concealed by any permanent portion of the building.

**103.5.3 Testing of Systems.** All plumbing systems shall be tested and approved as required by this Code or the Administrative Authority.

**103.5.3.1 Test.** Tests shall be conducted in the presence of the Administrative Authority or the Administrative Authority's duly appointed representative.

**103.5.3.2 Test Waived.** No test or inspection shall be required where a plumbing system, or part thereof, is set up for exhibition purposes and has no connection with a water or drainage system.

**103.5.3.3 Exceptions.** In cases where it would be impractical to provide the required water or air tests, or for minor installations and repairs, the Administrative Authority may make such inspection as deemed advisable in order to be assured

that the work has been performed in accordance with the intent of this Code.

**103.5.3.4 Protectively Coated Pipe.**

Protectively coated pipe shall be inspected and tested, and any visible void, damage or imperfection to the pipe coating shall be repaired to comply with Section 313.0 (see IAPMO IS-13, listed in Appendix I).

**103.5.3.5 Tightness.** Joints and connections in the plumbing system shall be gastight and watertight for the pressures required by test.

**103.5.4 Inspection Requests.** It shall be the duty of the person doing the work authorized by a permit to notify the Administrative Authority that such work is ready for inspection. The Administrative Authority may require that every request for inspection be filed at least one working day before such inspection is desired. Such request may be in writing or by telephone, at the option of the Administrative Authority.

It shall be the duty of the person requesting inspections required by this Code to provide access to and means for proper inspection of such work.

**103.5.4.1 Advance Notice.** It shall be the duty of the person doing the work authorized by the permit to notify the Administrative Authority, orally or in writing, that said work is ready for inspection. Such notification shall be given not less than twenty-four (24) hours before the work is to be inspected.

**103.5.4.2 Responsibility.** It shall be the duty of the holder of a permit to make sure that the work will stand the test prescribed before giving the notification.

The equipment, material, and labor necessary for inspection or tests shall be furnished by the person to whom the permit is issued or by whom inspection is requested.

**103.5.5 Other Inspections.** In addition to the inspections required by this Code, the Administrative Authority may require other inspections of any plumbing work to ascertain compliance with the provisions of this Code and other laws which are enforced by the Administrative Authority.

**103.5.5.1 Defective Systems.** An air test shall [For HCD – “may” replaces the word “shall”] be used in testing the sanitary condition of the drainage or plumbing system of any building premises when there



C  
A  
C  
A

C  
A  
C  
A

C  
A  
C  
A

is reason to believe that it has become defective. In buildings or premises condemned by the proper Administrative Authority because of an insanitary condition of the plumbing system or part thereof, the alterations in such system shall conform to the requirements of this Code.

**103.5.5.2 Moved Structures.** *[For HDC 1 & HCD 2, except as noted below]* All parts of the plumbing systems of any building or part thereof that is moved from one foundation to another, or from one location to another, shall be completely tested as prescribed elsewhere in this section for new work, except that walls or floors need not be removed during such test *[The following language is not adopted by HCD]* when other equivalent means of inspection acceptable to the Administrative Authority are provided.

**103.5.6 Reinspections.** A reinspection fee may be assessed for each inspection or reinspection when such portion of work for which inspection is called is not complete or when required corrections have not been made.

This provision is not to be interpreted as requiring reinspection fees the first time a job is rejected for failure to comply with the requirements of this Code, but as controlling the practice of calling for inspections before the job is ready for inspection or reinspection.

Reinspection fees may be assessed when the approved plans are not readily available to the inspector, for failure to provide access on the date for which the inspection is requested, or for deviating from plans requiring the approval of the Administrative Authority.

To obtain reinspection, the applicant shall file an application therefor in writing upon a form furnished for that purpose and pay the reinspection fee in accordance with Table 1-1.

In instances where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.

**103.5.6.1 Corrections.** Notices of correction or violation shall be written by the Administrative Authority and may be posted at the site of the work or mailed or delivered to the permittee or his authorized representative. Refusal, failure, or neglect to comply with any such notice or order within ten (10) days of receipt thereof, shall be considered a violation of this Code, and shall be subject to the penalties set forth

elsewhere in this Code for violations.

**103.5.6.2 Retesting.** If the Administrative Authority finds that the work will not pass the test, necessary corrections shall be made and the work shall then be resubmitted for test or inspection.

**103.5.6.3 Approval.** Upon the satisfactory completion and final test of the plumbing system, a certificate of approval shall be issued by the Administrative Authority to the permittee on demand.

**103.6 Connection Approval**

**103.6.1 Energy Connections.** No person shall make connections from a source of energy or fuel to any plumbing system or equipment regulated by this Code and for which a permit is required until approved by the Administrative Authority.

**103.6.2 Other Connections.** No person shall make connection from any water-supply line nor shall connect to any sewer system regulated by this Code and for which a permit is required until approved by the Administrative Authority.

**103.6.3 Temporary Connections.** The Administrative Authority may authorize temporary connection of the plumbing equipment to the source of energy or fuel for the purpose of testing the equipment.

**103.7 Unconstitutionality**

**103.7.1** If any section, subsection, sentence, clause, or phrase of this Code is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this Code. The Legislative Body hereby declares that it would have passed this Code, and each section, subsection, sentence, clause, or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, and phrases be declared unconstitutional.

**103.8 Validity**

**103.8.1** If any provision of this Code, or the application thereof to any person or circumstance, is held invalid, the remainder of the Code, or the application of such provision to other persons or circumstances, shall not be affected thereby.

**103.8.2** Wherever in this Code reference is made to an appendix, the provisions in the appendix shall not apply unless specifically adopted.

**103.9 [For SFM] Certification of Occupancy**

**103.9.1 Use and Occupancy.** No building or structure shall used or occupied, and no changes in the existing occupancy classification of a building or structure or portion thereof shall be made until the building official

C  
L  
L  
C  
L  
L  
C  
L  
L  
C  
L  
L  
C  
L  
L  
C  
L  
L



**TABLE 1-1**  
**Plumbing Permit Fees**  
*[Not adopted by the state of California]*

**Permit Issuance**

- 1. For issuing each permit.....\*
- 2. For issuing each supplemental permit .....

**Unit Fee Schedule** (in addition to items 1 and 2 above)

- 1. For each plumbing fixture on one trap or a set of fixtures on one trap (including water, drainage piping and backflow protection therefor).....\*
- 2. For each building sewer and each trailer park sewer.....\*
- 3. Rainwater systems – per drain (inside building).....\*
- 4. For each cesspool (where permitted).....\*
- 5. For each private sewage disposal system.....\*
- 6. For each water heater and/or vent.....\*
- 7. For each gas-piping system of one to five outlets .....
- 8. For each additional gas piping system outlet, per outlet.....\*
- 9. For each industrial waste pretreatment interceptor including its trap and vent, except kitchen-type grease interceptors functioning as fixture traps.....\*
- 10. For each installation, alteration or repair of water piping and/or water treating equipment, each..\*
- 11. For each repair or alteration of drainage or vent piping, each fixture.....\*
- 12. For each lawn sprinkler system on any one meter including backflow protection devices therefor....\*
- 13. For atmospheric-type vacuum breakers not included in item 12:
  - 1 to 5.....\*
  - over 5, each.....\*
- 14. For each backflow protective device other than atmospheric type vacuum breakers:
  - 2 inch (51 mm) diameter and smaller .....
  - over 2 inch (51 mm) diameter.....\*
- 15. For each graywater system.....\*
- 16. For initial installation and testing for a reclaimed water system .....
- 17. For each annual cross-connection testing of a reclaimed water system (excluding initial test)....\*
- 18. For each medical gas piping system serving one to five inlet(s)/outlet(s) for a specific gas.....\*
- 19. For each additional medical gas inlet(s)/outlet(s) .....

**Other Inspections and Fees**

- 1. Inspections outside of normal business hours.....\*
- 2. Reinspection fee.....\*
- 3. Inspections for which no fee is specifically indicated.....\*
- 4. Additional plan review required by changes, additions or revisions to approved plans (minimum charge – one-half hour).....\*

\* Jurisdiction will indicate their fees here.



Pressure Backflow.

**Backflow Connection** – Any arrangement whereby backflow can occur.

**Back-Pressure Backflow** – Backflow due to an increased pressure above the supply pressure, which may be due to pumps, boilers, gravity or other sources of pressure.

**Backflow Preventer** – A device or means to prevent backflow into the potable water system.

**Back-Siphonage** – The flowing back of used, contaminated, or polluted water from a plumbing fixture or vessel into a water supply pipe due to a pressure less than atmospheric in such pipe. See Backflow.

**Backwater Valve** – A device installed in a drainage system to prevent reverse flow.

**Bathroom** – A room equipped with a shower or bathtub.

**Battery of Fixtures** – Any group of two (2) or more similar, adjacent fixtures which discharge into a common horizontal waste or soil branch.

**Boiler Blowoff** – An outlet on a boiler to permit emptying or discharge of sediment.

**Branch** – Any part of the piping system other than a main, riser, or stack.

**Branch, Fixture** – See Fixture Branch.

**Branch, Horizontal** – See Horizontal Branch.

**Branch Vent** – A vent connecting one or more individual vents with a vent stack or stack vent.

**Building** – *[Not adopted by HCD]* A structure built, erected, and framed of component structural parts designed for the housing, shelter, enclosure, or support of persons, animals, or property of any kind.

**Building [For HCD 1 & HCD 2]** – *Building means a structure subject to this part.*

**Note:** *This definition in Health and Safety Code Section 17920(b) is repeated here for clarity for the Department of Housing and Community and Development.*

**Building Drain** – That part of the lowest piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer beginning two (2) feet (610 mm) outside the building wall.

**Building Drain (Sanitary)** – A building drain which conveys sewage only.

**Building Drain (Storm)** – A building drain which conveys storm water or other drainage, but no sewage.

**Building Sewer** – That part of the horizontal piping of a drainage system which extends from the end of

the building drain and which receives the discharge of the building drain and conveys it to a public sewer, private sewer, private sewage disposal system, or other point of disposal.

**Building Sewer (Combined)** – A building sewer which conveys both sewage and storm water or other drainage.

**Building Sewer (Sanitary)** – A building sewer which conveys sewage only.

**Building Sewer (Storm)** – A building sewer which conveys storm water or other drainage, but no sewage.

**Building Subdrain** – That portion of a drainage system which does not drain by gravity into the building sewer.

**Building Supply** – The pipe carrying potable water from the water meter or other source of water supply to a building or other point of use or distribution on the lot. Building supply shall also mean water service.

205.0 – C –

**California Building Code [For DSA/SS]** – *The most recent edition of Title 24, Part 2, California Code of Regulations.*

**Certified Backflow Assembly Tester** – A person who has shown competence to test and maintain backflow assemblies to the satisfaction of the Administrative Authority having jurisdiction.

**Cesspool** – A lined excavation in the ground which receives the discharge of a drainage system or part thereof, so designed as to retain the organic matter and solids discharging therein, but permitting the liquids to seep through the bottom and sides.

**Chemical Waste** – See Special Wastes.

**Clarifier** – See Interceptor.

**Clear Water Waste** – Cooling water and condensate drainage from refrigeration and air-conditioning equipment; cooled condensate from steam heating systems; cooled boiler blowdown water.

**Clinic Sink** – A sink designed primarily to receive wastes from bedpans and having a flush rim, an integral trap with a visible trap seal, and the same flushing and cleansing characteristics as a water closet.

**Code** – This publication: *Uniform Plumbing Code.*

**Combination Thermostatic/Pressure Balancing Valve** – A mixing valve which senses outlet temperature and incoming hot and cold water pressure and compensates for fluctuations in incoming hot and cold water temperatures and/or

C  
A  
→  
C  
A  
C  
A  
C  
A  
C  
A

C  
A  
C  
A  
C  
A









tape or thread lubricants and sealants specifically intended for use with plastics shall be used on plastic threads. Conventional pipe thread compounds, putty, linseed oil base products and unknown lubricants and sealants shall not be used on plastic threads.

**316.1.2 Wiped Joints.** Joints in lead pipe or fittings or between lead pipe or fittings and brass or copper pipe, ferrules, solder nipples or traps, shall be full-wiped joints. Wiped joints shall have an exposed surface on each side of a joint not less than three-fourths (3/4) inch (19.1 mm) and at least as thick as the material being joined. Wall or floor flange lead-wiped joints shall be made by using a lead ring or flange placed behind the joint at wall or floor. Joints between lead pipe and cast iron, steel or wrought iron shall be made by means of a caulking ferrule or soldering nipple.

**316.1.3 Soldered Joints.** Joints in copper tubing shall be made by the appropriate use of approved copper or copper alloy fittings. Surfaces to be joined by soldering shall be cleaned bright by manual or mechanical means. The joints shall be properly fluxed with an approved type flux, and made up with approved solder. All solder and fluxes shall be manufactured to approved standards. Solders and fluxes with a lead content which exceeds two-tenths (0.20) of one (1) percent shall be prohibited in piping systems used to convey potable water.

**316.1.4 Flared Joints.** Flared joints for soft copper tubing shall be made with fittings meeting approved standards. The tubing shall be reamed to the full inside diameter, resized to round and expanded with a proper flaring tool.

**316.1.5 Flexible Compression Factory-Fabricated Joints.** When pipe is joined by means of flexible compression joints, such joints shall conform to approved standards and shall not be considered as slip joints.

**316.1.6 Solvent Cement Plastic Pipe Joints.** Plastic pipe and fittings designed to be joined by solvent cementing shall comply with appropriate IAPMO Installation Standards.

ABS pipe and fittings shall be cleaned and then joined with listed solvent cement(s).

CPVC and PVC pipe and fittings shall be cleaned and joined with listed primer(s) and solvent cement(s).

**316.1.6.1 [For HCD 1 & HCD 2] Solvent Cement Plastic Pipe Joints.** Plastic pipe and fittings designed to be joined by solvent cementing

shall comply with Section 310.4 of this code and an approved nationally recognized installation standard listed in Table 14-1.

