ANSWER SHEET • 2023 Oregon Plumbing Rule & Laws • Course No. 5000153V

First Name: _____ Last Name: _____ Date: _____

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**** See instructions on the inside of the cover to submit your exam.**

1.	(A) (B) (C) (D)	21.	(A) (B) (C) (D)	41.	(A) (B) (C) (D)	61.	(A) (B) (C) (D)
2.	(A) (B) (C) (D)	22.	(A) (B) (C) (D)	42.	(A) (B) (C) (D)	62.	(A) (B) (C) (D)
3.	(A) (B) (C) (D)	23.	(A) (B) (C) (D)	43.	(A) (B) (C) (D)	63.	(A) (B) (C) (D)
4.	(A) (B) (C) (D)	24.	(A) (B) (C) (D)	44.	(A) (B) (C) (D)	64.	(A) (B) (C) (D)
5.	(A) (B) (C) (D)	25.	(A) (B) (C) (D)	45.	(A) (B) (C) (D)	65.	(A) (B) (C) (D)
6.	(A) (B) (C) (D)	26.	(A) (B) (C) (D)	46.	(A) (B) (C) (D)	66.	(A) (B) (C) (D)
7.	(A) (B) (C) (D)	27.	(A) (B) (C) (D)	47.	(A) (B) (C) (D)	67.	(A) (B) (C) (D)
8.	(A) (B) (C) (D)	28.	(A) (B) (C) (D)	48.	(A) (B) (C) (D)	68.	(A) (B) (C) (D)
9.	(A) (B) (C) (D)	29.	(A) (B) (C) (D)	49.	(A) (B) (C) (D)	69.	(A) (B) (C) (D)
10.	(A) (B) (C) (D)	30.	(A) (B) (C) (D)	50.	(A) (B) (C) (D)	70.	(A) (B) (C) (D)
11.	(A) (B) (C) (D)	31.	(A) (B) (C) (D)	51.	(A) (B) (C) (D)	71.	(A) (B) (C) (D)
12.	(A) (B) (C) (D)	32.	(A) (B) (C) (D)	52.	(A) (B) (C) (D)	72.	(A) (B) (C) (D)
13.	(A) (B) (C) (D)	33.	(A) (B) (C) (D)	53.	(A) (B) (C) (D)	73.	(A) (B) (C) (D)
14.	(A) (B) (C) (D)	34.	(A) (B) (C) (D)	54.	(A) (B) (C) (D)	74.	(A) (B) (C) (D)
15.	(A) (B) (C) (D)	35.	(A) (B) (C) (D)	55.	(A) (B) (C) (D)	75.	(A) (B) (C) (D)
16.	(A) (B) (C) (D)	36.	(A) (B) (C) (D)	56.	(A) (B) (C) (D)	76.	(A) (B) (C) (D)
17.	(A) (B) (C) (D)	37.	(A) (B) (C) (D)	57.	(A) (B) (C) (D)	77.	(A) (B) (C) (D)
18.	(A) (B) (C) (D)	38.	(A) (B) (C) (D)	58.	(A) (B) (C) (D)	78.	(A) (B) (C) (D)
19.	(A) (B) (C) (D)	39.	(A) (B) (C) (D)	59.	(A) (B) (C) (D)	79.	(A) (B) (C) (D)
20.	(A) (B) (C) (D)	40.	(A) (B) (C) (D)	60.	(A) (B) (C) (D)	80.	(A) (B) (C) (D)

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DISCLAIMER NOTE: This course is APPROVED by the Oregon Building Codes Division for continuing education to renew your plumbing license and is not intended to replace or supersede any state or local adopted codes.

2023 Oregon Plumbing Rule & Laws

918-695-0020

License Exemptions

(1) A license is not required for:

(a) A person to do the person's own work on the person's own residential building on the person's own premises, if the person complies with OAR chapter 918, division 690 and the plumbing requirements of the Oregon One-and Two-Family Dwelling Specialty Code; or

(b) To test, repair, service, maintain, install or replace any new or existing potable water pump equipment not exceeding seven and one-half horsepower on residential property and piping between such pump and storage tanks for such pumps, provided the person complies with all other provisions of OAR chapter 918, division 690.

(2) All plumbing installations, alterations, or remodeling in a commercial or industrial building being constructed or being offered for sale, exchange, rent or lease shall be made by a licensed Oregon journeyman plumber or by a registered Oregon apprentice plumber.

918-695-0030

Journeyman Plumber Qualifications

Qualifications. The minimum qualifications to take the journeyman plumber's certificate examination are:

(1) Satisfactory completion of a minimum four-year plumbing apprentice program in Oregon; or

(2) Equivalency requirements of at least four years academic training and on-the-job experience as an apprentice plumber, lawful journeyman plumber, or combination of both meeting the following minimum requirements:

(a) General items. 144 hours of academic training per year for each of at least four years generally in the following as it applies to plumbing:

(A) Materials, Tools, Equipment;

(B) Mathematics, Science;

(C) Soldering and Brazing;

(D) Plumbing and Related Codes;

(E) Drainage (DWV) Installations;

(F) Water Systems, Installations;

(G) Safety and First Aid;

(H) Blueprint Reading;

(I) Seismic Restraints.

(b) Specific items: Subject — Hours:

(A) Sewerage: Sanitary and Storm Piping, Disposal:

(i) Residential — 300;

(ii) Commercial — 300.

(B) Drainage, Waste and Vent Piping (DWV):

(i) Residential — 1,300;

(ii) Commercial — 1,300.

(C) Soldering, Brazing, Welding:

(i) Residential — 200;

(ii) Commercial — 200.

(D) Water: Supply, Services, Mains, Appurtenances:

(i) Residential — 1,100;

(ii) Commercial — 1,100.

(E) Fixtures, Appliances, Trim and Supports:

(i) Residential — 700;

(ii) Commercial — 700.

(F) Miscellaneous Plumbing, Piping, Repair and Maintenance:

(i) Residential — 250;

(ii) Commercial — 250.

(G) Total Minimum Subject Hours:

(i) Residential — 3,850;

(ii) Commercial — 3,850.

(c) A person with more than the minimum hours in any one specific item category may substitute up to 20 percent of the excess hours to meet the related minimum residential or commercial experience requirements in the same category.

918-780-0085

License Required

Whenever any plumbing installation is being made by an unlicensed person contrary to the provisions of the Oregon Plumbing Specialty Code or OAR chapter 918, division 695, the Building Official must stop the installation through written notice. The Building Official may serve the notice on any person engaged in such an installation, or by posting a copy of the written notice at the site of the installation. No person may proceed with the installation until authorized by the Building Official.

918-780-0065

Permits Required

No person, firm, or corporation shall do plumbing, or medical gas systems work in the State of Oregon without first obtaining a plumbing permit or minor label when required and paying the appropriate fees to the authorized permit issuing agency.

918-780-0035

Exempt Ordinary Minor Plumbing Repairs

(1) Effective April 1, 2006, state building code provisions for permit or inspection of ordinary minor plumbing repairs follow:

  (a) A registered plumbing contractor and any person exempt from licensing under ORS 693.020 are exempted from permit or inspection for ordinary minor plumbing repairs as defined in section (2) for residential and commercial structures;

  (b) The term "any person" is defined by ORS 693.020 and includes but is not limited to individuals, corporations, partnerships, public and municipal corporations, political subdivisions, any Oregon state and federal government agencies.

(2) The term "ordinary minor plumbing repairs" is defined as follows:

  (a) Includes repair, replacement or maintenance of existing plumbing fixtures, appliances, appurtenances and related water supply and drain attachments for the purpose of restoring a plumbing installation to a safe and sanitary operating condition.

  (b) Does not include new construction, replacement of water heaters, or underground plumbing.

(3) In addition to the exemption in section (1), a registered plumbing contractor does not need a permit or inspection for emergency repair or replacement of the following: freeze-damaged, leaking-exposed, or concealed piping not exceeding five feet of new piping per structure for a period of 180 days, provided the repair or replacement does not involve any changes or alterations to the existing plumbing system.

Exam Questions:

1. **What is the maximum size potable water pump that can be changed without requiring a plumbing license?**
   A. ½ hp
   B. ¼ hp
   C. 7 ½ hp
   D. 1 hp

2. **How does a building official in Oregon stop an unlicensed plumber from doing work on a new construction site?**
   A. Issue a fine to the general contractor
   B. A boot on their business vehicle
   C. Red danger tape around their gang box
   D. Through written notice

3. **Who does Oregon require to make all plumbing installations, alterations or remodeling in a commercial or industrial building being constructed or being offered for sale, exchange, rent or lease?**
   A. Oregon journeyman electrician
   B. Oregon journeyman HVAC installer
   C. Oregon journeyman plumber
   D. There is no licensing requirement for trades that work on commercial or industrial buildings

4. **True or false? Medical gas system work is exempt from permitting if the work is minor.**
   A. True
   B. False

5. **What ORS defines the term "any person"?**
   A. OAR chapter 918
   B. ORS 693.020
   C. ORS chapter 918
   D. ORS 639.020

918-008-0085

Statewide Code Interpretation Process:

(1) A petitioner may request a statewide code interpretation by providing the following information in writing or on division approved forms:

(a) A brief description of the facts and circumstances giving rise to the need for a statewide code interpretation; and

(b) The specialty code section at issue.

(2) Notwithstanding subsections (1)(a) and (b) of this rule, the division may elect to accept a substantially complete request for a statewide code interpretation if circumstances merit.

(3) After receipt and approval of a petitioner's request for interpretation, the division will process the request, reach a conclusion, and distribute the decision.

(4) Each quarter, the division will communicate to the appropriate advisory board its actions concerning statewide code interpretations.

918-008-0095

Alternate Method Ruling Process:

(1) A petitioner may request an alternate method ruling by providing the following information in writing or on division approved forms:

(a) Information on the material, design, or method the person wishes to utilize;

(b) The specialty code section at issue; and

(c) A brief description of the technical and scientific facts and circumstances giving rise to the need for an alternate method ruling.

