

EXHIBIT “A”

PROPOSED REVISION

Allegheny County Health Department Rules and Regulations
Article XV, Plumbing and Building Drainage

ALLEGHENY COUNTY HEALTH DEPARTMENT RULES & REGULATIONS ARTICLE XV – PLUMBING AND BUILDING DRAINAGE

Deletions are shown with strikethroughs.
Additions are shown in larger font, bolded, and underlined

CHAPTER 1 ADMINISTRATION

SECTION 101 GENERAL

AC 101.2 Scope. The provisions of this code shall apply to the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of plumbing systems **and residential fire sprinklers (NFPA 13D or IRC P2904)** within this jurisdiction. This code shall also regulate non-flammable medical gas, inhalation anesthetic, vacuum piping, nonmedical oxygen systems and sanitary and condensate vacuum collection systems. The installation of fuel gas distribution piping and equipment, fuel-gas-fired water heaters and water heater venting systems shall be regulated by the International.Fuel.Gas.Code; Provisions in the appendices shall not apply unless specifically adopted.

SECTION 102 APPLICABILITY

102.8 Referenced codes and standards. The codes and standards referenced in this code shall be those that are listed in **CHAPTER 15** and such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and the referenced standards, the provisions of this code shall be the minimum requirements.

102.8.1 Conflicts. Where conflicts occur between provisions of this code and the referenced standards, the provisions of this code shall apply.

102.8.2 Provisions in referenced codes and standards. Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

SECTION 103 DEPARTMENT OF PLUMBING INSPECTION

AC-103.1 General. The Plumbing Program of the Allegheny County Health Department is responsible for the enforcement of these regulations. **The function of the agency shall be the implementation, administration and enforcement of the provisions of this code.**

AC-103.5 Conflict of interest. No person appointed Chief Plumbing Inspector, Assistant Chief Plumbing Inspector, Plumbing Inspector Supervisor, and/or Plumbing Inspector shall, directly or indirectly, be engaged in business or work regulated by this Article during his employment with the Department. **It shall not be considered a conflict of interest for any person appointed Chief Plumbing Inspector, Assistant Chief Plumbing Inspector, Plumbing Inspector Supervisor, and/or Plumbing Inspector to serve as an instructor in a plumbing apprenticeship program (AC106.7.9)**

SECTION 104 DUTIES AND POWERS OF THE CODE OFFICIAL

~~AC-104.2~~ AC-104.1.1 Rule-making authority. The Board of Health shall have the authority, in the interest of public health, safety and the general welfare, to adopt rules and regulations through its established rulemaking process for the approval of the Allegheny County Chief Executive.

The Board of Health shall direct the Department to propose rules, regulations, standards, policies, and procedures to the Board of Health for approval, to interpret and implement the provisions of this Article; to secure the intent thereof; and to designate due to local climatic or other conditions appropriate, alternative minimum standards. Such rules, regulations, standards, policies, or procedures shall not have the effect of waiving structural or fire performance requirements specifically provided for in this code, or of violating accepted engineering practice involving public safety. The Board of Health may direct the Plumbing Advisory Board to review and comment upon rules, regulations, standards, policies, and procedures proposed by the Department.

~~AC-104.3~~ AC-104.2 Applications and permits. The Chief Plumbing Inspector and/or his designee shall receive applications, and issue permits for installation and alteration of plumbing, inspect the premises for which such permits have been issued, and ensure through necessary enforcement procedures compliance with the provisions of this Article.

~~AC-104.4~~ 104.3 Inspections. The Chief Plumbing Inspector and/or his designee shall make all required inspections or shall accept reports of inspections by approved agencies or individuals. All inspection reports shall be in writing; may be stored and issued electronically; and shall be endorsed by an officer of such approved agency or by an approved individual. The Chief Plumbing Inspector and/or his designee is authorized to engage such expert opinion as is deemed necessary to resolve unusual technical issues that arise, subject to the approval of the Director.

~~104.5~~ 104.5 Right of entry. Whenever it is necessary to make an inspection to enforce the provisions of this code, or whenever the code official has reasonable cause to believe that there exists in any building or upon any premises any conditions or violations of this code that make the building or premises unsafe, insanitary, dangerous or hazardous, the code official shall have the authority to enter the building or premises at all reasonable times to inspect or to perform the duties imposed upon the code official by this code. If such building or premises is occupied, the code official shall present credentials to the occupant and request entry. If such building or premises is unoccupied, the code official shall first make a reasonable effort to locate the owner or other person having charge or control of the building or premises and request entry. If entry is refused, the code official shall have recourse to every remedy provided by law to secure entry. When the code official shall have first obtained a proper inspection warrant or other remedy provided by law to secure entry, no owner or occupant or person having charge, care or control of any building or premises shall fail or neglect, after proper request is made as herein provided, to promptly permit entry therein by the code official for the purpose of inspection and examination pursuant to this code.

~~104.6~~ 104.5 Identification. The code official shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

~~104.7~~ 104.6 Notices and orders. The code official shall issue all necessary notices or orders to ensure compliance with this code.

~~AC-104.7.1~~ 104.6.1 Civil penalties. A person who violates any of the provisions of this Article, or any order issued by the Director under this regulation, is subject to a Civil Penalty in accordance with the provisions of the Department's Rules & Regulations, Article XVI, "Civil Penalties."

~~104.8~~ 104.7 Department records. The code official shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained for at least 5 years unless otherwise provided for by other regulations, Pennsylvania law, or federal law.

~~103.4~~ AC-104.8 Liability. The code official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties.

Any suit instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representative of the jurisdiction until the final termination of the proceedings. The code official or any subordinate shall not be liable for costs in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

SECTION 105 APPROVAL

105.2 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material or method of construction shall be approved where the code official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons why the alternative was not approved.

105.3 Required testing. Where there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the code official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction.

~~105.4 Alternative engineered design.~~ The design, documentation, inspection, testing and approval of an alternative engineered design plumbing system shall comply with Sections 105.4.1 through 105.4.6.

~~105.4.1 Design criteria.~~ An alternative engineered design shall conform to the intent of the provisions of this code and shall provide an equivalent level of quality, strength, effectiveness, fire resistance, durability and safety. Material, equipment or components shall be designed and installed in accordance with the manufacturer's installation instructions.

~~105.4.2 Submittal.~~ The registered design professional shall indicate on the permit application that the plumbing system is an alternative engineered design. The permit and permanent permit records shall indicate that an alternative engineered design was part of the approved installation.

~~105.4.3 Technical data.~~ The registered design professional shall submit sufficient technical data to substantiate the proposed alternative engineered design and to prove that the performance meets the intent of this code.

~~105.4.4 Construction documents.~~ The registered design professional shall submit to the code official two complete sets of signed and sealed construction documents for the alternative engineered design. The construction documents shall include floor plans and a riser diagram of the work. Where appropriate, the construction documents shall indicate the direction of flow, all pipe sizes, grade of horizontal piping, loading, and location of fixtures and appliances.

~~105.4.5 Design approval.~~ Where the code official determines that the alternative engineered design conforms to the intent of this code, the plumbing system shall be approved. If the alternative engineered design is not approved, the code official shall notify the registered design professional in writing, stating the reasons thereof.

~~105.4.6 Inspection and testing.~~ The alternative engineered design shall be tested and inspected in accordance with the requirements of Sections 107 and 312.

~~105.5~~ **105.4 Approved materials and equipment.** Materials, equipment and devices approved by the code official shall be constructed and installed in accordance with such approval.

~~105.5.1~~ **105.4.1 Material and equipment reuse.** Materials, equipment and devices shall not be reused unless such elements have been reconditioned, tested, placed in good and proper working condition and approved.

SECTION 106 PERMITS

~~AE-106.1.2~~ **Exempt Work.** The following work shall be exempt from the requirement for a permit:

1. Repairs that involve the working parts of a faucet or valve, the clearance of stoppages, or the replacement of defective faucets or valves (excluding hot water mixing valves in tub, shower, and/or combination tub and shower valves), may be made without a

permit. However, a permit shall be obtained when any part of the plumbing system becomes defective and requires replacement or alteration.

AC- 106.2 Exempt work. The following work shall be exempt from the requirement for a permit:

2. Allied Trades may install equipment not identified as plumbing but which may require water and/or waste connections such as heating, air conditioning, cooling, refrigeration, **commercial** fire sprinkler systems, and industrial piping. These connections may be made without a permit to water and waste outlets originally provided for in the plumbing and drainage systems, when such connections are made in conformance to Article XV, provided that: where such equipment or systems are being added to a structure in which no provisions have previously been provided for water supply and/or drainage outlets, the services of a registered master plumber will be required; and provided further that installers of any equipment requiring potable water using equipment or systems subject to backflow and/or which would in any way utilize toxic materials or chemicals which could potentially contaminate the potable water supply, shall be required to engage the services of a registered plumber to install proper backflow prevention devices as approved by the Administrative Authority.

106.3.1 Preliminary inspection. Before a permit is issued, the code official shall be authorized to inspect and evaluate the systems, equipment, buildings, devices, premises and spaces or areas to be used.

106.5 Permit issuance. The application, construction documents and other data filed by an applicant for permit shall be reviewed by the code official. If the code official finds that the proposed work conforms to the requirements of this code and all laws and ordinances applicable thereto, and that the fees specified in Section 109.1 have been paid, a permit shall be issued to the applicant.

106.5.1 Approved construction documents. When the code official issues the permit where construction documents are required, the construction documents shall be endorsed in writing and stamped "APPROVED." Such approved construction documents shall not be changed, modified or altered without authorization from the code official. Work shall be done in accordance with the approved construction documents.

The code official shall have the authority to issue a permit for the construction of a part of a plumbing system before the entire construction documents for the whole system have been submitted or approved, provided that adequate information and detailed statements have been filed complying with all pertinent requirements of this code. The holders of such permit shall proceed at their own risk without assurance that the permit for the entire plumbing system will be granted.

AC-106.5.3 Expiration. Every permit issued by the code official under the provisions of this code shall expire by limitation and become null and void if the work authorized by such permit is not commenced within 180 days from the date of such permit, or if the work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of 180 days. Before such work can be recommenced, a new permit shall be first obtained and the fee therefore shall be **equal to the plan fee required for a new permit**, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded 1 year.

106.5.6 Previous approvals. This code shall not require changes in the construction documents, construction or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.

AC-106.5.7-106.5.6.1 Permission to proceed. Plans filed shall not constitute permission to proceed. A permit must be obtained prior to commencing any plumbing work.

Exception: When an emergency repair is immediately necessary to protect public health and safety, the repairs may be conducted without first applying for and receiving a plumbing permit. In this circumstance, a permit application must be submitted within three (3) business days after the repair is made and the repairs must remain visible for inspection until the plumbing program has inspected and approved the work. Fees for plumbing permit applications for emergency repairs shall not be subject to the additional 100% fee required by Section 106.6.1.

AC-106.5.8 106.5.7 Performance of plumbing work. No person, other than a licensed master plumber, a licensed journeyman plumber in the employ of a licensed master plumber, a registered plumbing apprentice in the employ of a licensed master plumber, or a bonafide owner presently occupying an existing single-family building shall install, alter, or make connections with any sewer, water, drain, or any pipe connected therewith; or alter the location of any existing plumbing fixtures, water distribution piping system or sewer drainage system.

~~109.31~~**106.6.1 Work commencing before permit issuance.** Any person who commences any work on a plumbing system before obtaining the necessary permits shall be subject to a fee established by the code official that shall be in addition to the required permit fees.

~~109.41~~**106.6.4 Related fees.** The payment of the fee for the construction, alteration, removal or demolition for work done in connection to or concurrently with the work authorized by a permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

SECTION 107

CONSTRUCTION DOCUMENTS

107.1 Construction documents. Construction documents, engineering calculations, diagrams and other such data shall be submitted in two or more sets, or in a digital format where allowed by the code official, with each application for a permit. The code official shall require construction documents, computations and specifications to be prepared and designed by a registered design professional where required by state law. Construction documents shall be drawn to scale and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that the work conforms to the provisions of this code. Construction documents for buildings more than two stories in height shall indicate where penetrations will be made for pipes, fittings and components and shall indicate the materials and methods for maintaining required structural safety, fire-resistance rating and fire blocking. **Exception:** The code official shall have the authority to waive the submission of construction documents, calculations or other data if the nature of the work applied for is such that the reviewing of construction documents is not necessary to determine compliance with this code.

107.2 Retention of construction documents.

One set of approved construction documents shall be retained by the code official for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws.

One set of approved construction documents shall be returned to the applicant, and said set shall be kept on the site of the building or work at all times during which the work authorized thereby is in progress

106.5.2 Validity. The issuance of a permit or approval of construction documents shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or any other ordinance of the jurisdiction. A permit presuming to give authority to violate or cancel the provisions of this code shall not be valid.

The issuance of a permit based on construction documents and other data shall not prevent the code official from thereafter requiring the correction of errors in said construction documents and other data or from preventing building operations being carried on thereunder where in violation of this code or of other ordinances of this jurisdiction.

~~**106.5.6 Retention of construction documents.** One set of approved construction documents shall be retained by the code official for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws.~~

AC-106.7.9 Journeyman plumber qualifications. No journeyman plumber's license shall be granted a registered apprentice plumber until he has:

1. Acquired a minimum four (4) years experience or the equivalent of 8,000 hours worked;
2. **Successfully** completed 576 hours of plumbing training at an accredited school, preferably within six (6) years of the beginning of the apprenticeship training;
3. If a Master Plumber refuses to qualify records of legitimate past work hours for apprentices, they will be subject to penalties up to and including revocation of plan filing rights and/or more severe penalties as determined by the ACHD plumbing program; and
4. Passed the required examination.