ABS pipe and fittings shall be cleaned and then joined with listed solvent cement(s).

CPVC and PVC pipe and fittings shall be cleaned and joined with listed primer(s) and solvent cement(s).

**316.1.7 Brazing and Welding.** Brazing and welding shall conform to the applicable standard(s) in Table 14-1. All brazing on medical gas systems shall be performed by certified installers meeting the requirements of ANSI/ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications or AWS B2.2, Standard for Brazing Procedure and Performance Qualifications.

**316.1.8 Pressure-Lock Type Connection.** A mechanical connection which depends on an internal retention device to prevent pipe or tubing separation. Connection is made by inserting the pipe or tubing into the fitting to a prescribed depth.

**316.2 Special Joints**

**316.2.1 Copper Tubing to Screw Pipe Joints.** Joints from copper tubing to threaded pipe shall be made by the use of brass adapter fittings. The joint between the copper tubing and the fitting shall be properly soldered, and the connection between the threaded pipe and the fitting shall be made with a standard pipe size screw joint. Solder shall conform to the requirements of Section 316.1.3.

**316.2.2 Unions.** Approved unions may be used in drainage work when accessibly located in the trap seal or between a fixture and its trap; in the vent system, except underground or in wet vents; at any point in the water supply system and in gas piping as permitted by Section 1211.12.

**316.2.3 Plastic Pipe to Other Materials.** When connecting plastic pipe to other types of piping, only approved types of fittings and adapters designed for the specific transition intended shall be used.

**316.2.4 [For HCD 1 & HCD 2, DSA/SS, OSHPD 1, 2, 3 & 4]** Dielectric unions shall be used at all points of connection where there is a dissimilarity of metals.

**316.3 Flanged Fixture Connections**

**316.3.1** Fixture connections between drainage pipes and water closets and floor outlet service sinks and urinals shall be made by means of approved brass, hard lead, ABS, PVC, or iron flanges caulked, soldered, solvent cemented, or

C  
A  
C  
A  
C  
A  
C  
A  
C  
A  
C  
A  
C



C  
A  
C  
A  
C  
A  
C

C  
A  
C  
A  
C  
A  
C

screwed to the drainage pipe. The connection shall be bolted with an approved gasket, washer, or setting compound between the fixture and the connection. The bottom of the flange shall be set on an approved firm base.

**316.3.2** Closet bends or stubs shall be cut off so as to present a smooth surface even with the top of the closet ring before rough inspection is called.

**316.3.3** Wall-mounted water closet fixtures shall be securely bolted to an approved carrier fitting. The connecting piping between the carrier fitting and the fixture shall be an approved material and designed to accommodate an adequately sized gasket. Gasket material shall be neoprene, felt, or similar approved types.

#### **316.4 Prohibited Joints and Connections**

**316.4.1 Drainage System.** Any fitting or connection which has an enlargement, chamber or recess with a ledge, shoulder or reduction of pipe area, that offers an obstruction to flow through the drain shall be prohibited.

**316.4.2** No fitting or connection that offers abnormal obstruction to flow shall be used. The enlargement of a three (3) inch (80 mm) closet bend or stub to four (4) inches (100 mm) shall not be considered an obstruction.

#### **317.0 Increases and Reducers**

Where different sizes of pipes or pipes and fittings are to be connected, the proper size increasers or reducers or reducing fittings shall be used between the two sizes. Brass or cast iron body cleanouts shall not be used as a reducer or adapter from cast iron drainage pipe to iron pipe size (IPS) pipe.

#### **318.0 Food Handling Establishments**

Food or drink shall not be stored, prepared or displayed beneath soil or drain pipes, unless those areas are protected against leakage or condensation from such pipes reaching the food or drink as described below. Where building design requires that soil or drain pipes be located over such areas, the installation shall be made with the least possible number of joints and shall be installed so as to connect to the nearest adequately sized vertical stack with the provisions as follows:

**318.1** All openings through floors over such areas shall be sealed watertight to the floor construction.

**318.2** Floor and shower drains installed above such areas shall be equipped with integral seepage pans.

**318.3** All other soil or drain pipes shall be of an approved material as listed in Table 14-1 and Section 701.0. All materials shall conform to established standards. Cleanouts shall be extended through the floor construction above.

**318.4** Soil and drain pipes located above such areas shall be subjected to a standing water test of not less than twenty-five (25) feet (7620 mm).

**318.5** Piping subject to operation at temperatures that will form condensation on the exterior of the pipe shall be thermally insulated.

**318.6** Where pipes are installed in ceilings above such areas, the ceiling shall be of the removable type, or shall be provided with access panels in order to form a ready access for inspection of piping.

**318.7** In lieu of the above, any other method may be approved by the Administrative Authority.

**319.0 Test Gauges.** Tests required by this Code, which are performed utilizing dial gauges, shall be limited to gauges having the following pressure graduations or incrementations.

**319.1** Required pressure tests of ten (10) psi (69 kPa) or less shall be performed with gauges of 1/10 pound (0.7 kPa) incrementation or less.

**319.2** Required pressure tests exceeding ten (10) pounds (69 kPa) but less than one hundred (100) psi (689 kPa) shall be performed with gauges of one (1) psi (6.9 kPa) incrementation or less.

**319.3** Required pressure tests exceeding one hundred (100) psi (689 kPa) shall be performed with gauges incremented for two (2) percent or less of the required test pressure.

**319.4** Test gauges shall have a pressure range not greater than twice the test pressure applied.



**Exception 1:** *[Not adopted by HCD.]* Showers which are designed to comply with the accessibility standards listed in Table 14-1.

**Exception 2:** *[For HCD 1, HCD 2 & HCD 1A/C]* Showers required to be accessible to persons with disabilities shall comply with HCD "Exceptions 2 and 3" listed in Section 412.6 of this code.

**412.8** When the construction of on-site built-up shower receptors is permitted by the Administrative Authority, one of the following means shall be employed:

(1) Shower receptors built directly on the ground: Shower receptors built directly on the ground shall be watertight and shall be constructed from approved type dense, non-absorbent and non-corrosive materials. Each such receptor shall be adequately reinforced, shall be provided with an approved flanged floor drain designed to make a watertight joint in the floor, and shall have smooth, impervious, and durable surfaces.

(2) Shower receptors built above ground:

When shower receptors are built above ground the sub-floor and rough side of walls to a height of not less than three (3) inches (76 mm) above the top of the finished dam or threshold shall be first lined with sheet plastic\*, lead\* or copper\* or shall be lined with other durable and watertight materials.

All lining materials shall be pitched one-quarter (1/4) inch per foot (20.9 mm/m) to weep holes in the subdrain of a smooth and solidly formed sub-base. All such lining materials shall extend upward on the rough jambs of the shower opening to a point no less than three (3) inches (76 mm) above the top of the finished dam or threshold and shall extend outward over the top of the rough threshold and be turned over and fastened on the outside face of both the rough threshold and the jambs.

Non-metallic shower sub-pans or linings may be built-up on the job site of not less than three (3) layers of standard grade fifteen (15) pound (6.8 kg) asphalt impregnated roofing felt. The bottom layer shall be fitted to the formed sub-base and

\*Lead and copper sub-pans or linings shall be insulated from all conducting substances other than their connecting drain by fifteen (15) pound (6.8 kg) asphalt felt or its equivalent and no lead pan or liner shall be constructed of material weighing less than four (4) pounds per square foot (19.5 kg/m<sup>2</sup>). Copper pans or liners shall be at least No. 24 B & S Gauge (0.02 inches) (0.5 mm). Joints in lead pans or liners shall be burned. Joints in copper pans or liners shall be soldered or brazed. Plastic pans shall not be coated with asphalt based materials.

each succeeding layer thoroughly hot mopped to that below. All corners shall be carefully fitted and shall be made strong and watertight by folding or lapping, and each corner shall be reinforced with suitable webbing hot-mopped in place. All folds, laps, and reinforcing webbing shall extend at least four (4) inches (102 mm) in all directions from the corner and all webbing shall be of approved type and mesh, producing a tensile strength of not less than fifty (50) psi (344.5 kPa) in either direction. Non-metallic shower sub-pans or linings may also consist of multi-layers of other approved equivalent materials suitably reinforced and carefully fitted in place on the job site as elsewhere required in this section.

Linings shall be properly recessed and fastened to approved backing so as not to occupy the space required for the wall covering and shall not be nailed or perforated at any point which may be less than one (1) inch (25.4 mm) above the finished dam or threshold. An approved type sub-drain shall be installed with every shower sub-pan or lining. Each such sub-drain shall be of the type that sets flush with the sub-base and shall be equipped with a clamping ring or other device to make a tight connection between the lining and the drain. The sub-drain shall have weep holes into the waste line. The weep holes located in the subdrain clamping ring shall be protected from clogging.

All shower lining materials shall conform to approved standards acceptable to the Administrative Authority.

**412.8.1 Tests for Shower Receptors.** Shower receptors shall be tested for watertightness by filling with water to the level of the rough threshold. The test plug shall be so placed that both upper and under sides of the sub-pan shall be subjected to the test at the point where it is clamped to the drain.

**412.9** Floors of public shower rooms shall have a non-skid surface and shall be drained in such a manner that waste water from one bather will not pass over areas occupied by other bathers. Gutters in public or gang shower rooms shall have rounded corners for easy cleaning and shall be sloped not less than two (2) percent toward drains. Drains in gutters shall be spaced not more than eight (8) feet (2438 mm) from side walls nor more than sixteen (16) feet (4879 mm) apart.

**412.10** *DELETED*

**412.11 Location of Valves and Heads.** Control valves and shower heads shall be located on the side-wall of shower compartments or be otherwise



**510.6** A water heater supported from the ground shall rest on level concrete or other approved base extending not less than three (3) inches (76 mm) above the adjoining ground level.

**510.7** When a water heater is located in an attic, attic-ceiling assembly, floor-ceiling assembly, or floor-sub-floor assembly where damage may result from a leaking water heater, a watertight pan of corrosion resistant materials shall be installed beneath the water heater with a minimum three-quarter (3/4) inch (20 mm) diameter drain to an approved location.

**510.8 Relief Valve Discharge**

Discharge from a relief valve into a water heater pan shall be prohibited.

**511.0 Access and Working Space**

Every water heater installation shall be accessible for

inspection, repair, or replacement. The appliance space shall be provided with an opening or doorway of sufficient size to remove the water heater. In no case shall such opening or doorway be less than twenty-four (24) inches (610 mm) in width. Such access shall be continuous and shall be one or any combination of the following means:

**511.1** By an opening or door, and passageway not less than two (2) feet (610 mm) in width and large enough to permit removal of the water heater, but not less than thirty (30) inches (762 mm) in height. Stairways and ramps leading to or part of such passageways shall comply with the Building Code.

**511.2** Every attic, roof, mezzanine, or platform more than eight (8) feet (2438 mm) above the ground or floor level shall be made accessible by a stairway or ladder permanently fastened to the building. Such a

**TABLE 5-2**  
Size of Combustion Air Openings or Ducts<sup>1</sup> for Gas- or Liquid-Burning Water Heaters

Btu	watts
1000	293
2000	586
4000	1172
5000	1465
100,000	29,300

Column 1 Buildings of Ordinary Tightness		Column 2 Buildings of Unusually Tight Construction	
Condition	Size of Opening or Duct	Condition	Size of Opening or Duct
Appliance in unconfined <sup>2</sup> space	May rely on infiltration alone.	Appliance in unconfined <sup>2</sup> space: Obtain combustion air from outdoors or from space freely communicating with outdoors.	Provide 2 openings, each having 1 sq. in. (645 mm <sup>2</sup> ) per 5,000 Btu/h input.
Appliance in confined <sup>4</sup> space 1. All air from inside building	Provide two openings into enclosure each having 1sq. in. (645 mm <sup>2</sup> ) per 1,000 Btu/h input freely communicating with other unconfined interior spaces. Minimum 100 sq. in. (0.06 m <sup>2</sup> ) each opening.	Appliance in confined <sup>4</sup> space: Obtain combustion air from outdoors or from space freely communicating with outdoors.	1. Provide two vertical ducts or plenums: 1 sq. in. (645 mm <sup>2</sup> ) per 4,000 Btu/h input each duct or plenum. 2. Provide two horizontal ducts or plenums: 1 sq. in. (645 mm <sup>2</sup> ) per 2,000 Btu/h input each duct or plenum. 3. Provide two openings in an exterior wall of the enclosure: each opening 1 sq. in. (645 mm <sup>2</sup> ) per 4,000 Btu/h input. 4. Provide 1 ceiling opening to ventilated attic and 1 vertical duct to attic: each opening 1 sq. in. (645 mm <sup>2</sup> ) per 4,000 Btu/h input.
2. Part of air from inside building	Provide 2 openings into enclosure <sup>3</sup> from other freely communicating unconfined <sup>2</sup> interior spaces, each having an area of 100 sq. in. (0.06 m <sup>2</sup> ) plus one duct or plenum opening to outdoors having an area of 1 sq. in. (645 mm <sup>2</sup> ) per 5,000 Btu/h input rating.		5. Provide 1 opening in enclosure ceiling to ventilated attic and 1 opening in enclosure floor to ventilated crawl space: each opening 1 sq. in. (645 mm <sup>2</sup> ) per 4,000 Btu/h input.
3. All air from outdoors: Obtain from outdoors or from space freely communicating with outdoors.	Use any of the methods listed for confined space in unusually tight construction as indicated in Column 2.		

<sup>1</sup> For location of opening, see Section 507.3.

<sup>2</sup> As defined in Section 223.0.

<sup>3</sup> When the total input rating of appliances in enclosure exceeds 100,000 Btu/h, the area of each opening into the enclosure shall be increased 1 sq. in. (645 mm<sup>2</sup>) for each 1,000 Btu/h over 100,000 Bth/h.

<sup>4</sup> As defined in Section 205.0.

