

NOTICES OF PROPOSED RULEMAKING

Unless exempted by A.R.S. § 41-1005, each agency shall begin the rulemaking process by first submitting to the Secretary of State's Office a Notice of Rulemaking Docket Opening followed by a Notice of Proposed Rulemaking that contains the preamble and the full text of the rules. The Secretary of State's Office publishes each Notice in the next available issue of the *Register* according to the schedule of deadlines for *Register* publication. Due to time restraints, the Secretary of State's Office will no longer edit the text of proposed rules. We will continue to make numbering and labeling changes as necessary. Under the Administrative Procedure Act (A.R.S. § 41-1001 et seq.), an agency must allow at least 30 days to elapse after the publication of the Notice of Proposed Rulemaking in the *Register* before beginning any proceedings for adoption, amendment, or repeal of any rule. A.R.S. §§ 41-1013 and 41-1022.

NOTICE OF PROPOSED RULEMAKING

TITLE 4. PROFESSIONS AND OCCUPATIONS

CHAPTER 48. ARIZONA UNIFORM PLUMBING CODE COMMISSION

PREAMBLE

<u>1. Sections Affected</u>	<u>Rulemaking Action</u>
R4-48-101	Amend
R4-48-102	Amend
Table A	Repeal
Table B	Repeal
Illustration A	Repeal
R4-48-103	New Section
Table A	New Table
R4-48-104	Repeal
Table A	Repeal
Table B	Repeal
R4-48-104	New Section
R4-48-105	Repeal
R4-48-105	New Section
Table A	New Table
R4-48-106	New Section
R4-48-107	New Section
R4-48-108	New Section
R4-48-109	New Section
R4-48-110	New Section
R4-48-111	New Section
R4-48-112	New Section
R4-48-113	New Section
R4-48-114	New Section
Table A	New Table
R4-48-119	New Section
R4-48-120	New Section
R4-48-121	New Section
R4-48-122	New Section
Illustration A	New Illustration
R4-48-123	New Section
R4-48-124	New Section
R4-48-126	New Section
R4-48-129	New Section

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2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):

Authorizing statute: A.R.S. § 41-619

Implementing statute: A.R.S. § 41-619

3. A list of all previous notices appearing in the Register addressing the proposed rules:

Notice of Rulemaking Docket Opening: 7 A.A.R. 2160, May 25, 2001

4. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:

Name: A. Hal Key, P.E., Chairperson

Address: Arizona Uniform Plumbing Code Commission
c/o Arizona Registrar of Contractors
800 West Washington, 6th Floor
Phoenix, AZ 85007

Telephone: (602) 542-1525, ext. 7445

Fax: (602) 542-1599

5. An explanation of the rules, including the agency's reasons for initiating the rules:

The Arizona Uniform Plumbing Code Commission (Commission) has adopted a state plumbing code by rule. The International Association of Plumbing and Mechanical Officials' (I.A.P.M.O.) 1994 Uniform Plumbing Code (UPC), including its appendices, and installation standards, is incorporated by reference as the state plumbing code. The Commission has made some modifications to the UPC, adapting it to the circumstances of Arizona. It is the Commission's intent to separate each chapter and appendix into its own Section, eliminating the need to make changes to the entire code should recommended proposals for change be requested.

6. A reference to any study that the agency relied on in its evaluation of or justification for the proposed rules and where the public may obtain or review the study, all data underlying each study, any analysis of the study and other supporting material.

None

7. A showing of good cause why the rules are necessary to promote a statewide interest if the rules will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

8. The preliminary summary of the economic, small business, and consumer impact:

The Commission views this as only an editorial change that will not impact the economy, small business, or consumers.

9. The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact statement:

Name: A. Hal Key, P.E., Chairperson

Address: Arizona Uniform Plumbing Code Commission
c/o Arizona Registrar of Contractors
800 West Washington, 6th Floor
Phoenix, AZ 85007

Telephone: (602) 542-1525, ext. 7445

Fax: (602) 542-1599

10. The time, place, and nature of the proceedings for the making, amendment, or repeal of the rules or, if no proceeding is scheduled, where, when and how persons may request an oral proceeding on the proposed rules:

The Arizona Uniform Plumbing Code Commission meets at least once each year and at additional times on the call of the chairperson or a majority of its members. Oral comments will be accepted at these meetings. Written comments will be accepted at the location listed in item #4 from 8:00 a.m. to 4:30 p.m., Monday through Friday.

11. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

None

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12. Incorporations by reference and their location in the rules:

No change

13. The full text of the rules follows:

TITLE 4. PROFESSIONS AND OCCUPATIONS

CHAPTER 48. ARIZONA UNIFORM PLUMBING CODE COMMISSION

ARTICLE 1. ARIZONA UNIFORM PLUMBING CODE

Section

R4-48-101.	<u>Chapter 2, Definitions</u>
R4-48-102.	Arizona Uniform Plumbing Code <u>Incorporation of the Uniform Plumbing Code by Reference</u>
Table A.	Size of Combustion Air Openings or Ducts for Gas- or Liquid-Burning Water Heaters <u>Repealed</u>
Table B.	Plumbing Material Standards <u>Repealed</u>
Illustration A.	Horizontal Rainwater Piping <u>Repealed</u>
R4-48-103.	Reserved <u>Chapter 3, General Provisions</u>
Table A.	<u>Materials and Types of Joints (Horizontal and Vertical)</u>
R4-48-104.	Cross linked Polyethylene (PEX) Piping <u>Chapter 4, Plumbing Fixtures</u>
Table A.	Materials and Types of Joints (Horizontal and Vertical) <u>Repealed</u>
Table B.	Plumbing Material Standards <u>Repealed</u>
R4-48-105.	General <u>Chapter 5, Water Heaters</u>
Table A.	<u>Size of Combustion Air Openings or Ducts for Gas- or Liquid-Burning Water Heaters</u>
R4-48-106.	Reserved <u>Chapter 6, Water Supply and Distribution</u>
R4-48-107.	Reserved <u>Chapter 7, Sanitary Drainage</u>
R4-48-108.	Reserved <u>Chapter 8, Indirect and Special Wastes</u>
R4-48-109.	Reserved <u>Chapter 9, Vents</u>
R4-48-110.	Reserved <u>Chapter 10, Traps</u>
R4-48-111.	Reserved <u>Chapter 11, Storm Drainage</u>
R4-48-112.	Reserved <u>Chapter 12, Fuel Gas Piping</u>
R4-48-113.	Reserved <u>Chapter 13, Special Piping and Storage Systems</u>
R4-48-114.	Reserved <u>Chapter 14, Referenced Standards</u>
Table A.	<u>Plumbing Material Standards</u>
R4-48-119.	Reserved <u>Appendix A, Recommended Rules for Sizing the Water Supply System</u>
R4-48-120.	Reserved <u>Appendix B, Explanatory Notes on Combination Waste and Vent Systems</u>
R4-48-121.	Reserved <u>Appendix C, Minimum Plumbing Facilities</u>
R4-48-122.	Reserved <u>Appendix D, Rainwater Systems</u>
Illustration A.	<u>Horizontal Rainwater Piping</u>
R4-48-123.	Reserved <u>Appendix E, Manufactured or Mobile Home Parks and Recreational Vehicle Parks</u>
R4-48-124.	Reserved <u>Appendix F, Medical Gas Systems</u>
R4-48-126.	Reserved <u>Appendix H, Procedures for Sizing Commercial Kitchen Grease Interceptors</u>
R4-48-129.	<u>Installation Standards</u>

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CHAPTER 48. ARIZONA UNIFORM PLUMBING CODE COMMISSION

ARTICLE 1. ARIZONA UNIFORM PLUMBING CODE

R4-48-101. Chapter 2, Definitions

A. The following definition applies in this Article: "Person" has the meaning set forth in A.R.S. § 1-215.

B. The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

- Sec. 202.0. Modify the definition of "Insanitary" by replacing numbered paragraphs (2) and (3) with the following:
"(2) Any opening in a drainage system, except where lawful, which is not provided with an approved liquid sealed trap.
(3) Any plumbing fixture or other waste discharging receptacle or device, which is not supplied with water sufficient to flush it and maintain it in a clean condition except those specifically designed to function without water."
- Sec. 202.0. Add a definition for "PEX" which reads: "PEX means Cross-linked Polyethylene."