SECTION 108 **VIOLATIONS RESERVED**

SECTION 109 **FEES**

~~**106.6109.1 Fees.**~~ A permit shall not be issued until the fees prescribed in Section AC-106~~9.61~~**1.2** have been paid, and an amendment to a permit shall not be released until the additional fee, if any, due to an increase of the plumbing systems, has been paid.

~~106.6.1~~109.1.1 Work commencing before permit issuance. Any person who commences any work on a plumbing system before obtaining the necessary permits shall be subject to 100 percent of the usual permit fee in addition to the required permit fees.

~~AC-106.6.2~~109.1.2 Fee schedule. The fees for all plumbing work shall be as indicated on a fee schedule approved annually by the Board of Health.

~~AC-106.6.3~~109.1.3 Fee refunds. The Chief Plumbing Inspector shall authorize fee refunds as follows:

1. Fixture fees before work has commenced.
2. No refunds shall be made on plan fees or after plumbing work has been commenced.
3. The Chief Plumbing Inspector shall not authorize the refunding of any fee paid, except upon written application filed by the original permittee not later than 180 days after the date of fee payment.

SECTION 110

SERVICE UTILITIES INSIGHTS

110.1 Connection of service utilities. A person shall not make connections from a utility, source of energy, fuel, power, water system or sewer system to any building or system

that is regulated by this code for which a permit is required until authorized by the code official.

110.2 Temporary connection. The code official shall have the authority to authorize the temporary connection of the building or system to the utility, source of energy, fuel, power, water system or sewer system for the purpose of testing plumbing systems or for use under a temporary approval.

110.3 Authority to disconnect service utilities. The code official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section 110.1 or 110.2. The code official shall notify the serving utility, and wherever possible the owner or the owner's authorized agent and occupant of the building, structure or service system, of the decision to disconnect prior to taking

such action. If not notified prior to disconnecting, the owner, the owner's authorized agent or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.

SECTION 111

TEMPORARY EQUIPMENT, SYSTEMS AND USES

111.1 General. The code official is authorized to issue a permit for temporary equipment, systems and uses. Such permits shall be limited as to time of service, but shall not be permitted for more than 180 days. The code official is authorized to grant extensions for demonstrated cause.

111.2 Conformance. Temporary equipment, systems and uses shall conform to the structural strength, fire safety, means of egress, accessibility, light, ventilation and sanitary requirements of this code as necessary to ensure the public health, safety and general welfare.

111.3 Temporary utilities. The code official is authorized to give permission to temporarily supply utilities before an installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in the code.

111.4 Termination of approval. The code official is authorized to terminate such permit for temporary equipment, systems or uses and to order the temporary equipment, systems or uses to be discontinued.

SECTION ~~107~~ 112

INSPECTIONS AND TESTING

~~107.1~~ 112.1 General. The code official is authorized to conduct such inspections as are deemed necessary to determine compliance with the provisions of this code. Construction or work for which a permit is required shall be subject to inspection by the code official, and such construction or work shall remain visible and able to be accessed for inspection purposes until approved. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the permit applicant to cause the work to remain visible and able to be accessed for inspection

purposes. Neither the code official nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

~~107.2~~ 112.2 Required inspections and testing. The code official, upon notification from the permit holder or the permit holder's agent, shall make the following inspections and such other inspections as necessary, and shall either release that portion of the construction or shall notify the permit holder or an agent of any violations that must be corrected. The holder of the permit shall be responsible for the scheduling of such inspections.

~~107.2.1~~ 112.2.1 Other inspections. In addition to the inspections specified above, the code official is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced.

~~107.2.2~~ 112.2.2 Inspection requests. It shall be the duty of the holder of the permit or their duly authorized agent to notify the code official when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by this code.

~~107.2.3~~ 112.2.3 Approval required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the code official. The code official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his or her agent wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the code official.

~~AC-107.2.4~~ 112.2.4 Approved agencies. Reserved.

~~107.2.5~~ 112.2.5 Evaluation and follow-up inspection services. Prior to the approval of a closed, prefabricated plumbing system and the issuance of a plumbing permit, the code official shall require the submittal of an evaluation report on each prefabricated plumbing system indicating the complete details of the plumbing system, including a description of the system and its components, the basis upon which the plumbing system is being evaluated, test results and similar information, and other data as necessary for the code official to determine conformance to this code.

~~107.2.5.1~~ 112.2.5.1 Evaluation service. The code official shall designate the evaluation service of an approved agency as the evaluation agency and review such agency's evaluation report for adequacy and conformance to this code.

~~107.2.5.2~~ 112.2.5.2 Follow-up inspection. Except where ready access is provided to all plumbing systems, service equipment and accessories for complete inspection at the site without disassembly or dismantling, the code official shall conduct the frequency of in-plant inspections necessary to ensure conformance to the approved evaluation report or shall designate an independent, approved inspection agency to conduct such inspections. The

inspection agency shall furnish the code official with the follow-up inspection manual and a report of inspections upon request, and the plumbing system shall have an identifying label permanently affixed to the system indicating that factory inspections have been performed.

~~107.2.5.3~~ 112.2.5.3 Test and inspection records. All required test and inspection records shall be available to the code official at all times during the fabrication of the plumbing system and the erection of the building, or such records as the code official designates shall be filed.

~~107.3~~ 112.3 Special inspections. Special inspections of alternative.engineered.design.plumbing systems shall be conducted in accordance with Sections ~~107.3.1~~ **112.3.1** and ~~107.3.2~~ **112.3.2**.

~~107.3.1~~ 112.3.1 Periodic inspection. The registered design professional or designated inspector shall periodically inspect and observe the alternative.engineered.design.to determine that the installation is in accordance with the approved construction documents. All discrepancies shall be brought to the immediate attention of the plumbing contractor for correction. Records shall be kept of all inspections.

~~107.3.2~~ 112.3.2 Written report. The registered design professional shall submit a final report in writing to the code official upon completion of the installation, certifying that the alternative.engineered.design.conforms to the approved.construction documents. A notice of approval for the plumbing system shall not be issued until a written certification has been submitted.

~~107.4~~ 112.4 Testing. Plumbing work and systems shall be tested as required in Section 312 and in accordance with Sections ~~107.4.1~~ **112.4.1** through ~~107.4.3~~ **112.4.3**. Tests shall be made by the permit holder and observed by the code official.

~~107.4.1~~ 112.4.1 New, altered, extended or repaired systems. New plumbing systems and parts of existing systems that have been altered, extended or repaired shall be tested as prescribed herein to disclose leaks and defects, except that testing is not required in the following cases:

1. In any case that does not include addition to, replacement, alteration or relocation of any water supply, drainage or vent piping.
2. In any case where plumbing equipment is set up temporarily for exhibition purposes.

~~107.4.2~~ 112.4.2 Equipment, material and labor for tests. All equipment, material and labor required for testing a plumbing system or part thereof shall be furnished by the permit holder.

~~107.4.3~~ 112.4.3 Re-inspection and testing. Where any work or installation does not pass any initial test or inspection, the necessary corrections shall be made to comply with this code. The work or installation shall then be resubmitted to the code official for inspection and testing.

~~AC-107.4.3.1~~ 112.4.3.1 Re-inspection fees. A reinspection fee shall be charged when an inspection cannot be completed because the work has not progressed sufficiently to allow for testing, as defined in the relevant sections, or for final inspection. The fee, as listed on the current fee schedule, must be paid prior to any subsequent re-inspections.

~~107.5~~ 112.5 Approval. After the prescribed tests and inspections indicate that the work complies in all respects with this code, a notice of approval shall be issued by the code official.

~~107.5.1~~ 112.5.1 Revocation. The code official is authorized to, in writing, suspend or revoke a notice of approval issued under the provisions of this code wherever the notice is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure, premise or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.

~~107.6~~ Temporary connection. The code official shall have the authority to authorize the temporary connection of the building or system to the utility source for the purpose of testing plumbing systems or for use under a temporary certificate of occupancy.

~~107.7~~ Connection of service utilities. A person shall not make connections from a utility, source of energy, fuel, power, water system or sewer system to any building or system that is regulated by this code for which a permit is required until authorized by the code official.

SECTION ~~109~~113

MEANS OF APPEAL

~~AC-109.1~~ 113.1 Application for appeal. Any person aggrieved by any action taken by the Director and/or his or her designee may request a hearing within thirty (30) days in accordance with the Allegheny County Health Department Rules and Regulations, Article XI, "Hearings and Appeals."

SECTION ~~AC-110~~114

PLUMBING ADVISORY BOARD

~~AC-110.1~~ 114.1 General. The Board of Health shall appoint a Plumbing Advisory Board to consist of the following ten (10) members:

~~AC-110.2~~ 114.2 Terms of appointments. The Plumbing Advisory Board shall be Allegheny County residents consisting of ten (10) members as specified in Section AC-110.1. Two (2) members shall be appointed for a term of one (1) year, two (2) members for a term of two (2) years and the remainder for a term of three (3) years. Upon expiration of any term, all succeeding terms shall be for a term of three (3) years, or until successors are appointed and qualified. Terms shall be limited to two (2) consecutive three (3) year terms. Excessive

absenteeism shall be cause for dismissal of any member. If a member has been dismissed or is absent due to death or extended illness, a new member shall be appointed.

~~AC-110.3~~ 114.3 Election of officers. The Plumbing Advisory Board shall elect its own Chairman and Vice-Chairman annually and shall have the power to elect new officers in the event of a vacancy. A quorum shall consist of a majority of the presently appointed voting members of the Board. It shall meet within thirty (30) days following the adoption of this Article, and after, at the call of the Chairman, or at such times as may be necessary for proper performance of its duties, but at least once during any six-month period. The Board of Health shall appoint additional members to fill all vacancies. The Director and the Chief Plumbing Inspector shall be ex-officio members of the Board without the right to vote. The Chief Plumbing Inspector shall serve as Secretary for the Plumbing Advisory Board.

~~AC-110.4~~ 114.4 Duties of the Plumbing Advisory Board. The Plumbing Advisory Board shall advise the Director in administering the provisions of this Article.

CHAPTER 2

DEFINITIONS

BACKFLOW, DRAINAGE. A reversal of flow in the drainage system.

COPPER ALLOY. A metal alloy where the principle component is copper.

DUAL FLUSHING DEVICE. A feature that allows the user to flush a water closet with either a reduced or full volume of water, depending on bowl contents.

GROUP WASH FIXTURE. A type of lavatory that allows more than one person to utilize the fixture at the same time. The fixture has one or more drains and one or more faucets.

AC-PRIVATE. In the classification of plumbing fixtures, “private” applies to fixtures in residences and apartments, and to fixtures in nonpublic toilet rooms of hotels and motels and similar installations in buildings where the plumbing fixtures are intended for utilization by a family or an individual.

AC-PUBLIC OR PUBLIC UTILIZATION. In the classification of plumbing fixtures, “public” applies to fixtures in general toilet rooms of schools, gymnasiums, hotels, airports, bus and railroad stations, public buildings, bars, public comfort stations, office buildings, stadiums, stores, restaurants and other installations where a number of fixtures are installed so that their utilization is similarly unrestricted exposure to walk in traffic.

PUSH-FIT FITTING. A mechanical fitting that joins pipes or tubes and achieves a seal by mating the pipe or tube into the fitting.

AC-WATER DISPENSER. A plumbing fixture that is manually controlled by the user for the purpose of dispensing potable drinking water into a receptacle such as a cup, glass or bottle. Such fixture is connected to the potable water distribution system of the premises. This definition also includes a free- standing apparatus for the same purpose that is not connected to the potable water distribution system and that is supplied with potable water from a container, bottle or reservoir.

CHAPTER 3

GENERAL REGULATIONS

301.3 Connections to drainage system. Plumbing fixtures, drains, appurtenances and appliances used to receive or discharge liquid waste or sewage shall be directly connected to the sanitary drainage system of the building or premises, in accordance with the requirements of this code. This section shall not be construed to prevent indirect waste systems required by Chapter 8.

Exception: Bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to discharge to the sanitary drainage system where such fixtures discharge to an approved system in accordance with Chapters 13 and 14.

SECTION 305

PROTECTION OF PIPES AND

PLUMBING SYSTEM COMPONENTS

305.2 AC-305.2.1 Breakage. Pipes passing through or under walls shall be protected from breakage.

305.3 305.2 Stress and strain. Piping in a plumbing system shall be installed so as to prevent strains and stresses that exceed the structural strength of the pipe. Where necessary, provisions shall be made to protect piping from damage resulting from expansion, contraction and structural settlement.

305.5 305.3 Pipes through or under footings or foundation walls. Any pipe that passes under a footing or through a foundation wall shall be provided with a relieving arch, or a pipe sleeve pipe shall be built into the foundation wall. The sleeve shall be two pipe sizes greater than the pipe passing through the wall.

~~305.4~~ AC-305.3.1 Sleeves. Annular spaces between sleeves and pipes shall be filled or tightly caulked in an approved.manner. Annular spaces between sleeves and pipes in fire-resistance- rated assemblies shall be filled or tightly caulked in accordance with the International.Building.Code and International.Residential.Code;

AC-305.6 305.4 Freezing. Water service piping, exterior building drains and sewers shall be installed below recorded frost penetration but not less than 3' 6" below grade for water piping and 3' below grade for sewers and exterior building drains, measured to the top of pipe, provided that sewers to septic tanks are at least twelve (12) inches below grade. Plumbing piping in exterior building walls or exposed areas within buildings shall be adequately protected against freezing by insulation or heat or both.

305.4.1 Sewer depth. Building sewers that connect to private sewage disposal systems shall be installed not less than 12" inches (304.8mm) below finished grade at the point of septic tank connection. Building sewers shall be installed not less than 12" inches (304.8mm) below grade.