(2) Notwithstanding subsections (1)(a) through (c) of this rule, the division may elect to accept a substantially complete request for an alternate method ruling if circumstances merit.

(3) After receipt of a petitioner's complete request for interpretation, the appropriate advisory board makes a recommendation on the technical and scientific facts of the proposed alternate method ruling, consistent with ORS 455.060.

(4) After considering the recommendation of the appropriate advisory board, the division makes the final decision on the alternate method ruling and distributes the decision consistent with ORS 455.060.

To Access and find Plumbing Board actions, Oregon statute, administrative rule, plumbing code, code interpretations, and enforcement case studies go to https://www.oregon.gov/bcd/Pages/index.aspx. On the right side of the page, select boards and follow the prompts to select the correct board and information desired.

Exam Questions:

6. How often does the division issue code interpretations when formally requested?

A. Quarterly
B. The second Thursday of every month
C. Within 10 business days
D. Within 15 business days

7. What ORS does the board use when analyzing technical and scientific facts when making an Alternate Method Ruling?

A. 918-008-0045
B. 918-008-0085
C. 455.060
D. 693.020

8. What side of the Oregon Build Codes division website is the link to find Plumbing Board actions, Oregon statute, administrative rule, plumbing code, code interpretations, and enforcement case studies?

A. Bottom
B. Left
C. Top
D. Right

For plumbers and contractors to informally request clarification on a code call or interpretation, call the Oregon Building Codes Division. To formally request such information, refer to OAR 918-008-0120 listed below:

918-008-0120

State Building Code Appeal Process

(1) A person aggrieved by the Building Official's decision on the application of the state building code adopted under ORS 447.020, 455.020, 455.610, 460.085, 460.360, 479.730 or 480.545 may appeal to either the local jurisdiction's appeals board or the state specialty code chief. The appeals process selected may not change once initiated.

(2) A filing fee of $20 is required for appeals to the state specialty code chief.

(3) An appeal must be filed within 30 calendar days of the building official's decision.

(4) An appeal must include the following information and other information requested by the chief:

(a) The person filing the appeal, the jurisdiction where the act occurred, and any parties involved, including contact information;

(b) The specific code or codes involved, with proper citation;

(c) A written description of appeal, which may include diagrams or drawings with distances shown to scale;

(d) A copy of any written interpretation or decision, if issued by the jurisdiction;

(e) An explanation why the ruling should be reversed;

(f) The status and date of stop work order if issued; and

(g) Other information as requested by the chief.

(h) Notwithstanding subsection (a) through (g) of this rule, the division may elect to accept a substantially complete request for an appeal when it appears that doing so furthers the interests of the state.

(5) The Building Official and person appealing must respond within 7 calendar days to a request from the chief for additional information. The chief has 14 days to render a decision and inform both the jurisdiction and the person appealing a decision of a local jurisdiction. The maximum time for rendering a decision may not exceed 30 calendar days. The Building Codes Division Administrator may suspend these procedural time frames when the complexity of the issue merits additional decision time.

(6) A decision by a local jurisdiction's appeals board or chief may be appealed to the appropriate advisory board within 30 calendar days of the decision. A filing fee of $20 is charged for an appeal of a local jurisdiction's appeals board decision.

Exam Questions:

9. A code appeal process can be initiated to either the local jurisdiction's appeals board or the state _____.

A. Plumbing committee
B. Electrical Board
C. Specialty code chief
D. BCD

10. How long does a person initiating the code appeal process have to respond when the chief plumbing inspector asks for more information?

A. 7 calendar days
B. 14 days
C. 30 calendar days
D. 14 business days

11. How much money does it cost to file a state building code appeal?

A. 50 dollars
B. 20 dollars
C. 12 dollars
D. No fee required

104.3 Application for Permit. To obtain a permit, the applicant shall first file an application therefore in writing or digitally, on a form furnished by the building official for that purpose, such application shall:

(1) Identify and describe the work to be covered by the permit for which application is made.

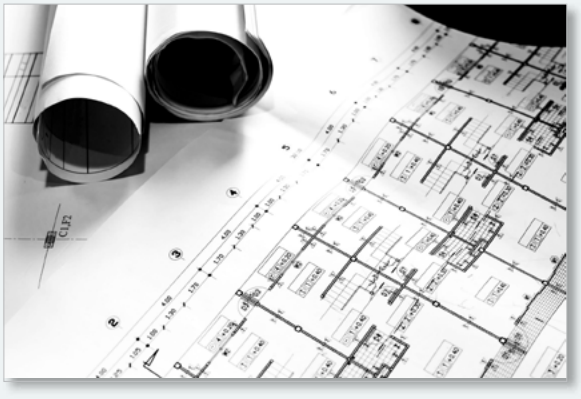
(2) Describe the land upon which the proposed work is to be done by legal description, street address, or similar description that will readily identify and definitely locate the proposed building or work.

(3) Indicate the use or occupancy for which the proposed work is intended.

(4) Be accompanied by construction documents in accordance with section 104.3.1.

(5) Be signed by the permittee or the permittees authorized agent. The Building Official shall be permitted to require evidence to indicate such authority.

(6) Give such other data and information in accordance with the Building Official.



104.3.1 Construction Documents. Where required under 918-780-0040, construction documents, engineering calculations, diagrams, and other data shall be submitted in two or more sets, or in a digital format where permitted by the Building Official, with each application for a permit. The construction documents, computations, and specifications shall be prepared by, and the plumbing designed by, a registered design professional. Construction documents shall be drawn to scale upon suitable material. Electronic media documents are permitted to be submitted when approved by the Building Official. Construction documents shall identify with clarity that the intended work to be performed is in accordance with the code. Manufacturers installation instructions, as required by this code, shall be available on the job site at the time of inspection.

Exception: The Building Official shall be permitted to waive the submission of construction documents, calculations, or other data where the Building Official finds that the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with the code.

104.4.5 Suspension or Revocation. The Building Official shall be permitted to, in writing, suspend or revoke a permit issued under the provisions of this code where the permit is issued in error or on the basis of incorrect information supplied or in violation of other state laws.

Authority Having Jurisdiction. The organization, office, or individual responsible for enforcing other requirements that are not part of this code. The Authority Having Jurisdiction shall be a federal, state, or municipal authority. In the absence of statutory authority, the Authority Having Jurisdiction may be some other responsible party. This definition shall include the Authority Having Jurisdictions duly authorized representative.

Building Code. Shall mean the Oregon Structural Specialty Code as adopted by OAR 918-460-0100.

Building Drain. That part of the lowest piping of a drainage system that receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer beginning 5 feet outside the building wall.

Building Official. The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative of the Building Official.

Building Sewer. See OAR-918-690-0410 and ORS 701.348.

Diverter Valve, Gray Water. A valve that directs gray water to the sanitary drainage system or a subsurface irrigation system.

Exam Questions:

12. What is the first step an applicant must take to obtain a permit according to the code?

A. Attend an interview with the building official for approval
B. File an application in writing or digitally on a form furnished by the building official
C. Submit verbal authorization from a licensed contractor
D. Pay all associated fees before receiving an application form

13. Who is responsible for preparing the construction documents, computations, and plumbing design according to the code?

A. A licensed contractor
B. A certified building inspector
C. A registered design professional
D. A construction manager

14. Under what circumstance can the Building Official waive the submission of construction documents, calculations, or other data?

A. If the project is located outside the usual jurisdiction of the Building Official
B. When the project owner makes a special request for waiver by providing financial incentives
C. If the construction project value is below a specific monetary threshold
D. When the Building Official finds that the nature of the work does not require a review to ensure code compliance

15. Under what circumstances is the Building Official permitted to suspend or revoke a permit according to the code?

A. If there are not enough personnel to conduct the inspection
B. If the weather conditions are unfavorable for construction
C. If the permit is issued in error or based on incorrect information
D. If the construction project involves more than one contractor

16. What best defines a valve that directs gray water to the sanitary drainage system or a subsurface irrigation system?

A. Diverter Valve, Brown water
B. Diverter Valve, On Site Treated Nonpotable Water
C. Diverter Valve, Rainwater
D. Diverter Valve, Gray Water

Diverter Valve, On Site Treated Nonpotable Water. A component in the collection system to control inflow and overflow in collection tanks intended for on-site treatment and direct beneficial use.

Diverter Valve, Rainwater. A component in commercial rainwater catchment systems to control high inflow and overflow volumes in rainwater storage tanks.

Dwelling. Any building that contains one or two dwelling units used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.

Dwelling Unit. A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

Electrical Code. Shall mean the Oregon Electrical Specialty Code as adopted by OAR 918-305-0100.

Flood Hazard Area. The area designated as a flood hazard by the Flood Plain Administrator.

Flood Hazard Area Subject to High Velocity Wave Action. Area within the flood hazard area that is subject to high velocity wave action, and shown on a Flood Insurance Rate Map or other flood hazard map as zone V, VO, VE or V1-30.

Flood Plain Administrator. See section 102.3.1.

Food Service Establishment. A facility that engages in activities of preparing or serving food or beverage for consumption by person(s) either on or off the premises, including but not limited to restaurants, cafes, commercial kitchens, caterers, hotels and motels, schools, hospitals, prisons, correctional facilities, nursing homes, care institutions, and any other facility preparing and serving food for consumption.

Lot. A single or individual parcel or area of land legally recorded or validated by other means acceptable to the municipality on which is situated a building or which is the site of any work regulated by this code, together with the yards, courts, and unoccupied spaces legally required for the building or works, and that is owned by or is in the lawful possession of the owner of the building or works.

Manufacture Dwelling Code. Shall mean the Oregon Manufactured Dwelling Installation Specialty code as adopted by OAR918-500-0510.

Plumbing. Defined in ORS 447.010(6).

Potable Water. Water that is satisfactory for drinking, culinary, and domestic purposes and that meets the requirements of the Health Building Official.