# CHAPTER 6

## WATER SUPPLY AND DISTRIBUTION

### 601.0 Running Water Required

**601.1** Except where not deemed necessary for safety or sanitation by the Administrative Authority, each plumbing fixture shall be provided with an adequate supply of potable running water piped thereto in an approved manner, so arranged as to flush and keep it in a clean and sanitary condition without danger of backflow or cross-connection. Water closets and urinals shall be flushed by means of an approved flush tank or flushometer valve. In jurisdictions which adopt Appendix J, water closets, urinals, and trap primers in designated non-residential buildings may be provided with reclaimed water as defined and regulated by Appendix J of this Code.

**601.1.1 [For HCD 1 w/exceptions & HCD 2 w/o exceptions]** Except where not deemed necessary for safety or sanitation by the Administrative Authority each plumbing fixture shall be provided with an adequate supply of hot and /or cold potable runner water piped thereto in an approved manner, so arranged as to flush and keep it in a clean and sanitary condition without danger of backflow or cross connection. Water closets and urinals shall be flushed by means of an approved flush tank or flushometer valve.

#### Exceptions:

**1. [For HCD 1]** For limited-density owner-built rural dwellings, potable water shall be available to the dwelling site, although such water need not be pressurized. Where water is not piped from a well, spring, cistrn or other source, there shall be a minimum reserve of 50 gallons (189 L) of potable water available. Where water delivery is pressurized, piping shall be installed in accordance with the provisions of this chapter.

**2. [For HCD 1]** Where deemed not necessary for safety or sanitation by the Administrative Authority.

**601.2 Identification of a Potable and Nonpotable Water System.** In all buildings where potable water and nonpotable water systems are installed, each system shall be clearly identified. Each system shall be color coded as follows:

**601.2.1 Potable Water** – Green background with white lettering.

**601.2.2 Nonpotable Water.** Yellow back-ground with black lettering, with the words “CAUTION: NONPOTABLE WATER, DO NOT DRINK”. [For HCD 1 & HCD 2] “A UNIVERSAL POISON SYMBOL OF SKULL AND CROSSBONES SHALL BE PROVIDED.”

Each system shall be identified with a colored

band to designate the liquid being conveyed, and the direction of normal flow shall be clearly shown. The minimum size of the letters and length of the color field shall conform to Table 6-1.

A colored identification band shall be indicated every twenty (20) feet (6096 mm) but at least once per room, and shall be visible from the floor level.

Where vacuum breakers or backflow preventers are installed with fixtures listed in Table 14-1, identification of the discharge side may be omitted. Each outlet on the nonpotable water line which could be used for special purposes shall be posted as follows: “CAUTION: NONPOTABLE WATER, DO NOT DRINK”

**TABLE 6-1**

Minimum Length of Color Field and Size of Letters

Outside Diameter of Pipe or Covering, inches	Minimum Length of Color Field, inches(mm)	Minimum Size of Letters, inches(mm)
1/2 to 1-1/4 (15 to 32)	8 (203)	1/2 (12.7)
1-1/2 to 2 (40 to 50)	8 (203)	3/4 (19.1)
2-1/2 to 6 (65 to 150)	12 (305)	1-1/4 (32)
8 to 10 (200 to 250)	24 (619.0)	2-1/2 (64)
Over 10 (Over 250)	32 (813.0)	3-1/2 (89)

**601.2.3 Reclaimed Water** – Purple (Pantone color #512) background and shall be imprinted in nominal 1/2" (12.7 mm) high, black, upper case letters, with the words “CAUTION: RECLAIMED WATER, DO NOT DRINK”. [For HCD 1 & HCD 2] “A UNIVERSAL POISON SYMBOL OF SKULL AND CROSSBONES SHALL BE PROVIDED.”

**601.3** Faucets and diverters shall be connected to the water distribution system so that hot water corresponds to the left side of the fittings.

**601.4 [For HCD 1 & HCD 2]** All sources for drinking water shall be maintained in a clean and sanitary condition. Drinking fountain and portable water dispensers shall not be located in toilet rooms.

**601.5 [For CA] Schools of Cosmetology and Cosmetological Establishments.**

**601.5.1 Hot-and Cold-running Water.** At least one sink with hot- and cold-running water shall be provided in each work area or workroom where hairdressing is performed in each school and establishment.

**601.5.2 Handwashing Facilities.** Each school and establishment shall provide adequate handwashing facilities, including hot- and cold-running water, located within or adjacent to the toilet room or rooms in accordance with Appendix C, Table C-1.

**601.5.3 Drinking Water.** Each school and establishment





603.4.18.3, potable water supplies to fire protection systems that are normally under pressure, including but not limited to standpipes and automatic sprinkler systems, except in one or two family residential sprinkler systems piped in materials approved for potable water distribution systems, shall be protected from back-pressure and back-siphonage by one of the following testable devices:

1. Double check valve assembly
2. Double check detector assembly
3. Reduced pressure backflow preventor
4. Reduced pressure detector assembly

Potable water supplies to fire protection systems that are not normally under pressure shall be protected from backflow and shall meet the requirements of the appropriate standard(s) referenced in Table 14-1.

**603.4.18.2 [Not adopted by HCD]** Where fire protection systems supplied from a potable water system include a fire department (siamese) connection which is located less than seventeen hundred (1700) feet (518.2 m) from a non-potable water source that could be used by the fire department as a secondary water supply, the potable water supply shall be protected by one of the following:

1. Reduced pressure backflow preventor
2. Reduced pressure detector assembly

**Note:** Non-potable water sources include fire department vehicles carrying water of questionable quality or water that is treated with antifreeze, corrosion inhibitors, or extinguishing agents.

**603.4.18.3 [Not adopted by HCD]** Where antifreeze, corrosion inhibitors, or other chemicals are added to a fire protection system supplied from a potable water supply, the potable water system shall be protected by one of the following:

1. Reduced pressure backflow preventor
2. Reduced pressure detector assembly

**603.4.18.4 [Not adopted by HCD]** Whenever a backflow device is installed in the potable water supply to a fire protection system, the hydraulic design of the system shall account for the pressure drop through the backflow device. If such devices are retrofitted for an existing fire protection system, the hydraulics of the sprinkler system design shall be checked to verify that

there will be sufficient water pressure available for satisfactory operation of the fire sprinklers.

**603.4.18.5 [Not adopted by HCD] Residential Sprinkler Systems.** When residential sprinkler systems are installed using the potable water system they shall be installed in accordance with the standards listed in Table 14-1.

**603.4.19 Special Equipment, Water Supply Protection.** Vacuum breakers for washer-hose bedpans shall be located not less than five (5) feet (1524 mm) above the floor. Hose connections in health care or laboratory areas shall not be less than six (6) feet (1829 mm) above the floor.

**603.4.20** Portable cleaning equipment, dental vacuum pumps and chemical dispensers shall be protected from backflow by an airgap, an atmospheric vacuum breaker, a spill-proof vacuum breaker, or a reduced pressure principle backflow preventer.

**603.4.21 Water Heater Connectors.** Flexible metallic water heater connectors or reinforced flexible water heater connectors connecting water heaters to the piping system shall be in compliance with the appropriate standards listed in Table 14-1.

**603.4.22** Combination stop-and-waste valves or cocks shall not be installed underground.

**604.0 Materials**

**604.1 [Not adopted by HCD]** Water distribution pipe, building supply water pipe and fittings shall be of brass, copper, cast iron, galvanized malleable iron, galvanized wrought iron, galvanized steel, or other approved materials. Asbestos-cement, CPVC, PE, PVC, or PEX water pipe manufactured to recognized standards may be used for cold water distribution systems outside a building. CPVC, PEX water pipe, tubing, and fittings, manufactured to recognized standards may be used for hot and cold water distribution systems within a building. All materials used in the water supply system, except valves and similar devices shall be of a like material, except where otherwise approved by the Administrative Authority.

**Exception: 1. [For OSHPD 1, 2, 3 & 4]** Use of CPVC is not permitted for applications under authority of the Office of Statewide Health Planning and Development.

**Exception: 2. [For BSC, DSA/SS, DHS, AGR]** Use of PEX piping is not adopted for applications under the authority of the Building Standards Commission, the Division of the State Architect, the

C  
A

C  
A

C  
A

C  
A

C  
A

C  
A  
C  
A  
C  
A  
C  
A  
C  
A  
C  
A  
C  
A  
C  
A



with potable water piping shall be galvanized.

**604.6** All malleable iron water fittings shall be galvanized.

**604.7** Piping and tubing which has previously been used for any purpose other than for potable water systems shall not be used.

**604.8** Approved plastic materials may be used in water service piping, provided that where metal water service piping is used for electrical grounding purposes, replacement piping therefore shall be of like materials.

**Exception:** Where a grounding system, acceptable to the Administrative Authority is installed, inspected, and approved, metallic pipe may be replaced with non-metallic pipe.

**604.9** Solder shall conform to the requirements of Section 316.1.3.

**604.10** Water pipe and fittings with a lead content which exceeds eight (8) percent shall be prohibited in piping systems used to convey potable water.

**604.11 PEX.** *[Not adopted by BSC, HCD, DSA/SS, DHS, AGR, & OSHPD 1, 2, 3 & 4]* Cross-linked polyethylene (PEX) tubing shall be marked with the appropriate standard designation(s) listed in Table 14-1 for which the tubing has been listed or approved. Pex tubing shall be installed in compliance with the provisions of this section.

**604.11.1 PEX Fittings.** *[Not adopted by BSC, HCD, DSA/SS, DHS, AGR, & OSHPD 1, 2, 3 & 4]* Metal Insert Fittings and Metal Compression Fittings used with PEX tubing shall be manufactured to and marked in accordance with the standards for the fittings in Table 14-1.

**604.11.2 Water Heater Connections.** *[Not adopted by BSC, HCD, DSA/SS, DHS, AGR, & OSHPD 1, 2, 3 & 4]* PEX tubing shall not be installed within the first eighteen (18) inches (457 mm) of piping connected to a water heater.

**604.12 Flexible Corrugated Connectors.** Flexible corrugated connectors of copper or stainless steel shall be limited to the following connector lengths:

**Water Heater Connectors** – twenty-four (24) inches (609 mm).

**Fixture Connectors** – thirty (30) inches (762 mm).

**Washing Machine Connectors** – seventy-two (72) inches (1827 mm).

**Dishwasher and Icemaker Connectors** – one hundred twenty (120) inches (3048 mm).

## 605.0 Valves

**605.1** Valves up to and including two (2) inches (51

mm) in size shall be brass or other approved material. Sizes over two (2) inches (51 mm) may have cast iron or brass bodies. Each gate or ball valve shall be a fullway type with working parts of non-corrosive material.

**605.2** A fullway valve controlling all outlets shall be installed on the discharge side of each water meter and on each unmetered water supply. Water piping supplying more than one building on any one premises shall be equipped with a separate fullway valve to each building, so arranged that the water supply can be turned on or off to any individual or separate building; provided however, that supply piping to a single family residence and building accessory thereto, may be controlled on one valve. Such shutoff valves shall be accessible at all times. A fullway valve shall be installed on the discharge piping from water supply tanks at or near the tank. A fullway valve shall be installed on the cold water supply pipe to each water heater at or near the water heater.

**605.3** In multi-dwelling units, one (1) or more shutoff valves shall be provided in each dwelling unit so that the water supply to any plumbing fixture or group of fixtures in that dwelling unit can be shut off without stopping water supply to fixtures in other dwelling units. These valves shall be accessible in the dwelling unit that they control.

**605.4** All valves used to control two (2) or more openings shall be fullway gate valves, ball valves or other approved valves designed and approved for the service intended.

**605.5** A control valve shall be installed immediately ahead of each water supplied appliance and immediately ahead of each slip joint or non-metallic fixture supply or appliance supply.

**605.6** All required shutoff or control valves shall be accessible.

**605.7** A single control valve shall be installed on a water supply line ahead of any automatic metering valve which supplies a battery of fixtures.

**605.8** *[For OSHPD 1, 2 & 4]* Each riser or branch shall be provided with an accessible sectionalizing valve in hot- and cold-water systems to permit servicing or replacement of piping or equipment. Stop valves shall be provided at each fixture.

## 606.0 Joints and Connections

### 606.1 Types of Joints

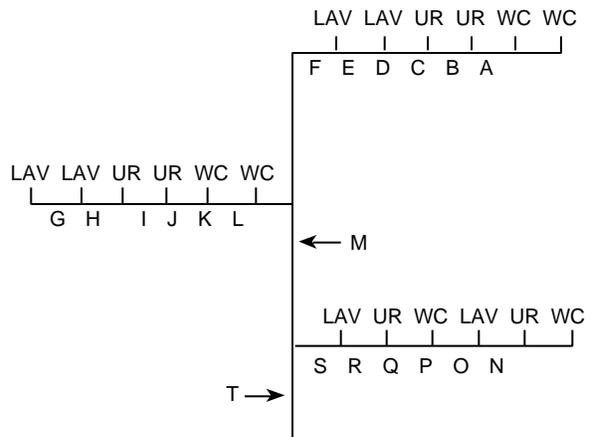
**606.1.1 Flared Joints.** Flared joints for soft copper water tubing shall be made with fittings meeting approved standards. The tubing shall be reamed to the full bore, resized to round and expanded with a proper flaring tool.

fixture units assigned to every section of pipe, whether branch or main, shall be determined by the number and category of flushometer valves served by that section of pipe, in accordance with Table 6-7. Piping supplying a flushometer valve shall not be less in size than the valve inlet.