AC-305.7 305.5 Waterproofing of openings. Joints at the roof and around vent pipes shall be made watertight by the use of copper, aluminum, or other approved flashing material. Exterior wall openings shall be made watertight. Floor drains installed above the basement floor with useable space below shall be waterproofed with approved flashing material. The flashing material shall be securely fastened to the waste outlet at the seepage entrance making a watertight joint between the flashing material and the floor drain. Flashing material shall extend a minimum of 18 inches from the center of the floor drain.

~~305.8~~ AC-305.6 Protection against physical damage. In concealed locations where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than 1½ inches (38 mm) from the nearest edge of the member, the pipe shall be protected by steel shield plates. Such shield plates shall have a thickness of not less than 0.0575 inch (1.463 mm) (No. 16 gage). Such plates shall cover the area of the pipe where the member is notched or bored and shall extend a minimum of 2 inches (51mm) above sole plates and below top plates.

~~305.9~~ 305.7 Protection of components of plumbing system. Components of a plumbing system installed along alleyways, driveways, parking garages or other locations exposed to damage shall be recessed into the wall or otherwise protected in an approved.manner.

~~307.5.1~~ 307.5 Protection of footings. Trenching installed parallel to footings and walls shall not extend into the bearing plane of a footing or wall. The upper boundary of the bearing plane is a line that extends downward, at an angle of 45 degrees (0.79 rad) from horizontal, from the outside bottom edge of the footing or wall.

~~307.5~~ AC-307.5.1 Trench location. Trenches installed parallel to footings shall not extend below the 45-degree (0.79 rad) bearing plane of the footing or wall.

SECTION 308

PIPE SUPPORTS

308.2 Piping seismic supports. Where earthquake loads are applicable in accordance with the International Building Code, plumbing piping supports, anchorage, and bracing shall be designed and installed for seismic forces in accordance with Chapter 16 of the International Building Code.

308.5 Interval of support. Pipe shall be supported in accordance with Table 308.5.

Exception: The interval of support for piping systems designed to provide for expansion/contraction shall conform to the engineered design in accordance with Section ~~105.4~~**316.1**.

AC-308.9 Parallel water distribution systems. Piping bundles for manifold systems shall be supported in accordance with Table 308.5. Support at changes in direction shall be in accordance with the manufacturer's installation instructions. Where hot water piping is bundled with cold, hot water piping shall be insulated in accordance with 607.5

SECTION 309

FLOOD HAZARD RESISTANCE

~~**309.3 Flood hazard areas subject to high-velocity wave action Coastal high-hazard areas and coastal A zones.** Structures located in flood hazard areas subject to high-velocity wave action shall meet the requirements of Section 309.2. The plumbing systems, pipes and fixtures shall not be mounted on or penetrate through walls intended to break away under flood loads.~~

SECTION 310

WASHROOM AND TOILET ROOM REQUIREMENTS

AC-310.4 Water closet compartment. Each water closet utilized by the public, or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.

AC-310.5 Urinal partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The horizontal dimension between walls or partitions at each urinal shall be not less than 30 inches (762 mm). The walls or partitions shall begin at a height not more than 12 inches (305 mm) from and extend not less

than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal a minimum of 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished back wall surface, whichever is greater.

AC-310.6.2 Location near food handling or storage areas. The doors of toilet rooms in any establishment regulated by Article III of the Rules and Regulations of the Allegheny County Health Department shall not open directly into any kitchen or dining rooms/**consumption area**, or any room in which food, drink, or utensils are handled or stored. When such toilet rooms are located adjacent to the kitchen or dining areas, an intervening vestibule of at least three (3) feet square shall be provided.

SECTION 312

TESTS AND INSPECTIONS

312.10.2 Testing. Reduced pressure principle, double check, pressure vacuum breaker, reduced pressure detector fire protection, double check detector fire protection, and spill-resistant vacuum breaker backflow preventer assemblies and hose connection backflow preventers shall be tested at the time of installation, immediately after repairs or relocation and at least annually. The testing procedure shall be performed in accordance with one of the following standards: ASSE 5013, ASSE 5015, ASSE 5020, ASSE 5047, ASSE 5048, ASSE 5052, ASSE 5056, CSA B64.10 or CSA B64.10.1. **Test gauges shall comply with ASSE 1064.**

SECTION 314

CONDENSATE DISPOSAL

314.1.1 Identification. **The termination of concealed condensate piping shall be marked to indicate whether the piping is connected to the primary or secondary drain.**

314.2.1.1 Condensate discharge. **Condensate drains shall not directly connect to any plumbing drain, waste or vent pipe. Condensate drains shall not discharge into a plumbing fixture other than a floor sink, floor drain, trench drain, mop sink, hub drain, standpipe, utility sink or laundry sink. Condensate drain connections to a lavatory wye branch tailpiece or to a bathtub overflow pipe shall not be considered as discharging to a plumbing fixture. Except where discharging to grade outdoors, the point of discharge of condensate drains shall be located within the same occupancy, tenant space or dwelling unit as the source of the condensate.**

314.2.3.3 Identification. The termination of concealed condensate piping shall be marked to indicate whether the piping is connected to the primary or secondary drain.

SECTION 316

ALTERNATIVE ENGINEERED DESIGN

316.1 Alternative engineered design. The design, documentation, inspection, testing and approval of an alternative engineered design plumbing system shall comply with Sections 316.1.1 through 316.1.6.

316.1.1 Design criteria. An alternative engineered design shall conform to the intent of the provisions of this code and shall provide an equivalent level of quality, strength, effectiveness, fire resistance, durability and safety. Material, equipment or components shall be designed and installed in accordance with the manufacturer's instructions.

316.1.2 Submittal. The registered design professional shall indicate on the permit application that the plumbing system is an alternative engineered design. The permit and permanent permit records shall indicate that an alternative engineered design was part of the approved installation.

316.1.3 Technical data. The registered design professional shall submit sufficient technical data to substantiate the proposed alternative engineered design and to prove that the performance meets the intent of this code.

316.1.4 Construction documents. The registered design professional shall submit to the code official two complete sets of signed and sealed construction documents for the alternative engineered design. The construction documents shall include floor plans and a riser diagram of the work. Where appropriate, the construction documents shall indicate the direction of flow, all pipe sizes, grade of horizontal piping, loading and location of fixtures and appliances.

316.1.5 Design approval. Where the code official determines that the alternative engineered design conforms to the intent of this code, the plumbing system shall be approved. If the alternative engineered design is not approved, the code official shall notify the registered design professional in writing, stating the reasons thereof.

316.1.6 Inspection and testing. The alternative engineered design shall be tested and inspected in accordance with the requirements of Sections 112 and 312.

CHAPTER 4

FIXTURES, FAUCETS AND FIXTURE FITTINGS

SECTION 403

MINIMUM PLUMBING FACILITIES

Footnotes to Table AC-403.1:

2. For establishments serving food and/or drinks, see Article III, ~~“Restaurants,”~~ **“Food safety”** and ~~Article IV “General Food,”~~ of the Allegheny County Health Department Rules & Regulations.

6. Utility sinks shall be provided for washing utensils, equipment, and appurtenances in accordance with Article III, ~~“Restaurants”~~ **“Food safety”** and ~~Article IV, “General Food.”~~

7.A dedicated, safe-washed/air-gapped food prep sink of adequate capacity will be required in facilities which are engaged in procedures which include but are not limited to washing produce, thawing frozen foods, draining pasta, washing rice, and other similar tasks as determined by the Allegheny County Health Department’s Food Safety Program Article III.

403.1.1 Fixture calculations. To determine the occupant load of each sex, the total occupant load shall be divided in half. To determine the required number of fixtures, the fixture ratio or ratios for each fixture type shall be applied to the occupant load of each sex in accordance with Table 403.1. Fractional numbers resulting from applying the fixture ratios of Table 403.1 shall be rounded up to the next whole number. For calculations involving multiple occupancies, such fractional numbers for each occupancy shall first be summed and then rounded up to the next whole number.

Exceptions:

1. The total occupant load shall not be required to be divided in half where approved statistical data indicate a distribution of the sexes of other than 50 percent of each sex.

2. Where multiple-user facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total occupant load. In such multiple-user facilities, each fixture type shall be in accordance with ICC A117.1 and each urinal that is provided shall be located in a stall.

3. Distribution of the sexes is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.

403.1.2 Single-user toilet and bathing room fixtures. The plumbing fixtures located in single-user toilet and bathing rooms, including family or assisted-use toilet and bathing rooms that are required by Section 1110.2.1 of the International Building Code, shall contribute toward the total number of required plumbing fixtures for **a building or tenant space. Single-user toilet and bathing rooms**, and family or assisted-use toilet rooms and **bathing rooms shall be identified as being available for use by all persons regardless of their sex** The total number of fixtures shall be **permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or separate facilities.**

403.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.

Exceptions:

1. Separate facilities shall not be required for dwelling units and sleeping units.
2. Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or fewer.
3. Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is 100 or fewer.
4. Separate facilities shall not be required in business occupancies, in which the maximum occupant load is 25 or fewer.

5. Separate facilities shall not be required to be designated by sex where single-user toilet rooms are provided in accordance with Section 403.1.2.

6. Separate facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by both sexes and privacy for water closets is provided in accordance with Section 405.3.4. Urinals shall be located in an area visually separated from the remainder of the facility or each urinal that is provided shall be located in a stall.

AC-403.3.1 Access. The route to the public toilet facilities required by Section 403.3 shall not pass through kitchens, storage rooms or closets. Access to the required facilities shall be from within the building or from the exterior of the building. All routes shall comply with the accessibility requirements of the International Building Code. The public shall have access to the required toilet facilities at all times that the building is occupied.

403.3.2 Prohibited toilet room location. Toilet rooms shall not open directly into a room used for the preparation of food for service to the public.

AC-403.3.3 Location of toilet facilities in occupancies other than malls. In occupancies other than covered and open mall buildings, the required public and employee toilet facilities shall be located not more than one story above or below the space required to be provided with toilet facilities, and the path of travel to such facilities shall not exceed a distance of 300 feet (152 m).

Exceptions:

1. The location and maximum distances of travel to required employee facilities in factory and industrial occupancies shall be permitted to exceed that required by this section, provided that the location and maximum distances of travel are approved.

2. The location and maximum distances of travel to required public and employee facilities in Group S occupancies shall be permitted to exceed that required by this section, provided that the location and maximum distances of travel are approved.

~~403.3.3~~ **403.3.4 Location of toilet facilities in covered malls.** In covered mall buildings, the required public and employee toilet facilities shall be located not more than one story above or below the space required to be provided with toilet facilities, and the path of travel to such facilities shall not exceed a distance of 300 feet (91 440 mm). In covered mall buildings, the required facilities shall be based on total square footage, and facilities shall be installed in each individual store or in a central toilet area located in accordance with this section. The maximum travel distance to central toilet facilities in covered mall buildings shall be measured from the main entrance of any store or tenant space. In covered mall buildings, where employees' toilet facilities are not provided in the individual store, the maximum travel distance shall be measured from the employees' work area of the store or tenant space.

~~403.3.4~~ **403.3.5 Pay facilities.** Where pay facilities are installed, such facilities shall be in excess of the required minimum facilities. Required facilities shall be free of charge.

~~403.3.5~~ **403.3.5 Door locking.** Where a toilet room is provided for the use of multiple occupants, the egress door for the room shall not be lockable from the inside of the room. This section does not apply to family or assisted-use toilet rooms.

AC-403.5 Drinking fountain location. Drinking fountains shall not be required to be located in individual tenant spaces provided that public drinking fountains are located within a distance of travel of 300 feet (152 m) of the most remote location in the tenant space and not more than one story above or below the tenant space. Where the tenant space is in a covered or open mall, such distance shall not exceed 300 feet (91 m).

SECTION 404

ACCESSIBLE PLUMBING FACILITIES

404.1 Where required. Accessible plumbing facilities and fixtures shall be provided in accordance with Chapter 11 of the International Building Code.

404.2 Accessible fixture requirements. Accessible plumbing fixtures shall be installed in accordance with ICC A117.1.

404.3 Exposed pipes and surfaces. Water supply and drain pipes under accessible lavatories and sinks shall be covered or otherwise configured to protect against contact. Pipe coverings shall comply with ASME A112.18.9 or ASTM C1822.

SECTION 405

INSTALLATION OF FIXTURES

405.3.1 Water closets, urinals, lavatories and bidets. A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction. **Where partitions or other obstructions do not separate adjacent water closets, urinals, or bidets, the fixtures shall not be set** closer than 30 inches (762 mm) center to center between **adjacent fixtures or adjacent water closets, urinals, or bidets. There shall be not less than a 21-inch (533 mm)** clearance in front of a water closet, urinal, lavatory or **bidet to any wall, fixture or door. Water closet compartments shall be not less than 30 inches (762 mm) in width** and not less than 60 inches (1524 mm) in depth for floor-mounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wall-hung water closets.

Exception: An accessible children's water closet shall be set not closer than 12 inches (305 mm) from its center to the required partition or to the wall on one side.

405.4.3 Securing wall-hung water closet bowls. Wall-hung water closet bowls shall be supported by a concealed metal carrier that is attached to the building structural members so that strain is not transmitted to the fixture connector or any other part of the plumbing system. The carrier shall conform to ASME A112.6.1M or ASME A112.6.2.

405.5 Plumbing fixtures with a pumped waste. Plumbing fixtures with a pumped waste shall comply with ASME A112.3.4/CSA B45.9. The plumbing fixture with a pumped waste shall be installed in accordance with the manufacturer's instructions.