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R4-48-102. Arizona Uniform Plumbing Code Incorporation of the Uniform Plumbing Code by Reference

- A. All persons shall comply with the International Association of Plumbing and Mechanical Officials' (I.A.P.M.O.) Uniform Plumbing Code (1994 Edition) which is incorporated by reference, including appendices ~~A, B, C, D, E, F and H~~ A through J, and installation standards, as the state plumbing code. This incorporation by reference does not include any later amendments or editions. Copies of the incorporated material are available from I.A.P.M.O. at 20001 Walnut Drive South, Walnut, CA, 91789-2825 and are on file with Arizona Uniform Plumbing Code Commission and the Office of the Secretary of State.
- B. The Uniform Plumbing Code incorporated in R4-48-102(A) ~~by subsection (A)~~ is modified as follows:
1. Delete pages: "~~1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14~~ 1 through 14, after making ~~the changes listed in subsection (B)~~ all modifications in this Article."
 2. Sec. 202.0. Modify the definition of "Insanitary" by replacing numbered paragraphs (2) and (3) with the following:
 "~~(2) Any opening in a drainage system, except where lawful, which is not provided with an approved liquid sealed trap.~~
 (3) Any plumbing fixture or other waste discharging receptacle or device, which is not supplied with water sufficient to flush it and maintain it in a clean condition except those specifically designed to function without water."
 3. ~~Move Sec. 101.4.1.3 to a new Sec. 301.1.5.~~
 4. ~~Move Sec. 101.5.2 to a new Sec. 301.1.6.~~
 5. ~~Move Sec. 101.5.4 to a new Sec. 301.1.7.~~
 6. ~~Move Sec. 101.5.5 to a new Sec. 301.1.8.~~
 7. ~~Move Sec. 103.5 to a new Sec. 318.0.~~
 8. ~~Move Sec. 103.5.1 to a new Sec. 318.1.~~
 9. ~~Move Sec. 103.5.1.2 to a new Sec. 318.2.~~
 10. ~~Move Sec. 103.5.1.3 to a new Sec. 318.3.~~
 11. ~~Move Sec. 103.5.1.4 to a new Sec. 318.4.~~
 12. ~~Move Sec. 103.5.5 to a new Sec. 318.5.~~
 13. ~~Move Sec. 103.5.5.1 to a new Sec. 318.6.~~
 14. ~~Move Sec. 103.5.5.2 to a new Sec. 318.7.~~
 15. ~~Move Sec. 103.5.3 to a new Sec. 319.0.~~
 16. ~~Move Sec. 103.5.3.1 to a new Sec. 319.1.~~
 17. ~~Move Sec. 103.5.3.2 to a new Sec. 319.2.~~
 18. ~~Move Sec. 103.5.3.4 to a new Sec. 319.3.~~
 19. ~~Move Sec. 103.5.3.5 to a new Sec. 319.4.~~
 20. ~~Move Sec. 103.5.3.7 to a new Sec. 319.5.~~
 21. ~~Move Sec. 103.5.6.1 to a new Sec. 319.6.~~
 22. ~~Move Sec. 103.5.6.2 to a new Sec. 319.7.~~
 23. ~~Move Sec. 103.5.6.3 to a new Sec. 319.8.~~
 24. ~~Move Sec. 712.4 to a new Sec. 320.0.~~
 25. ~~Move Sec. 712.4.1 to a new Sec. 320.1.~~
 26. ~~Move Sec. 712.4.2 to a new Sec. 320.2.~~
 27. ~~Move Sec. 712.4.3 to a new Sec. 320.3.~~
 28. ~~Move Sec. 712.4.4 to a new Sec. 320.4.~~
 29. ~~Move Sec. 103.6 to a new Sec. 321.0.~~
 30. ~~Move Sec. 103.6.1 to a new Sec. 321.1.~~
 31. ~~Move Sec. 103.6.2 to a new Sec. 321.2.~~
 32. ~~Move Sec. 103.6.3 to a new Sec. 321.3.~~
 33. Sec. 402.1 is modified to read: "The maximum flow rates and quantities for all plumbing fixtures and fixture fittings shall be consistent with A.R.S. Title 45, Chapter 1, Article 12."
 34. Section 402.2 is deleted.
 35. Sec. 501.0 is modified to read: "General. The regulations of this chapter shall govern the construction, location, and installation of all fuel burning and other water heaters heating potable water, together with all chimneys, vents, and their connectors. All design, construction, and workmanship shall be in conformity with accepted engineering practices and shall be of such character as to secure the results sought to be obtained by this Code. No water heater shall be hereinafter installed which does not comply in all respects with the type and model of each size thereof approved by the Administrative Authority. A list of generally accepted gas equipment standards is included in Table 14 1. A water heater (boiler) which exceeds any of the following limitations shall not be placed in service until the vessel is separately inspected pursuant to A.R.S. Title 23, Chapter 2, Article 11.
 - (a) 120 gallon (454.2L) nominal water capacity.
 - (b) 160 PSI (1,103.2 kPa) operating pressure.
 - (c) 210° F (98.9° C) operating temperature.

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- (d) 200,000 btu/h (58,620W) heat input.”
36. Sec. 507.2 is modified to read: “In new construction, all enclosed buildings shall be provided with combustion air obtained from outside. In existing buildings of ordinary tightness insofar as infiltration is concerned, all or a portion of the combustion air for fuel burning water heaters may be obtained from infiltration if the enclosure volume equals at least 50 cubic feet per 1000 btu/h (4.831L/W) input of the water heater. Existing buildings of unusually tight construction shall also be provided with outside combustion air. No change in combustion air is required when an existing fuel burning water heater is replaced with a new water heater having the same or smaller btu/h input capacity. When an existing fuel burning water heater is replaced by a higher capacity water heater, or when 1 or more additional fuel burning water heaters are installed in an existing building containing other fuel burning appliances, the room or space shall be provided with combustion air as required for new construction.”
37. Sec. 507.3.1. Add an exception to read: “Combustion air openings may be provided in an outside door provided:
- (a) The door is not less than 2 feet 0 inches in width and 6 feet 8 inches in height; and
 - (b) The openings are spaced as far apart as possible or a full louvered door is provided; and
 - (c) The equipment room ceiling is not more than 16 inches above the top of the door.”
38. Sec. 507.6 is added to read: “Liquefied Petroleum Gas (LPG). All provisions of this chapter shall apply to combustion air for equipment using liquefied petroleum gas.
- Exceptions:
- (a) The bottom of the lower combustion air opening shall be located at or below the floor of the room containing LPG-fueled equipment.
 - (b) The lower combustion air duct, when used, shall have the bottom installed level or with a downward slope, starting from a point at or below the equipment room floor and continuing to the outside of the structure. The duct shall terminate above the finish grade and shall be provided with wire mesh screen to cover the opening.
 - (c) No pockets or trapped sections shall be permitted in any lower combustion air duct.”
39. Table 5-1 is modified. Refer to Table A—Size of Combustion Air Openings or Ducts for Gas or Liquid Burning Water Heaters.
40. Sec. 517.6 is modified to read: “No venting system shall terminate less than 3 feet (0.9m) above any forced air inlet or evaporative cooler located within 10 feet (3.0m) or less than 4 feet (1.2m) from any property line except a public way.”
41. Sec. 601.1. Add exception to read: “Potable running water is not required for waterless urinals that have been approved by the Administrative Authority.”
42. Sec. 603.4 is added to read: “Secondary Backflow Protection. The following occupancies shall have Reduced Pressure Principle Backflow Prevention Assemblies installed as near as practical to the water service meter connection: Hospitals, surgical clinics, laboratories, morgues, mortuaries, veterinary hospitals, industrial occupancies, packing plants, slaughterhouses, chemical plants, municipal waste treatment facilities, and construction water services. NOTE: Multiple water services which are interconnected onsite shall be provided with not less than a Double Check Valve Assembly at each service connection.”
43. Sec. 608.5 is modified to read: “All relief valves shall be provided with a drain, not smaller than the relief valve outlet, of galvanized steel, hard drawn copper piping and fittings, CPVC, PB, or listed relief valve drain tube with fittings which shall not reduce the internal bore of the pipe or tubing (straight lengths as opposed to coils) and shall extend from the valve to the outside of the building with the end of the pipe not more than 2 feet (0.61 m) nor less than 6 inches (152.4 mm) above the ground and pointing downward. Such drains may terminate at other approved locations. No part of such drain pipe shall be trapped and the terminal end of the drain pipe shall not be threaded.”
44. Move Sec. 103.5.1.1 to a new Sec. 610.15.
45. Move Sec. 103.5.3.3 a new Sec. 610.16.
46. Sec. 707.4 is modified to read: “Each horizontal drainage pipe shall be provided with a cleanout at its upper terminal and each run of piping, which is more than 100 feet (30.4 m) in total developed length, shall be provided with a cleanout for each 100 feet (30.4 m), or fraction thereof, in length of such piping. Exceptions:
- a. Cleanouts may be omitted on a horizontal drain line less than 5 feet (1.5 m) in length unless such line is serving sinks or urinals.
 - b. Cleanouts may be omitted on any horizontal drainage pipe installed on a slope of 72 degrees or less from the vertical angle (angle of 1/5 bend).
 - c. An approved type of 2 way cleanout fitting, installed inside the building wall near the connection between the building drain and building sewer or installed outside of a building at the lower end of a building drain and extended to grade, may be substituted for an upper terminal cleanout.”
47. Sec. 710.6, paragraph 1, is modified to read: “Backwater valves, gate valves, motors, compressors, air tanks, and other mechanical devices required by this section shall be located where they will be accessible for inspection and repair at all times.”
48. Delete Sections 712.4, 712.4.1, 712.4.2, 712.4.3, 712.4.4.