Private Sewage Disposal System. A septic tank with the effluent discharging into a subsurface disposal field, into one or more seepage pits, or into a combination of subsurface disposal field and seepage pit or of such other facilities as may be permitted under the procedures set forth by other regulating agencies.

Groundwater. Water that exists beneath the earth's surface.

Health Care Facilities. Buildings, or portions of buildings, in which human medical, dental, psychiatric, nursing, obstetrical, or surgical care is provided.

Exam Questions:

17. What best defines a component in the collection system to control inflow and overflow in collection tanks intended for on-site treatment and direct beneficial use?

A. Diverter Valve, On Site Treated Nonpotable Water
B. Diverter Valve, Gray Water
C. Diverter Valve, Rainwater
D. Diverter Valve, Brown water

18. What term best defines a component in commercial rainwater catchment systems to control high inflow and overflow volumes in rainwater storage tanks?

A. Diverter Valve, Gray Water
B. Diverter Valve, Rainwater
C. Diverter Valve, On Site Treated Nonpotable Water
D. Diverter Valve, Brown water

19. What is the most accurate definition of a dwelling?

A. A temporary shelter used for short-term accommodation
B. A commercial structure primarily used for business activities
C. A building that contains one or two dwelling units for living purposes
D. An outdoor structure meant for recreational use only

20. Which area is designated as the flood hazard area?

A. The area located below sea level
B. The area with the largest lakes and rivers
C. The area experiencing heavy rainfall
D. The area designated as a flood hazard by the flood plain administrator

21. What is the water that exists beneath the earth's surface know as?

A. Groundwater
B. Surface water
C. Rainwater
D. Runoff water

22. What term best defines buildings or structures where human medical, dental, psychiatric, nursing, obstetrical, or surgical care is provided?

A. Retail centers
B. Educational institutions
C. Government offices
D. Health care facilities

Mid-Story Guide. A support designed to keep piping in alignment, located half-way between floors or a floor and ceiling.

Plumbing System. Includes all potable water, alternate water sources, building supply, and distribution pipes; all plumbing fixtures and traps; all drainage and vent pipes; and all building drains and building sewers, including their respective joints and connections, devices, receptors, and appurtenances within the property lines of the premises and shall include potable water piping, potable water treating or using equipment, medical gas and medical vacuum systems, liquid and fuel gas piping, and water heaters.

Vented Line. A horizontal soil or waste pipe with a vented fixture upstream, on the same floor level.

301.2 Minimum Standards. Pipe, pipe fittings, traps, fixtures, material, and devices used in a plumbing system shall be listed (third party certified) by a listing agency (accredited conformity assessment body) as complying with the approved applicable recognized standards referenced in this code, and shall be free from defects. Unless otherwise provided for in this code, materials, fixtures, or devices used or entering into the construction of plumbing systems, or parts thereof shall be submitted to the Building Official for approval prior to being installed.

301.2.1 Marking. Each length of pipe and each pipe fitting, trap, fixture, material, and device used in a plumbing system shall have cast, stamped, or indelibly marked on it any markings required by the applicable reference standards and listing agency, and the manufacturers mark or name, which shall readily identify the manufacturer to the end user of the product. Where required by the approved standard that applies, the product shall be marked with the weight and the quality of the product. Materials and devices used or entering into the construction of plumbing and drainage systems, or parts thereof shall be marked and identified in a manner satisfactory to the Building Official. Such marking shall be done by the manufacture. Field markings shall not be acceptable.

301.3 Alternate Materials and Methods of Construction Equivalency. Alternate materials and methods shall be requested in accordance with Chapter 1 of this code.

301.3.1 Testing. The Building Official shall have the authority to require tests, as proof of equivalency.

301.3.1.1 Tests. Test shall be made in accordance with approved or applicable standards, by an approved testing agency at the expense of the applicant. In the absence of such standards, the Building Official shall have the authority to specify the test procedure.

301.3.1.2 Request by Building Official. The Building Official shall have the authority to require tests to be made or repeated where there is reason to believe that a material or device no longer is in accordance with the requirements on which its approval was based.

301.4 Flood Hazard Areas. Plumbing systems shall be located above the design flood elevation as determined by the Flood Plain Administrator.

Exception: Plumbing systems shall be permitted to be located below the design flood elevation provided that the systems are designed and installed to prevent water from entering or accumulating within their components, and the systems are constructed to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to such elevation.

301.4.1 Coastal High Hazard Areas. Plumbing systems in buildings located in coastal high hazard areas as determined by the Flood Plain Administrator, shall not have plumbing systems, pipes, and fixtures mounted

on or penetrate through walls that are intended to break away under flood loads in accordance with the building code. PIC 14

301.5.3 Design Documents. The registered design professional shall provide two complete sets of signed and sealed design documents for the alternative engineered design for submittal to the Building Official. The design document shall include floor plans and a riser diagram of the work. Where appropriate, the design document shall indicate the direction of flow, pipe sizes, grade of horizontal piping, loading, and location of fixtures and appliances.

301.5.4 Design Approval. An approval of an alternative engineered design shall be at the discretion of the Building Official. The exercise of this discretionary approval by the Building Official shall have no effect beyond the jurisdictional boundaries of said Building Official. An alternative engineered design so approve shall not be considered as in accordance with the requirements, intent, or both of this code for a purpose other than that granted by the Building Official.

Exam Questions:

23. What is a support designed to keep piping in alignment, located mid-way between floors or a floor and ceiling.
- A. Vertical Brace
- B. Anchorage Support
- C. Mid-Story Guide
- D. Expansion Joint

24. What components are included in the definition of a Plumbing System?
- A. All potable water, alternate water sources, distribution pipes, fixtures, traps, drains, sewers, medical gas systems, and water heaters
- B. Only the water heaters and potable water supply lines
- C. Just the building drains and sewers, including their connections
- D. Exclusively the medical gas and vacuum systems

25. Based on the code, which statement accurately defines a "Vented Line"?
- A. A horizontal sewage pipe that connects directly to the main sewer line
- B. A vertical drainage pipe running to different floors of a building
- C. A horizontal soil or waste pipe with a vented fixture upstream on the same floor level
- D. A pipe that is exclusively used for supplying hot water to fixtures

26. What is required of the registered design professional when submitting design documents for an alternative engineer design according to section 301.5.3?
- A. Ensure that the design documents focus solely on the exterior aesthetics of the building
- B. Submit only electronic copies of design documents
- C. Provide a single set of unsigned design plans including only floor plans
- D. Provide two complete sets of signed and sealed design documents to the building official

27. In flood hazard areas, where should plumbing systems be located according to the Flood Plain Administrator?
- A. At the ground level
- B. Above the design flood elevation
- C. Below the design flood elevation
- D. Plumbing systems can be mounted on any wall, regardless of flood load considerations

301.5.5 Design Review. The Building Official shall have the authority to require testing of the alternative engineered design in accordance with section 301.3.1, including the authority to require an independent review of alternate materials or engineered systems by a registered design professional and at the expense of the applicant.

306.1 Wastes. Waste detrimental to the public sewer system or detrimental to the functioning of the sewage treatment plant shall be treated and disposed of as found necessary and directed by the Building Official.

306.2 Safe Discharge. Sewage or other waste from a plumbing system that is capable of being deleterious or surface or subsurface waters shall not be discharged into the ground or waterway unless it has first been rendered safe by some acceptable form of treatment in accordance with the requirements of this code.

309.5 Dead Legs. Dead legs shall have an accessible method of flushing and shall not exceed 1.5 times the diameter of the pipe.

310.9 Female Plastic Connections. Female plastic threaded connections shall not be allowed to be used when threaded onto a male metallic connection.

310.10 ABS and PVC Transition Joints. Except as provided in Section 705.9.4, PVC and ABS pipe and fittings shall not be solvent welded to any other unlike material.

311.1 General. The drainage system of each new building and new work installed in an existing building shall be separate and independent from that of any other building, and, where available, every building shall have an independent connection with a public or private sewer.

Exception: Where one building stands in the rear of another building on an interior lot, and no public or private sewer is available or can be constructed to the rear building through an adjoining court, yard, or driveway, the building drain from the front building shall be permitted to be extended to the rear building.

312.3 Building Sewer and Drainage Piping. No building sewer or piping or part thereof, constructed of materials other than those approved for use under or within a building, shall be installed under or within 5 feet of a building or structure, or less than 1 foot below the surface of the ground.

312.6 Freezing Protection. No water, soil, or waste pipe shall be installed or permitted outside of a building or in an exterior wall unless, where necessary, adequate provision is made to protect such pipe from freezing.

313.1 General. Piping, fixtures, appliances, and appurtenances shall be supported in accordance with this code and the manufacturer's installation instructions. Except as provided in Section 507.2, seismic restraints shall be in accordance with the building code.

313.2 Material. Hangers, supports, and anchors shall be of sufficient strength to support the weight of the pipe and its contents. Piping shall be isolated from incompatible materials.

315.1 Unions. Approve union shall be permitted to be used in drainage piping where 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.

319.1 Medical Gas and Vacuum Systems. General. Such piping shall be in accordance with the requirements of Chapter 13.

408.2 Water Consumption. Showerheads shall have a maximum flow rate of not more than 1.8 gpm at 80 psi (6.8 L/m at 552 kPa).

Exam Questions:

28. Dead legs shall have an accessible method of flushing and shall not exceed _____ the diameter of the pipe.

A. 1 time
B. 1.5 times
C. 3.5 times
D. 2 times

29. Which statement correctly describes the restriction on "Female Plastic Connections"?

A. Female plastic threaded connections can only be used with plastic male connections
B. Female plastic threaded connections are always allowed with any type of male connection
C. Female plastic threaded connections shall not be used when threaded onto a male metallic connection
D. Female plastic threaded connections are prohibited in all plumbing applications

30. Which statement correctly describes the restriction on "ABS and PVC Transition Joints"?

A. PVC and ABS pipe and fittings have no restrictions on their use with different materials
B. PVC and ABS pipe and fittings can be solvent welded to any material without restrictions
C. PVC and ABS pipe and fittings must always be solvent welded to metal connections
D. PVC and ABS pipe and fittings shall not be solvent welded to any other unlike material, except as provided in Section 705.9.4

31. In general, which of the following statements correctly describes the drainage system requirements for new and existing buildings?