~~405.5~~ **405.6 Water-tight joints.** Joints formed where fixtures come in contact with walls or floors shall be sealed.

~~405.6~~ **405.7 Plumbing in mental health centers.** In mental health centers, pipes or traps shall not be exposed, and fixtures shall be bolted through walls.

~~405.7~~ **405.8 Design of overflows.** Where any fixture is provided with an overflow, the waste shall be designed and installed so that standing water in the fixture will not rise in the overflow when the stopper is closed, and no water will remain in the overflow when the fixture is empty.

~~405.7.1~~ **405.8.1 Connection of overflows.** The overflow from any fixture shall discharge into the drainage system on the inlet or fixture side of the trap.

Exception: The overflow from a flush tank serving a water closet or urinal shall discharge into the fixture served.

~~405.8~~ **405.9 Slip joint connections.** Slip joints shall be made with an approved elastomeric gasket and shall only be installed on the trap outlet, trap inlet and within the trap seal. Fixtures with concealed slip-joint connections shall be provided with an access panel or utility space at least 12 inches (305 mm) in its smallest dimension or other approved arrangement so as to provide access to the slip joint connections for inspection and repair.

~~405.9~~ **405.10 Design and installation of plumbing fixtures.** Integral fixture fitting mounting surfaces on manufactured plumbing fixtures or plumbing fixtures constructed on site shall meet the design requirements of ASME A112.19.2M or ASME A112.19.3M.

SECTION AC-406

AUTOMATIC CLOTHES WASHERS

AC-406.1 Approval. Domestic automatic clothes washers shall conform to ASSE 1007.

AC-406.2 Water connection. The water supply to an automatic clothes washer shall be protected against backflow by an air gap installed integrally within the machine conforming to ASSE 1007 or with the installation of a backflow preventer in accordance with Section 608.

AC-406.3 Waste connection. The waste from an automatic clothes washer shall discharge through an air break into a standpipe in accordance with Section 802.4 or into a laundry sink. The trap and fixture drain for an automatic clothes washer standpipe shall be a minimum of 2 inches (51 mm) in diameter. The automatic clothes washer fixture drain shall connect to a branch drain or drainage stack a minimum of 3 inches (76 mm) in diameter. Automatic clothes washers that discharge by gravity shall be permitted to drain to a waste receptor or an approved trench drain.

SECTION 407

BATHTUBS

407.2 Bathtub waste outlets and overflows. Bathtubs shall be equipped with a waste outlet that is not less than 1 1/2 inches (38 mm) in diameter. The waste outlet shall be equipped with a watertight stopper. Where an overflow is installed, the overflow shall be not less than 1 1/2 inches (38 mm) in diameter.

SECTION 408

BIDETS

408.1 Approval. Bidets shall conform to ASME A112.19.2/CSA B45.1 or **ASME A112.19.3/CSA B45.4.**

SECTION 409

DISHWASHING MACHINES

409.4 Residential dishwasher waste connection. The waste connection of a residential dishwasher shall connect directly to a wye branch fitting on the tailpiece of the kitchen sink, directly to the dishwasher connection of a food waste disposer, or through an air break to a standpipe. The waste line of a residential dishwasher shall rise and be securely fastened to the underside of the sink rim or countertop.

SECTION 410

DRINKING FOUNTAINS

410.3 High and low drinking fountains. Where drinking fountains are provided on an exterior site, on a floor or within a secured area, the drinking fountains shall be provided in accordance with Sections 410.3.1 and 410.3.2.

[BE] 410.3.1 Minimum number. Not fewer than two drinking fountains shall be provided. One drinking fountain shall comply with the requirements for people who use a wheelchair and one drinking fountain shall comply with the requirements for standing persons.

Exceptions:

1. A single drinking fountain with two separate spouts that complies with the requirements for people who use a wheelchair and standing persons shall be permitted to be substituted for two separate drinking fountains.

2. Where drinking fountains are primarily for children's use, the drinking fountains for people using wheelchairs shall be permitted to comply with the children's provisions in ICC A117.1 and drinking fountains for standing children shall be permitted to provide the spout at 30 inches (762 mm) minimum above the floor.

410.3.2 More than the minimum number. Where more than the minimum number of drinking fountains specified in Section 410.3.1 is provided, 50 percent of the total number of drinking fountains provided shall comply with the requirements for persons who use a wheelchair and 50 percent of the total number of drinking fountains provided shall comply with the requirements for standing persons.

Exceptions:

1. Where 50 percent of the drinking fountains yields a fraction, 50 percent shall be permitted to be rounded up or down, provided that the total number of drinking fountains complying with this section equals 100 percent of the drinking fountains.

2. Where drinking fountains are primarily for children's use, drinking fountains for people using wheelchairs shall be permitted to comply with the children's provisions in ICC A117.1 and drinking fountains for standing children shall be permitted to provide the spout at 30 inches (762 mm) minimum above the floor.

410.4 Substitution. Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants. In other occupancies where three or more drinking fountains are required, water dispensers shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains.

~~410.2~~ 410.5 Prohibited location. Drinking fountains, water coolers and bottled water dispensers shall not be installed in public restrooms.

SECTION 411

EMERGENCY SHOWERS AND

EYEWASH STATIONS

411.3 Water supply. Where hot and cold water is supplied to an emergency shower or eyewash station, the temperature of the water supply shall only be **controlled by a temperature-actuated mixing valve complying with ASSE 1071.** Where water is supplied directly to an emergency shower or eyewash station from a water heater, the water heater shall comply with ASSE 1085.

SECTION ~~424~~412

FAUCETS AND OTHER FIXTURE FITTINGS

412.10 Head shampoo sink faucets. Head shampoo sink faucets shall be supplied with hot water that is limited to not more than 120°F (49C). Each faucet shall have integral check valves to prevent crossover flow between the hot and cold-water supply connections. The means for regulating the maximum temperature shall be one of the following;

- 1. A limiting device conforming to ASSE 1070/ASME A112.1070/CSA B125.70.**
- 2. A water heater conforming to ASSE 1082.**
- 3. A temperature-actuated, flow-reduction device conforming to ASSE 1062.**

412.11 Prerinse spray valve. Prerinse spray valves for commercial food service shall conform to ASME A112.18.1/CSA B125.1.

SECTION ~~412~~413

FLOOR AND TRENCH DRAINS

~~412.1~~ 413.1 Approval. Floor drains shall conform to ASME A112.3.1, ASME A112.6.3 or CSA B79. Trench drains shall comply with ASME A112.6.3.

~~412.2~~ 413.2 Floor drains. Floor drains shall have removable strainers. The floor drain shall be constructed so that the drain is capable of being cleaned. Access shall be provided to the drain inlet. Ready access shall be provided to floor drains.

Exception: Floor drains serving refrigerated display cases shall be provided with access.

~~AC-412.3~~ AC-413.3 Size of floor drains. Floor drains installed below a basement floor must be a minimum of four (4) inches in diameter. Floor drains installed above the basement floor must be a minimum of three (3) inches in diameter. Residential emergency drains installed in laundry rooms on floors above usable space may be two (2) inches in diameter when it is properly connected to the drainage and vent system. All floor drains must be supplied with an automatic priming device.

Exceptions: For residential installations, hose bibs or a laundry tray may be substituted for an automatic priming device when the fixture is located in the same room.

~~412.4~~ 413.4 Public laundries and central washing facilities. In public coin-operated laundries and in the central washing facilities of multiple-family dwellings, the rooms containing automatic clothes washers shall be provided with floor drains located to readily drain the entire floor area. Such drains shall have a minimum outlet of not less than 3 inches (76 mm) in diameter.

SECTION ~~427~~414

FLOOR SINKS

SECTION ~~425~~415

FLUSHING DEVICES FOR WATER CLOSETS AND URINALS

SECTION ~~413~~416

FOOD WASTE GRINDER UNITS(~~FIG AC-413.3~~ AC-416.3)

SECTION ~~414~~417

GARBAGE CAN WASHERS(~~FIG AC-414.2~~ AC-417.2)

SECTION ~~415~~418

LAUNDRY TRAYS

SECTION ~~416~~419

LAVATORIES

AC-419.3 Lavatory waste outlets. Lavatories and group wash fixtures shall have a waste outlet not less than ~~1 1/4 inches~~ **1 1/2 inches** in diameter. A strainer, pop-up stopper, crossbar or other device shall be provided to restrict the clear opening of the waste outlet.

~~**416.4 Moveable lavatory systems.** Moveable lavatory systems shall comply with ASME A112.19.12.~~

SECTION ~~426~~420

MANUAL FOOD AND BEVERAGE DISPENSING EQUIPMENT

SECTION ~~417~~421

SHOWERS

421.1 Approval. Prefabricated showers and **shower compartments shall conform to ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5/IAPMO Z124.** Shower valves for individual showers shall conform to the requirements of Section 412.3.

421.3.1 Waste fittings. **Waste fittings shall conform to ASME A112.18.2/CSA B125.2.**

421.4.1 Floor and wall area. **Bathtub floors, shower floors, wall areas above built-in tubs that have installed shower heads and walls in shower compartments shall be constructed of smooth, corrosion-resistant and nonabsorbent waterproof materials. Wall materials shall extend to a height of not less than 6 feet (1829 mm) above the room floor level, and not less than 70 inches (1778 mm) above the drain of the tub or shower. Such walls shall form a watertight joint with each other and with either the tub or shower floor.**

421.5.2.3 Sheet lead. **Sheet lead shall weigh not less than 4 pounds per square foot (19.5 kg/m²) and shall be coated with an asphalt paint or other approved coating. The lead sheet shall be insulated from conducting**

substances other than the connecting drain by 15-pound (6.80 kg) asphalt felt or an equivalent. Sheet lead shall be joined by burning.

421.5.2.6 Liquid-type, trowel-applied, load-bearing, bonded waterproof materials. Liquid-type, trowel-applied, load-bearing, bonded waterproof materials shall meet the requirements of ANSI A118.10 and shall be applied in accordance with the manufacturer's instructions.

SECTION ~~418~~422

SINKS

SECTION ~~419~~424

URINALS

SECTION ~~420~~425

WATER CLOSETS

425.1 Approval. Water closets shall conform to the water consumption requirements of Section 604.4 and shall conform to ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5/IAPMO Z124.

425.1.1 Hydraulic performance. Water closets shall conform to the hydraulic performance requirements of ASME A112.19.2/CSA B45.1.

425.1.2 Water closet tanks. Water closet tanks shall conform to ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 or CSA B45.5/IAPMO Z124.

425.1.3 Dual flush water closets. Water closets equipped with a dual flushing device shall comply with ASME A112.19.14.

425.2 Water closets for public or employee toilet facilities. Water closet bowls for public or employee toilet facilities shall be of the elongated type.

425.3 Water closet seats. Water closets shall be equipped with seats of smooth, nonabsorbent material. Seats of water closets provided for public or employee toilet facilities shall be of the hinged open-front type. Integral water closet seats shall be of the same material as the fixture. Water closet seats shall be sized for the water closet bowl type.

425.4 Water closet connections. A 4-inch by 3-inch (102 mm by 76 mm) closet bend shall be acceptable. Where a 3-inch (76 mm) bend is utilized on water closets, a 4-inch by 3-inch (102 mm by 76 mm) flange shall be installed to receive the fixture horn.

SECTION ~~421~~ 426

WHIRLPOOL BATHTUBS

SECTION ~~422~~ AC-427

HEALTH CARE FIXTURES AND EQUIPMENT

422.1 AC-427.1 Scope. This section shall govern those aspects of healthcare plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to the requirements of this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: nursing homes, homes for the aged, orphanages, infirmaries, first aid stations, psychiatric facilities, clinics, professional offices of dentists and doctors, mortuaries, educational facilities, surgery, dentistry, research and testing laboratories, establishments manufacturing pharmaceutical drugs and medicines and other structures with similar apparatus and equipment classified as plumbing.

422.2 AC-427.2 Approval. All special plumbing fixtures, equipment, devices and apparatus shall be of an approved type.

422.3 AC-427.3 Protection. All devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods and that connect to either the water supply or drainage system, shall be provided with protection against backflow, flooding, fouling, contamination of the water supply system and stoppage of the drain.

422.4 AC-427.4 Materials. Fixtures designed for therapy, special cleansing or disposal of waste materials, combinations of such purposes, or any other special purpose, shall be of smooth, impervious, corrosion-resistant materials and, where subjected to temperatures in excess of 180°F (82°C), shall be capable of withstanding, without damage, higher temperatures.

422.5 AC-427.5 Access. Access shall be provided to concealed piping in connection with special fixtures where such piping contains steam traps, valves, relief valves, check valves, vacuum breakers or other similar items that require periodic inspection, servicing, maintenance or repair. Access shall be provided to concealed piping that requires periodic inspection, maintenance or repair.

~~422.6~~ AC-427.6 Clinical sink. A clinical sink shall have an integral trap in which the upper portion of a visible trap seal provides a water surface. The fixture shall be designed so as to permit complete removal of the contents by siphonic or blowout action and to reseal the trap. A flushing rim shall provide water to cleanse the interior surface. The fixture shall have the flushing and cleansing characteristics of a water closet.

~~422.7~~ AC-427.7 Prohibited usage of clinical sinks and service sinks. A clinical sink serving a soiled utility room shall not be considered as a substitute for, or be utilized as, a service sink. A service sink shall not be utilized for the disposal of urine, fecal matter or other human waste.

~~422.8~~ AC-427.8 Ice prohibited in soiled utility room. Machines for manufacturing ice, or any device for the handling or storage of ice, shall not be located in a soiled utility room.