**Table 6-6**  
Minimum Required Air Chamber Dimensions

Nominal Pipe Diameter	Length of Pipe (ft.)	Flow Pressure P.S.I.G.	Velocity in Ft. Per. Sec.	Required Air Chamber Vol. in Cubic Inch	Phys. Size in Inches
1/2" (15 mm)	25	30	10	8	3/4" x 15"
1/2" (15 mm)	100	60	10	60	1" x 69.5"
3/4" (20 mm)	50	60	5	13	1" x 5"
3/4" (20 mm)	200	30	10	108	1.25" x 72.5"
1" (25 mm)	100	60	5	19	1.25" x 12.7"
1" (25 mm)	50	30	10	40	1.25" x 27"
1-1/4" (32 mm)	50	60	10	110	1.25" x 54"
1-1/2" (40 mm)	200	30	5	90	2" x 27"
1-1/2" (40 mm)	50	60	10	170	2" x 50.5"
2" (50 mm)	100	30	10	329	3" x 44.5"
2" (50 mm)	25	60	10	150	2.5" x 31"
2" (50 mm)	200	60	5	300	3" x 40.5"

Sizing Method  
**Example Using TABLE 6-7**  
Public Use Fixtures



When using Table 6-7 to size water piping, care must be exercised to assign flushometer fixture units based on the number and category of fixtures served. In the example above, fixture units assigned to each section of pipe are computed as follows: Note: Each capital letter refers to the section of pipe above it, unless otherwise shown.

- A: 1 WC = 40 F.U.
- B: 2 WC = 70 F.U.
- C: 2 WC (70) + 1 UR (20) = 90 F.U.
- D: 2 WC (70) + 2 UR (35) = 105 F.U.
- E: 2 WC (70) + 2 UR (35) + 1 LAV (1) = 106 F.U.
- F: 2 WC (70) + 2 UR (35) + 2 LAV (2) = 107 F.U.
- G: 1 LAV = 1 F.U.
- H: 2 LAV = 2 F.U.
- I: 2 LAV (2) + 1 UR (20) = 22 F.U.
- J: 2 LAV (2) + 2 UR (35) = 37 F.U.
- K: 2 LAV (2) + 2 UR (35) + 1 WC (40) = 77 F.U.
- L: 2 LAV (2) + 2 UR (35) + 2 WC (70) = 107 F.U.
- M: 4 WC (105) + 4 UR (53) + 4 LAV (4) = 162 F.U.
- N: 1 WC = 40 F.U.
- O: 1 WC (40) + 1 UR (20) = 60 F.U.
- P: 1 WC (40) + 1 UR (20) + 1 LAV (1) = 61 F.U.
- Q: 2 WC (70) + 1 UR (20) + 1 LAV (1) = 91 F.U.
- R: 2 WC (70) + 2 UR (35) + 1 LAV (1) = 106 F.U.
- S: 2 WC (70) + 2 UR (35) + 2 LAV (2) = 107 F.U.
- T: 6 WC (125) + 6 UR (63) + 6 LAV (6) = 194 F.U.

**TABLE 6-7**

Flushometer Fixture Units for Water Sizing Using Table 6-5

Fixture Category: Water Closet w/ Flushometer Valves

Number of Flushometer Valves	Individual Fixture Units Assigned in Decreasing Value	Fixture Units Assigned for Water Closets and Similar 10 Unit Fixtures in Accumulative Values
1	40	40
2	30	70
3	20	90
4	15	105
5 or more	10 each	115 plus 10 for each additional fixture in excess of 5

Fixture Category: Urinals w/ Flushometer Valves

Number of Flushometer Valves	Individual Fixture Units Assigned in Decreasing Value	Fixture Units Assigned for Urinals and Similar 5 Unit Fixtures in Accumulative Values
1	20	20
2	15	35
3	10	45
4	8	53
5 or more	5 each	58 plus 5 for each additional fixture in excess of 5



**701.4 Ferrules and Bushings**

**701.4.1** Caulking ferrules shall be manufactured from bronze or copper and shall be in accordance with Table 7-1.

**701.4.2** Soldering bushings shall be of bronze or copper in accordance with Table 7-2.

**702.0 Fixture Unit Equivalent**

The unit equivalent of plumbing fixtures shown in Table 7-3 shall be based on the size of the trap required, and the unit equivalent of fixtures and devices not shown in Table 7-3 shall be based on the rated discharge capacity in gpm (gallons per minute) (liters per second) in accordance with Table 7-4.

Maximum trap loadings for sizes up to four (4) inches (102 mm) are as follows:

1-1/4"	(32 mm)	—	1 unit
1-1/2"	(40 mm)	—	3 units
2"	(50 mm)	—	4 units
3"	(80 mm)	—	6 units
4"	(100 mm)	—	8 units

**Exception:** On self-service laundries.

**703.0 Size of Drainage Piping**

**703.1** The minimum sizes of vertical and/or horizontal drainage piping shall be determined from the total of all fixture units connected thereto, and additionally, in the case of vertical drainage pipes, in accordance with their length.

**703.2** Table 7-5 shows the maximum number of fixture units allowed on any vertical or horizontal drainage pipe, building drain or building sewer of a given size; the maximum number of fixture units allowed on any branch interval of a given size; and the maximum length (in feet and meters) of any vertical drainage pipe of a given size.

**TABLE 7-4**

Discharge Capacity In Gallons per Minute  
(Liters per Second)

For Intermittent Flow Only

GPM	(l/sec.)		
Up to 7-1/2	(Up to 0.47)	Equals	1 Unit
8 to 15	(0.50 to 0.95)	Equals	2 Units
16 to 30	(1.00 to 1.89)	Equals	4 Units
31 to 50	(1.95 to 3.15)	Equals	6 Units

Discharge capacity for over 50 gallons per minute (3.15 L/sec.) shall be determined by the Administrative Authority.

For a continuous flow into a drainage system,

such as from a pump, sump ejector, air conditioning equipment, or similar device, two (2) fixture units shall be allowed for each gallon per minute (0.06 L/sec.) of flow.

**703.3** For alternate method of sizing drainage piping, see Appendix L.

**704.0 Fixture Connections (Drainage)**

**704.1** Drainage piping shall be provided with approved inlet fittings for fixture connections, correctly located according to the size and type of fixture proposed to be connected.

**704.2** Two fixtures set back-to-back, or side-by-side, within the distance allowed between a trap and its vent, may be served by a single vertical drainage pipe provided that each fixture wastes separately into an approved double fixture fitting having inlet openings at the same level.

**704.3** Pot sinks, scullery sinks, dishwashing sinks, silverware sinks, commercial dishwashing machines, silverware-washing machines, and other similar fixtures shall be connected directly to the drainage system. A floor drain shall be provided adjacent to the fixture, and the fixture shall be connected on the sewer side of the floor drain trap, provided that no other drainage line is connected between the floor drain waste connection and the fixture drain. The fixture and floor drain shall be trapped and vented as required by this Code.

**704.4 Closet Rings (Closet Flanges)**

**704.4.1** Closet rings (closet flanges) for water closets or similar fixtures shall be of an approved type and shall be bronze, copper, hard lead, cast iron, galvanized malleable iron, ABS, PVC, or other approved materials. Each such closet ring (closet flange) shall be approximately seven (7) inches (175 mm) in diameter and, when installed, shall, together with the soil pipe, present a one and one-half (1-1/2) inch (38 mm) wide flange or face to receive the fixture gasket or closet seal.

**704.4.2** Caulked-on closet rings (closet flanges) shall be not less than one-fourth (1/4) inch (6.4 mm) thick and not less than two (2) inches (51 mm) in overall depth.

**704.4.3** Closet rings (closet flanges) shall be burned or soldered to lead bends or stubs, shall be caulked to cast iron soil pipe, shall be solvent cemented to ABS and PVC and shall be screwed or fastened in an approved manner to other materials.

**704.4.4** All such closet rings (closet flanges) shall be adequately designed and secured to support fixtures connected thereto.

**TABLE 7-5**  
Maximum Unit Loading and Maximum Length of Drainage and Vent Piping

Size of Pipe, inches (mm)	1-1/4 (32)	1-1/2 (40)	2 (50)	2-1/2 (65)	3 (80)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)
<b>Maximum Units</b>											
Drainage Piping <sup>1</sup>											
Vertical	1	2 <sup>2</sup>	16 <sup>3</sup>	32 <sup>3</sup>	48 <sup>4</sup>	256	600	1380	3600	5600	8400
Horizontal	1	1	8 <sup>3</sup>	14 <sup>3</sup>	35 <sup>4</sup>	216 <sup>5</sup>	428 <sup>5</sup>	720 <sup>5</sup>	2640 <sup>5</sup>	4680 <sup>5</sup>	8200 <sup>5</sup>
<b>Maximum Length</b>											
Drainage Piping											
Vertical, feet (m)	45 (14)	65 (20)	85 (26)	148 (45)	212 (65)	300 (91)	390 (119)	510 (155)	750 (228)		
Horizontal (Unlimited)											
<b>Vent Piping (See note)</b>											
Horizontal and Vertical											
Maximum Units	1	8 <sup>3</sup>	24	48	84	256	600	1380	3600		
Maximum Lengths, feet (m)	45 (14)	60 (18)	120 (37)	180 (55)	212 (65)	300 (91)	390 (119)	510 (155)	750 (228)		

- 1 Excluding trap arm.
- 2 Except sinks, urinals and dishwashers.
- 3 Except six-unit traps or water closets.
- 4 Only four (4) water closets or six-unit traps allowed on any vertical pipe or stack; and not to exceed three (3) water closets or six-unit traps on any horizontal branch or drain.
- 5 Based on one-fourth (1/4) inch per foot (20.9 mm/m) slope. For one-eighth (1/8) inch per foot (10.4 mm/m) slope, multiply horizontal fixture units by a factor of 0.8.

**Note:** The diameter of an individual vent shall not be less than one and one-fourth (1-1/4) inches (31.8 mm) nor less than one-half (1/2) the diameter of the drain to which it is connected. Fixture unit load values for drainage and vent piping shall be computed from Tables 7-3 and 7-4. Not to exceed one-third (1/3) of the total permitted length of any vent may be installed in a horizontal position. When vents are increased one (1) pipe size for their entire length, the maximum length limitations specified in this table do not apply.

**704.4.5** Closet screws, bolts, washers, and similar fasteners shall be of brass, copper, or other listed, equally corrosion resistant materials. All such screws and bolts shall be of adequate size and number to properly support the fixture installed.

**705.0 Joints and Connections**

**705.1 Types of Joints**

**705.1.1 Caulked Joints.** Caulked joints for cast iron bell-and-spigot soil pipe and other similar joints shall be firmly packed with oakum or hemp and filled with molten lead to a depth of not less than one (1) inch (25.4 mm). The lead shall be caulked thoroughly at the inside and outside edges of the joint. After caulking, the finished joint shall not extend more than one-eighth (1/8) inch (3.2 mm) below the rim of the hub. No paint, varnish, or other coatings shall be permitted on the joining material until after the joint has been tested and approved. Caulked joints in cast iron bell-and-spigot water piping shall be made with non-toxic materials.

**705.1.1.1 Caulked Joints [For HCD 1 & HCD 2, DSA/SS, OSHPD 1, 2, 3 & 4]** All joints for liquid

material are to be reamed to full size and cleaned of all loose materials.

**705.1.2 Cement Mortar Joints.** Except for repairs and connections to existing lines constructed with such joints, cement mortar joints shall be prohibited on building sewers.

**705.1.3 Burned Lead Joints.** Burned (welded) lead joints shall be lapped and the lead shall be fused together to form a uniform weld at least as thick as the lead being joined.

**705.1.4 Asbestos Cement Sewer Pipe Joints.** Joints in asbestos cement pipe shall be a sleeve coupling of the same composition as the pipe or of other approved materials, and sealed with rubber rings or joined by an approved type compression coupling. Joints between asbestos cement pipe and other approved pipe shall be made by means of an approved adapter coupling.

**705.1.5 Packing Additives Prohibited.** The addition of leak sealing additives to joint packing shall be prohibited.

**705.1.6 Molded Rubber Coupling Joints.** When pipe is joined by means of molded rubber coupling joints, such joints shall conform to

C  
L  
L  
A  
L

C  
L  
L  
A  
L



sewage treatment or private sewage disposal. A grease trap is not required for individual dwelling units or for any private living quarters.

**1014.1.1 [For OSHPD 1, 2, 3 & 4]** The administrative authority is the individual official, board, department or agency authorized to administer and enforce the sewage treatment system in the area of the location of the health facility.

**1014.2** No grease trap shall be installed which has an approved rate of flow of more than fifty-five (55) gallons per minute (3.5 L/s), nor less than twenty (20) gallons per minute (1.3 L/s), except when specially approved by the Administrative Authority.

**1014.3** Each plumbing fixture or piece of equipment connected to a grease trap shall be provided with an approved type vented flow control installed in a readily accessible and visible location. Flow control devices shall be so designed that the flow through such device or devices shall at no time be greater than the rated capacity of the grease trap. No flow control device having adjustable or removable parts shall be approved. The vented flow control device shall be located such that no system vent shall be between the flow control and the grease trap inlet. The vent or air inlet of the flow control device shall connect with the sanitary drainage vent system as elsewhere required by this Code or shall terminate through the roof of the building and shall not terminate to the free atmosphere inside the building.

Exception: Listed grease traps with approved type flow controls or restricting devices may be installed in an accessible location in accordance with the manufacturer's instructions.

**1014.4** Each grease trap required by this section shall have an approved rate of flow which is not less than that given in Table 10-2 for the total number of connected fixtures. The total capacity in gallons (L) of fixtures discharging into any such grease trap shall not exceed two and one-half (2-1/2) times the certified gpm (L/s) flow rate of the grease trap as per Table 10-2.

Not more than four (4) separate fixtures shall be connected to or discharged into any one (1) grease trap.

For the purpose of this section, the term "fixture" shall mean and include each plumbing fixture, appliance, apparatus, or other equipment required to be connected to or discharged into a grease trap by any provision of this section.

**1014.5** Each fixture discharging into a grease trap shall be individually trapped and vented in an approved manner.

**1014.6** Grease traps shall be maintained in efficient operating condition by periodic removal of the

accumulated grease. No such collected grease shall be introduced into any drainage piping, or public or private sewer.