A. The drainage system of each new building and any new work installed in an existing building must be separate and independent from any other building and must have an independent connection with a public or private sewer where available
B. New buildings may share their drainage systems with neighboring buildings if space constraints exist
C. Existing buildings must be retrofitted to allow shared drainage systems between multiple structures
D. It is mandatory for new buildings to connect solely to a public sewer, without the option of a private sewer

32. Which of the following statements correctly describes the requirements for supporting piping, fixtures, appliances, and appurtenances?

A. Piping and appliances can be installed without support as long as they are placed within a building
B. Piping, fixtures, appliances, and appurtenances must be supported according to both the code requirements and the manufacturer's installation instructions
C. Manufacturer's installation instructions may be disregarded if the code provides alternative support guidelines
D. Fixtures should be supported only if they are located in multi-story buildings

33. Which of the following is a correct requirement for the installation of piping?

A. Only hangers need to be of sufficient strength, but isolating piping from incompatible materials is optional
B. Piping can be supported by any materials available as long as they meet the basic size requirements
C. Hangers, supports, and anchors must be strong enough to support the weight of the pipe and its contents, and piping should be isolated from incompatible materials
D. Supports and anchors are unnecessary if the piping is less than 5 feet long

34. What is the maximum allowable flow rate for showerheads at 80 psi?

A. 2.0 gpm
B. 2.5 gpm
C. 1.5 gpm
D. 1.8 gpm

408.5 Finished Curb or Threshold. Where a shower receptor has a finished dam, curb, or threshold, it shall be not less than 1 inch (25.4 mm) lower than the sides and back of such receptor. In no case, shall a dam or threshold be less than 2 inches (51 mm) or exceeding 9 inches (229 mm) in depth where measured from the top of the dam or threshold to the top of the drain. Each such receptor shall be provided with an integral nailing flange to be located where the receptor meets the vertical surface of the finished interior of the shower compartment. The flange shall be watertight and extend vertically not less than 1 inch (25.4 mm) above the top of the sides of the receptor. The finished floor of the receptor shall slope uniformly from the sides towards the drain not less than 1/8 inch per foot (10.4 mm/m), nor more than 1/2 inch per foot (41.6 mm/m).

Thresholds shall be of sufficient width to accommodate a minimum 22 inch (559 mm) door. Shower doors shall open so as to maintain not less than a 22 inch (559 mm) unobstructed opening for egress. Where there is a shower without a threshold, the floor space within the same room shall be considered a wet room.

Exceptions:

(1) Showers in accordance with Section 403.2.

(2) A cast-iron shower receptor flange shall be not less than 0.3 of an inch (7.62 mm) in height.

(3) For flanges not used as a means of securing, the sealing flange shall be not less than 0.3 of an inch (7.62 mm) in height.

412.1 Application. Urinals shall comply with ASME A112.19.2/ CSA B45.1, ASME A112.19.19, or CSA B45.5/ IAPMO Z124. Urinals shall have an average water consumption not to exceed 0.5 gallons of water per flush.

412.1.1 Non Water Urinals. Nonwater urinals shall have a liquid barrier sealant to maintain a trap seal. Nonwater urinals shall permit the uninhibited flow of waste through the urinal to the sanitary drainage system. Where non water urinals are installed, not less than 1water supplied fixture rated at not less than 1 water supply fixture unit (W SFU) shall be installed upstream on the same drain line to facilitate drain line flow and rinsing. Where nonwater urinals are installed, they shall have a water distribution line rough-in to each individual urinal location to allow for the installation of an approved backflow prevention device in the event of a retrofit.

412.2 Backflow Protection. A water supply to a urinal shall be protected by an approved-type vacuum breaker or other approved backflow prevention device in accordance with

Section 603.5.

414.3 Drainage Connection. Domestic dishwashing machines shall discharge in accordance with Section 807.3 through an air gap fitting, into a waste receptor, into a wye branch fitting on the tailpiece of a kitchen sink, or into the dishwasher connection of a food waste disposer. Commercial dishwashing machines shall discharge indirectly through an air break or direct connection. The indirect discharge for commercial dishwashing machines shall be in accordance with section 807.1, and the direct discharge shall be in accordance with section 704.3.

415.1 Application. Drinking fountains shall be self-closing and comply with ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, or ASME A112.19.3/CSA B45.4. Drinking fountains and bottle filling stations shall also comply with NSF 61. Permanently installed electric water coolers and bottle filling stations shall also comply with UL 399. Electric water coolers and water heaters connected to potable water that are vented to the atmosphere shall comply with ASSE 1023.

416.5 Drain. Where a drain is provided, the discharge shall be in accordance with Section 811.0.

418.3 Location of Floor Drains. Floor drains shall be installed in the following areas:

(1) Toilet rooms containing two or more water closets or a combination of one water closet and one urinal, Except in a dwelling unit. Floor mounted urinals may be used as a floor drain to meet the requirements of this section.

(2) Commercial kitchens and in accordance with Section 704.3.

(3) Laundry rooms and commercial buildings and common laundry facilities serving three or more dwelling units.

(4) Boiler rooms.

Exam Questions:

35. Which standard must drinking fountains and bottle filling stations comply with?

A. NSF 61
B. NSF 372
C. ANSI 117.1
D. ASME A112.19

36. Based on the code regarding non-water urinals, which of the following statements is correct?

A. Non-water urinals do not need to be connected to the sanitary drainage system
B. Non-water urinals are required to use a minimum of 0.2 gallons of water per flush
C. Non-water urinals should intermittently use water to ensure waste drainage
D. Non-water urinals must allow the uninhibited flow of waste to the sanitary drainage system

420.2 Water Consumption. Sink faucets shall have a maximum flow rate of not more than 1.8 gpm at 60 PSI.

Exceptions:

(1) Clinical sinks

(2) Laundry trays

(3) Service sinks

420.3 Pre-Rinse Spray Valve. Commercial food service pre-rinse spray valves shall have a maximum flow rate of 1.28 (gpm) and shall be equipped with an integral automatic shutoff.

422.1 Minimum Number of required Fixtures. The minimum number of required fixtures shall be in accordance with the building code.

501.1 Applicability. The regulations of this chapter shall govern the construction, location, and installation of fuel burning, instantaneous and other types of water heaters heating potable water. The minimum capacity for storage water heaters shall be in accordance with the first- hour rating listed in Table 501.1(2). No water heater shall be hereinafter installed that does not comply with the manufacturer's installation instructions and the type and of model of each size thereof approved by the State Plumbing Board. A list of accepted water heater appliance standards is referenced in Table 501.1(1). Listed appliances shall be installed in accordance with the manufacturer's installation instructions. Unlisted water heater shall be permitted in accordance with Section 505.3.2.

502.1 Direct Vent Water Heaters. Water heaters that are constructed and installed so that air for combustion is derived directly from the outside atmosphere and all flue gases are discharged to the outside atmosphere.

502.2 Hot Water Supply Boiler. A storage type potable water heating unit exceeding any of the perimeters of section 502.3. A hot water supply boiler is regulated by the Boiler Code.

502.3. Storage Type Water Heaters. Storage type water heaters regulated by this code are appliances which heat potable water and are equipped with approved safety devices and operate at or below the following:

(1) Volume of 120 gallons

(2) Water temperature of 210°F

(3) One hundred fifty pounds-force per square inch operating pressure; and

(4) Two hundred Thousand British thermal units (BTU) (58.6 kW*h) input

Exception: Potable water heaters designed to create hot water instantaneously on demand without the use of a storage tank.

502.4 Indirect Fired Water Heater. A water heater consisting of a storage tank equipped with an internal or external heat exchanger used to transfer heat from an external source to heat potable water. The storage tank either contains heated potable water or water supplied from an external source, such as a boiler.

502.5 Water Heater. An appliance for supplying hot water for domestic or commercial purposes.

502.6 Instantaneous Tankless Water Heater. Potable water heating units, sometimes with a small buffer tank, designed to create hot water instantaneously on demand without the use of a storage tank, regardless of size or BTU input, and shall be listed per Chapter 17.

503.1 General. It shall be unlawful for a person to install, remove, or replace or cause to be installed, removed, or replaced a water heater without first obtaining a permit from the Building Official to do so.

504.1 Final Water Heater Inspection. This inspection shall be made after work authorized by the permit has been installed. The Building Official will make such inspection to be assured that the work has been installed in accordance with the intent of this code.

505.1 Location. Water heater installations in bedrooms and bathrooms shall comply with one of the following:

(1) Water heater shall be of the direct vent type.

(2) Fuel burning water heater shall be permitted to be installed in a closet located in the bedroom or bathroom, provided the closet is equipped with a listed, gasketed door assembly and a listed self-closing device. The self-closing door assembly shall meet the requirements of 505.1.1. The door assembly shall be installed with a threshold and bottom door seal and shall meet the requirements of section 505.1.2. Combustion air for such installation shall be obtained from the outdoors in accordance with the Mechanical Code. The closet shall be for the exclusive use of the water heater.

Exam Questions:

37. What is the maximum flow rate for commercial food service pre-rinse spray valves?

A. 2.00 gallons per minute (GPM)
B. 1.50 gallons per minute (GPM)
C. 1.28 gallons per minute (GPM)
D. 3.00 gallons per minute (GPM)

38. What is the maximum flow rate allowed for sink faucets at 60 PSI according to section 420.2?

A. 1.0 gpm
B. 2.2 gpm
C. 1.8 gpm
D. 2.5 gpm

39. According to section 422.1, what determines the minimum number of required fixtures?

A. The building code
B. The local zoning ordinance
C. The contractor's specifications
D. The manufacturer's recommendations

40. When installing a fuel-burning water heater in a closet within a bedroom or bathroom, where must the combustion air be obtained from according to the mechanical code?