~~422.9~~ AC-427.9 Sterilizer equipment requirements. The approval and installation of all sterilizers shall conform to the requirements of the International Mechanical Code;

SECTION 501

GENERAL

501.2 Water heater as space heater. Where a combination potable water heating and space heating system requires water for space heating at temperatures greater than **140°F (60C)**, **a temperature-actuated mixing valve complying with ASSE 1017 shall be provided to limit the water supplied to the potable hot water distribution system to a temperature of 140°F (60C) or less. The potability of the water shall be maintained throughout the system. Requirements for combination potable water heating and space heating systems shall be in accordance with the International Mechanical Code.**

CHAPTER 6

WATER SUPPLY AND DISTRIBUTION

AC-603.1.1 Tracer wire for nonmetallic piping. An insulated tracer wire listed for the purpose or other approved conductor shall be installed adjacent to underground nonmetallic water service. Access shall be provided to the tracer wire or the tracer wire shall terminate above ground at each end of the nonmetallic piping. The tracer wire size shall be not less than 12 AWG, solid core, coated and the wire insulation type shall be suitable for direct burial.

605.5 Fittings. Pipe fittings shall be approved for installation with the piping material installed and shall comply with the applicable standards listed in Table 605.5. Pipe fittings utilized in water supply systems shall also comply with NSF 61. Ductile and gray iron pipe and pipe fittings utilized in water service piping systems shall be cement mortar lined in accordance with AWWA C104/A21.4.

~~AC-605.13~~ AC-605.11 Gray iron and ductile iron joints. Joints for gray and ductile iron pipe and fittings shall comply with AWWA C111 and shall be installed in accordance with the manufacturer's installation instructions.

~~AC-605.13.1~~ AC-605.11.1 Rodding of joints on grey iron and ductile iron joints. All mechanical joints on grey iron and ductile iron pipe must be rodded in addition to the required thrust blocks at all changes in direction and other areas specified by the Administrative Authority

~~605.14~~ 605.12 **Copper pipe.** Joints between copper or copper-alloy pipe or fittings shall comply with Sections 605.14.1 through 605.14.5.

~~605.14.1~~ 605.12.1 **Brazed joints.** All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

~~605.14.2~~ 605.12.2 **Mechanical joints.** Mechanical joints shall be installed in accordance with the manufacturer's instructions.

~~605.14.3~~ 605.12.3 **Soldered joints.** Solder joints shall be made in accordance with the methods of ASTM B828. All cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B32. The joining of water supply piping shall be made with lead-free solder and fluxes. "Lead free" shall mean a chemical composition equal to or less than 0.2-percent lead.

~~605.14.4~~ 605.12.4 **Threaded joints.** Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

~~605.14.5~~ 605.12.5 **Welded joints.** All joint surfaces shall be cleaned. The joint shall be welded with an approved filler metal.

~~AC-605.15~~ 605.13 Copper tubing. Joints between copper or copper-alloy tubing or fittings shall comply with Sections 605.15.1 through AC-605.15.6.

~~605.15.1~~ 605.13.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

~~605.15.2~~ 605.13.2 Flared joints. Flared joints for water pipe shall be made by a tool designed for that operation.

~~605.15.3~~ 605.13.3 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

~~605.15.4~~ 605.13.4 Soldered joints. Solder joints shall be made in accordance with the methods of ASTM B828. All cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B32. The joining of water supply piping shall be made with lead-free solders and fluxes. "Lead free" shall mean a chemical composition equal to or less than 0.2-percent lead.

~~605.15.5~~ 605.13.5 Press-connect joints. Press-connect joints shall conform to one of the standards listed in Table 605.5 and shall be installed in accordance with the manufacturer's instructions. Cut tube ends shall be reamed to the full inside diameter of the tube end. Joint surfaces shall be cleaned. The tube shall be fully inserted into the press-connect fitting. Press-connect joints shall be pressed with a tool certified by the manufacturer.

~~AC-605.15.6~~ 605.13.6 Push-fit joints. Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions.

~~AC-605.26~~ 605.15 Chlorinated polyvinyl chloride/aluminum/ chlorinated polyvinyl chloride (CPVC/AL/CPVC) pipe and tubing. Joints between CPVC/AL/CPVC plastic pipe or CPVC fittings shall comply with Sections AC-605.15.1 through AC-605.15.2.

~~AC-605.26.1~~ 605.15.1 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

~~AC-605.26.2~~ 605.15.2 Solvent cementing. Joint surfaces shall be clean and free from moisture and an approved primer shall be applied. Solvent cement; orange in color and conforming to ASTM F493 shall be applied to joint surfaces. The joint shall be made while the cement is wet and in accordance with ASTM D2846 or ASTM F493. Solvent cement joints shall be permitted above or below ground.

Exception: A primer is not required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM F493.
2. The solvent cement used is yellow in color.
3. The solvent cement is used only for joining 1/2-inch (12.7 mm) through 2-inch diameter (51 mm) CPVC/AL/CPVC pipe and CPVC fittings.
4. The CPVC fittings are manufactured in accordance with ASTM D2846.

~~605.17~~ 605.16 PEX Plastic. Joints between cross-linked polyethylene plastic tubing or fittings shall comply with Sections 605.17.1 and 605.17.3.

~~605.17.1~~ 605.16.1 Flared joints. Flared pipe ends shall be made by a tool designed for that operation.

~~605.17.2~~ 605.16.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions. Fittings for cross-linked polyethylene (PEX) plastic tubing shall comply with the applicable standards listed in Table 605.5 and shall be installed in accordance with the manufacturer's instructions. PEX tubing shall be factory marked with the appropriate standards for the fittings that the PEX manufacturer specifies for use with the tubing.

~~605.17.3~~ 605.16.3 Push-fit joints. Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions.

~~605.18~~ 605.17 Steel. Joints between galvanized steel pipes or fittings shall comply with Sections 605.18.1 and 605.18.2.

~~605.18.1~~ 605.17.1 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

~~605.18.2~~ 605.17.2 Mechanical joints. Joints shall be made with an approved elastomeric seal. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

~~605.19~~ 605.18 Polyethylene plastic. Joints between polyethylene plastic pipe and tubing or fittings shall comply with Sections 605.19.1 **605.18.1 through 605.18.4.**

~~605.19.1~~ 605.18.1 Flared joints. Flared joints shall be permitted where so indicated by the pipe manufacturer. Flared joints shall be made by a tool designed for that operation.

~~605.19.2~~ 605.18.2 Heat-fusion joints. Joint surfaces shall be clean and free from moisture. All joint surfaces shall be heated to melt temperature and joined. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM D2657.

~~605.19.3~~ **605.18 .3 Mechanical joints.** Mechanical joints shall be installed in accordance with the manufacturer's instructions.

~~605.19.4~~ **605.18 .4 Installation.** Polyethylene pipe shall be cut square, with a cutter designed for plastic pipe. Except where joined by heat fusion, pipe ends shall be chamfered to remove sharp edges. Kinked pipe shall not be installed. The minimum pipe bending radius shall not be less than 30 pipe diameters, or the minimum coil radius, whichever is greater. Piping shall not be bent beyond straightening of the curvature of the coil. Bends shall not be permitted within 10 pipe diameters of any fitting or valve. Stiffener inserts installed with compression-type couplings and fittings shall not extend beyond the clamp or nut of the coupling or fitting.

~~605.20~~ **605.19 Polypropylene (PP) plastic.** Joints between PP plastic pipe and fittings shall comply with Section 605.20.1 or 605.20.2.

~~605.20.1~~ **605.19.1 Heat-fusion joints.** Heat-fusion joints for polypropylene pipe and tubing joints shall be installed with socket-type heat-fused polypropylene fittings, butt-fusion polypropylene fittings or electrofusion polypropylene fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F2389.

~~605.20.2~~ **605.19.2 Mechanical and compression sleeve joints.** Mechanical and compression sleeve joints shall be installed in accordance with the manufacturer's instructions.

~~605.21~~ **605.20 Polyethylene/aluminum/polyethylene (PE-AL-PE) and cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX).** Joints between PE-AL-PE and PEX-AL-PEX pipe and fittings shall comply with Section 605.21.1.

~~605.21.1~~ **605.20.1 Mechanical joints.** Mechanical joints shall be installed in accordance with the manufacturer's instructions. Fittings for PE-AL-PE and PEX-AL-PEX as described in ASTM F1974, ASTM F1281, ASTM F1282, CAN/CSA B137.9 and CAN/CSA B137.10 shall be installed in accordance with the manufacturer's instructions.

~~605.22~~ **605.21 PVC plastic.** Joints between PVC plastic pipe or fittings shall comply with Sections 605.22.1 through 605.22.3.

~~605.22.1~~ **605.21.1 Mechanical joints.** Mechanical joints on water pipe shall be made with an elastomeric seal conforming to ASTM D3139. Mechanical joints shall not be installed in above-ground systems unless otherwise approved. Joints shall be installed in accordance with the manufacturer's instructions.

~~605.22.2~~ 605.21.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F656 shall be applied. Solvent cement not purple in color and conforming to ASTM D2564 or CSA-B137.3 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D2855. Solvent-cement joints shall be permitted above or below ground.

~~605.22.3~~ 605.21.3 Threaded joints. Threads shall conform to ASME B1.20.1. Schedule 80 or heavier pipe shall be permitted to be threaded with dies specifically designed for plastic pipe, but the pressure rating of the pipe shall be reduced by 50 percent. Thread by socket molded fittings shall be permitted. Approved thread lubricant or tape shall be applied on the male threads only.

~~605.23~~ 605.22 Stainless steel. Joints between stainless steel pipe and fittings shall comply with Sections 605.23.1 and 605.23.3.

~~605.23.1~~ 605.22.1 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

~~605.23.2~~ 605.22.2 Welded joints. All joint surfaces shall be cleaned. The joint shall be welded autogenously or with an approved filler metal as referenced in ASTM A312.

~~605.23.3~~ 605.22.3 Grooved and shouldered mechanical joints. Grooved and shouldered mechanical joints shall comply with ASTM F1476, shall be made with an approved elastomeric seal and shall be installed in accordance with the manufacturer's instructions. Such joints shall be exposed or concealed.

~~605.24~~ 605.23 Joints between different materials. Joints between different piping materials shall be made with a mechanical joint of the compression or mechanical-sealing type, or as permitted in Sections 605.24.1, 605.24.2 and 605.24.3. Connectors or adapters shall have an elastomeric seal conforming to ASTM F477. Joints shall be installed in accordance with the manufacturer's instructions.

~~605.24.1~~ 605.23.1 Copper or copper-alloy tubing to galvanized steel pipe. Joints between copper or copper-alloy tubing and galvanized steel pipe shall be made with a brass fitting or dielectric fitting or a dielectric union conforming to ASSE 1079. The copper tubing shall be soldered to the fitting in an approved manner, and the fitting shall be screwed to the threaded pipe.

~~605.24.2~~ 605.23.2 Plastic pipe or tubing to other piping material. Joints between different types of plastic pipe or between plastic pipe and other piping materials shall be made with approved adapters or transition fittings.

~~605.24.3~~ **605.23.3 Stainless steel.** Joints between stainless steel and different piping materials shall be made with a mechanical joint of the compression or mechanical sealing type or a dielectric fitting or a dielectric union conforming to ASSE 1079.

~~605.25~~ **605.24 PE-RT plastic.** Joints between polyethylene of raised temperature plastic tubing and fittings shall be in accordance with Section 605.25.1.

~~605.25.1~~ **605.24.1 Mechanical joints.** Mechanical joints shall be installed in accordance with the manufacturer's instructions. Fittings for polyethylene of raised temperature plastic tubing shall comply with the applicable standards listed in Table 605.5 and shall be installed in accordance with the manufacturer's instructions. Polyethylene of raised temperature plastic tubing shall be factory marked with the applicable standards for the fittings that the manufacturer of the tubing specifies for use with the tubing.

~~605.12~~ **AC-605.25 Brass.** Joints between brass pipe or fittings shall comply with Sections 605.12.1 **AC-605.25.1** through 605.12.4 **AC-605.25.4**

~~605.12.1~~ **AC-605.25.1** Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

~~605.12.2~~ **AC-605.25.2 Mechanical joints.** Mechanical joints shall be installed in accordance with the manufacturer's instructions.

~~605.12.3~~ **AC-605.25.3 Threaded joints.** Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

~~605.12.4~~ **AC-605.25.4 Welded joints.** All joint surfaces shall be cleaned. The joint shall be welded with an approved filler metal

606.1 Location of full-open valves.

Full-open valves shall be installed in the following locations:

1. On the building water service pipe from the public water supply near the curb.
2. On the water distribution supply pipe at the entrance into the structure.

2.1. In multiple-tenant buildings, where a common water supply piping system is installed to supply other than one- and two-family dwellings, a main shutoff valve shall be provided for each tenant.

3. On the discharge side of every water meter.

4. On the base of every water riser pipe in occupancies other than multiple-family residential occupancies that are two stories or less in height and in one- and two-family residential occupancies.
5. On the top of every water down-feed pipe in occupancies other than one- and two-family residential occupancies.
6. On the entrance to every water supply pipe to a dwelling unit, except where supplying a single fixture equipped with individual stops.
7. On the water supply pipe to a gravity or pressurized water tank.
8. On the water supply pipe to every water heater.

AC-606.2 Individual fixture valves. Location of shutoff valves. Shut off valves shall be installed in the following locations:

In all building classifications, the water service line to each fixture or other piece of equipment shall be provided with a valve or fixture stop to shut off the water to the fixture. All sill cocks and wall hydrants shall be separately controlled by a valve inside the building.