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49. Sec. 713.4 is modified to read: "The public sewer may be considered as not being available only when so determined by the Administrative Authority (local, county, or state)."
50. Sec. 723.0 is modified to read: "Building sewers shall be tested by plugging the end of the building sewer at its points of connection with the public sewer or private sewage disposal system and completely filling the building sewer with water from the lowest to the highest point thereof or by approved equivalent low pressure air test, or by such other test as may be prescribed by the Administrative Authority. The building sewer shall be watertight at all points. Exception: Sewer tests may be waived at the discretion of the Administrative Authority."
51. Sec. 807.4 is modified to read: "The discharge pipe of a domestic dishwashing machine may be directly connected to the tailpiece of a sink drain, or into the waste "boss" of a food waste disposer, without installation of an airgap fitting. The dishwasher discharge line shall be securely fastened as high as possible, but not lower than 2 inches (50.8 mm) below the flood rim of the sink."
52. Sec. 807.5 is added to read: "No dishwashing machine utilized for commercial purposes may be directly connected to a drainage system. Commercial dishwashers shall discharge into an approved receptor (floor sink) through an airgap of not less than 1 inch."
53. Sec. 1005.0 is modified to read: "Trap Seals. Each fixture trap shall have a liquid seal of not less than 2 inches (50.8mm) and not more than 4 inches (101.6mm) except where a deeper seal is found necessary by the Administrative Authority for special conditions. Traps shall be set true with respect to their liquid seals and, where necessary, they shall be protected from freezing."
54. Sec. 1007.0 is modified to read: "Trap Seal Protection. Floor drain or similar traps directly connected to the drainage system and subject to infrequent use shall be provided with an approved means of maintaining their water seals, except where not deemed necessary for safety or sanitation by the Administrative Authority. When automatic trap priming devices are installed, they shall be accessible for maintenance."
55. Sec. 1007.1 is added to read: "Approved Means of Maintaining Trap Seals. Approved means of maintaining trap seals include the following, but are not limited to the methods cited:
- (a) Listed Trap Seal Primer.
 - (b) A hose bibb or bibbs within the room.
 - (c) Drainage from untrapped lavatories discharging to the tailpiece of those fixture traps which require priming. All fixtures shall be in the same room and on the same floor level as the trap primer."
56. Sec. 1210.1 is modified to read: "All pipe used for the installation, extension, alteration, or repair of any gas piping shall be standard weight wrought iron or steel (galvanized or black) or yellow brass (containing not more than 75% copper) or listed corrugated stainless steel tubing systems for interior use only. Approved PE pipe may be used in exterior buried piping systems. Exception: CSST piping installed outside a building shall be sleeved or shall be installed with protection from mechanical damage equivalent of that required for CSST piping within the building. When installed underground, CSST shall be sleeved and shall have a minimum burial depth of 18 inches (457.2 mm)."
57. Table 14-1. Add standards in alphabetical order listed under appropriate sections. Refer to Table B—Plumbing Material Standards.
58. The 3rd paragraph of Appendix C is added to read:
"Those jurisdictions that have not adopted a building code which stipulates minimum plumbing facilities shall utilize Appendix C of the 1994 UPC when establishing plumbing facility requirements."
59. Appendix D1.1(e) is modified to read: "Roof drains, overflow drains, and rainwater piping installed within the building shall be tested in conformity with the provisions of this Code for testing drain, waste, and vent systems."
60. Appendix D3.3 is modified to read: "Horizontal Rainwater Piping. Horizontal Rainwater Piping shall be sized in accordance with Table D-2. Exception: The potential head of water which may rise in the vertical drain pipe (tailpiece) may be used to reduce the horizontal pipe size and its slope if the head (rise) is sufficient when calculated as follows:
- (a) If the head [*h*] is equal to or greater than 3/8 inch for each foot (31.35 mm/m) of horizontal pipe length, the horizontal pipe may be pitched at 1/8 inch slope (10.45 mm/m), but sized according to the 1/2 inch slope (41.8 mm/m) table.
 - (b) If the head [*h*] is equal to or greater than 1/8 inch for each foot (10.45 mm/m) of horizontal pipe length, the horizontal pipe may be pitched at 1/8 inch slope (10.45 mm/m), but sized according to the 1/4 inch slope (20.9 mm/m) table. (See Illustration A).

EXAMPLE #1: Roof Area—4800 Square Feet (445.9 m²)

Maximum Rainfall/Hour—6 Inches (152.4 mm/h)

Pipe Laid at 1/8 inch slope (10.45 mm/m)

Using the 1/2 inch slope (41.8 mm/m) table, the horizontal pipe size will be 6 inches. The available static head [*h*] needed to allow use of the 1/2 inch (41.8 mm/m) table is calculated as follows: 3/8 inch of head pressure per foot (31.35 mm/m) of horizontal pipe run becomes 3/8 inch x 100 feet = 300/8ths, or 'h' = 37 1/2

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2 inches (952.5 mm). NOTE: Sizing from the 1/8 inch (10.45 mm per m) table would have required the horizontal pipe size to be 8 inches (203.2 mm), rather than the 6 inches (152.4 mm) made possible by use of the 1/2 inch (41.8 mm/m) slope table.

EXAMPLE #2: Roof Area—6000 Square Feet

Maximum Rainfall/Hour—6 Inches (152.4 mm)

Pipe Laid at 1/8 inch slope (10.45 mm/m)

Using the 1/4 inch slope (20.9 mm/m) table, the horizontal pipe size will be 8 inches (203.3 mm). The available static head [*h*] needed to allow use of the 1/4 inch (20.9 mm/m) table is calculated as follows: 1/8 inch of head pressure per foot (10.45 mm per m) of horizontal pipe run becomes 1/8 inch x 100 feet = 100/8ths, or *h* = 12 1/2 inches (317.5 mm). NOTE: Sizing from 1/8 inch (10.45 mm per m) table would have required the horizontal pipe size to be 10 inches (254.0 mm), rather than the 8 inches (203.2 mm) made possible by use of the 1/4 inch slope (20.9 mm/m) table.

(e) If the head [*h*] is equal to or greater than 10 feet (3.05 m) (for example, base of a stack), all horizontal pipe downstream of any such vertical section may be the same size as the vertical pipe to which it is connected.”