**1014.7** No water jacketed grease trap or grease interceptor shall be approved or installed.

**1014.8 Grease Interceptors for Commercial Kitchens.** Required grease interceptors, installed outdoors, shall comply with the provisions of Appendix H.

**1014.9 [For OSHPD 1, 2, 3 & 4]** Grease traps shall not be installed in food preparation areas of kitchens.

**1014.10 [For OSHPD 1, 2, 3 & 4]** Grease interceptors shall be installed outside of the kitchen area in a location affording ease of maintenance and servicing.

**1015.0 Food Waste Disposal and Dishwasher Prohibited**

Unless specifically required or permitted by the Administrative Authority, no food waste disposal unit or dishwasher shall be connected to or discharge into any grease trap.

**TABLE 10-2**  
Grease Traps

Total Number of Fixtures Connected	Required Rate of Flow per Minute, Gallons	Grease Retention Capacity, Pounds
1	20	40
2	25	50
3	35	70
4	50	100

**TABLE 10-2**  
Grease Traps (Metric)

Note: For installations with more than four (4) fixtures, the Administrative Authority may permit the use of larger grease traps designed not to exceed the parameters of Section 1014.4, but not to exceed seventy-five (75) GPM (284 liters per minute).

Total Number of Fixtures Connected	Required Rate of Flow per Minute, Liters	Grease Retention Capacity, kg
1	76	18
2	95	22
3	132	31
4	189	45



C  
A  
C  
C  
A  
C  
C  
A  
C  
C  
A  
C  
C  
A  
C  
C  
A  
C  
C  
A  
C  
C  
A

disconnect assembly to make the pump accessible for servicing.

**1101.5.4** For separate dwellings not serving continuously flowing springs or groundwater, the sump discharge pipe may discharge onto a concrete splash block with a minimum length of twenty-four (24) inches (610 mm). This pipe shall be within four (4) inches (102 mm) of the splash block and positioned to direct the flow parallel to the recessed line of the splash block.

**1101.5.5** Subsoil drains subject to backflow when discharging into a storm drain shall be provided with a backwater valve in the drain line so located as to be accessible for inspection and maintenance.

**1101.5.1.1 [For HCD 1 & HCD 2]** *When required by the Administrative Authority due to geological conditions, subsoil drains shall be provided around the perimeter of buildings having basement, cellars, or crawl spaces or floors below grade. Such subsoil drains may be positioned inside or outside of the footing, shall be of perforated, or open-jointed approved drain tile or pipe not less than three (3) inches (76 mm) in diameter, and shall be laid in gravel, slag, crushed rock, approved three-quarter (3/4) inch (19.1 mm) crushed recycled glass aggregate, or other approved porous material with a minimum of four (4) inches (102 mm) surrounding the pipe on all sides. Filter media shall be provided for exterior subsoil piping.*

**1101.5.6** Nothing in Section 1101.5 shall prevent drains that serve either subsoil drains or areaways of a detached building from discharging to a properly graded open area, provided that:

- (1) They do not serve continuously flowing springs or groundwater;
- (2) The point of discharge is at least ten (10) feet (3048 mm) from any property line; and
- (3) It is impracticable to discharge such drains to a storm drain, to an approved water course, to the front street curb or gutter, or to an alley.

**1101.6 Building Subdrains.** Building subdrains located below the public sewer level shall discharge into a sump or receiving tank, the contents of which shall be automatically lifted and discharged into the drainage system as required for building sumps.

**1101.7 Areaway Drains.** All open subsurface space adjacent to a building, serving as an entrance to the basement or cellar of a building, shall be provided with a drain or drains. Such areaway drains shall be two (2) inches (50 mm) minimum diameter for areaways not exceeding one hundred (100) square feet (9.3 m<sup>2</sup>) in area, and shall be discharged in the

manner provided for subsoil drains not serving continuously flowing springs or ground water (see Section 1101.5.2). Areaways in excess of one hundred (100) square feet (9.3 m<sup>2</sup>) shall not drain into subsoil. Areaway drains for areaways exceeding one hundred (100) square feet (9.3 m<sup>2</sup>) shall be sized according to Table 11-2.

**1101.8 Window Areaway Drains.** Window areaways not exceeding ten (10) square feet (0.9 m<sup>2</sup>) in area may discharge to the subsoil drains through a two (2) inch (50 mm) pipe. However, window areaways exceeding ten (10) square feet (0.9 m<sup>2</sup>) in area shall be handled in the manner provided for entrance areaways (see Section 1101.7).

**1101.9 Filling Stations and Motor Vehicle Washing Establishments.** Public filling stations and motor vehicle washing establishments shall have the paved area sloped toward sumps or gratings within the property lines. Curbs not less than six (6) inches (152 mm) high shall be placed where required to direct water to gratings or sumps.

**1101.10 Paved Areas.** Where the occupant creates surface water drainage, the sumps, gratings or floor drains shall be piped to a storm drain or an approved water course.

**1101.11 Roof Drainage**

**1101.11.1 Primary Roof Drainage.** Roof areas of a building shall be drained by roof drains or gutters. The location and sizing of drains and gutters shall be coordinated with the structural design and pitch of the roof. Unless otherwise required by the Administrative Authority, roof drains, gutters, vertical conductors or leaders, and horizontal storm drains for primary drainage shall be sized based on a storm of sixty (60) minutes duration and 100-year return period (see Appendix D).

**1101.11.2 Secondary Roof Drainage**

**1101.11.2.1** Where parapet walls or other construction extend above the roof and create areas where storm water would become trapped if the primary roof drainage system failed to provide sufficient drainage, an independent secondary roof drainage system consisting of scuppers, standpipes, or roof drains shall be provided. Secondary roof drainage systems shall be sized in accordance with Section 1101.11.1 of this Code. Overflow drains shall be the same size as the roof drains with the inlet flow line two (2) inches (51 mm) above the low point of the roof and shall be installed independent from the roof drains.

**1101.11.2.2** Where secondary roof drainage

**Table 12-11**

Copper Tube – Low Pressure  
 Maximum Delivery Capacity\* of Cubic Feet of Gas Per Hour of Copper Tube Carrying Natural Gas of 0.60\*\* Specific Gravity at Low Pressure (Less than 14 inches Water Column) Based on Pressure Drop of 0.50 Inch Water Column:

Length of Tube, feet	Outside Diameter of Tube, inches						
	3/8 (10 mm)	1/2 (15 mm)	5/8 (18 mm)	3/4 (20 mm)	7/8 (22 mm)	1-1/8 (28 mm)	1-3/8 (34 mm)
10	24	50	101	176	250	535	963
20	17	34	69	121	172	368	662
30	13	27	56	97	138	295	531
40	11	23	48	83	118	253	455
50	10	21	42	74	105	224	403
60	9.1	19	38	67	95	203	365
70	8.4	17	35	62	84	197	336
80	7.8	16	33	57	81	174	313
90	7.3	15	31	54	76	163	293
100	6.9	14	29	51	72	154	277
125	6.1	13	26	45	64	136	245
150	5.6	11	23	41	58	124	222
175	5.1	11	21	38	53	114	205
200	4.8	10	20	35	50	106	190
250	4.2	8.7	18	31	44	94	169

\*Includes 20% factor for fittings.

\*\*For other pressure drops values see Table 12-12.

**Table 12-12**

Specific Gravity  
 Multipliers to be Used with Copper Tube when Specific Gravity of Gas is other than 0.60.

Specific Gravity	Multiplier	Specific Gravity	Multiplier
.35	1.31	1.00	.78
.40	1.23	1.10	.74
.45	1.16	1.20	.71
.50	1.10	1.30	.68
.55	1.04	1.40	.66
.60	1.00	1.50	.63
.65	.96	1.60	.59
.70	.93	1.70	.58
.75	.90	1.80	.56
.80	.87	1.90	.56
.85	.84	2.00	.55
.90	.82	2.10	.54

Adjustment for a gas with an average specific gravity (relative density) other than 0.60 is achieved by multiplying the CFH values of Tables 12-11, 12-13, or 12-14 by the appropriate multiplier.

**Table 12-13**

Copper Tube – Medium Pressure  
 Maximum Delivery Capacity\* of Cubic Feet of Gas Per Hour of Copper Tube Carrying Natural Gas of 0.60\*\* Specific Gravity at Medium Pressure (2.0 psig) Based on Pressure Drop of 1.0 psig:

Length of Tube, feet	Outside Diameter of Tube, inches						
	3/8 (10 mm)	1/2 (15 mm)	5/8 (18 mm)	3/4 (20 mm)	7/8 (22 mm)	1-1/8 (28 mm)	1-3/8 (34 mm)
10	222	458	932	1629	2311	4937	8889
20	153	315	641	1120	1589	3393	6109
30	123	253	515	899	1276	2725	4906
40	105	216	440	770	1092	2332	4199
50	93	192	390	682	968	2067	3721
60	84	174	354	618	877	1873	3372
70	78	160	325	569	807	1723	3102
80	72	149	303	529	750	1603	2886
90	68	140	254	496	704	1504	2708
100	64	132	268	469	665	1421	2558
125	57	117	238	415	589	1259	2267
150	51	106	215	376	534	1141	2054
175	47	97	198	346	491	1050	1890
200	44	91	184	322	457	976	1758
250	39	80	163	286	405	865	1558

\*Includes 20% factor for fittings.

\*\*For other pressure drops values see Table 12-12.

**Table 12-14**

Copper Tube – High Pressure  
 Maximum Delivery Capacity\* of Cubic Feet of Gas Per Hour of Copper Tube Carrying Natural Gas of 0.60\*\* Specific Gravity at High Pressure (5.0 psig) Based on Pressure Drop of 3.50 psig:

Length of Tube, feet	Outside Diameter of Tube, inches						
	3/8 (10 mm)	1/2 (15 mm)	5/8 (18 mm)	3/4 (20 mm)	7/8 (22 mm)	1-1/8 (28 mm)	1-3/8 (34 mm)
10	462	954	1941	3392	4812	10279	18504
20	318	656	1334	2331	3307	7064	12718
30	255	527	1071	1872	2656	5673	10213
40	218	451	917	1602	2273	4855	8741
50	194	399	812	1420	2015	4303	7747
60	175	362	736	1287	1825	3899	7019
70	161	333	677	1184	1679	3587	6458
80	150	310	630	1101	1562	3337	6008
90	141	291	591	1033	1466	3131	5637
100	133	274	558	976	1385	2958	5324
125	118	243	495	865	1227	2621	4719
150	107	220	448	784	1112	2375	4276
175	98	203	413	721	1023	2185	3934
200	91	189	384	671	952	2033	3659
250	81	167	340	594	843	1802	3243

\*Includes 20% factor for fittings.

\*\*For other pressure drops values see Table 12-12.





→ systems, or cylinder storage requirements.

**1310.0 Definitions**

**1310.1 Building Supply** – The pipe from the source of supply to a building or structure.

**1310.2 Critical Care Area** – An area in a medical facility where special care is provided, including intensive care units, coronary care units, recovery rooms, and respiratory care units.

**1310.3 Manifold** – A device for connecting outlets of one or more gas cylinders to the central piping system for that specific gas.

**1310.4 Medical Air** – Compressed air used in a medical facility.

**1310.5 Medical Gas** – Gases used in a medical facility, including oxygen, nitrous oxide, nitrogen, carbon dioxide, helium, medical air, and mixtures of these gases. Standards of purity apply.

**1310.6 Medical Gas System** – A system consisting of a central supply system (manifold, bulk, or compressors), including control equipment and piping extending to station outlets in the facility where medical gases may be required.

**1310.7 Medical Vacuum System** – A system consisting of central vacuum-producing equipment with vacuum switches and operating controls,

shutoff valves, alarm warning systems, gauges, and a network of piping extending to and terminating with station inlets at locations where patient suction may be required. Includes surgical vacuum systems, waste anesthesia gas disposal (gas scavenging systems), and bedside suction systems.

**1310.8 Purge, Flow** – The removal of oxygen from a system by oil-free dry nitrogen during brazing.

**1310.9 Purge, System** – The removal of nitrogen from a system with the medical gas required for that system.

**1310.10 SCFM** – Standard cubic feet per minute, the unit measure for a volume of gas at standard conditions (68°F [20°C] and 1 atmosphere of pressure).

**1310.11 Special Hazard Area** – An area, such as a kitchen or electrical switchgear room.

**1310.12 Station Inlet** – An inlet in a vacuum piping system at which the user makes connections and disconnections.

**1310.13 Station Outlet** – An outlet point in a medical gas piping system at which the user makes connections and disconnections.

**1310.14 Use Point** – A room or area within a room, where medical gases are dispensed to a patient for medical purposes.

**1310.15 User Outlet** – See station outlet.

**1310.16 Valve, Isolation** – A valve which isolates

**TABLE 13-1**

Operating Pressures for Medical Gas and Medical Vacuum Systems

System	Symbol	Minimum Pressure	Maximum Pressure
Oxygen	O <sub>2</sub>	50 psig (0.34 MPa)	50 (+5-0) psig
Medical Vacuum	Vac	12" Hg	
Nitrous Oxide	N <sub>2</sub> O	50 psig (0.34 MPa)	50(+5-0) psig
Medical Compressed Air	Med Air	50 psig (0.34 MPa)	50(+5-0) psig
Nitrogen	N <sub>2</sub>	160 psig (1.10 MPa)	199 psig
Helium	He	50 psig (0.34 MPa)	50(+5-0) psig
Carbon Dioxide	CO <sub>2</sub>	50 psig (0.34 MPa)	50(+5-0) psig
Non-Standard Nitrogen	N <sub>2</sub>	200 psig (1.36 MPa)	300 psig (2.06 MPa)

**TABLE 13-2**

Minimum Flow Rates

Oxygen	.71 CFM per outlet <sup>1</sup> (20 LPM)
Nitrous Oxide	.71 CFM per outlet <sup>1</sup> (20 LPM)
Medical Compressed Air	.71 CFM per outlet <sup>1</sup> (20 LPM)
Nitrogen	15 CFM (0.42 m <sup>3</sup> /min.) free air per outlet
Vacuum	1 SCFM (0.03 Sm <sup>3</sup> /min.) per inlet <sup>2</sup>
Carbon Dioxide	.71 CFM per outlet <sup>1</sup> (20 LPM)
Helium	.71 CFM per outlet (20 LPM)

<sup>1</sup> Any room designed for a permanently located respiratory ventilator or anesthesia machine shall have an outlet capable of a flow rate of 180 LPM (6.36 CFM) at the station outlet.