- 1. On the water service line to each fixture or other piece of equipment shall be provided with a valve or fixture stop to shut off the water to the fixture.**
- 2. All sill cocks and wall hydrants shall be separately controlled by a valve inside the building.**
- 3. On the water supply pipe to each appliance or mechanical equipment.**

606.7 AC-606.7 Labeling of water distribution pipes in bundles. Where water distribution piping is bundled at installation, each pipe in the bundle shall be identified using stenciling or commercially available pipe labels. The identification shall indicate the pipe contents and the direction of flow in the pipe. The interval of the identification markings on the pipe shall not exceed 25 feet (7620 mm). There shall be not less than one identification label on each pipe in each room, space or story.

607.1 Where required. In residential occupancies, hot. water shall be supplied to plumbing fixtures and equipment utilized for bathing, washing, culinary purposes, cleansing, laundry or building maintenance. In nonresidential occupancies, hot. water shall be supplied for culinary purposes, cleansing, laundry or building maintenance purposes. In non-residential occupancies, hot. water or tempered. water shall be supplied for bathing and washing purposes.

607.1.1 Temperature limiting means. A thermostat control for a water heater shall only serve as the temperature limiting means for the purposes of complying with the requirements of this code for maximum allowable hot or tempered water delivery temperature at fixtures where the water heater complies with ASSE 1082 or ASSE 1085.

607.1.2 Tempered water temperature control.

Tempered water shall be controlled by one the following:

- 1. A limiting device conforming to ASSE 1070/ASME A112.1070/CSA B125.70 and set to not greater than 110°F (43°C).**
- 2. A thermostatic mixing valve conforming to ASSE 1017.**
- 3. A water heater conforming to ASSE 1082.**
- 4. A water heater conforming to ASSE 1084.**

This provision shall not supersede the requirement for protective shower valves in accordance with Section 412.3.

607.2 AC-607.2 Hot or tempered water supply to fixtures.

The developed length of hot or tempered water piping, from the source of hot water to the fixtures that require hot or tempered water, shall not exceed 50 **feet for commercial occupancy (15 240 mm)** and **100 feet for residential occupancy**. Recirculating system piping and heat-traced piping shall be considered to be sources of hot or tempered water.

607.2.1 Circulation systems and heat trace systems for maintaining heated water temperature in distribution systems. For Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, the installation of heated water circulation and temperature maintenance systems shall be in accordance with Section R403.5.1 of the International Energy Conservation Code. For other than Group R2, R3 and R4 occupancies that are three stories or less in height above grade plane, the installation of heated water circulation and heat trace systems shall be in accordance with Section C404.6 of the International Energy Conservation Code.

607.2.1.1 Pump controls for hot water storage systems.

The controls on pumps that circulate water between a water heater and a storage tank for heated water shall limit operation of the pump from

heating cycle startup to not greater than 5 minutes after the end of the cycle.

607.2.1.2 Demand recirculation controls for distribution systems. A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold-water supply pipe shall be a demand recirculation water system. Pumps shall have controls that comply with both of the following:

1. **1.The control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture, or sensing the flow of hot or tempered water to a fixture fitting or appliance.**
2. **2.The control shall limit the temperature of the water entering the cold water piping to 104°F (40°C).**

~~607.2.3~~ 607.2.2 Recirculating pump. Where a thermostatic mixing valve is used in a system with a hot water recirculating pump, the hot water or tempered water return line shall be routed to the cold water inlet pipe of the water heater and the cold water inlet pipe or the hot water return connection of the thermostatic mixing valve.

~~607.2.2~~ AC-607.2.3 Hot water system controls. Automatic circulating hot water system pumps or heat trace shall be arranged to be conveniently turned off, automatically or manually, when the hot water system is not in operation.

~~607.3.1~~ AC-607.3.1 Pressure-reducing valve. For water service system sizes up to and including 2 inches (51 mm), a device for controlling pressure shall be installed where, because of thermal expansion, the pressure on the downstream side of a pressure-reducing valve exceeds the pressure-reducing valve setting.

~~607.3.2~~ AC-607.3.2 Backflow prevention device or check valve. Where a backflow prevention device, check valve or other device is installed on a water supply system utilizing storage water heating equipment such that thermal expansion causes an increase in pressure, a device for controlling pressure shall be installed.

~~AC-608.3.2~~ 608.4 Potable water handling and treatment equipment. Water pumps, filters, softeners, tanks and other appliances and devices that handle or treat potable water to be supplied to the potable water distribution system shall be located to prevent contamination from entering the appliances and devices. Overflow, relief valve and waste discharge pipes from such appliances and devices shall terminate through an air gap.

~~608.4~~ 608.5 Water service piping. Water service piping shall be protected in accordance with Sections AC-603.2 and **~~AC-603.2.1~~**.

~~608.5~~ 608.6 Chemicals and other substances. Chemicals and other substances that produce either toxic conditions, taste, odor or discoloration in a potable water system shall not be introduced into, or utilized in, such systems.

~~608.6~~ 608.7 Cross-connection control. Cross connections shall be prohibited, except where approved protective devices are installed. **~~608.6.1~~** Private water supplies. Cross connections between a private water supply and a potable public supply shall be prohibited.

~~608.6.1~~ 608.7.1 Private water supplies. Cross connections between a private water supply and a potable public supply shall be prohibited.

~~608.7~~ ~~AC-608.8~~ Valves and outlets prohibited below grade. Potable water outlets and combination stop-and-waste valves shall not be installed underground or below grade. Freezeproof yard hydrants that drain the riser into the ground are considered to be stop-and-waste valves. Exception: Freezeproof yard hydrants that drain the riser into the ground shall be permitted to be installed, provided that the potable water supply to such hydrants is protected upstream of the hydrants in accordance with Section 608 and the hydrants are permanently identified as non-potable outlets by approved signage that reads as follows: "Caution, Non-potable Water. Do Not Drink."

~~608.8~~ 608.9 Identification of non-potable water systems. Where non-potable water systems are installed, the piping conveying the non-potable water shall be identified either by color marking or metal tags in accordance with Sections 608.8.1 through 608.8.2.3.

~~608.8.1~~ 608.9.1 Signage required. Non-potable water outlets, such as hose connections, open ended pipes and faucets, shall be identified with signage that reads as follows: "Non-potable water is utilized for [application name]. CAUTION: NONPOTABLE WATER - DO NOT DRINK." The words shall be legibly and indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material or shall be indelibly printed on the fixture. The letters of the words shall be not less than 0.5 inch (12.7 mm) in height and in colors in contrast to the background on which they are applied. In addition to the required wordage, the pictograph shown in Figure 608.8.1 shall appear on the required signage.

~~608.8.2~~ 608.9.2 Distribution pipe labeling and marking. Non-potable distribution piping shall be purple in color and shall be embossed, or integrally stamped or marked, with the words: "CAUTION: NONPOTABLE WATER - DO NOT DRINK" or the piping shall be installed with a purple identification tape or wrap. Pipe identification shall include the contents of the piping system and an arrow indicating the direction of flow. Hazardous piping systems. shall also contain information addressing the nature of the hazard. Pipe identification shall be

repeated at intervals not exceeding 25 feet (7620 mm) and at each point where the piping passes through a wall, floor or roof. Lettering shall be readily observable within the room or space where the piping is located.

~~608.8.2.1~~ **608.9.2.1 Color.** The color of the pipe identification shall be discernable and consistent throughout the building. The color purple shall be used to identify reclaimed, rain, and gray water distribution systems.

~~608.8.2.2~~ **608.9.2.2 Lettering Size.** The size of the background color field and lettering shall comply with Table 608.8.2.2.

~~608.8.2.3~~ **608.9.2.3 Identification tape.** Where used, identification tape shall be at least 3 inches (76 mm) wide and have white or black lettering on a purple field stating, "CAUTION: NONPOTABLE WATER – DO NOT DRINK." Identification tape shall be installed on top of non-potable rainwater distribution pipes, fastened at least every 10 feet (3048 mm) to each pipe length and run continuously the entire length of the pipe.

~~608.9~~ **608.10 Reutilization prohibited.** Water utilized for the heating or cooling of equipment or other processes shall not be returned to the potable water system. Such water shall be discharged into a drainage system through an air gap or shall be utilized for non-potable purposes.

~~608.10~~ **608.11 Reuse of piping.** Piping that has been utilized for any purpose other than conveying potable water shall not be utilized for conveying potable water.

~~608.11~~ **608.12 Potable water tanks.** Where in contact with potable water intended for drinking water, water tanks, coatings for the inside of tanks and liners for water tanks shall conform to NSF 61. The interior surface of a potable water tank shall not be lined, painted or repaired with any material that changes the taste, odor, color or potability of the water supply when the tank is placed in, or returned to, service.

~~608.12~~ **608.13 Pumps and other appliances.** Water pumps, filters, softeners, tanks and all other devices that handle or treat potable water shall be protected against contamination.

~~608.13~~ **608.14 Backflow protection.** Means of protection against backflow shall be provided in accordance with Sections 608.13.1 through 608.13.9.

~~608.13.1~~ **608.14.1 Air gap.** The minimum required air gap shall be measured vertically from the lowest end of a potable water outlet to the flood level rim of the fixture or receptacle into which such potable water outlet discharges. Air gaps shall comply with ASME A112.1.2 and air gap fittings shall comply with ASME A112.1.3.

~~608.13.2~~ **608.14.2 Reduced pressure principle backflow preventers.** Reduced pressure principle backflow preventers shall conform to ASSE 1013, AWWA C511, CAN/CSA B64.4 or CSA B64.4.1. Reduced pressure detector assembly backflow preventers shall conform to ASSE 1047. These devices shall be permitted to be installed where subject to continuous pressure conditions. The relief opening shall discharge by air gap and shall be prevented from being submerged.

608.14.3 Backflow preventer with intermediate atmospheric vent.
Backflow preventers with intermediate atmospheric vents shall conform to ASSE 1012, ASSE 1081 or CSA B64.3. These devices shall be permitted to be installed where subject to continuous pressure conditions. The relief opening shall discharge by air. gap and shall be prevented from being submerged.

~~608.13.4~~ **608.14.4 Barometric loop.** Barometric loops shall precede the point of connection and shall extend vertically to a height of 35 feet (10 668 mm). A barometric loop shall only be utilized as an atmospheric-type or pressure-type vacuum breaker

~~608.13.5~~ **608.14.5 Pressure-type vacuum breakers.** Pressure vacuum breakers assemblies shall comply with ASSE 1020 or CSA B64.1.2. Spill-resistant vacuum breakers assemblies shall comply with ASSE 1056 or CSA B64.1.3. These assemblies shall be installed with the critical level of the assembly located not less than 12 inches (305 mm) above all downstream piping and outlets. Pressure vacuum breaker assemblies shall not be installed in locations where spillage could cause damage to the structure.

~~608.13.6~~ **608.14.6 Atmospheric-type vacuum breakers.** Pipe applied atmospheric-type vacuum breakers shall conform to ASSE 1001 or CAN/CSA B64.1.1. Hose-connection vacuum breakers shall conform to ASSE 1011, ASSE 1019, ASSE 1035, ASSE 1052, CAN/CSA B64.2, CSA B64.2.1, CSA B64.2.1.1, CAN/CSA B64.2.2 or CSA B64.7. These devices shall operate under normal atmospheric pressure when the critical level is installed at the required height.

~~608.13.7~~ **608.14.7 Double check-valve assemblies.** Double check valve assemblies shall conform to ASSE 1015, CSA B64.5, CSA B64.5.1 or AWWA C510. Double-detector check-valve assemblies shall conform to ASSE 1048. These devices shall be capable of operating under continuous pressure conditions.

~~608.13.9~~ **608.14.8 Chemical dispenser backflow devices.** Backflow devices for chemical dispensers shall comply with ASSE 1055 or shall be equipped with an air gap fitting.

608.14.9 Dual check backflow preventer. Dual check backflow preventers shall conform to ASSE 1024 or CSA B64.6.

~~608.13.8~~ **AC-608.14.10 Spillproof vacuum breakers.** Spillproof vacuum breakers (SVB) shall conform to ASSE 1056. These devices are designed for installation under continuous pressure conditions when the critical level is installed at the required height.

~~608.14~~ **608.15 Location of backflow preventers.** Access shall be provided to backflow preventers as specified by the installation instructions of the approved manufacturer.

~~608.14.1~~ **608.15 .1 Outdoor enclosures for backflow prevention devices.** Outdoor enclosures for backflow prevention devices shall comply with ASSE 1060.

~~608.14.2~~ **608.15.2 Protection of backflow preventers.** Backflow preventers shall not be located in areas subject to freezing except where they can be removed by means of unions or are protected from freezing by heat, insulation or both.

~~608.14.2.1~~ **AC-608.15.2.1 Relief port piping.** The termination of the piping from the relief port or air gap fitting of a backflow preventer shall discharge to an approved indirect waste receptor ~~or to the outdoors where it will not cause damage or create a nuisance.~~ **The indirect waste receptor and drainage piping shall be sized to drain the maximum discharge flow rate from the relief port as published by the backflow preventer manufacturer.**

~~AC-608.14.3~~ **AC-608.15.3 Protection of water service.** Newly installed or replaced water service piping shall be provided with a backflow device located at or near the water meter. Dual check valves, double check valves, and reduced pressure zone type backflow preventers are acceptable for the purpose of this section.

~~608.15~~ **608.16 Protection of potable water outlets.** All potable water openings and outlets shall be protected against backflow in accordance with Section 608.15.1, 608.15.2, 608.15.3, 608.15.4, 608.15.4.1 or 608.15.4.2.

~~608.15.1~~ **608.16.1 Protection by air gap.** Openings and outlets shall be protected by an air gap between the opening and the fixture flood level rim as specified in Table 608.15.1. Openings and outlets equipped for hose connection shall be protected by means other than an air gap.