61. Appendix F Medical Gas Systems. Current language is deleted and replaced with the following sections of NFPA #99, Health Care Facilities (1996 Edition) as amended by this section, which are incorporated by reference. The incorporation by reference does not include any later amendments or editions. Copies of the incorporated material are available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02169, and are on file with the Office of the Secretary of State:

F1 Scope

(a) The provisions herein shall apply to the installation, testing, and certification of medical gas and vacuum piping for safe use in patient care hospitals, clinics, and other health care facilities.

(b) The purpose of this appendix is to provide minimum requirements for the installation, testing, and certification of medical gas and medical vacuum systems, from the point of supply to the user outlets or inlets. These provisions do not cover portable systems or cylinder storage requirements.

F2 All medical gas and vacuum piping systems are to be installed and inspected based upon applicable language found in the following chapters of NFPA #99, Health Care Facilities (1996 edition):

Chapter 1. Introduction.

1-1 Scope

1-2 Application. (Use 1st paragraph; delete 2nd paragraph)

1-3 Intended Use

1-4 Discretionary Powers of Authority Having Jurisdiction

1-5 Interpretations

1-6 Organization of This Document (subsections 1-6.1, 1-6.2, and 1-6.3)

1-7 Metric Units

1-8 Effective Date

1-9 Preface

Add Sec. 1-10 to read: “Sections of NFPA 99, 1996 edition, which are not referenced are not mandated by the Arizona Uniform Plumbing Code.”

Chapter 2. Definitions.

2-1 Official NFPA Definitions

2-2 Definitions of Terms Used in the Standard

Chapter 4. Gas and Vacuum Systems.

4-3.1.1.2 Storage Requirements (Location, Construction, Arrangement)

4-3.5 Administration—Level 1

4-3.5.1 Responsibility of Governing Body

4-3.5.2 Gas System Policies—Level 1

4-3.5.2.1 Gases in Cylinders and Liquefied Gases in Containers—Level 1

4-3.5.2.2 Storage of Cylinders and Containers—Level 1

4-3.5.2.3 Patient Gas Systems—Level 1

4-3.5.3 Gas Systems Recordkeeping—Level 1

4-3.5.4 Gas Systems Information and Warning Signs—Level 1

4-3.5.4.1 (No Heading)

4-3.5.4.2 (No Heading)

4-3.5.4.3 (No Heading)

4-3.5.5 Gas System Transport and Delivery—Level 1

4-3.5.5.1 (No Heading)

4-3.5.5.2 (No Heading)

4-3.5.6 Vacuum Systems Policies—Level 1

- 4-3.5.6.1 Patient Vacuum Systems
- 4-3.5.7 Vacuum System Recordkeeping—Level 1
- 4-3.5.8 Vacuum System Information and Warning Signs—Level 1
- 4-3.5.8.1 Piping Distribution System
- 4-3.5.8.2 Gauge Identification
- 4-3.5.9 WAGD System Policies—Level 1
- 4-3.5.9.1 Maintenance
- 4-3.5.9.2 Performance Tests
- 4-4 Level 2 Piped Systems
- 4-4.1 Piped Gas Systems—Level 2
- 4-4.2 Piped Vacuum Systems—Level 2
- 4-4.3 Piped WAGD Systems—Level 2
- 4-4.4 Performance Criteria and Testing—Level 2
- 4-4.5 Administration—Level 2
- 4-5.5 Administration—Level 3
- 4-5.5.1 Responsibility of Governing Body
- 4-5.5.2 Gas System Policies—Level 3
- 4-5.5.2.1 (No Heading)
- 4-5.5.2.2 (No Heading)
- 4-5.5.2.3 Patient Gas Systems—Level 3
- 4-5.5.3 Gas System Recordkeeping—Level 3
- 4-5.5.4 Gas System Information and Warning Signs—Level 3
- 4-5.5.5 Gas System Transport and Delivery—Level 3
- 4-5.5.6 Vacuum System Policies—Level 3
- 4-5.5.7 Vacuum System Recordkeeping—Level 3
- 4-5.5.8 Vacuum System Information and Warning Signs—Level 3
- 4-5.5.9 WAGD System Policies—Level 3
- 4-6.5 Administration—Level 4
- Chapter 12: Hospital Requirements:
 - 12-1 Scope
 - 12-3.4 Gas and Vacuum System Requirements
 - 12-3.4.1 (No Heading)
 - 12-3.4.2 (No Heading)
 - 12-3.4.3 (No Heading)
 - 12-3.4.4 (No Heading)
 - 12-3.4.5 (No Heading)
- Chapter 13: Ambulatory Health Care Center Requirements:
 - 13-1 Scope
 - 13-3.4 Gas and Vacuum System Requirements
 - 13-3.4.1 (No Heading)
 - 13-3.4.2 (No Heading)
 - 13-3.4.3 (No Heading)
 - 13-3.4.4 (No Heading)
 - 13-3.4.5 (No Heading)
- Chapter 14: Clinic Requirements:
 - 14-1 Scope
 - 14-3.4 Gas and Vacuum System Requirements
 - 14-3.4.1 (No Heading)
 - 14-3.4.2 (No Heading)
 - 14-3.4.3 (No Heading)
 - 14-3.4.4 (No Heading)
 - 14-3.4.5 (No Heading)
- Chapter 15: Medical and Dental Office Requirements:
 - 15-1 General
 - 15-1.1 Scope
 - 15-1.2 Applicability
 - 15-3.4 Gas and Vacuum System Requirements
 - 15-3.4.1 (No Heading)
 - 15-3.4.2 (No Heading)

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- 15.3.4.3 (No Heading)
- 15.3.4.4 (No Heading)
- 15.3.4.5 (No Heading)
- 15.3.4.6 (No Heading)
- 15.3.4.7 (No Heading)
- 15.3.4.8 (No Heading)
- 15.3.4.9 (No Heading)

Chapter 16: Nursing Home Requirements:

- 16-1 Scope
- 16-3.4 Gas and Vacuum System Requirements
- 16-3.4.1 (No Heading)
- 16-3.4.2 (No Heading)

Chapter 17: Limited Care Facility Requirements:

- 17-1 Scope
- 17-3.4 Gas and Vacuum System Requirements
- 17-3.4.1 (No Heading)
- 17-3.4.2 (No Heading)

Chapter 19: Hyperbaric Facilities:

- 19-1 Introduction and Scope
- 19-3.3.3 (No Heading)
- 19-3.3.5 (No Heading)²

62: Appendix H 2 (a) is modified to read: "Interceptors shall be constructed in accordance with the design approved by the Administrative Authority and shall have a minimum of 2 compartments with fittings designed for grease retention. Grease interceptors shall be constructed of solid durable materials, not subject to excessive corrosion or decay, and shall be watertight."

Table A. ~~Size of Combustion Air Openings or Ducts for Gas or Liquid Burning Water Heaters~~ Repealed

Column 1 Existing Buildings of Ordinary Tightness		Column 2 New Buildings and Unusually Tight Construction	
Condition	Size of Opening or Duct	Condition	Size of Opening or Duct
Appliance in unconfined ² -space.	May rely on infiltration alone.	Appliance in unconfined ² -space: Obtain combustion air from outdoors or from space freely communicating with outdoors.	Provide 2 openings, minimum 50 sq. in. each opening. ³
Appliance in confined ⁴ -space 1. All air from inside building.	Provide 2 openings into enclosure each having 1 sq. in. (645mm ²) per 1000 btu/h input freely communicating with other unconfined interior spaces. ³ Minimum 100 sq. in. (0.06m ²) each opening.	Appliance in confined ⁴ -space: Obtain combustion air from outdoors or from space freely communicating with outdoors.	Provide 2 openings into enclosure, minimum 50 sq. in. each opening. ³
2. All air from outdoors: Obtain from outdoors or from space freely communicating with outdoors.	Use the methods listed for confined space as indicated in Column 2.		

Notes

¹For location of opening, see Section 507.3.

²As defined in Chapter 2.

³When the total btu/h input rating of all enclosed appliances/equipment exceeds 100,000 btu/h, the combined net free area of all combustion air openings shall be increased by not less than 1 additional square inch (645mm) for each 1000 btu/h in excess of 100,000 btu/h.