<sup>2</sup> For testing and certification purposes, individual station inlets shall be capable of a flow rate of 3 SCFM, while maintaining a system pressure of not less than 12 inches (305 mm) at the nearest adjacent vacuum inlet.

**TABLE 13-6**  
Size of Gas/Vacuum Piping

ft x 304.8 = mm  
in x 25.4 = mm

Medical Gas System	Pipe Size Inch <sup>2</sup>	Maximum Delivery Capacity <sup>3</sup> in SCFM (LPM)				
		Length of Piping in Feet (m) <sup>1</sup>				
		100 (30)	250 (76)	500 (152)	750 (228)	1000 (304)
Oxygen	1/2	15.0 (425)	10.6 (300)	7.4 (209)	5.9 (167)	5.1 (144)
	3/4	40.0 (1133)	28.3 (801)	19.6 (555)	15.7 (445)	13.3 (377)
	1	50.0 (1416)	50.0 (1416)	40.2 (1138)	32.2 (912)	27.7 (784)
Nitrous Oxide	1/2	15.0 (425)	9.5 (269)	6.5 (184)	5.3 (150)	4.5 (127)
	3/4	30.0 (849)	24.7 (699)	17.1 (484)	13.7 (388)	11.7 (331)
	1	40.0 (1113)	40.0 (1133)	34.7 (983)	28.2 (798)	24.3 (688)
Medical Air	1/2	18.1 (512)	11.1 (314)	7.8 (221)	6.3 (177)	5.3 (151)
	3/4	40.0 (1133)	29.9 (847)	21.0 (595)	16.5 (467)	14.1 (399)
	1	50.0 (1416)	50.0 (1416)	42.1 (1192)	35.8 (1013)	29.2 (826)
Vacuum	1	22.8 (645)	13.7 (388)	9.5 (269)	7.6 (215)	6.5 (184)
	1-1/4	40.1 (1135)	24.5 (694)	16.7 (473)	13.3 (377)	11.2 (317)
	1-1/2	63.7 (1804)	38.9 (1101)	26.8 (759)	21.1 (600)	17.9 (507)
	2	132.7 (3758)	81.4 (2305)	56.0 (1586)	45.0 (1274)	38.3(1084)
Nitrogen	1/2	25.0 (708)	25.0 (708)	25.0 (708)	23.8 (674)	20.6 (583)
	3/4	60.0 (1699)	60.0 (1699)	60.0 (1699)	60.0 (1699)	54.2(1535)
	1	110.0 (3115)	110.0 (3115)	110.0 (3115)	110.0 (3115)	110.0(3115)

<sup>1</sup> Length of piping includes a 30% allowance for fittings.

<sup>2</sup> One-half inch (12.7 mm) diameter pipe is the minimum size allowed in medical gas systems.

<sup>3</sup> Based on the following maximum pressure drops:

Oxygen, nitrous oxide, and medical air – 5 psig (10" Hg)

Vacuum – 1.96 psig (4" Hg)

Nitrogen – 20 psig (41" Hg)

**1321.0 Valves**

**1321.1 General Requirements.** All valves in medical gas and vacuum piping systems, except those at the source of supply and at station outlets/inlets, shall:

**1321.1.1** Be accessible three (3) piece fullway ball valves with brazed extensions, which shall open or close using not more than one-quarter turn of the handle;

**1321.1.2** Have working parts that are oil-free and non-corrosive;

**1321.1.3** Be properly labeled, as described in Section 1324.0, to identify the type of gas they control.

**1321.2 Location.** Valves for medical gas and medical piping systems shall be installed in the following locations:

**1321.2.1** At the building supply where the line enters the building or downstream of the source of supply;

**1321.2.2** At the source of supply and at each supply manifold, located upstream of the building supply valve in the immediate vicinity of the source equipment;

**1321.2.3** At each piece of equipment, including all accessory devices, vacuum pumps, and medical air compressors;

**1321.2.4** At the base of each riser serving more than one (1) floor;

**1321.2.5** At each floor or horizontal branch between the riser and the first station outlet/inlet;

**Exception:** Single story facilities shall have a supply valve installed between the main and the station outlet/inlet for each branch.

**1321.2.6** Outside of each operating room.

**1321.3 Zone Valves.** Zone valves shall be located in enclosures having transparent removable windows. Additional valves shall be installed in the following locations:

**1321.3.1** Immediately outside of each

anesthetizing area or room;

**1321.3.2** Inside of each special care area, or adjacent to the nursing station;

**1321.3.3** Within all nursing stations or main control panel areas, or adjacent to the nursing station, in view from any location within the nursing station.

Zone valves shall be installed so that the closure of one zone valve area does not affect the operation or supply of gases or vacuum to other areas. Each zone valve more than fifteen (15) feet (4572 mm) from a station outlet shall have a service isolation valve installed immediately adjacent to the riser for that branch.

**Exception:** Anesthetizing suites and special care areas shall be supplied by lateral branch lines off the risers with no other intervening shutoff valves.

**1321.4 Enclosures.** Where valves are concealed in any enclosure, the door or entry to the enclosure shall be identified and color coded with the type of gas service installed, as described in Section 1324.0. Enclosures shall be of sufficient size to permit valve operation. Valve handles in the “off” position shall prevent closure of the access panel or door.

#### **1322.0 Pressure Regulating Equipment**

**1322.1** Pressure regulating equipment shall be installed in the supply main upstream of the final line-pressure relief valve. Each central supply system shall have a pressure relief valve set at fifty (50) percent above normal line pressure, installed downstream of the pressure regulator and upstream of any shutoff valve. All pressure relief valves shall be constructed of brass or bronze and close automatically when excess pressure has been released.

**1322.2 Pressure Gauges.** A pressure gauge shall be installed in the main line adjacent to the alarm actuating switch. Gauges shall be labeled as described in Section 1324.0, and shall be readily visible at all times from a standing position.

**1322.3** A pressure relief valve shall not be isolated from its intended use by any valve.

#### **1323.0 Station Outlets/Inlets**

Station outlets and inlets shall be installed in strict accordance with the manufacturer’s instructions. After installation of the piping, but before installation of the station outlets/inlets and other medical gas and medical vacuum system components (e.g., pressure actuating switches for alarms, manifolds, pressure gauges, or pressure relief valves), system lines shall be purged by means of oil-free dry nitrogen.

#### **1324.0 Marking and Identification**

**1324.1** All medical gas piping, valves, and manifolds shall have permanent labels bearing the name of the gas they carry or control.

**1324.2** The labeling shall be by means of metal tags, stenciling, stamping, or adhesive markers, and shall be visible.

**1324.3** Each pipe shall bear a label at intervals not to exceed twenty (20) feet (6096 mm), at least once in each room, before and after barriers, behind access doors, and at outlets and inlets. Vertical risers shall be marked at every floor. The label shall:

**1324.3.1** Have lettering at least three-eighths (3/8) (9.5 mm) high;

**1324.3.2** Be applied with the lettering parallel to the axis of the pipe.

**1324.4** The labels shall be in the following colors:

<b>Gas</b>	<b>Marking Colors</b>
Medical Air	Yellow background with black letters
Nitrogen	Black background with white letters
Nitrous Oxide	Blue background with white letters
Oxygen	Green background with white letters
Vacuum	White background with black letters
Helium	Brown background with white letters
Carbon Dioxide	Gray background with black or white letters

#### **1324.5 Valve Identification**

**1324.5.1** All valves and manifolds shall be identified by means of a metal tag, stamped with the name of the gas it conveys or controls and securely attached to the valve or manifold.

**1324.5.2** Each valve installed in a medical gas piping system shall be marked with a symbol, number, or description for area of control. A record shall be made listing the rooms/area controlled by each valve for each gas, and shall remain with the facility owner.

**1324.5.3** Where a valve is accessible, its location shall be permanently identified with the following: “(Type Gas) Shutoff Valve for (Location or Zone)”. The identification shall be lettered and color coded as described in this Section.

#### **1325.0 Alarms**

**1325.1** An alarm system, (Master), with both an audible and non-cancelable visual signal shall be installed in each medical gas and medical vacuum system. This alarm system shall have two (2) separate signal panels located in areas where at least one (1) of the two (2) is always under continuous surveillance.

**1325.2** The master alarm shall indicate any change in pressure above or below the normal operating pressure ranges listed in Table 13-1, change from the primary to secondary supply, any failure of the

MANDATORY REFERENCED STANDARDS

Table 14-1

Standard Number	Standard Title	Application	Indicate if Not Approved in the UPC
IAPMO PS 109-96	Rigid Unshielded Mechanical Couplings for Use with Plain End Drain, Waste, and Vent (DWV) Pipe and Plain End Sewer Pipe	Joints	
IAPMO PS 110-99	PVC Cold Water Compression Fittings	Fittings	
IAPMO PS 111-99	PVC Cold Water Gripper Fittings	Fittings	
IAPMO PS 112-99	PVC Plastic Valves for Cold Water Distribution Systems Outside a Building and CPVC Plastic Valves for Hot and Cold Water Distribution Systems	Valves	
IAPMO PS 113-99	Hydraulically Powered Household Food Waster Grinders	Appliances	
IAPMO PS 114-99	Remote, Floor Box Industrial Water Supply, Air Supply, Drainage	Miscellaneous	
IAPMO PS 115-99	Hot Water Demand or Automatic Activated Hot Water Pumping Systems	Miscellaneous	
IAPMO PS 116-99	Hot Water Circulating Devices Which Do Not Use a Pump	Miscellaneous	
IAPMO SPS 3-93	Skimmers (Spas, Hot Tubs and Swimming Pools)	Swimming Pools and Spas	
IAPMO SPS 4-89	Special Use Suction Fittings for Swimming Pools, Spas and Hot Tubs (For Suction Side Automatic Swimming Pool Cleaners)	Swimming Pools and Spas	
IAS LC 1-97	Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST) (same as CSA 6.26-M97)	Fuel Gas	X
IAS LC 1-97	<i>Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST) (same as CSA 6.26-M97)</i>	<b>[For HCD 1 &amp; 2]</b> Fuel Gas	
MIL-F-1183 H-83 [D]	Fittings, Pipe, Cast Bronze, Silver-Brazing	Piping, Copper Alloy	
MIL-F-18180C1	Flanges and Flanged Fittings, Pipe, Steel (150, 300, 400, 600, 900, 1500, and 2500 pounds)	Piping, Ferrous	
MIL-P-17552	Pumps, Centrifugal, Water, Horizontal, General Service; and Pumps, Centrifugal Water, Horizontal, Boiler-Feed; Electric Motor or Steam Driven	Pumps	
MIL-P-21214B-92	Vertical sump pumps	Pumps	
SSPMA-85			
MIL-P-21251C	Plumping Units, Sewage, Duplex, Automatic, Wet-Pit-Type	Pumps	
MIL-P-22561-82(D)	Glass (standard cancelled per Department of Defense)	Miscellaneous	
MIL-V-29193-80(D)	Pressurized flushing devices	Fixtures	
MIL-P-52407 (A)-1976 (D)	Pump, Centrifugal: Electric-Motor-Driven, Shallow Well (for Water)	Pumps	
MIL-P-62156 (1)-1983 (D)	Submersible, axial flow, electric motor driven	Pumps	
MIL-P-B-81 (D)			
SSPMA-85	Sewage pumps	Pumps	
MSS SP-25-93	Standard Marking System for Valves, Fittings, Flanges and Unions	Piping	
MSS SP-42-90 (R95)	Class 150 Corrosion Resistant Gate, Globe, Angle and Check Valves with Flanged and Butt Weld Ends	Piping, Ferrous	
MSS SP-44-91	Steel Pipeline Flanges	Piping, Ferrous	
MSS SP-58-93	Pipe Hangers And Supports – Materials, Design and Manufacture	Piping	
MSS SP-67-90	Butterfly Valves	Valves	
MSS SP-70-90	Cast Iron Gate Valves, Flanged and Threaded Ends	Valves	
MSS SP-71-90	Cast Iron Swing Check Valves, Flanged and Threaded Ends	Valves	