~~608.15.2~~ **608.16.2 Protection by a reduced pressure principle backflow preventer.** Openings and outlets shall be protected by a reduced pressure principle backflow preventer.

~~608.15.3~~ 608.16.3 Protection by a backflow preventer with intermediate atmospheric vent. Openings and outlets shall be protected by a backflow preventer with an intermediate atmospheric vent.

~~608.15.4~~ 608.16.4 Protection by a vacuum breaker. Openings and outlets shall be protected by atmospheric-type or pressure type vacuum breakers. The critical level of the vacuum breaker shall be set a minimum of 6 inches (152 mm) above the flood level rim of the fixture or device. Fill valves shall be set in accordance with Section 425.3.1. Vacuum breakers shall not be installed under exhaust hoods or similar locations that will contain toxic fumes or vapors. Pipe-applied vacuum breakers shall be installed not less than 6 inches (152 mm) above the flood level rim of the fixture, receptor or device served.

~~608.15.4.1~~ 608.16.4.1 Deck-mounted and integral vacuum breakers. Approved deck-mounted or equipment mounted vacuum breakers and faucets with integral atmospheric or spillproof vacuum breakers shall be installed in accordance with the manufacturer's instructions and the requirements for labeling with the critical level not less than 1 inch (25 mm) above the flood level rim.

~~608.15.4.2~~ 608.16.4.2 Hose connections. Sillcocks, hose bibbs, wall hydrants and other openings with a hose connection shall be protected by an atmospheric-type or pressure-type vacuum breaker or a permanently attached hose connection vacuum breaker.

Exceptions:

1. This section shall not apply to water heater and boiler drain valves that are provided with hose connection threads and that are intended only for tank or vessel draining.
2. This section shall not apply to water supply valves intended for connection of clothes washing machines where backflow prevention is otherwise provided or is integral with the machine

608.17 Connections to the potable water system. Connections to the potable water system shall conform to Sections 608.17.1 through 608.17.10.

608.17.1 Beverage dispensers. The water supply connection to beverage dispensers shall be protected against backflow in accordance with Sections 608.17.1.1 and 608.17.1.2.

608.17.1.2 Coffee machines and noncarbonated drink dispensers. The water supply connection to each coffee machine and each noncarbonated beverage dispenser shall be protected against backflow by

a backflow preventer conforming to ASSE 1022 or ASSE 1024, or protected by an air gap.

608.17.2 Connections to boilers. The potable supply to the boiler shall be equipped with a backflow preventer with an intermediate atmospheric vent complying with ASSE 1012, ASSE 1081 or CSA B64.3. Where conditioning chemicals are introduced into the system, the potable water connection shall be protected by an air gap or a reduced pressure principle backflow preventer, complying with ASSE 1013, AWWA C511 or CSA B64.4.

~~608.16.3~~ **608.17.3 Heat exchangers.** Heat exchangers utilizing an essentially toxic transfer fluid shall be separated from the potable water by double-wall construction. An air gap open to the atmosphere shall be provided between the two walls. Heat exchangers utilizing an essentially nontoxic transfer fluid shall be permitted to be of single-wall construction

~~608.16.4~~ **608.17.4 Connections to automatic fire sprinkler systems and standpipe systems.** The potable water supply to automatic fire sprinkler and standpipe systems shall be protected against backflow by a double check-valve assembly or a reduced pressure principle backflow preventer.

Exceptions:

1. Where systems are installed as a portion of the water distribution system in accordance with the requirements of this code and are not provided with a fire department connection, isolation of the water supply system shall not be required.
2. Isolation of the water distribution system is not required for deluge, pre-action or dry pipe systems.

~~608.16.4.1~~ **608.17.4.1 Additives or non-potable source.** Where systems under continuous pressure contain chemical additives or antifreeze, or where systems are connected to a non-potable secondary water supply, the potable water supply shall be protected against backflow by a reduced pressure principle backflow preventer. Where chemical additives or anti-freeze are added to only a portion of an automatic fire sprinkler or standpipe system, the reduced pressure principle backflow preventer shall be permitted to be located so as to isolate that portion of the system. Where systems are not under continuous pressure, the potable water supply shall be protected against backflow by an air gap or a pipe applied atmospheric vacuum breaker conforming to ASSE 1001 or CAN/CSA B64.1.1.

~~608.16.5~~ **608.17.5 Connections to lawn irrigation systems.** The potable water supply to lawn irrigation systems shall be protected against backflow by an atmospheric-type vacuum breaker, a pressure-type vacuum breaker or a reduced pressure principle backflow preventer. A valve shall not be installed downstream from an atmospheric vacuum breaker.

Where chemicals are introduced into the system, the potable water supply shall be protected against backflow by a reduced pressure principle backflow preventer.

~~608.16.6~~ **608.17.6 Connections subject to backpressure.** Where a potable water connection is made to a non-potable line, fixture, tank, vat, pump or other equipment subject to backpressure, the potable water connection shall be protected by a reduced pressure principle backflow preventer. 608.16.7 Chemical dispensers. Where chemical dispensers connect to the potable water distribution system, the water supply system shall be protected against backflow in accordance with Section ~~608.13.1, 608.13.2, 608.13.5, 608.13.6, 608.13.8 or 608.13.9~~ **608.14.1, 608.14.2, 608.14.5, 608.14.6, 608.14.9.**

~~608.16.8~~ **608.17.8 Portable cleaning equipment.** Where the portable cleaning equipment connects to the water distribution system, the water supply system shall be protected against backflow in accordance with Section ~~608.13.1, 608.13.2, 608.13.3, 608.13.7 or 608.13.8~~ **608.14.1, 608.14.2, 608.14.3, 608.13.7 or 608.14.8.**

~~608.16.9~~ **608.17.9 Dental pump equipment.** Where dental pumping equipment connects to the water distribution system, the water supply system shall be protected against backflow in accordance with Section ~~608.13.1, 608.13.2, 608.13.5, 608.13.6 or 608.13.8~~ **608.14.1, 608.14.2, 608.14.5, 608.14.6 or 608.14.8.**

608.16.10 Coffee machines and noncarbonated beverage dispensers. The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an air gap.

~~608.16.11~~ **608.17.10 Humidifiers.** The water supply connection to humidifiers that do not have internal backflow protection shall be protected against backflow by a backflow preventer conforming to ASSE 1012 or by an air gap.

~~608.17~~ **608.18 Protection of individual water supplies.** An individual water supply shall be located and constructed so as to be safeguarded against contamination in accordance with Sections 608.17.1 through 608.17.8.

~~608.17.1~~ **608.18.1 Well locations.** A potable ground water source or pump suction line shall not be located closer to potential sources of contamination than the distances shown in Table ~~608.17.1~~ **608.18.1.** In the event the underlying rock structure is limestone or fragmented shale, the local or state health department shall be consulted on well site location. The distances in Table ~~608.17.1~~ **608.18.1** constitute minimum separation and shall be increased in areas of creviced rock or limestone, or where the direction of movement of the ground water is from sources of contamination toward the well.

~~608.17.2~~ **608.18.2 Elevation.** Well sites shall be positively drained and shall be at higher elevations than potential sources of contamination. ~~608.17.3~~ **608.18.3 Depth.** Private potable well supplies shall not be developed from a water table less than 10 feet (3048 mm) below the ground surface.

~~608.17.3~~ **608.18.3 Depth.** Private potable well supplies shall not be developed from a water table less than 10 feet (3048 mm) below the ground surface.

~~608.17.4~~ **608.18.4 Water-tight casings.** Each well shall be provided with a water-tight casing to a minimum distance of 10 feet (3048 mm) below the ground surface. All casings shall extend at least 6 inches (152 mm) above the well platform. The casing shall be large enough to permit installation of a separate drop pipe. Casings shall be sealed at the bottom in an impermeable stratum or extend several feet into the water-bearing stratum.

~~608.17.5~~ **608.18.5 Drilled or driven well casings.** Drilled or driven well casings shall be of steel or other approved material. Where drilled wells extend into a rock formation, the well casing shall extend to and set firmly in the formation. The annular space between the earth and the outside of the casing shall be filled with cement grout to a minimum distance of 10 feet (3048 mm) below the ground surface. In an instance of casing to rock installation, the grout shall extend to the rock surface.

~~608.17.6~~ **608.18.6 Dug or bored well casings.** Dug or bored well casings shall be of water-tight concrete, tile, or galvanized or corrugated metal pipe to a minimum distance of 10 feet (3048 mm) below the ground surface. Where the water table is more than 10 feet (3048 mm) below the ground surface, the water-tight casing shall extend below the table surface. Well casings for dug wells or bored wells constructed with sections of concrete, tile, or galvanized or corrugated metal pipe shall be surrounded by 6 inches (152 mm) of grout poured into the hole between the outside of the casing and the ground to a minimum depth of 10 feet (3048 mm).

~~608.17.7~~ **608.18.7 Cover.** Every potable water well shall be equipped with an overlapping water-tight cover at the top of the well casing or pipe sleeve such that contaminated water or other substances are prevented from entering the well through the annular opening at the top of the well casing, wall or pipe sleeve. Covers shall extend downward at least 2 inches (51 mm) over the outside of the well casing or wall. A dug well cover shall be provided with a pipe sleeve permitting the withdrawal of the pump suction pipe, cylinder or jet body without disturbing the cover. Where pump sections or discharge pipes enter or leave a well through the side of the casing, the circle of contact shall be watertight.

~~608.17.8~~ **608.18.8 Drainage.** All potable water wells and springs shall be constructed such that surface drainage will be diverted away from the well or spring.

AC- 609.2.1 Tracer wire for nonmetallic piping. An insulated tracer wire listed for the purpose or other approved conductor shall be installed adjacent to underground nonmetallic piping serving as a water service for a hospital. Access shall be provided to the tracer wire or the tracer wire shall terminate above ground at each end of the nonmetallic piping. The tracer wire size shall be not less than 18 AWG 12 AWG, solid core, coated and the wire insulation type shall be suitable for direct burial.

CHAPTER 7 SANITARY DRAINAGE

AC-701.2.3 Inspection / site tee required at public sewer connections. All new or replaced sanitary or combined sewer laterals, when connected to public sewers, shall be provided with an inspection / site tee **two-way tee** at or near the property line. Such connection shall be brought to grade and finished with a water- and air-tight cleanout assembly.

SECTION 704 DRAINAGE PIPING INSTALLATION

704.2 Reduction in pipe size in the direction of flow. INSIGHTS

The size of the drainage piping shall not be reduced in the direction of the flow. The following shall not be considered as a reduction in size in the direction of flow:

- 1. A 4-inch by 3-inch (102 mm by 76 mm) water closet flange.**
- 2. A water closet bend fitting having a 4-inch (102 mm) inlet and a 3-inch (76 mm) outlet provided that the 4-inch leg of the fitting is upright and below, but not necessarily directly connected to, the water closet flange.**
- 3. An offset closet flange.**

SECTION 708 CLEANOUTS

708.1-6 708.11 Cleanout equivalent. A fixture trap or a fixture with integral trap, removable without altering concealed piping, shall be acceptable as a cleanout equivalent.

~~708.11~~ 708.12 Prohibited use. The use of a threaded cleanout opening to add a fixture or to extend piping shall be prohibited except where another cleanout of equal size is installed with the required access and clearance.

SECTION AC-~~717~~716

REPLACEMENT OF UNDERGROUND SEWERS BY PIPE-BURSTING METHODS

SECTION 717

RELINING BUILDING SEWERS AND BUILDING DRAINS INSIGHTS

717.1 General. This section shall govern the relining of existing building sewers and building drainage piping.

717.2 Applicability. The relining of existing building sewers and building drainage piping shall be limited to gravity drainage piping 4 inches (102 mm) in diameter and larger. The relined piping shall be of the same nominal size as the existing piping.

717.3 Preinstallation requirements. Prior to commencement of the relining installation, the existing piping sections to be relined shall be descaled and cleaned. After the cleaning process has occurred and water has been flushed through the system, the piping shall be inspected internally by a recorded video camera survey.

717.3.1 Preinstallation recorded video camera survey. The video survey shall include verification of the project address location. The video shall include notations of the cleanout and fitting locations, and the approximate depth of the existing piping. The video shall also include notations of the length of piping at intervals not greater than 25 feet (7620 mm).

717.4 Permitting. Prior to permit issuance, the code official shall review and evaluate the preinstallation recorded video camera survey to determine if the piping system is able to be relined in accordance with the proposed lining system manufacturer's installation requirements and applicable referenced standards.

717.5 Prohibited applications. Where review of the preinstallation recorded video camera survey reveals that piping systems are not installed

correctly or defects exist, relining shall not be permitted. The defective portions of piping shall be exposed and repaired with pipe and fittings in accordance with this code. Defects include, but are not limited to, backgrade or insufficient slope, complete pipe wall deterioration or complete separations such as from tree root invasion or improper support.

717.6 Relining materials. The relining materials shall be manufactured in compliance with applicable standards and certified as required in Section 303. Fold-and-form pipe relining materials shall be manufactured in compliance with ASTM F1504 or ASTM F1871.

717.7 Installation. The installation of relining materials shall be performed in accordance with the manufacturer's installation instructions, applicable referenced standards and this code

717.7.1 Material data report. The installer shall record the data as required by the relining material manufacturer and applicable standards. The recorded data shall include but is not limited to the location of the project, relining material type, amount of product installed and conditions of the installation. A copy of the data report shall be provided to the code official prior to final approval.

717.8 Post-installation recorded video camera survey. The completed, relined piping system shall be inspected internally by a recorded video camera survey after the system has been flushed and flow-tested with water. The video survey shall be submitted to the code official prior to finalization of the permit. The video survey shall be reviewed and evaluated to provide verification that no defects exist. Any defects identified shall be repaired and replaced in accordance with this code.