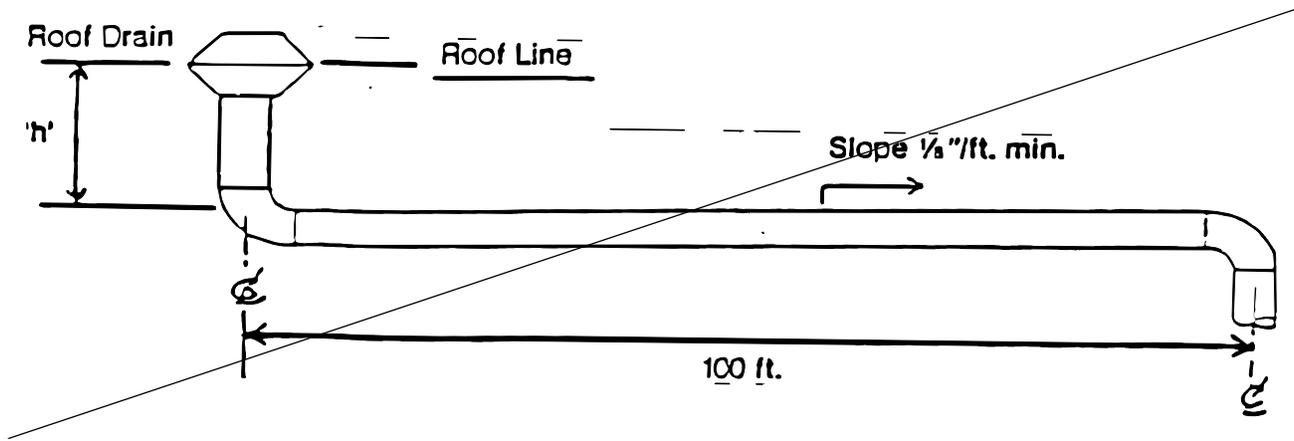
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⁴As defined in Section 202.0.

Table B. Plumbing Material Standards Repealed

Materials and Products	ANSI	ASTM	FS	IAPMO	Other Standards	Footnote-Remarks
PLUMBING FIXTURES: Waterless Urinals	Z124.9			C-3346		

Illustration A. Horizontal Rainwater Piping Repealed



R4-48-103. Reserved Chapter 3, General Provisions

The Uniform Plumbing Code incorporated in R4-48-102(A), is modified as follows:

1. Move Sec. 101.4.1.3 to a new Sec. 301.1.5.
2. Move Sec. 101.5.2 to a new Sec. 301.1.6.
3. Move Sec. 101.5.4 to a new Sec. 301.1.7.
4. Move Sec. 101.5.5 to a new Sec. 301.1.8.
5. Move Sec. 103.5 to a new Sec. 318.0.
6. Move Sec. 103.5.1 to a new Sec. 318.1.
7. Move Sec. 103.5.1.2 to a new Sec. 318.2.
8. Move Sec. 103.5.1.3 to a new Sec. 318.3.
9. Move Sec. 103.5.1.4 to a new Sec. 318.4.
10. Move Sec. 103.5.5 to a new Sec. 318.5.
11. Move Sec. 103.5.5.1 to a new Sec. 318.6.
12. Move Sec. 103.5.5.2 to a new Sec. 318.7.
13. Move Sec. 103.5.3 to a new Sec. 319.0.
14. Move Sec. 103.5.3.1 to a new Sec. 319.1.
15. Move Sec. 103.5.3.2 to a new Sec. 319.2.
16. Move Sec. 103.5.3.4 to a new Sec. 319.3.
17. Move Sec. 103.5.3.5 to a new Sec. 319.4.
18. Move Sec. 103.5.3.7 to a new Sec. 319.5.
19. Move Sec. 103.5.6.1 to a new Sec. 319.6.
20. Move Sec. 103.5.6.2 to a new Sec. 319.7.
21. Move Sec. 103.5.6.3 to a new Sec. 319.8.
22. Move Sec. 712.4 to a new Sec. 320.0.
23. Move Sec. 712.4.1 to a new Sec. 320.1.
24. Move Sec. 712.4.2 to a new Sec. 320.2.
25. Move Sec. 712.4.3 to a new Sec. 320.3.

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26. Move Sec. 712.4.4 to a new Sec. 320.4.
27. Move Sec. 103.6 to a new Sec. 321.0.
28. Move Sec. 103.6.1 to a new Sec. 321.1.
29. Move Sec. 103.6.2 to a new Sec. 321.2.
30. Move Sec. 103.6.3 to a new Sec. 321.3.
31. Add a new row to Table 3-1. Refer to Table A – Materials and Types of Joints (Horizontal and Vertical).

Table A. Materials and Types of Joints (Horizontal and Vertical)

PEX	Mechanical	1 inch (25.4mm) and smaller, 3 feet (0.9 m), 1-1/4 inch (31.8mm) and larger 4 feet (1.2 m).	Base and each floor. Provide mid-story guides
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R4-48-104. Cross-linked Polyethylene (PEX) Piping Chapter 4, Plumbing Fixtures

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

1. Sec.202.0. Add a definition for “PEX” which reads: “PEX means Cross-linked Polyethylene.”
2. Add a new row to Table 3-1. Refer to Table A – Materials and Types of Joints (Horizontal and Vertical).
3. Sec. 604.1 is modified to read: “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, PEX, or PVC water pipe manufactured to recognized standards may be used for cold water distribution systems outside a building. CPVC or PEX water pipe and tubing 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.”
4. Sec. 604.11 is added to read: “Cross-linked polyethylene (PEX) tubing shall be marked with appropriate designation or designations consistent with the fitting system or systems for which the tubing has been listed or approved. PEX tubing shall be installed with mechanical joints in compliance with the appropriate standards and the manufacturer’s instructions.”
5. Table 14-1. Add standards in alphabetical order listed under appropriate sections. Refer to Table B – Plumbing Material Standards. These standards are incorporated by reference. This incorporation by reference does not include any later amendments or editions. Copies of the incorporated material are available from American Society for Testing and Materials and are on file with the Arizona Uniform Plumbing Code Commission and the Office of the Secretary of State.

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

1. Sec. 402.1 is modified to read: “The maximum flow rates and quantities for all plumbing fixtures and fixture fittings shall be consistent with A.R.S. Title 45, Chapter 1, Article 12.”
2. Sec. 402.2 is deleted.

Table A. Materials and Types of Joints (Horizontal and Vertical) Repealed

PEX	Mechanical	One (1) inch (25.4mm) and smaller, three (3) feet (0.9 m), one and one-fourth (1 1/4) inch (31.8mm) and larger (4) feet (1.2 m).	Base and each floor. Provide mid-story guides.
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Table B. Plumbing Material Standards Repealed

Materials and Products	ANSI	ASTM	FS	IAPMO	Other Standards	Footnote-Remarks
NONMETALLIC PIPE: Metal insert fittings utilizing a copper crimp ring for SDR9 Cross-Linked Polyethylene (PEX) tubing. Cold Expansion Fitting with PEX reinforcing ring for use with SDR-9 Cross Linked Polyethylene (PEX Tubing)		F1807-97 F1960-99				

R4-48-105. General Chapter 5, Water Heaters

The rules of this Article are adopted under A.R.S. § 41-619, which provides for the adoption statewide of the Uniform Plumbing Code (“Code”). The rules do not specify the procedures by which the Code will be enforced, which may be governed by other provisions of state law. The rules do not supersede, restrict, or negate the authority of any state agency, municipality, or county to administer, delegate, or enforce laws, statutes, rules, or ordinances within its respective jurisdiction.