Standard Number	Standard Title	Application	Indicate if Not Approved in the UPC
MSS SP-72-92	Ball Valves with Flanged or Butt-Welding Ends for General Service	Valves	
MSS SP-73-91	Brazing Joints for Wrought and Cast Copper Alloy Solder Joint Pressure Fittings	Joints	
MSS SP-78-87 (R92)	Cast Iron Plug Valves, Flanged and Threaded Ends	Valves	
MSS SP-80-87	Bronze Gate, Globe, Angle and Check Valves	Valves	
MSS SP-83-87	Steel Pipe Unions Socket-Welding and Threaded	Piping, Ferrous	
MSS SP-84 [D]	Steel Valves – Socket-Welding Ends and Threaded Ends (discontinued)	Valves	
<b>CA</b>    <i>NFPA 13, 1999</i>	<i>Automatic Sprinkler Systems, as amended</i>	<i>Piping [For SFM]</i>	
<b>CA</b>    NFPA 13R-1996	Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height	Miscellaneous	
<b>CA</b>    <i>NFPA 13R-1999</i>	<i>Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height</i>	<i>Piping [For SFM]</i>	
<b>CA</b>    NFPA 13D-1996	Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes	Miscellaneous	
<b>CA</b>    <i>NFPA 13D-1999</i>	<i>Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes</i>	<i>Piping [For SFM]</i>	
<b>CA</b>    <i>NFPA 14, 2000</i>	<i>Installation of Standpipe, Private Hydrant and Hose Systems</i>	<i>Piping [For SFM]</i>	
<b>CA</b>    NFPA 31-97	Installation of Oil-Burning Equipment	Miscellaneous	
<b>CA</b>    NFPA 54-96	National Fuel Gas Code	Fuel Gas <b>[For SFM]</b>	
<b>CA</b>    NFPA 58-98	Storage and Handling of Liquefied Petroleum Gases	Fuel Gas <b>[For SFM]</b>	
<b>CA</b>    NFPA 99-93	Medical Gas Systems	Piping	
<b>CA</b>    <i>NFPA 99-93</i>	<i>Medical Gas Systems</i>	<i>Piping</i>	
<b>CA</b>    <b>[For SFM OSHPD 1,2,3,&amp;4]</b> NFPA 99-99	<i>Medical Gas Systems</i>	<i>Piping [For SFM]</i>	
<b>CA</b>    NFPA 99C-93	Gas and Vacuum Systems	Piping	
<b>CA</b>    <i>NFPA 99C-93</i>	<i>Gas and Vacuum Systems</i>	<i>Piping</i>	
<b>CA</b>    <b>[For SFM OSHPD 1,2,3,&amp;4]</b> NFPA 99C-99	<i>Gas and Vacuum Systems</i>	<i>Piping [For SFM]</i>	
<b>CA</b>    NFPA 211-96	Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances	Miscellaneous	
<b>CA</b>    NFPA 8501-97	Single Burner Boiler Operation	Appliances	
<b>CA</b>    NSF 3-96	Commercial Spray-Type Dishwashing and Glasswashing Machines	Appliances	
<b>CA</b>    NSF 12-93	Automatic Ice Making Equipment	Appliances	
<b>CA</b>    NSF 14-98	Plastic Piping Components and Related Materials	Piping, Plastic	
<b>CA</b>    NSF 18-96	Manual Food and Beverage Dispensing Equipment	Appliances	
<b>CA</b>    NSF 24-96	Plumbing System Components for Manufactured Homes and Recreational Vehicles	Miscellaneous	
<b>CA</b>    NSF 29-93	Chemical Feeders for Commercial Dishwashers	Appliances	
<b>CA</b>    NSF 40-99	Residential Wastewater Treatment Systems	DWV Components	
<b>CA</b>    NSF 41-98	Non-Liquid Saturated Treatment Systems	DWV Components	
<b>CA</b>    NSF 42-98	Drinking Water Treatment Units - Aesthetic Effects	Appliances	
<b>CA</b>    NSF 44-98	Cation Exchange Water Softeners	Appliances	
<b>CA</b>    NSF 46-97	Evaluation of Components and Devices Used in Wastewater Treatment Systems	DWV Components	
<b>CA</b>    NSF 53-98	Drinking Water Treatment Units - Health Effects	Appliances	
<b>CA</b>    NSF 58-98	Reverse Osmosis Drinking Water Treatment Systems	Appliances	
<b>CA</b>    NSF 61-98	Drinking Water System Components - Health Effects	Miscellaneous	
<b>CA</b>    NSF 62-97	Water Distillation Systems	Appliances	
<b>CA</b>    NSPI 1-1991	Public Swimming Pools	Swimming Pools and Spas	
<b>CA</b>    PDI G-101-85	Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data	DWV Components	

# CHAPTER 15

## PIPING APPLICATIONS

### 1501.0 General Requirements

**1501.1 Applicability.** All DWV and stormwater piping penetrations of fire-resistance rated walls, partitions, floors, floor/ceiling assemblies, roof/ceiling assemblies or shaft enclosures shall be protected in accordance with the requirements of the Building Code and this Chapter.

**1501.2 [For HCD 1 & HCD 2]** Any provisions of this chapter adopted by the State Fire Marshal shall be applicable to structures subject to HCD 1 and/or HCD 2 (See Section 101.11.8).

### 1502.0 Plans and Specifications

**1502.1** Plans and specifications shall indicate with sufficient detail how penetrations of fire resistance rated assemblies shall be firestopped prior to obtaining design approval by the Administrative Authority.

### 1503.0 Installation

**1503.1** Firestop materials shall be installed in accordance with this Chapter, the Building Code and the manufacturer's instructions.

### 1504.0 Definitions

**1504.1 F Rating.** The time period that the penetration firestop system limits the spread of fire through the penetration when tested in accordance with ASTM E 814.

**1504.2 T Rating.** The time period that the penetration firestop system, including the penetrating item, limits the maximum temperature rise of 325 degrees F above its initial temperature through the penetration on the nonfire side, when tested in accordance with ASTM E 814.

### 1505.0 ABS and PVC DWV (Combustible) Installations

**1505.1** ABS and PVC DWV Piping installations shall be protected in accordance with the appropriate fire resistance rating requirements in the building code that list the acceptable area, height and type of construction for use in specific occupancies to assure compliance and integrity of the fire resistance rating prescribed.

**1505.2** When penetrating a fire resistance rated wall, partition, floor, floor-ceiling assembly, roof-

ceiling assembly, or shaft enclosure, the fire resistance rating of the assembly shall be restored to its original rating with a material or product tested to standard(s) referenced in Chapter 14 and at an independent testing agency acceptable to the Administrative Authority.

**1505.3** Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 119 or ASTM E 814, with a minimum positive pressure differential of 0.01 inch of water. Systems shall have an F rating of at least 1 hour but not less than the required fire resistance rating of the assembly being penetrated. Systems protecting floor penetrations shall have a T rating of at least 1 hour but not less than the required fire resistance rating of the floor being penetrated. Floor penetrations contained within the cavity of a wall at the location of the floor penetration do not require a T rating. No T rating shall be required for floor penetrations by piping that is not in direct contact with combustible material.

**1505.4** The penetration must meet any additional requirements for protection of the penetration in the building code adopted by the Administrative Authority.

**1505.5** Prior to being concealed, piping penetrations shall be inspected to verify compliance with the fire resistance rating prescribed in the building code.

**1505.6** When piping penetrates a rated assembly, non-combustible piping shall not connect to combustible piping unless it can be demonstrated that the transition complies with the requirements of 1505.3.

### 1506.0 Copper, Cast Iron or Steel DWV (Non Combustible) Installations

**1506.1** Metallic DWV piping installations shall be protected in accordance with the appropriate fire resistance rating requirements in the building code that list the acceptable area, height and type of construction for use in specific occupancies to assure compliance and integrity of the fire resistance rating prescribed.

**1506.2** When penetrating a fire resistance rated wall, partition, floor, floor-ceiling assembly, roof-ceiling assembly, or shaft enclosure, the fire resistance rating of the assembly shall be restored to its original rating with a material or product tested to standard(s) referenced in Section 1506.3 and at an independent testing agency acceptable to the Administrative Authority.

C  
A  
C  
C  
A  
C  
C  
A  
A

L  
L  
L  
L  
L  
L  
L

**Exceptions:**

1. Concrete, mortar, or grout may be used to fill the annular spaces around cast iron, copper, or steel piping that penetrates concrete or masonry fire resistant rated assemblies. The nominal diameter of the penetrating item should not exceed 6 inches (15.2 cm) and the opening size should not exceed 144 sq. in. (929 sq. cm). The thickness of concrete, mortar, or grout should be the full thickness of the assembly or the thickness necessary to provide a fire resistance rating not less than the required fire resistance rating of the assembly penetrated. , or
2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste for the time period equivalent to the fire resistance rating of the assembly when tested to standard(s) referenced in Section 1506.3.

**1506.3** Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 119 or ASTM E 814, with a minimum positive pressure differential of 0.01 inch of water. Systems shall have an F rating of at least 1 hour but not less than the required fire resistance rating of the assembly being penetrated. Systems protecting floor penetrations shall have a T rating of at least 1 hour but not less than the required fire resistance rating of the floor being penetrated. Floor penetrations contained within the cavity of a wall at the location of the floor penetration do not require a T rating. No T rating shall be required for floor penetrations by piping that is not in direct contact with combustible material.

**1506.4** *The penetration must meet any additional requirements for protection of the penetration in the building code adopted by the Administrative Authority.*

**1506.5** *Prior to being concealed, piping penetrations shall be inspected to verify compliance with the fire resistance rating prescribed in the building code.*

**1506.6** When piping penetrates a rated assembly, combustible piping shall not connect to non-combustible piping unless it can be demonstrated that the transition complies with the requirements of 1506.3.

**1506.7** Unshielded couplings shall not be used to connect non-combustible piping unless it can be demonstrated that the fire resistive integrity of the penetration is maintained.

**1507.0 Model Code References**

**1507.1 ICBO Uniform Building Code (1997 edition),** Chapters 5 and 6 for heights and areas and occupancies, Chapter 7 for fire resistance ratings and

firestop systems.

**1508.0 Inspection Checklist**

**1508.1 General.** The Administrative Authority shall obtain verification of compliance with this chapter through the application of this checklist, the appropriate installation standards, construction documents, specifications and manufacturers product information (if applicable) to determine required details.

**1508.2** The Administrative Authority having jurisdiction shall determine the type, size and quantity of penetrations to be inspected.

**1508.3** The Administrative Authority having jurisdiction shall determine the required F ratings (1, 2, 3, or 4 hour) and T ratings (0, 1, 2, 3, or 4 hour) for the assembly being penetrated.

**1508.4** The Administrative Authority having jurisdiction shall require documentation (drawings) of systems installed by the contractor. This could be a tested system or a manufacturer's engineered system judgement. Ask for product data sheets of products used for identification.

**1508.5 Examination**

**1508.5.1 External Examination.** The assembly type, insulation type and thickness, type and size of any sleeve, type and size of penetrant, size of opening, orientation of penetrant, annular space and rating shall be inspected for compliance with the approved drawing submitted.

**1508.5.2 Internal Examination.** With contractor present and prepared to make repairs, the contractor shall be directed to cut into the firestop sufficiently to reveal the type and backing materials and the type and amount of the material. The contractor shall repair the firestop and the Administrative Authority having jurisdiction shall re-examine the installation.

**1508.5.3** The Administrative Authority having jurisdiction after examining the firestop, both externally and internally, shall compare the values with the design submitted. The Administrative Authority having jurisdiction will verify that all values fall within the design parameters of the tested or engineered system submitted and approved.

**1508.5.4** The Administrative Authority having jurisdiction shall continue inspection approving or rejecting applications as required. If sufficient non-compliant installations are found, the entire project may need to be redone. Re-examination after corrections shall be made.

# APPENDIX A

## RECOMMENDED RULES FOR SIZING THE WATER SUPPLY SYSTEM

Because of the variable conditions encountered, it is impractical to lay down definite detailed rules of procedure for determining the sizes of water supply pipes in an appendix which must necessarily be limited in length. For a more adequate understanding of the problems involved, refer to Water-Distributing Systems for Buildings, Report BMS 79 of the National Bureau of Standards; and Plumbing Manual, Report BMS 66, also published by the National Bureau of Standards.

The following is a suggested order of procedure for sizing the water supply system.

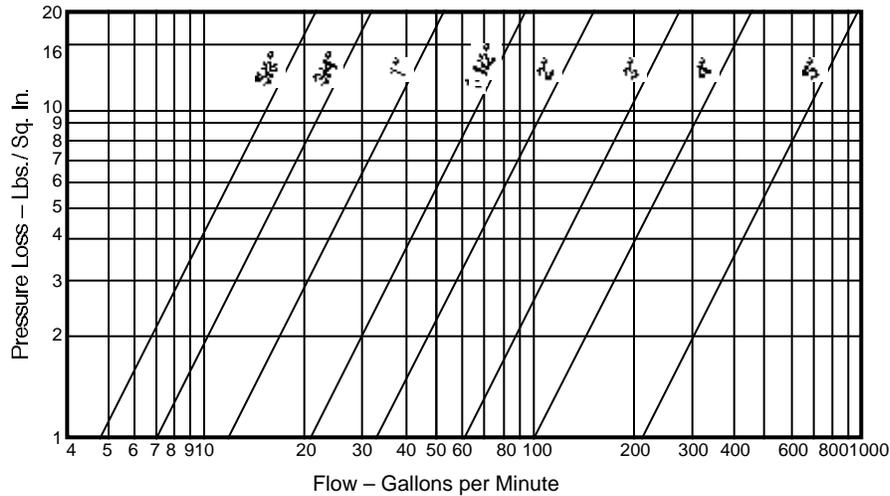
### A 1 Preliminary Information

**A 1.1** Obtain the necessary information regarding the minimum daily service pressure in the area where the building is to be located.

**A 1.2** If the building supply is to be metered, obtain information regarding friction loss relative to the rate of flow for meters in the range of sizes likely to be used. Friction-loss data can be obtained from

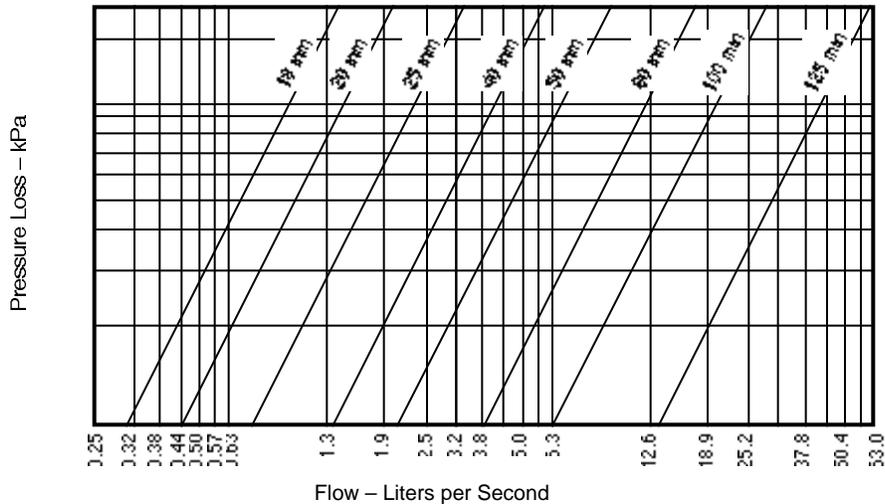
**CHART A-1**

Friction Losses for Disk Type Water Meters



**CHART A-1 (Metric)**

Friction Losses for Disk Type Water Meters



**TABLE A-2**

**Water Supply Fixture Units (WSFU) and Minimum Fixture Branch Pipe Sizes<sup>3</sup>**

Note: [ For HCD & HCD 2] See Chapter 6, Section 610.7, Table 6-4, UPC, for equivalent fixture units.