A. From a shared air source with other appliances
B. From the room the closet is located in
C. From the outdoors
D. From an indoor mechanical ventilation system

505.1.2 Gasketing. Gasketing on gasketed doors or frames shall be furnished in accordance with the published listings of the door, frame, or gasketing material manufacturer.

Exception: Where acceptable to the Building Official, gasketing of non-combustible or limited-combustible material shall be permitted to be applied to the frame, provided closing and latching of the door are not inhibited.

505.3.2 Unlisted Water Heaters. Except as otherwise permitted in this code, unlisted water heaters shall be approved by the Building Official prior to being installed. Clearance for unlisted water heaters shall be not less than 12 inches on all sides. Combustible floors under unlisted water heaters shall be protected in an approved manner.

505.6 Temperature, Pressure, and Vacuum Relief Devices. Temperature, pressure, and vacuum relief devices or combinations thereof shall be installed in accordance with the terms of their listings and the manufacturers installation instructions. A shuttle valve shall not be placed between the relief valve and the water heater or on discharge pipes between such valves and the atmosphere. The hourly British thermal units discharge capacity or the rated steam relief capacity of the device shall not be less than the input rating of the water heater. Discharge piping shall be installed in accordance with Section 608.5.

506.1 Water Heaters. Water heaters deriving heat from fuels or types of energy other than gas shall comply with the standards referenced in Table 501.1(1), or section 506.3. Vents or chimneys for such appliances shall be of approved types. An adequate supply of air for combustion and for adequate ventilation of heater rooms or compartments shall be provided. Each such appliance shall be installed in a location in accordance with the requirements of this code.

506.3 Indirect Fired Water Heaters. Indirect-fired water heaters shall be in accordance with the applicable sections of the Boiler Code or shall comply with one of the other applicable standards shown in Table 501.1(1). Each water heater shall bear a label in accordance with ASME requirements, or an approved testing agency, certifying and attesting that such an appliance has been tested, inspected and meets the requirements of the applicable standards or code.

507.2 Seismic Provisions. Water heater shall be anchored or strapped to resist horizontal displacement due to earthquake motion. Strapping shall be at points within the upper one third and lower one third of its vertical dimensions. At the lower point, a distance of not less than 4 inches shall be maintained from the controls with the strapping.

Exception: Water heaters in one-and two-family dwellings and townhouses in Seismic Design Category B and C are not required to be strapped or anchored to resist horizontal displacement due to earthquake motion.

507.4 Drainage Pan. Where a water heater is located in an attic, in or on an attic ceiling assembly, floor ceiling assembly, or floor sub-floor assembly where damage results from a leaking water heater, a watertight pan of corrosion-resistant materials shall be installed beneath the water heater with not less than 3/4 of an inch diameter drain to an approved location. Such pan shall be not less than 1 1/2 inches in depth.

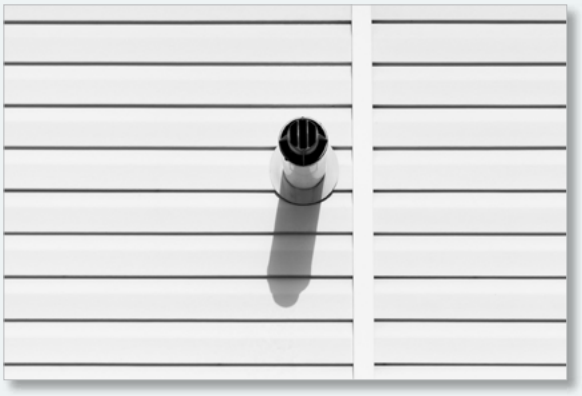
(1) Replacement of an existing water heater shall not require a water heater pan or drain unless one already exists.

(2) Instantaneous water heaters.

507.5 Flammable Vapors. Appliances shall not be installed in areas where the open use, handling, or dispensing of flammable liquids occurs, unless the design, operation, or installation reduces the potential of ignition of the flammable vapers. Water heaters installed in compliance with sections 507.6 through section 507.8 shall

be considered to comply with the intent of this provision.

507.6 Installation in Residential Garages. Fuel gas water heaters in residential garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that all burners and burner-ignition devices are located not less than 18 inches above the floor unless listed as flammable vapor ignition resistant.



507.6.1 Physical Damage. Fuel gas water heaters installed in garages, warehouses, or other areas subject to mechanical damage shall be guarded against such damage by being installed behind protective barriers in accordance with the Mechanical Code or by being elevated or located out of the normal path of vehicles.

Exam Questions:

41. What is the minimum required clearance on all sides for unlisted water heaters?

A. 6 inches
B. 12 inches
C. 18 inches
D. 24 inches

42. According to section 506.3, which of the following is true about indirect fired water heaters?

A. They require vents that must comply with ASME requirements
B. They do not need to bear any label from a testing agency
C. They can be installed without regard to any applicable standards or codes
D. They must comply with the applicable sections of the boiler code or one of the standards in Table 501.1(1)

43. When installing a water heater, what measure should be taken to prevent horizontal displacement during an earthquake?

A. Secure with adhesive
B. Install rubber padding underneath
C. Anchor or strap the water heater
D. Place on an elevated platform

44. Based on section 507.4, which of the following statements is true regarding the installation of a drainage pan for water heaters?

A. A watertight pan of corrosion-resistant material is required under a water heater in an attic if damage from a leak could occur
B. An existing water heater must have a newly installed drainage pan and drain during replacement, even if one did not exist before
C. The drainage pan does not need to be resistant to corrosion as long as it is watertight
D. The depth of the drainage pan should be at least 3 inches to effectively collect water

45. Based on section 507.6, which of the following statements is true regarding the installation of fuel gas water heaters in residential garages?

A. Fuel gas water heaters can only be installed in residential garages if the garage is fully separate from any living spaces
B. Fuel gas water heaters in residential garages do not have height requirements for burner placement
C. Fuel gas water heaters in residential garages must be installed so that all burners and ignition devices are at least 18 inches above the floor unless they are listed as flammable vapor ignition resistant
D. There are no specific installation requirements for fuel gas water heaters in areas adjacent to residential garages

46. In which seismic design categories are water heaters in one- and two-family dwellings and townhouses NOT required to be strapped or anchored to resist horizontal displacement due to earthquake motion?

A. Categories E and F
B. Categories D and E
C. Category A only
D. Categories B and C

507.6. To Access From the Outside. Where fuel gas water heaters are installed in a separate, enclosed space having access only from outside of the garage, such appliances shall be permitted to be installed at floor level, providing the required combustion air is taken from the exterior of the garage.

507.7 Installation in Commercial Garages. Fuel gas water heaters installed in commercial garages shall comply with section 507.7.1 and section 507.7.2.

507.7.1 Parking Structures. Fuel gas water heaters installed in enclosed, basement, and underground parking structure shall be installed in accordance with the Mechanical Code.

507.7.2. Repair Garages. Fuel gas water heaters installed in repair garages shall be installed in accordance with the provisions of the Mechanical Code.

507.8 Installation in Aircraft Hangers. Heaters in aircraft hangers shall be installed in accordance with NFPA 409.

507.9 Installation Instructions. The installer shall conform to the appliance and equipment manufacturers recommendations in completing an installation. The installer shall leave the manufacturers installation, operating, and maintenance instructions in a location on the premises where they are readily available for reference and guidance of the Building Official, service personnel, and the owner or operator.

508.1. Water Heaters on Roofs. Water heaters located on roofs or other elevated locations shall be accessible.

508.1.1 Access. Buildings of more than 15 feet in height shall have an inside means of access to the roof, unless other means acceptable to the Building Official are used.

508.2 Water Heaters in Attics and Under Floor Spaces. An attic or under-floor space in which a water heater is installed shall be accessible through an opening and passageway, not less than as large as the largest component of the appliance, and not less than 22 inches by 30 inches.

601.2 Water Supply and Flushing. 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 using an approved flush tank or flushometer valve.

Exception: 1. Listed fixtures that do not require water for their operation and are not connected to the water supply.

Exception: 2. Where not deemed necessary for safety and sanitation by the Building Official.

602.4 Approval by Authority. No water piping supplied by a private water supply system shall be connected to any other source of supply without the approval of the Building Official, Oregon Health Authority, or other department having jurisdiction.

Exam Questions:

47. Based on section 507.7.2, how should fuel gas water heaters be installed in repair garages?

A. Fuel gas water heaters can be installed in repair garages without any specific guidelines or codes
B. Fuel gas water heaters should not be installed in repair garages under any circumstances
C. Fuel gas water heaters in repair garages must be installed in accordance with the provisions of the mechanical code
D. Only portable fuel gas water heaters are allowed in repair garages, with no installation requirements

48. Based on section 507.8, how should heaters be installed in aircraft hangars?

A. Heaters in aircraft hangars must be installed in accordance with NFPA 409
B. Heaters in aircraft hangars should be installed according to the electrical code only
C. Heaters in aircraft hangars can be installed without following any specific standards
D. Heaters in aircraft hangars should be installed based on manufacturer recommendations alone

49. What requirement must be met for water heaters located on roofs or other elevated locations?

A. Water heaters must be installed indoors and are not allowed on roofs
B. Water heaters do not need any special requirements if placed on roofs
C. Water heaters should be made from lightweight materials if they are on roofs
D. Water heaters must be accessible

50. What are the requirements for accessibility when installing a water heater in an attic or under floor space?

A. The space must have an external access door directly to the outside with a minimum size of 36 inches by 36 inches
B. The space must be accessible through an opening and passageway that is at least as large as the largest component of the appliance, and not less than 22 inches by 30 inches
C. The space must be accessed by a pull-down ladder and have a passageway that is at least 20 inches wide
D. There are no specific size requirements for access openings when installing a water heater in an attic or under floor space

51. Based on section 601.2, which of the following is a requirement for the water supply and flushing of plumbing fixtures?