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

1. Sec. 501.0 is modified to read: “General. The regulations of this chapter shall govern the construction, location, and installation of all fuel-burning and other water heaters heating potable water, together with all chimneys, vents, and their connectors. All design, construction, and workmanship shall be in conformity with accepted engineering practices and shall be of such character as to secure the results sought to be obtained by this Code. No water heater shall be hereinafter installed which does not comply in all respects with the type and model of each size thereof approved by the Administrative Authority. A list of generally accepted gas equipment standards is included in Table 14-1. A water heater (boiler) which exceeds any of the following limitations shall not be placed in service until the vessel is separately inspected pursuant to A.R.S. Title 23, Chapter 2, Article 11.
 - (a) 120-gallon (454.2L) nominal water capacity.
 - (b) 160 PSI (1,103.2 kPa) operating pressure.
 - (c) 210° F (98.9° C) operating temperature.
 - (d) 200,000 btu/h (58,620W) heat input.”
2. Sec. 507.2 is modified to read: “In new construction, all enclosed buildings shall be provided with combustion air obtained from outside. In existing buildings of ordinary tightness insofar as infiltration is concerned, all or a portion of the combustion air for fuel-burning water heaters may be obtained from infiltration if the enclosure volume equals at least 50 cubic feet per 1000 btu/h (4.831L/W) input of the water heater. Existing buildings of unusually tight construction shall also be provided with outside combustion air. No change in combustion air is required when an existing fuel-burning water heater is replaced with a new water heater having the same or smaller btu/h input capacity. When an existing fuel-burning water heater is replaced by a higher-capacity water heater, or when 1 or more additional fuel burning water heaters are installed in an existing building containing other fuel-burning appliances, the room or space shall be provided with combustion air as required for new construction.”
3. Sec. 507.3.1. Add an exception to read: “Combustion air openings may be provided in an outside door provided:
 - (a) The door is not less than 2 feet 0 inches in width and 6 feet 8 inches in height; and
 - (b) The openings are spaced as far apart as possible or a full louvered door is provided; and
 - (c) The equipment room ceiling is not more than 16 inches above the top of the door.”
4. Sec. 507.6 is added to read: “Liquefied Petroleum Gas (LPG). All provisions of this chapter shall apply to combustion air for equipment using liquefied petroleum gas. Exceptions:
 - (a) The bottom of the lower combustion air opening shall be located at or below the floor of the room containing LPG-fueled equipment.
 - (b) The lower combustion air duct, when used, shall have the bottom installed level or with a downward slope, starting from a point at or below the equipment room floor and continuing to the outside of the structure. The duct shall terminate above the finish grade, and shall be provided with wire mesh screen to cover the opening.
 - (c) No pockets or trapped sections shall be permitted in any lower combustion air duct.”
5. Table 5-1 is modified. Refer to Table A – Size of Combustion Air Openings or Ducts for Gas- or Liquid-Burning Water Heaters.
6. Sec. 517.6 is modified to read: “No venting system shall terminate less than 3 feet (0.9m) above any forced air inlet or evaporative cooler located within 10 feet (3.0m) or less than 4 feet (1.2m) from any property line except a public way.”

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Table A. Size Of Combustion Air Openings or Ducts for Gas-or Liquid-Burning Water Heaters

<u>Column 1</u> <u>Existing Buildings of Ordinary Tightness</u>		<u>Column 2</u> <u>New Buildings and Unusually Tight Construction</u>	
<u>Condition</u>	<u>Size of Opening or Duct</u>	<u>Condition</u>	<u>Size of Opening or Duct</u>
Appliance in unconfined ² space.	May rely on infiltration alone.	Appliance in unconfined ² space: Obtain combustion air from outdoors or from space freely communicating with outdoors.	Provide 2 openings, minimum 50 sq. in. each opening. ³
Appliance in confined ⁴ space 1. All air from inside building.	Provide 2 openings into enclosure each having 1 sq. in. (645mm ²) per 1000 btu/h input freely communicating with other unconfined interior spaces. ³ Minimum 100 sq. in. (0.06m ²) each opening.	Appliance in confined ⁴ space: Obtain combustion air from outdoors or from space freely communicating with outdoors.	Provide 2 openings into enclosure, minimum 50 sq. in. each opening. ³
2. All air from outdoors: Obtain from outdoors or from space freely communicating with outdoors.	Use the methods listed for confined space as indicated in Column 2.		

Notes

¹ For location of opening, see Section 507.3.

² As defined in Chapter 2.

³ When the total btu/h input rating of all enclosed appliances/equipment exceeds 100,000 btu/h, the combined net free area of all combustion air openings shall be increased by not less than one additional square inch (645mm) for each 1000 btu/h in excess of 100,000 btu/h.

⁴ As defined in Section 202.0.

R4-48-106. Reserved Chapter 6, Water Supply and Distribution

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

1. Sec. 601.1. Add exception to read: "Potable running water is not required for waterless urinals that have been approved by the Administrative Authority."
2. Sec. 603.4 is added to read: "Secondary Backflow Protection. The following occupancies shall have Reduced Pressure Principle Backflow Prevention Assemblies installed as near as practical to the water service meter connection: Hospitals, surgical clinics, laboratories, morgues, mortuaries, veterinary hospitals, industrial occupancies, packing plants, slaughter houses, chemical plants, municipal waste treatment facilities, and construction water services. NOTE: Multiple water services which are interconnected onsite shall be provided with not less than a Double Check Valve Assembly at each service connection."
3. Sec. 604.1 is modified to read: "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, PEX, or PVC water pipe manufactured to recognized standards may be used for cold water distribution systems outside a building. CPVC or PEX water pipe and tubing 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."
4. Sec. 604.11 is added to read: "Cross-linked polyethylene (PEX) tubing shall be marked with appropriate designation or designations consistent with the fitting system or systems for which the tubing has been listed or approved. PEX tubing shall be installed with mechanical joints in compliance with the appropriate standards and the manufacturer's instructions."
5. Sec. 608.5 is modified to read: "All relief valves shall be provided with a drain, not smaller than the relief valve outlet, of galvanized steel, hard drawn copper piping and fittings, CPVC, PB, or listed relief valve drain tube with fittings which shall not reduce the internal bore of the pipe or tubing (straight lengths as opposed to coils) and shall

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extend from the valve to the outside of the building with the end of the pipe not more than 2 feet (0.61 m) nor less than 6 inches (152.4 mm) above the ground and pointing downward. Such drains may terminate at other approved locations. No part of such drain pipe shall be trapped and the terminal end of the drain pipe shall not be threaded.”

6. Move Sec. 103.5.1.1 to a new Sec. 610.15.
7. Move Sec. 103.5.3.3 to a new Sec. 610.16.

R4-48-107. Reserved Chapter 7, Sanitary Drainage

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

1. Sec. 707.4 is modified to read: “Each horizontal drainage pipe shall be provided with a cleanout at its upper terminal and each run of piping, which is more than 100 feet (30.4 m) in total developed length, shall be provided with a cleanout for each 100 feet (30.4 m), or fraction thereof, in length of such piping. Exceptions:
 - (a) Cleanouts may be omitted on a horizontal drain line less than 5 feet (1.5 m) in length unless such line is serving sinks or urinals.
 - (b) Cleanouts may be omitted on any horizontal drainage pipe installed on a slope of 72 degrees or less from the vertical angle (angle of 1/5 bend).
 - (c) An approved type of 2-way cleanout fitting, installed inside the building wall near the connection between the building drain and building sewer or installed outside of a building at the lower end of a building drain and extended to grade, may be substituted for an upper terminal cleanout.”
2. Sec. 710.6, paragraph 1, is modified to read: “Backwater valves, gate valves, motors, compressors, air tanks, and other mechanical devices required by this section shall be located where they will be accessible for inspection and repair at all times.”
3. Delete Sections 712.4, 712.4.1, 712.4.2, 712.4.3, 712.4.4.
4. Sec. 713.4 is modified to read: “The public sewer may be considered as not being available only when so determined by the Administrative Authority (local, county, or state).”
5. Sec. 723.0 is modified to read: “Building sewers shall be tested by plugging the end of the building sewer at its points of connection with the public sewer or private sewage disposal system and completely filling the building sewer with water from the lowest to the highest point thereof or by approved equivalent low pressure air test, or by such other test as may be prescribed by the Administrative Authority. The building sewer shall be watertight at all points. Exception: Sewer tests may be waived at the discretion of the Administrative Authority.”