Inch	mm
1/2	15
3/4	20
1	25

	Minimum Fixture Branch Pipe Size <sup>1,4</sup>	Private	Public	Assembly <sup>6</sup>
<b>Appliances, Appurtenances or Fixtures<sup>2</sup></b>				
Bathtub or Combination Bath/Shower (fill) .....	1/2"	4.0	4.0	
3/4" Bathtub Fill Valve .....	3/4"	10.0	10.0	
Bidet .....	1/2"	1.0		
Clotheswasher.....	1/2"	4.0	4.0	
Dental Unit, cuspidor.....	1/2"		1.0	
Dishwasher, domestic .....	1/2"	1.5	1.5	
Drinking Fountain or Watercooler.....	1/2"	0.5	0.5	0.75
Hose Bibb.....	1/2"	2.5	2.5	
Hose Bibb, each additional <sup>7</sup> .....	1/2"	1.0	1.0	
Lavatory.....	1/2"	1.0	1.0	1.0
Lawn Sprinkler, each head <sup>5</sup> .....		1.0	1.0	
Mobile Home, each (minimum) ( Not adopted by HCD).....		12.0		
<b>Sinks</b>				
Bar .....	1/2"	1.0	2.0	
Clinic Faucet.....	1/2"		3.0	
Clinic Flushometer Valve.....				
with or without faucet.....	1"		8.0	
Kitchen, domestic.....	1/2"	1.5	1.5	
Laundry .....	1/2"	1.5	1.5	
Service or Mop Basin .....	1/2"	1.5	3.0	
Washup, each set of faucets.....	1/2"		2.0	
Shower .....	1/2"	2.0	2.0	
Urinal, 1.0 GPF.....	3/4"	3.0	4.0	5.0
Urinal, greater than 1.0 GPF.....	3/4"	4.0	5.0	6.0
Urinal, flush tank.....	1/2"	2.0	2.0	3.0
Washfountain, circular spray.....	3/4"		4.0	
Water Closet, 1.6 GPF Gravity Tank.....	1/2"	2.5	2.5	3.5
Water Closet, 1.6 GPF Flushometer Tank .....	1/2"	2.5	2.5	3.5
Water Closet, 1.6 GPF Flushometer Valve.....	1"	5.0	5.0	6.0
Water Closet, greater than 1.6 GPF Gravity Tank.....	1/2"	3.0	5.5	7.0
Water Closet, greater than 1.6 GPF Flushometer Valve.....	1"	7.0	8.0	10.0

**Notes:**

1. Size of the cold branch outlet pipe, or both the hot and cold branch outlet pipes.
2. Appliances, Appurtenances or Fixtures not included in this Table may be sized by reference to fixtures having a similar flow rate and frequency of use.
3. The listed fixture unit values represent their total load on the cold water service. The separate cold water and hot water fixture unit value for fixtures having both cold and hot water connections shall each be taken as three-quarters (3/4) of the listed total value of the fixture.
4. The listed minimum supply branch pipe sizes for individual fixtures are the nominal (I.D.) pipe size.
5. For fixtures or supply connections likely to impose continuous flow demands, determine the required flow in gallons per minute (GPM) and add it separately to the demand (in GPM) for the distribution system or portions thereof.
6. Assembly [Public Use (See Table 4-1)].
7. Reduced fixture unit loading for additional hose bibbs as used is to be used only when sizing total building demand and for pipe sizing when more than one hose bibb is supplied by a segment of water distributing pipe. The fixture branch to each hose bibb shall be sized on the basis of 2.5 fixture units.

# HISTORY NOTE APPENDIX

## California Plumbing Code (Title 24, Part 5, California Code of Regulations)

For prior history, see the History Note Appendix to the California Plumbing Code 1998 Triennial Edition Published in December 1998 and effective July 1, 1999.

1. (DSA/AC 3/01) Adoption of the 2000 edition of the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials (CCR, Title 24, Part 5) with necessary amendments pertaining to accessibility standards for persons with disabilities. Approved by the Building Standards Commission on November 28, 2001 and effective on November 1, 2002.

2. (DSA/SS 4/01) Adoption of the 2000 edition of the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials (CCR, Title 24, Part 5) with necessary amendments for public schools, community colleges and state-owned or state-leased essential service buildings. Approved by the Building Standards Commission on May 2, 2002 and effective on November 1, 2002.

3. (OSHPD 4/01) Adoption of the 2000 edition of the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials (CCR, Title 24, Part 5) with necessary amendments for hospital buildings, nursing facilities, correctional treatment centers, and state licensed clinics. Approved by the Building Standards Commission on May 2, 2002 and effective on November 1, 2002.

4. (HCD 2/01) Adoption of the 2000 edition of the Uniform Plumbing Code of the International 2001 California Plumbing Code Association of Plumbing and Mechanical Officials (CCR, Title 24, Part 5) with necessary amendments for hotels, motels, lodging houses, apartment houses, dwellings, employee housing, factory-built housing and permanent buildings and accessory buildings in mobile home parks and special-occupancy parks. Approved by the Building Standards Commission on May 2, 2002 and effective on November 1, 2002.

5. (SFM 3/01) Adoption of the 2000 edition of the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials (CCR, Title 24, Part 5) with amendments for the State Fire Marshal regulated

occupancies. Approved by the Building Standards Commission on May 2, 2002 and effective on November 1, 2002.

6. (BSC 2/01) Adoption/Approval of the 2000 edition of the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials (CCR, Title 24, Part 5) with necessary amendments for state-owned buildings, buildings constructed by the University of California, and buildings constructed by the California State University. Adoption/Approval of the 2000 edition of the Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials (CCR, Title 24, Part 5) on behalf of the Department of Health Services and the Department of Food and Agriculture for commissaries, organized camps, public beaches, food establishments, dairies and places of meat inspection. Approved by the Building Standards Commission on May 2, 2002 and effective on November 1, 2002.

### 7. October 1, 2002 Errata

Pages vii: Correct the title for Appendix C.

Pages xii & xiii: add CEC & DWR columns, omit CA SPBC column and update 1997 to 2000 UPC to Sample.

Page xiv: add Local Fire Official under 101.4.0, add 101.4.1 UPC for Local Fire Official, add CA, HCD1, HCD 1ASC & Local Fire Official for 101.11, delete first and last sentence of footnote.

Page xv: Under Chapter 1, add 103.9.1 CA, 103.9.2 CA, 103.9.3 CA, 103.9.4 CA & 103.9.5 CA for Local Fire Official and revise footnote from 1997 to 2000 edition. Under Chapter 2 remove footnote.

Page xvi: Revise DOSH footnote from 1997 to 2000 edition. Delete first and last sentence of next footnote.

Page xvii: Delete all but last sentence of footnote.

Page xviii: Under Chapters 4 and 5, revise DOSH footnote from 1997 to 2000 edition. Delete entire footnote at the

bottom of the page.

Page xix: Delete all but last sentence of footnote.

Page xx: Under Chapters 6, 7 & 8, revise DOSH footnote from 1997 to 2000 edition. Delete entire footnote at the bottom of the page.

Page xxi: Under Chapters 9 & 10 revise DOSH footnote from 1997 to 2000 edition. Delete entire footnote at the bottom of the page.

Page xxii: Under Chapters 11, 12 & 13 revise DOSH footnote from 1997 to 2000 edition. Under Chapter 13 omit Local Fire Official under Adopt entire UPC chapter without amendments and add Adopt only those sections which are listed below. Delete all but last sentence of footnote at the bottom of the page.

Page xxiii: Under Chapters 14 & 15 revise DOSH footnote from 1997 to 2000 edition. Delete last sustenance from the footnote at the bottom of the page.

Page xxiv: Under Appendix A revise DOSH footnote from 1997 to 2000 edition. Delete entire footnote at the bottom of the page.

Page xxv: Delete entire footnote at the bottom of the page.

Page xxvi: Under Appendix I, for HCD 1 and HCD 2 under Adopt only those sections which are listed below, add 301.0.1 CA, 301.0.1.1 CA, 301.0.2 CA, 301.0.2.1 CA and 301.0.2.2 CA. Delete entire footnote at the bottom of the page.

Page 3, Section 17958.8, second last line, revise "Section 17920.7" to "Section 13143.2".

Page 4: In Section 101.10.1 heading revise "HCD 1 & 2" to "HCD 1 & HCD 2" and in the last line revise reference 3 to reference. In Section 101.10.2 revise second and third lines of heading to read "HCD 1/AC & HCD 2, DWR, DSA/AC, DSA/SS, OSHPD 1, 2, 3 & 4, SFM]" "

Page 5: In the second line of Section 101.11.4.5, revise "Agency-State of local" to "Agency-State or local". In second last line of Section 101.11.8.2, revise "meant" to "mean".

Page 9: Capitalize "State Fire Marshal" in various locations and add margin tape L's for local enforcement from Application – Organized Camps through item 5.

Page 10: In Section 101.14 heading after "HCD 2" add "& SFM". Add margin tape L's for local enforcement for Section 101.14 and Section 102.2.1.1.

Page 11: Add margin tape L's for local enforcement for Section 102.2.1

Page 15: Revise the language in the 1st paragraph of Section 103.4.5.3

Page 16: Add margin tape L's for local enforcement for Sections 103.4.6, 103.4.7, 103.4.8 and Section 17951 (a).

Page 18: Add margin tape L's for local enforcement for Sections 103.9 & 103.9.1.

Page 19: Add margin tape CA's for Section 103.9.1 (cont'd.) and 103.9.2 and add L's for local enforcement for Sections 103.9.1 (cont'd), 103.9.2, 103.9.3, 103.9.4 and 103.9.5.

Page 21: Revise Section 203 (2.) reference from "Section 101.11" to "Section 101.11.8.1"

Page 23: In Covered Multifamily Dwelling – [For HCD 1/AC] revise the reference "Section 101.11" to "Section 101.11.8.2".

Page 24: In Section 210.0, under HCD 1, revise reference from "Section 101.11" to "Section 101.11.8.1". Under HCD 1/AC, revise reference from "Section 101.11" to "Section 101.11.8.2". Under HCD 2, revise reference from "Section 101.11" to "Section 101.11.8.3".

Page 26: After "Listing Agency", add "[Not adopted by HCD]". In the "Note:" under "Nuisance [For HCD 1 & HCD 2]", revise the reference from "Section 17920(i)" to "Section 17920(k)".

Page 38: Add symbol noting the deletion of Section 320.0 Medical Labs.

Page 44: In Section 412.7, Exception 2, revise "persons with disabilities" to "persons with disabilities". Revise HCD "Exceptions 1 and 2" to "Exceptions 2 and 3".

Page 55: In Section 1921 (a), revise "strapped to resist"

falling” to “strapped to resist falling”.

Page 63: In Section 601.2.2 and Section 601.2.3 add quotation marks around the words A UNIVERSAL POISON SYMBOL OF SKULL AND CROSSBONES SHALL BE PROVIDED.

Page 69: In Section 603.4.12, add quotation marks around the words A UNIVERSAL POISON SYMBOL OF SKULL AND CROSSBONES SHALL BE PROVIDED.

Page 71: In Section 604.1.2 [HCD 1] revise “Authority to Approved” to “Authority to Approve”.

Page 80: At Section 612.5, add a double line margin tape for the words “The audible/visual device for the high temperature alarm shall annunciate at a continuously occupied location”.

Page 86: In Section 705.1.1.1, revise “Calked” to “Caulked”.

Page 108: At Section 1014.9, for second line, add a double line margin tape.

Page 111: Revise last sentence of Section 1101.3.1 to read: “ABS or PVC installations are limited to not more than two stories of areas of residential accommodations.”

Page 145: In Table 12-13 change Length of Tube, feet, “175” to “200” and “200” to “250” and delete bottom “250”. Immediately below row “150”, insert a new row for “| 175 | 47 | 97 | 198 | 346 | 491 | 1050 | 1890 |”. In Table 12-14, in the row for 50 of Length of Tube, feet, revise the right hand column for 1-3/8 to read “7747”.

Page 147: For Section 1301.0, add margin tape L's and double line margin tape.

Page 153: In Section 1321.1.3 revise reference from “Section 1316.0” to “Section 1324”.

Page 170: In Table 14.1, Add margin tape L for NFPA 13, 1999, NFPA 13R, 1999, NFPA 13 D-1999, NFPA 14, 2000, NFPA 54-96, NFPA 58-98 & NFPA 99-93. Add margin tape L and Revise “[For SMF] NFPA 99-99” to “[For SFM, OSHPD 1, 2, 3, &4] NFPA 99-99”, under Standards Title add “Medical Gas Systems” and under Application add “Piping [For SFM]”. Add margin tape L for NFPA 99C-93. Add margin tape L and Revise “[For

SMF] NFPA 99C-99” to “[For SFM, OSHPD 1, 2, 3, &4]”, under Standard Title add “Gas and Vacuum Systems” and under Application add “Piping [For SFM]”.

Page 179: For Section 1505.4, Section 1505.5 and Section 1505.6 add margin tape L's.

Page 186: Under the heading Water Supply Fixture Units (WSFU)....., add “Note: [For HCD 1 & HCD 2] See Chapter 6, Section 610.7, Table 6-4, U.P.C., for equivalent fixture units.” In the item “Mobile Home, each, (mini - mum)” add the words “(Not Adopted by HCD)”.

Page 186: Under the column Assembly, the footnote should read “6” instead of “5”.