A. Every fixture must be drained with a gravity-fed system to ensure proper sanitation and operation
B. Plumbing fixtures should have a dedicated hot water supply line for flushing purposes to maintain cleanliness
C. Each plumbing fixture must be provided with an adequate supply of potable running water arranged to flush and keep it clean and sanitary, without danger of backflow or cross connection
D. All plumbing fixtures must use only recycled water for flushing to promote eco-friendly practices

603.2 Approval of Devices or Assemblies. Before a device or an assembly is installed for the prevention of backflow, it shall have first been approved by the Building Official, Building Codes Division, or the State Plumbing Board. Devices or assemblies shall be tested in accordance with recognized standards or other standards acceptable to the Building Official, Building Codes Division, or State Plumbing Board. Backflow prevention devices and assemblies shall comply with table 603.2, except for specific applications and provisions as stated in Section 603.5.1 through section 603.5.21.

Devices or assemblies installed in a potable water supply system for protection against backflow shall be maintained in good working condition by the person or persons having control of such devices or assemblies. Such devices or assemblies shall be tested at the time of installation.

603.4 General Requirements. Assemblies shall comply with listed standards and be acceptable to the Building Official, in accordance with the requirements of this code.

603.4.1 Backflow Prevention Valve. Where more than one backflow prevention valve is installed on a single premise, and the valves are installed in one location, each separate valve shall be permanently identified by the permittee in a manner satisfactory to the Building Official.

603.4.2 Testing. The premise owner or responsible person shall have the backflow prevention assembly tested at the time of installation.

603.4.9 Prohibited Locations. Backflow preventers shall not be located in an area containing fumes that are toxic, poisonous, or corrosive.

603.5.6 Protection from Lawn Sprinklers and Irrigation Systems. Potable water supplies to systems having no pumps or connections for pumping equipment, and no chemical injection or provisions for chemical injection, shall be protected from backflow by one of the following devices:

(1) Atmospheric vacuum breaker (AVB)

(2) Pressure vacuum breaker backflow prevention assembly (PVB)

(3) Spill resistant pressure vacuum breaker (SVB)

(4) Reduced-pressure principle backflow prevention assembly (RP)

(5) Double check valve backflow prevention assembly (DC)

(6) A valve complying with IAPMO PS 72

603.5.6.2 Systems with Backflow Devices. Where systems have a backflow device installed downstream from a potable water supply pump or a potable water supply pump connection, the device shall be one of the following.:

(1) Atmospheric vacuum breaker (AVB)

(2) Pressure vacuum breaker backflow prevention assembly (PVB)

(3) Spill resistant pressure vacuum breaker (SVB)

(4) Reduced-pressure principle backflow prevention assembly (RP)

(5) Double check valve backflow prevention assembly (DC)

603.5.11 Non Potable Water Piping. In cases where it is impractical to correct individual cross-connections on the domestic water line, the line supplying such outlets shall be considered a nonpotable water line. No

drinking or domestic water outlets shall be connected to the nonpotable waterline. Where possible, portions of the nonpotable waterline shall be exposed, and exposed portions shall be properly identified in accordance with this code. Each outlet on the nonpotable waterline that is permitted to be used for drinking or domestic purposes shall be posted: "CAUTION: NONPOTABLE WATER, DO NOT DRINK."

603.5.17 Potable Water Outlets and Valves. Potable water outlets, freeze proof yard hydrants, combination stop and waste valves, or other fixtures that incorporate a stop and waste feature that drains into the ground shall not be installed underground.

Exception: External vertical yard hydrants shall be of the self-draining sanitary type or be provided with a dual check backflow preventer in accordance with ASSE 1024.

604.10 Plastic Materials. Approved plastic materials shall be permitted to be used in building supply piping, provided that where metal building supply piping is used for electrical grounding purposes, replacement piping, therefore, shall be of like materials.

Exception: Where a grounding system is installed, inspected, and approved in accordance with the Electrical Code, metallic pipe shall be permitted to be replaced with nonmetallic pipe.

604.13 Water Heater Connectors. Flexible metallic (copper and stainless steel), reinforced flexible, braided stainless steel, or polymer braided with EPDM core connectors that connect a water heater to the piping system shall comply with ASME A112.18.6/CSA B125.6. Copper, copper alloy, or stainless steel flexible connectors shall not exceed 24 inches (610 mm). PEX, PEX-AL-PEX, PE-AL-PE, or PE-RT tubing shall not be installed within the first 18 inches (457 mm) of piping connected to a water heater.

Exception: CPVC, PE-RT, PEX, or PP tubing accordance with the manufacturers installation instructions and approved for hot and cold potable water distribution in accordance with Table 604.1, shall be permitted to be installed within the first 18 inches of piping connected to an instantaneous on-demand tankless water heater.

Exam Questions:

52. What general requirement must assemblies meet before they can be considered acceptable for use?

A. Assemblies must be installed by a state-certified contractor
B. Assemblies must be designed by a licensed architect
C. Assemblies must comply with listed standards and be acceptable to the building official
D. Assemblies must be inspected weekly by the local fire department

53. Which device can be installed downstream from a potable water supply pump or connection to protect against backflow?

A. Thermal expansion tank
B. Centrifugal pump reducer
C. Atmospheric vacuum breaker (AVB)
D. Ion exchange resin system

54. Which of the following devices can be used to protect potable water supplies to systems without pumps or chemical injection from backflow?

A. Chemical injection pump (CIP)
B. Submersible pump valve (SPV)
C. Atmospheric vacuum breaker (AVB)
D. High-pressure gauge (HPG)

55. Which device can be installed downstream from a potable water supply pump or connection to protect against backflow?

A. Centrifugal pump reducer
B. Atmospheric vacuum breaker (AVB)
C. Thermal expansion tank
D. Ion exchange resin system

56. Based on section 603.5.17, which of the following is true regarding the installation of potable water outlets and certain fixtures?

A. Freeze proof yard hydrants can be installed underground if they are connected to a nonpotable water line
B. Potable water outlets and valves can be installed underground as long as they are properly insulated
C. Fixtures with a stop and waste feature can be installed at any depth if marked adequately
D. Potable water outlets, freeze proof yard hydrants, and fixtures with a stop and waste feature that drains into the ground shall not be installed underground

57. Which of the following types of tubing is permitted to be installed within the first 18 inches of piping connected to an instantaneous on-demand tankless water heater, according to manufacturer instructions and Table 604.1?

A. CPVC
B. Copper
C. Galvanized steel
D. Cast iron

605.2.2 Solvent Cement Joints. Solvent cement joints for CPVC pipe and fittings shall be clean from dirt and moisture. Solvent cements shall comply with ASTM F493, requiring the use of a primer shall be orange in color. The primer shall be colored and shall comply with ASTM F656. Listed solvent submit that complies with ASTM F493 and that does not require the use of primers, yellow, green, or red in color, shall be permitted for pipe and fittings that comply with ASTM D2846, ½ of an inch through 2 inches in diameter or ASTM F442, ½ of an inch through three inches in diameter. Apply primer where required inside the fitting and to the depth of the fitting on pipe. Apply liberal coat of cement to the outside surface of pipe to depth of fitting and inside of fitting. Place pipe inside fitting to forcefully bottom the pipe in the socket and hold together until joint is set.

605.15 Dielectric Unions. Dielectric unions where installed at points of connection where there is a dissimilarity of metals shall be in accordance with ASSE 1079 or IAPMO PS 66.

605.16.1 Copper or Copper Alloy Pipe or Tubing to Threaded Pipe Joints. Joints from copper or copper alloy pipe or tubing to threaded pipe shall be made using copper alloy adapter, copper alloy nipple [minimum 6 inches (152 mm)], dielectric fitting, or dielectric union in accordance with ASSE 1079 or IAPMO PS 66. The joint between the copper or copper alloy pipe or tubing and the fitting shall be a soldered, brazed, flared, or press-connect joint and the connection between the threaded pipe and the fitting shall be made with a standard pipe size threaded joint.

605.16.3 Stainless Steel to Other Materials. Where connecting stainless steel pipe to other types of piping, mechanical joints of the compression type, dielectric fitting, or dielectric union in accordance with ASSE 1079

or IAPMO PS 66 and designed for the specific transition intended shall be used.

608.2 Excessive Water Pressure. Where static water pressure in the water supply piping is exceeding 80 psi (552 kPa), an approved-type pressure regulator preceded by an adequate strainer shall be installed and the static pressure reduced to 80 psi (552 kPa) or less. Pressure regulators for potable water distribution systems shall comply with ASSE 1003. Such regulator(s) shall control the pressure to water outlets in the building unless otherwise approved by the Building Official. Each such regulator and strainer shall be accessibly located aboveground or in a vault equipped with adequate means to provide drainage and shall be protected from freezing and shall have the strainer readily accessible for cleaning without removing the regulator or strainer body or disconnecting the supply piping. Pipe size determinations shall be based on 80 percent of the reduced pressure where using Table 610.4.

An approved expansion tank shall be installed in the cold-water distribution piping downstream of each such regulator to prevent excessive pressure from developing due to thermal expansion and to maintain the pressure setting of the regulator. Expansion tanks used in potable water systems intended to supply drinking water shall comply with NSF 61. The expansion tank shall be properly sized, securely fastened, and installed in accordance with the manufacturer's installation instructions and listing. Systems designed by registered design professionals shall be permitted to use approved pressure relief valves in lieu of expansion tanks provided such relief valves have a maximum pressure relief setting of 100 psi (689 kPa) or less.

608.3 Expansion Tanks, and Combination Temperature and Pressure-Relief Valves. A water system provided with a check valve, backflow preventer, or other normally closed device that prevents dissipation of building pressure back into the water main, independent of the type of water heater used, shall be provided with an approved, listed, and adequately sized expansion tank or other approved device having a similar function to control thermal expansion. Prepressurized water expansion tanks shall comply with IAPMO Z1088. Such expansion tank or other approved device shall be installed on the building side of the check valve, backflow preventer, or other device and shall be sized, securely fastened, and installed in accordance with the manufacturer's installation instructions.