R4-48-108. Reserved Chapter 8, Indirect and Special Wastes

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

1. Sec. 807.4 is modified to read: “The discharge pipe of a domestic dishwashing machine may be directly connected to the tailpiece of a sink drain, or into the waste “boss” of a food waste disposer without installation of an airgap fitting. The dishwasher discharge line shall be securely fastened as high as possible, but not lower than 2 inches (50.8 mm) below the flood rim of the sink.”
2. Sec. 807.5 is added to read: “No dishwashing machine utilized for commercial purposes may be directly connected to a drainage system. Commercial dishwashers shall discharge into an approved receptor (floor sink) through an airgap of not less than one inch.”

R4-48-109. Reserved Chapter 9, Vents

This Chapter has no modifications.

R4-48-110. Reserved Chapter 10, Traps

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

1. Sec. 1005.0 is modified to read: “Trap Seals. Each fixture trap shall have a liquid seal of not less than 2 inches (50.8mm) and not more than 4 inches (101.6mm) except where a deeper seal is found necessary by the Administrative Authority for special conditions. Traps shall be set true with respect to their liquid seals and, where necessary, they shall be protected from freezing.”
2. Sec. 1007.0 is modified to read: “Trap Seal Protection. Floor drain or similar traps directly connected to the drainage system and subject to infrequent use shall be provided with an approved means of maintaining their water seals, except where not deemed necessary for safety or sanitation by the Administrative Authority. When automatic trap priming devices are installed, they shall be accessible for maintenance.”
3. Sec. 1007.1 is added to read: “Approved Means of Maintaining Trap Seals. Approved means of maintaining trap seals include the following, but are not limited to the methods cited:
 - (a) Listed Trap Seal Primer.
 - (b) A hose bibb or bibbs within the room.
 - (c) Drainage from untrapped lavatories discharging to the tailpiece of those fixture traps which require priming. All fixtures shall be in the same room and on the same floor level as the trap primer.”

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R4-48-111. Reserved Chapter 11, Storm Drainage

This Chapter has no modifications.

R4-48-112. Reserved Chapter 12, Fuel Piping

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

Sec. 1210.1 is modified to read: "All pipe used for the installation, extension, alteration, or repair of any gas piping shall be standard weight wrought iron or steel (galvanized or black) or yellow brass (containing not more than 75 percent copper) or listed corrugated stainless steel tubing systems for interior use only. Approved PE pipe may be used in exterior buried piping systems. Exception: CSST piping installed outside a building shall be sleeved, or shall be installed with protection from mechanical damage equivalent of that required for CSST piping within the building. When installed underground CSST shall be sleeved and shall have a minimum burial depth of 18 inches (457.2 mm)."

R4-48-113. Reserved Chapter 13, Special Piping and Storage Systems

This Chapter has no modifications.

R4-48-114. Reserved Chapter 14, Referenced Standards

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

1. Table 14-1. Add standards in alphabetical order listed under appropriate sections. Refer to Table A Plumbing Material Standards.
2. Table 14-1. Add standards in alphabetical order listed under appropriate sections. Refer to Table B – Plumbing Material Standards. These standards are incorporated by reference. This incorporation by reference does not include any later amendments or editions. Copies of the incorporated material are available from American Society for Testing and Materials and are on file with the Arizona Uniform Plumbing Code Commission and the Office of the Secretary of State.

Table A. Plumbing Material Standards

<u>Materials and Products</u>	<u>ANSI</u>	<u>ASTM</u>	<u>FS</u>	<u>IAPMO</u>	<u>Other Standards</u>	<u>Footnote Remarks</u>
<u>NONMETALLIC PIPE: Metal insert fittings utilizing a copper crimp ring for SDR9 Cross-Linked Polyethylene (PEX) tubing. Cold Expansion Fitting with PEX reinforcing ring for use with SDR-9 Cross-Linked Polyethylene (PEX Tubing)</u>		<u>F1807-97</u> <u>F1960-99</u>				
<u>PLUMBING FIXTURES: Waterless Urinals</u>	<u>Z124.9</u>			<u>C-3346</u>		

R4-48-119. Reserved Appendix A, Recommended Rules for Sizing the Water Supply System

This Chapter has no modifications.

R4-48-120. Reserved Appendix B, Explanatory Notes on combination Waste and Vent Systems

This Chapter has no modifications.

R4-48-121. Reserved Appendix C, Minimum Plumbing Facilities

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

The 3rd paragraph of Appendix C is added to read: "Those jurisdictions that have not adopted a building code which stipulates minimum plumbing facilities shall utilize Appendix C of the 1994 UPC when establishing plumbing facility requirements."

R4-48-122. Reserved Appendix D, Rainwater Systems

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

1. Appendix D1.1(c) is modified to read: "Roof drains, overflow drains, and rainwater piping installed within the building shall be tested in conformity with the provisions of this Code for testing drain, waste, and vent systems."
2. Appendix D3.3 is modified to read: "Horizontal Rainwater Piping. Horizontal Rainwater Piping shall be sized in accordance with Table D-2. Exception: The potential head of water which may rise in the vertical drain pipe (tail-piece) may be used to reduce the horizontal pipe size and its slope if the head (rise) is sufficient when calculated as follows:

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- (a) If the head [‘h’] is equal to or greater than 3/8 inch for each foot (31.35 mm/m) of horizontal pipe length, the horizontal pipe may be pitched at 1/8 inch slope (10.45 mm/m), but sized according to the 1/2 inch slope (41.8 mm/m) table.
- (b) If the head [‘h’] is equal to or greater than 1/8 inch for each foot (10.45 mm/m) of horizontal pipe length, the horizontal pipe may be pitched at 1/8 inch slope (10.45 mm/m), but sized according to the 1/4 inch slope (20.9 mm/m) table. (See Illustration A).

EXAMPLE #1: Roof Area – 4800 Square Feet (445.9 m²)

Maximum Rainfall/Hour – 6 Inches (152.4 mm/h)

Pipe Laid at 1/8 inch Slope (10.45 mm/m)

Using the 1/2 inch slope (41.8 mm/m) table, the horizontal pipe size will be 6 inches. The available static head [‘h’] needed to allow use of the 1/2 inch (41.8 mm/m) table is calculated as follows: 3/8 inch of head pressure per foot (31.35 mm/m) of horizontal pipe run becomes 3/8-inch x 100 feet = 300/8ths, or ‘h’ = 37 1/2 inches (952.5 mm). NOTE: Sizing from the 1/8 inch (10.45 mm per m) table would have required the horizontal pipe size to be 8 inches (203.2 mm), rather than the 6 inches (152.4 mm) made possible by use of the 1/2 inch (41.8 mm/m) slope table.

EXAMPLE #2: Roof Area – 6000 Square Feet

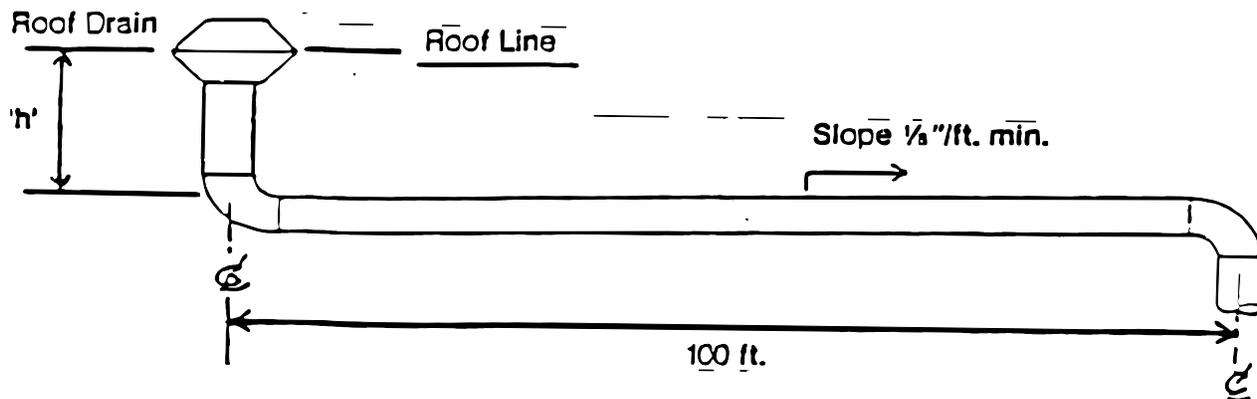
Maximum Rainfall/Hour – 6 Inches (152.4 mm)

Pipe Laid at 1/8 inch Slope (10.45 mm/m)

Using the 1/4 inch slope (20.9 mm/m) table the horizontal pipe size will be 8 inches (203.3 mm). The available static head [‘h’] needed to allow use of the 1/4 inch (20.9 mm/m) table is calculated as follows: 1/8 inch of head pressure per foot (10.45 mm per m) of horizontal pipe run becomes 1/8-inch x 100 feet = 100/8ths, or ‘h’ = 12 1/2 inches (317.5 mm). NOTE: Sizing from 1/8 inch (10.45 mm per m) table would have required the horizontal pipe size to be 10 inches (254.0 mm) rather than the 8 inches (203.2 mm) made possible by use of the 1/4 inch slope (20.9 mm/m) table.

- (c) If the head [‘h’] is equal to or greater than 10 feet (3.05 m) (for example, base of a stack), all horizontal pipe downstream of any such vertical section may be the same size as the vertical pipe to which it is connected.”

Illustration A. Horizontal Rainwater Piping



R4-48-123. Reserved Appendix E, Manufactured or Mobile Home Parks and Recreational Vehicle Parks

This Chapter has no modifications.

R4-48-124. Reserved Appendix F, Medical Gas Systems

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

- 1. Appendix F Medical Gas Systems. Current language is deleted and replaced with the following sections of NFPA #99, Health Care Facilities (1996 Edition) as amended by this section, which are incorporated by reference. The incorporation by reference does not include any later amendments or editions. Copies of the incorporated material are available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02169, and are on file with the Office of the Secretary of State:

“F1 Scope

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Notices of Proposed Rulemaking

- (a) The provisions herein shall apply to the installation, testing, and certification of medical gas and vacuum piping for safe use in-patient care hospitals, clinics, and other health care facilities.
- (b) The purpose of this appendix is to provide minimum requirements for the installation, testing, and certification of medical gas and medical vacuum systems, from the point of supply to the user outlets or inlets. These provisions do no cover portable systems or cylinder storage requirements.

F2 All medical gas and vacuum piping systems are to be installed and inspected based upon applicable language found in the following chapters of NFPA #99, Health Care Facilities (1996 edition):

Chapter 1. Introduction.

1-1 Scope

1-2 Application. (Use first paragraph; delete second paragraph)

1-3 Intended Use

1-4 Discretionary Powers of Authority Having Jurisdiction

1-5 Interpretations

1-6 Organization of This Document (subsections 1-6.1, 1-6.2, and 1-6.3)

1-7 Metric Units

1-8 Effective Date

1-9 Preface

Add Sec. 1-10 to read: "Sections of NFPA 99, 1996 edition, which are not referenced are not mandated by the Arizona Uniform Plumbing Code."

Chapter 2. Definitions.

2-1 Official NFPA Definitions

2-2 Definitions of Terms Used in the Standard

Chapter 4. Gas and Vacuum Systems.

4-3.1.1.2 Storage Requirements (Location, Construction, Arrangement)

4-3.5 Administration - Level 1

4-3.5.1 Responsibility of Governing Body

4-3.5.2 Gas System Policies - Level 1

4-3.5.2.1 Gases in Cylinders and Liquefied Gases in Containers - Level 1

4-3.5.2.2 Storage of Cylinders and Containers - Level 1

4-3.5.2.3 Patient Gas Systems - Level 1

4-3.5.3 Gas Systems Recordkeeping - Level 1

4-3.5.4 Gas Systems Information and Warning Signs - Level 1

4-3.5.4.1 (No Heading)

4-3.5.4.2 (No Heading)

4-3.5.4.3 (No Heading)

4-3.5.5 Gas System Transport and Delivery - Level 1

4-3.5.5.1 (No Heading)

4-3.5.5.2 (No Heading)

4-3.5.6 Vacuum Systems Policies – Level 1

4-3.5.6.1 Patient Vacuum Systems

4-3.5.7 Vacuum System Recordkeeping - Level 1

4-3.5.8 Vacuum System Information and Warning Signs - Level 1

4-3.5.8.1 Piping Distribution System

4-3.5.8.2 Gauge Identification

4-3.5.9 WAGD System Policies - Level 1

4-3.5.9.1 Maintenance

4-3.5.9.2 Performance Tests

4-4 Level 2 Piped Systems

4-4.1 Piped Gas Systems - Level 2

4-4.2 Piped Vacuum Systems - Level 2

4-4.3 Piped WAGD Systems - Level 2

4-4.4 Performance Criteria and Testing - Level 2

4-4.5 Administration - Level 2

4-5 Administration - Level 3

4-5.1 Responsibility of Governing Body

4-5.2 Gas System Policies - Level 3

4-5.2.1 (No Heading)

4-5.2.2 (No Heading)

4-5.2.3 Patient Gas Systems – Level 3

- 4-5.5.3 Gas System Recordkeeping - Level 3
- 4-5.5.4 Gas System Information and Warning Signs - Level 3
- 4-5.5.5 Gas System Transport and Delivery - Level 3
- 4-5.5.6 Vacuum System Policies - Level 3
- 4-5.5.7 Vacuum System Recordkeeping - Level 3
- 4-5.5.8 Vacuum System Information and Warning Signs - Level 3
- 4-5.5.9 WAGD System Policies - Level 3
- 4-6.5 Administration - Level 4

Chapter 12. Hospital Requirements.

- 12-1 Scope
- 12-3.4 Gas and Vacuum System Requirements
 - 12-3.4.1 (No Heading)
 - 12-3.4.2 (No Heading)
 - 12-3.4.3 (No Heading)
 - 12-3.4.4 (No Heading)
 - 12-3.4.5 (No Heading)

Chapter 13. Ambulatory Health Care Center Requirements.

- 13-1 Scope
- 13-3.4 Gas and Vacuum System Requirements
 - 13-3.4.1 (No Heading)
 - 13-3.4.2 (No Heading)
 - 13-3.4.3 (No Heading)
 - 13-3.4.4 (No Heading)
 - 13-3.4.5 (No Heading)

Chapter 14. Clinic Requirements.

- 14-1 Scope
- 14-3.4 Gas and Vacuum System Requirements
 - 14-3.4.1 (No Heading)
 - 14-3.4.2 (No Heading)
 - 14-3.4.3 (No Heading)
 - 14-3.4.4 (No Heading)
 - 14-3.4.5 (No Heading)

Chapter 15. Medical and Dental Office Requirements.

- 15-1 General
 - 15-1.1 Scope
 - 15-1.2 Applicability
- 15-3.4 Gas and Vacuum System Requirements
 - 15-3.4.1 (No Heading)
 - 15-3.4.2 (No Heading)
 - 15-3.4.3 (No Heading)
 - 15-3.4.4 (No Heading)
 - 15-3.4.5 (No Heading)
 - 15-3.4.6 (No Heading)
 - 15-3.4.7 (No Heading)
 - 15-3.4.8 (No Heading)
 - 15-3.4.9 (No Heading)

Chapter 16. Nursing Home Requirements.

- 16-1 Scope
- 16-3.4 Gas and Vacuum System Requirements
 - 16-3.4.1 (No Heading)
 - 16-3.4.2 (No Heading)

Chapter 17. Limited Care Facility Requirements.

- 17-1 Scope
- 17-3.4 Gas and Vacuum System Requirements
 - 17-3.4.1 (No Heading)
 - 17-3.4.2 (No Heading)

Chapter 19. Hyperbaric Facilities.

- 19-1 Introduction and Scope
 - 19-3.3.3 (No Heading)

19-3.3.5 (No Heading)

R4-48-126. ~~Reserved~~ Appendix H. Procedures for Sizing Commercial Kitchen Grease Interceptors

The Uniform Plumbing Code incorporated in R4-48-102(A) is modified as follows:

Appendix H 2 (a) is modified to read: "Interceptors shall be constructed in accordance with the design approved by the Administrative Authority and shall have a minimum of 2 compartments with fittings designed for grease retention. Grease interceptors shall be constructed of solid durable materials, not subject to excessive corrosion or decay, and shall be water-tight."

R4-48-129. Installation Standards

This Chapter has no modifications.