A water system containing storage water heating equipment shall be provided with an approved, listed, adequately sized combination temperature and pressure-relief valve, except for listed nonstorage instantaneous heaters having an inside diameter of not more than 3 inches (80 mm). Each such approved combination temperature and pressure-relief valve shall be installed on the water-heating device in an approved location based on its listing requirements and the manufacturer's installation instructions. Each such combination temperature and pressure-relief valve shall be provided with a drain in accordance with Section 608.5.

Exception: An expansion tank shall not be required for an instantaneous on-demand water heater.

Exam Questions:

58. What is the correct procedure for preparing CPVC pipe and fittings for solvent cement joints according to the guidelines?

A. The surfaces should be coated with petroleum jelly before joining
B. The surfaces should be roughened with sandpaper
C. The surfaces should be heated with a torch for better adhesion
D. The surfaces should be clean from dirt and moisture

59. Which standard should dielectric unions adhere to when installed at points of connection involving dissimilar metals?

A. ASSE 1079 or IAPMO PS 66
B. ASTM D1785 or ASTM D2665
C. AISI 316 or AISI 304
D. ANSI Z21.15 or CSA 6.9

60. According to the code, how should the joint be made between copper or copper alloy pipe/tubing and its fitting?

A. Threaded, crimped, taped, or nailed joint
B. Welded, riveted, glued, or hinged joint
C. Compression, mechanical, slip-fit, or slip joint
D. Soldered, brazed, flared, or press-connect joint

61. What standard must expansion tanks used in potable water systems, which are intended to supply drinking water, comply with?

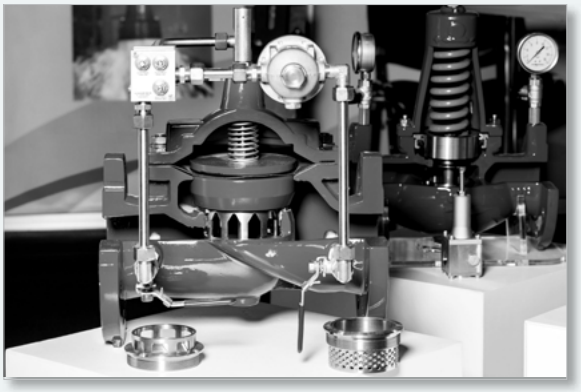
A. ANSI 150
B. NSF 61
C. ISO 9001
D. ASME B16.9

62. When is an expansion tank not required in a water heating system?

A. For an instantaneous on-demand water heater
B. For a storage tank water heater
C. For a solar water heating system
D. For a heat pump water heater

609.7 Abutting Lot. Nothing contained in this code shall be construed to prohibit the use of an abutting lot, provided documentation of a legal easement for access to connect a building supply is submitted to the Building Official.

609.11 Water Hammer. Building water supply systems where quick acting valves are installed shall be provided with water hammer arrester(s) to absorb high pressures resulting from the quick closing of these valves. Water hammer arresters shall be approved mechanical devices that comply with ASSE 1010 or PDI-WH 201 and shall be installed as close as possible to quick-acting valves.



Exception: This section shall not apply to one-and two-family dwellings or townhouses.

612.1 Where Required. Where residential multipurpose sprinkler systems are required in one-and two-family dwellings or townhouses, the system shall be installed in accordance with NFPA 13D in Chapter 17.

Table 703.2

Footnote 7: Was revised to provide clarity on the permitted number of drainage fixtures for one to eight public lavatories.

Up to 8 public lavatories are permitted to be installed on a 1⅟2 inch (40 mm) vertical branch or horizontal sanitary branch sloped at 1⁄4 inch per foot (20.8 mm/m). Up to 8 public lavatories shall not exceed a total of 2 drainage fixture units.

705.6.2 Solvent Cement Joints. Solvent cement joins for PVC pipe and fittings shall be clean from dirt and moisture. Pipe shall be cut square, and pipe shall be debarred. Where surfaces to be joined are clean and free of dirt, moisture, oil, and other foreign material, apply primer purple in color that complies with ASTM F656. Primer shall be applied to the surface of the pipe and fitting is softened. Solvent submit that comply with ASTM D2564 shall be applied to all joint surfaces. Joints shall be made while both the inside socket surface and outside surface of pipe are wet with solvent cement. Hold joint in place and undisturbed for 1 minute after assembly.

Exception: Listed solvent cements that do not require the use of primer with PVC/DWV non-pressure systems and installed per the manufacturers installation instructions.

705.10.3 Plastic Pipe to Other Materials. Where connecting plastic pipe to other types of plastic or other types of piping material; approved listed adapter or transition fittings and listed for the specific transition intended shall be used. Except as provided in Section 705.9.4, PVC and ABS pipe and fittings shall not be solvent welded to any other unlike material.

707.9 Clearance. Each cleanout in piping 2 inches (50 mm) or less in size shall be so installed that there is a clearance of not less than 18 inches (457 mm) by 18 inches (457 mm) in front of the cleanout. Cleanouts in piping exceeding 2 inches (50 mm) shall have a clearance of not less than 24 inches (610 mm) by 24 inches (610 mm) in front of the cleanout. Cleanouts in under-floor piping shall be extended to or above the finished floor or shall be extended outside the building where there is less than 18 inches (457 mm) vertical overall, allowing for obstructions such as ducts, beams, and piping, and 30 inches of (762 mm) horizontal clearance from the means of access to such cleanout.

708.1 General. Horizontal drainage piping shall be run in practical alignment and a uniform slope of not less than 1/4 inch per foot or 2% toward the point of disposal provided that, where it is impractical due to the depth of the street sewer, to the structural features, or to the arrangement of a building or structure to obtain a slope of 1/4 inch per foot or 2%, such pipe or piping 4 inches or larger in diameter shall be permitted to have a slope of not less than 1/8 inch per foot or 1%, were first approved by the Building Official.

Exam Questions:

63. When residential multi-purpose sprinkler systems are required in one and two-family dwellings or townhouses, how should they be installed?

A. In accordance with NFPA 13D as specified in Chapter 17
B. By using any locally preferred method without specific standards
C. Only in basements and attics to conserve water
D. With standard garden hose connections for flexibility

64. According to section 705.6.2, what steps must be taken before joining PVC pipes?

A. Pipes can have some moisture, but they should be clean and cut at any angle
B. Pipes must be clean from dirt and moisture, cut square, and debarred
C. Fittings require no cleaning, but pipes should be debarred
D. Only pipes need to be dry, and they can have rough cuts

65. What is required when connecting plastic pipe to other types of plastic or piping materials?

A. Unapproved generic adapters
B. Standard adhesive strips
C. Approved listed adapter or transition fittings listed for the specific transition
D. Electrical tape

66. What should be done with cleanouts in under-floor piping when there is less than 18 inches of vertical clearance or 30 inches of horizontal clearance from the means of access?

A. Install additional ducts to provide clearance
B. Seal the cleanouts permanently below the flooring
C. Cover the cleanouts with temporary flooring
D. Extend the cleanouts to or above the finished floor or outside the building

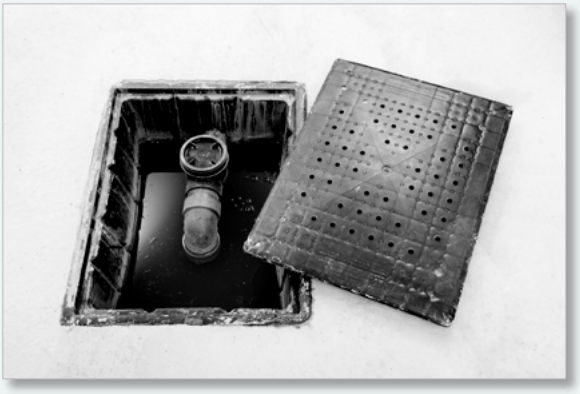
67. According to the code for horizontal drainage piping, what is the minimum uniform slope required for pipes 4 inches or larger in diameter, when a 1/4 inch per foot slope is impractical due to specific conditions?

A. 1/8 inch per foot or 1%
B. 1/16 inch per foot or 0.5%
C. 1/2 inch per foot or 4%
D. 3/8 inch per foot or 3%

710.4 Discharge Line. The discharge line from such ejector, pump, or another mechanical device shall be of approved pressure rated material and be provided with an accessible backwater or swing check valve and gate or ball valve. Fittings shall be a fullway type, shall not restrict flow, and shall be approved for use with the pressure discharge piping. Where the gravity drainage line to which such discharge line connects is horizontal, the method of connection shall be from the top through a wye branch fitting. The gate or ball valve shall be located on the discharge side of the backwater or check valve.

Gate or ball valves, where installed in drainage piping, shall be fullway type with working parts of corrosion-resistant metal. Sizes 4 inches (100 mm) or more in diameter shall have cast-iron bodies and sizes less than 4 inches (100 mm), cast-iron or copper alloy bodies.

710.6 Backwater Valves. Backwater valves, gate valves, fullway ball valves, unions, motors, compressors, air tanks, and other mechanical devices required by this section shall be located where they will be accessible for inspection and repair and, unless continuously exposed, shall be enclosed in a masonry pit fitted with an adequately sized removable cover.



Backwater valves shall comply with ASME A112.14.1, or IAPMO IGC 305 and have bodies of cast-iron, plastic, copper alloy, or other approved materials; shall have noncorrosive bearings, seats, and self-aligning discs; and shall be constructed to ensure a positive mechanical seal. Such backwater valves shall remain open during periods of low flows to avoid screening of solids and shall not restrict capacities or cause excessive turbulence during peak loads. Unless otherwise listed, valve access covers shall be bolted type with gasket, and each valve shall bear the manufacturer's name cast into the body and the cover.

710.14 Elevator Pit Drains. Permanent means of drainage shall be provided for each elevator car. Gravity drains, when installed, shall people be provided with an approved-type backwater valve to prevent drain line backup and the trap seal shall be protected with an automatic trap seal primer. Sumps and pumps may be installed when provided with the following:

(1) A check valve to prevent water, gases, and outdoors from entering the pit.

(2) A secure and level cover over the sump.

(3) An automatic activation switch.

(4) A minimum 50 GPM pump per each elevator car.

(5) A minimum 2-inch discharge pipe.

(6) Sump size as recommended by the pump manufacturer.

(7) The outlet pipe of the pump shall be directly or indirectly connected to the sanitary drainage system.

(8) Single pumps shall be permitted.

(9) A minimum 4-inch receiving gravity drain at 1/4 inch per foot slope or 2% shall serve the branch connected through the trap.

(10) Dual pumps and oil water separator are not required.

714.2 Prohibited Water Discharge. No rain, surface, or sub surface water shall be connected to or discharged into a drainage system unless first approved by the Building Official.

714.4. Commercial Food Waste Disposer. The Building Official shall review before approval, the installation of a commercial food waste disposer connecting to a private sewage disposal system.

714.5 Tanks. An approved type, watertight sewage or wastewater holding tank, the contents of which, due to their character, shall be periodically removed and disposed of where required to prevent anticipated surface or subsurface contamination or pollution, damage to the public, sewer, or other hazardous or nuisance conditions.

Exam Questions:

68. How should a discharge line connect to a horizontal gravity drainage line according to the guidelines?

A. From the front through a reducer fitting
B. From the bottom through a tee fitting
C. From the side through an elbow fitting
D. From the top through a wye branch fitting

69. What is the correct specification for valve access covers unless otherwise listed?

A. Bolted type with gasket, and each valve shall bear the manufacturer's name cast into the body and the cover
B. Welded type with sealant, with the manufacturer's name on a sticker
C. Riveted type without gasket, with the manufacturer's name painted on
D. Snap-on type with O-ring, and the manufacturer's logo etched into the body

70. What is required before installing a commercial food waste disposer that connects to a private sewage disposal system?

A. Submission of a waste analysis report
B. Installation of a grease trap
C. Certification by an environmental engineer
D. Review and approval by the building official

71. What type of tank is required to prevent anticipated surface or subsurface contamination or pollution?

A. A polyethylene plastic storage tank
B. A reinforced concrete septic tank
C. An approved type, watertight sewage or wastewater holding tank
D. A galvanized steel overflow tank

1006.2 Vents Not Required. Traps for floor drains, floor sinks, funnel drains, area drains, catch basins and receptors within a building discharging to a vented horizontal soil or waste pipe are exempt from the provision requiring individual vents for each trap, provided that the trap arm, or distance from the trap to the vented horizontal soil or waste pipe to which it discharges, measuring the developed length, does not exceed the maximum distances as shown in Table 1006.2, and that the branch waste pipe from the trap connects to a soil or waste pipe which is vented with a pipe having a diameter not less than that which would be required to vent a floor drain, floor sink, funnel drain, area drain, catch basin and receptors, computed on the units allowed in Table 702.1 and Table 703.2. Common vent sizing shall be the sum of fixture units served, but in no case smaller than the minimum vent size required for any fixture served or as determined from Table 703.2 whichever is larger.

Exception: Floor sinks installed to receive the discharge waste from sinks shall be permitted to be individually vented. Trap arms shall not exceed distances as per Table 1006.2. Priming of traps for above vented floor sinks are not required.

1101.4.2 Location. Building storm sewers located 2 feet (610 mm) or more away from any building or property line, except roads, streets or alleys, shall be of cast iron, vitrified clay, concrete, asbestos cement, ABS, PVC, CPE, or other pipe meeting applicable standards in Table 701.2, Table 1101.4.9, and Chapter 17. Fittings shall be in accordance with Section 706.0 of this code.

1101.4.3 Cleanouts. Cleanouts shall be required and shall be installed as per Section 719.0 of this code.

1101.4.8 Fittings. Sanitary tee branch fittings and 90-degree medium turns shall be permitted for interior and exterior storm drain piping.

Exception: Approved taps shall be permitted on storm sewers per manufacturer's listing.

1312.4 Vacuum Filtration. Central supply systems for vacuum shall be provided with inlet filtration with the following characteristics:

(1) Filtration shall be at least duplex to allow one filter to be exchanged without impairing vacuum system.

(2) Filtration shall be located on the patient side of the vacuum producer.

(3) Filters shall be efficient to 0.3 µ and 99.97 percent HEPA or better, per DOE-STD-3020.

(4) Filtration shall be sized for 100 percent of the peak calculated demand while one filter or filter bundle is isolated.

(5) It shall be permitted to group multiple filters into bundles to achieve the required capacities.

(6) The system shall be provided with isolation valves on the source side of each filter bundle and isolation valves on the patient side of each filter or filter bundle, permitting the filters to be isolated without shutting off flow to the central supply system.

(7) A means shall be available to allow the user to observe any accumulation of liquids.

(8) A vacuum relief petcock shall be provided to allow vacuum to be relieved in the filter canister during filter replacement.

(9) Filter elements and canisters shall be permitted to be constructed of materials as deemed suitable by the manufacturer.

1314.5 Valve Types. New or replacement valves shall be permitted to be of any type as long as they meet the following conditions:

(1) They have a minimum Cv factor in accordance with Table 1314.5.1 or Table 1314.5.2.

(2) They use a quarter turn to off.

(3) They are constructed of materials suitable for the service.

(4) They are provided with copper tube extensions by the manufacturer for brazing or with corrugated medical tubing (CMT) fittings.

(5) They indicate to the operator if the valve is open or closed.

(6) They permit in-line serviceability.

(7) They are cleaned for oxygen service by the manufacturer if used for any positive-pressure service.

(8) They have threaded purge ports on the patient side and the source side.

(9) They have a minimum working pressure equal to or greater than the relief valve protecting the piping system on which the valve is installed for any positive-pressure service.

1323.14 Identification of Shutoff Valves. Shutoff valves shall be identified with the following:

(1) Name or chemical symbol for the specific medical gas or vacuum system.

(2) Room or areas served.

(3) Caution to not close or open valve except in emergency.

(4) Gas or vacuum system color code in accordance with Table 1305.1.

1327.1 General. Dental gas and vacuum systems shall comply with the applicable sections in Chapter 15 of the NFPA 99 and this Code.

1601.2 System Design. Rainwater catchment systems shall be designed in accordance with this chapter by a certified plumbing contractor or registered design professional. Components, piping, and fittings used in a rainwater catchment system shall be listed.

1601.3 Permit. It shall be unlawful for a person to construct, install, alter, or cause to be constructed, installed, or altered a rainwater catchment system in a building or on a premise without first obtaining a permit to do such work from the Building Official. PIC 35

1603.21 Rainwater Diversion Valves. Rainwater diversion valves ranging from 2 inches (50 mm) through 4 inches (100 mm) in diameter shall comply with IAPMO PS 59. Rainwater diversion valves ranging from 6 inches (150 mm) to 12 inches (300 mm) in diameter shall comply with IAPMO IGC 352. Where required, valves shall be accessible and shall include a filter located upstream of the valve.

Exam Questions:

72. What limitation is placed on trap arms according to the code?

A. Trap arms must be at least half the lengths specified in Table 1006.2
B. Trap arms shall not exceed distances as per Table 1006.2
C. Trap arms should be double the distances listed in Table 1006.2
D. Trap arms have no distance restrictions and can be any length

73. What materials are permitted for building storm sewers located 2 feet or more away from any building or property line, according to the information provided?

A. Cast iron, vitrified clay, concrete, asbestos cement, ABS, PVC, and CPE, or other pipe meeting applicable standards in Table 701.2, Table 1101.4.9, and Chapter 17
B. Only stainless steel or copper pipes, without exceptions
C. Materials other than copper should not exceed 2-inch diameters
D. Wood and aluminum pipes meeting applicable standards

74. According to the code, under what condition are taps permitted on storm sewers?

A. Taps are permitted only if installed by a certified plumber regardless of approval
B. Taps are only permitted if they are made of stainless steel
C. Taps are never permitted on storm sewers
D. Taps must be approved per the manufacturer's listing

75. According to the information provided, what is the purpose of a vacuum relief petcock in a filter canister?

A. To increase the pressure inside the filter canister
B. To allow vacuum to be relieved in the filter canister during filter replacement
C. To regulate the flow rate of liquid through the filter
D. To maintain continuous vacuum in the filter canister at all times

76. Based on the code, what is the minimum working pressure requirement for new or replacement valves in a positive-pressure service?

A. The minimum working pressure must be equal to or greater than the relief valve protecting the piping system
B. The minimum working pressure must be exactly half of the relief valve protecting the piping system.
C. The minimum working pressure must be less than the relief valve protecting the piping system.
D. There is no specific working pressure requirement for new or replacement valves in a positive-pressure service.

77. Which of the following identifies requirements for shutoff valves in a medical gas or vacuum system?

A. Name or chemical symbol for the specific medical gas or vacuum system
B. Manufacturer's logo and installation date
C. Instructions for routine maintenance
D. Maximum working pressure and temperature rating

78. Which of the following requirements must dental gas and vacuum systems adhere to?

A. Monthly inspection and certification by local authorities
B. Installation by certified technicians with 10 years of experience
C. Compliance with the applicable sections in Chapter 15 of the NFPA 99 and this Code
D. Use of only proprietary equipment from a single manufacturer

79. Who is qualified to design rainwater catchment systems according to the specified chapter?

A. A licensed landscape architect with water management experience
B. A certified plumbing contractor or registered design professional
C. A certified environmental engineer specializing in hydrology
D. A local government official with relevant permitting authority

80. What must a person obtain before constructing, installing, or altering a rainwater catchment system on a premise?

A. Approval from a certified plumbing contractor
B. Written consent from neighboring property owners
C. A permit from the Building official
D. A consultation with an environmental scientist