717.9 Certification. A certification shall be provided in writing to the code official, from the permit holder, that the relining materials have been installed in accordance with the manufacturer's installation instructions, the applicable standards and this code.

717.10 Approval. Upon verification of compliance with the requirements of Sections 717.1 through 717.9, the code official shall approve the installation.

SECTION 718

REHABILITATION OF BUILDING SEWERS AND BUILDING DRAINS INSIGHTS

718.1 Cure-in-place. Sectional cure-in-place rehabilitation of building sewer piping and sewer service lateral piping shall be in accordance with ASTM F2599. Main and lateral cure-in-place rehabilitation of building sewer and sewer service lateral pipe and their connections to the main sewer pipe shall be in accordance with ASTM F2561. Hydrophilic rings or gaskets in cure-in-place rehabilitation of building sewer piping and sewer service laterals shall be in accordance with ASTM F3240 to ensure water tightness and elimination of ground water penetration.

Chapter 8 – Indirect/Special Waste

AC-802.1.1.1 Food Handling includes but is not limited to washing produce, thawing frozen foods, draining pasta, washing rice, and other similar tasks as determined by the Allegheny County Health Department’s Food Safety Program Article III.

AC-802.1.6 Domestic dishwashing machines. Domestic dishwashing machines shall discharge indirectly through an air gap or air break into a standpipe or waste receptor in accordance with Section 802.2, or discharge into a wye branch fitting on the tailpiece of the kitchen sink or the dishwasher connection of a food waste grinder. The waste line of a domestic dishwashing machine discharging into a kitchen sink tailpiece or food waste grinder shall connect to a deck-mounted air gap or the waste line shall rise and be securely fastened to the underside of the sink rim or counter.

802.2 802.3 Installation. All indirect waste piping shall discharge through an air gap or air break into a waste receptor or standpipe. Waste receptors and standpipes shall be trapped and vented and shall connect to the building drainage system. All indirect waste piping that exceeds 30 inches (762 mm) in developed length measured horizontally, or 54 inches (1372 mm) in total developed length, shall be trapped. Exception: Where a waste receptor receives only clearwater waste and does not directly connect to a sanitary drainage system, the receptor shall not require a trap.

802.2.1 802.3.1 Air gap. The air gap between the indirect waste pipe and the flood level rim of the waste receptor shall be a minimum of twice the effective opening of the indirect waste pipe.

802.2.2 802.3.2 Air break. An air break shall be provided between the indirect waste pipe and the trap seal of the waste receptor or standpipe. 802.3 Waste receptors. Every waste receptor shall be of an approved type. A removable strainer or basket shall cover the waste outlet of waste receptors. Waste receptors shall be installed in ventilated spaces. Waste receptors shall not be installed in bathrooms or toilet rooms or in any inaccessible or

unventilated space such as a closet or storeroom. Ready access shall be provided to waste receptors.

~~802.3~~ 802.4 Waste receptors. Every waste receptor shall be of an approved type. A removable strainer or basket shall cover the waste outlet of waste receptors. Waste receptors shall be installed in ventilated spaces. Waste receptors shall not be installed in bathrooms or toilet rooms or in any inaccessible or unventilated space such as a closet or storeroom. Ready access shall be provided to waste receptors

~~802.3.1~~ 802.4.1 Size of receptors. A waste receptor shall be sized for the maximum discharge of all indirect waste pipes served by the receptor. Receptors shall be installed to prevent splashing or flooding

~~802.3.2~~ 802.4.2 Open hub waste receptors. Waste receptors shall be permitted in the form of a hub or pipe extending not less than 1 inch (25.4 mm) above a water-impervious floor and are not required to have a strainer. 802.4 Standpipes. Standpipes shall be individually trapped. Standpipes shall extend a minimum of 18 inches (457 mm) and a maximum of 42 inches (1066 mm) above the trap weir. Access shall be provided to all standpipes and drains for rodding.

SECTION 803 SPECIAL WASTES

~~803.2~~ 803.1 Neutralizing device required for corrosive waste. Corrosive liquids spent acids or other harmful chemicals that destroy or injure a drain, sewer, soil or waste pipe, or create noxious or toxic fumes or interfere with sewage treatment processes shall not be discharged into the plumbing system without being thoroughly diluted, neutralized or treated by passing through an approved dilution or neutralizing device. Such devices shall be automatically provided with a sufficient supply of diluting water or neutralizing medium so as to make the contents non-injurious before discharge into the drainage system. The nature of the corrosive or harmful waste and the method of its treatment or dilution shall be approved prior to installation. 803.3 System design. A chemical drainage and vent system shall be designed and installed in accordance with this code. Chemical drainage and vent systems shall be completely separated from the sanitary systems. Chemical waste shall not discharge to a sanitary drainage system until such waste has been treated in accordance with Section 803.2

~~803.3~~ 803.2 System design. A chemical drainage and vent system shall be designed and installed in accordance with this code. Chemical drainage and vent systems shall be completely separated from the sanitary systems. Chemical waste shall not discharge to a sanitary drainage system until such waste has been treated in accordance with Section 803.2.

~~803.1~~ AC-803.3 Wastewater temperature. Steam pipes shall not connect to any part of a drainage or plumbing system and water above 140°F (60°C) shall not be discharged into any

part of a drainage system. Such pipes shall discharge into an indirect waste receptor connected to the drainage system.

~~AC-803.1.1~~ AC 803.3.1 Condenser tanks. No steam pipe shall connect to any part of a drainage or plumbing system, nor shall any water above 140°F be discharged into any part of a drainage system except where cooling methods are provided which automatically cool the discharge to 140°F or less before being discharged to the building drainage system. If potable water is used with a direct connection to the cooling apparatus, a backflow preventer shall be installed in the potable water supply. Where condensate or blow-off tanks are used to lower temperatures, the tank shall be sized to a capacity of 1/3 the total water capacity of the vessel(s) discharging into the tank. The tank shall be vented independently through the roof with a galvanized wrought iron vent pipe not less than two (2) inches in size. The overflow or discharge from the tank shall be properly trapped and vented before connecting to the building drainage system. The trap shall be not less than 1 1/2 inches in size, or larger when warranted, based on gallon per minute discharged or each gallon per minute being equal to one (1) fixture unit. When the overflow or discharge pipe is submerged inside the tank forming its own integral trap, an additional trap will not be required, but the integral trap shall be vented by a proper size vent.

CHAPTER 9 VENTS

~~903.1.3~~ 905.6 Protected vent terminal. Where an open vent pipe terminates above a sloped roof and is covered by either a roof-mounted panel (such as a solar collector or photovoltaic panel mounted over the vent opening) or a roof element (such as an architectural feature or a decorative shroud), the vent pipe shall terminate not less than 2 inches (51 mm) above the roof surface. Such roof elements shall be designed to prevent the adverse effects of snow accumulation and wind on the function of the vent. The placement of a panel over a vent pipe and the design of a roof element covering the vent pipe shall provide for an open area for the vent pipe to the outdoors that is not less than the area of the pipe, as calculated from the inside diameter of the pipe. Such vent terminals shall be protected by a method that prevents birds and rodents from entering or blocking the vent pipe opening.

~~907.2~~ 904.6 Upper section. The upper section of the drainage stack shall be vented as a separate stack with a vent stack connection installed in accordance with ~~Section 904.4~~ 904.2. The offset shall be considered to be the base of the stack.

~~AC-904.6~~ **AC-904.7 Vent headers.** Stack-vent and vent stacks may be connected into a common vent header at the top of the stacks and then extended to the open air as a direct extension of one stack. This header shall be sized in accordance with the requirements of Table AC-901.1, the number of units being the sum of all units on all vent stacks connected thereto and the developed length being the longest vent length from the intersection at the base of the most distant stack to the vent terminal in the open air.

CHAPTER 10

SECTION 1002 TRAP REQUIREMENTS

AC-1002.1 Fixture traps. Each plumbing fixture shall be separately trapped by a liquid-seal trap, except as otherwise permitted by this code. The vertical distance from the fixture outlet to the trap weir shall not exceed 24 inches (610 mm), and the horizontal distance shall not exceed 30 inches (610 mm) measured from the centerline of the fixture outlet to the centerline of the inlet of the trap. The height of a clothes washer standpipe above a trap shall conform to Section 802.4. A fixture shall not be double trapped.

Exceptions:

1. This section shall not apply to fixtures with integral traps.
- ~~2. A combination plumbing fixture is permitted to be installed on one trap, provided that one compartment is not more than 6 inches (152 mm) deeper than the other compartment and the waste outlets are not more than 30 inches (762 mm) apart.~~
- ~~3. A grease interceptor intended to serve as a fixture trap in accordance with the manufacturer's installation instructions shall be permitted to serve as the trap for a single fixture or a combination sink of not more than three compartments where the vertical distance from the fixture outlet to the inlet of the interceptor does not exceed 30 inches (762 mm) and the developed length of the waste pipe from the most upstream fixture outlet to the inlet of the interceptor does not exceed 60 inches (1524 mm).~~
- 4. 2. Where a hydromechanical grease interceptor serves a food utensil, dishes, pots and pans sink, in accordance with the manufacturer's installation instructions. The branch drain serving the interceptor shall be provided with an emergency floor drain downstream of the interceptor connection, and the branch shall serve only the emergency floor drain and the interceptor. Where the interceptor serves a combination sink of not more than three compartments where the vertical distance from the fixture outlet to the inlet of the interceptor does not exceed 30 inches (762 mm) and the developed length of the waste pipe from the most upstream fixture outlet to the inlet of the interceptor does not exceed 60 inches (1524 mm).**

The food utensil, dishes, pots and pans sink shall be required to connect directly with the interceptor.

1002.3 AC-1002.3 Prohibited traps. The following types of traps are prohibited:

1. Traps that depend on moving parts to maintain the seal.
2. Bell traps.
3. Crown-vented traps.
4. Traps not integral with a fixture and that depend on interior partitions for the seal, except those traps constructed of an approved material that is resistant to corrosion and degradation.
5. "S" traps.
6. Drum traps.

7. Bottle Traps

Exception: Drum traps used as solids interceptors and drum traps serving chemical waste systems shall not be prohibited.

1002.4 Trap seals. Each fixture trap shall have a liquid seal of not less than 2 inches (51 mm) and not more than 4 inches (102 mm), or deeper for special designs relating to accessible fixtures.

1002.4.1 Trap seal protection. Trap seals of emergency floor drain traps and trap seals subject to evaporation shall be protected by one of the methods in Sections 1002.4.1.1 through 1002.4.1.5.

1002.4.1.1 Potable water-supplied trap seal primer valve. A potable water-supplied trap seal primer valve shall supply water to the trap. Water-supplied trap seal primer valves shall conform to ASSE 1018. The discharge pipe from the trap seal primer valve shall connect to the trap above the trap seal on the inlet side of the trap.

1002.4.1.2 Reclaimed or graywater-supplied trap seal primer valve. A reclaimed or graywater-supplied trap seal primer valve shall supply water to the trap. Water-supplied trap seal primer valves shall conform to ASSE 1018. The quality of reclaimed or graywater supplied to trap seal primer valves shall be in accordance with the requirements of the manufacturer of the trap seal primer valve. The discharge pipe from the trap seal primer valve shall connect to the trap above the trap seal, on the inlet side of the trap.

1002.4.1.3 Wastewater-supplied trap primer device. A wastewater supplied trap primer device shall supply water to the trap. Wastewater supplied trap primer devices shall conform to ASSE 1044. The discharge pipe from the trap seal primer device shall connect to the trap above the trap seal on the inlet side of the trap.

AC-1003.3.2 Food waste grinders. ~~Where food waste grinders connect to grease interceptors, a solids interceptor shall separate the discharge before connecting to the grease interceptor.~~ **A food waste disposer shall not discharge to a grease interceptor.** Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste grinder. Emulsifiers, chemicals, enzymes and bacteria shall not discharge into the food waste grinder.

1003.3.3—Additives to grease interceptors. Dispensing systems that dispense interceptor performance additives to grease interceptors shall not be installed except where such systems dispense microbes for the enhancement of aerobic bioremediation of grease and other organic material, or for inhibiting growth of pathogenic organisms by anaerobic methods. Such microbial dispensing systems shall be installed only where the grease interceptor manufacturer's instructions allow such systems and the systems conform to ASME A112.14.6. Systems that discharge emulsifiers, chemicals or enzymes to grease interceptors shall be prohibited.

~~**1003.3.3**~~ **1003.3.4 Grease interceptors and automatic grease removal devices not required.** A grease interceptor or an automatic grease removal device shall not be required for individual dwelling units or any private living quarters.

~~**1003.3.4**~~ **1003.3.5 Hydromechanical grease interceptors, fats oils and greases disposal systems and automatic-grease removal devices.** Hydromechanical grease interceptors; fats, oils, and greases disposal systems and automatic grease removal devices shall be sized in accordance with ASME A112.14.3, ASME 112.14.4, ASME A112.14.6, CSA B481.3 or PDI G101. Hydromechanical grease interceptors; fats, oils, and greases disposal systems and automatic grease removal devices shall be designed and tested in accordance with ASME A112.14.3, ASME 112.14.4, ICSA B481.1, PDI G101 or PDI G102. Hydromechanical grease interceptors; fats, oils, and greases disposal systems and automatic grease removal devices shall be installed in accordance with the manufacturer's instructions. Where manufacturer's instructions are not provided, hydromechanical grease interceptors; fats, oils, and greases disposal systems and automatic grease removal devices

shall be installed in compliance with ASME A112.14.3, ASME A112.14.4, ASME A112.14.6, CSA B481.3 or PDI G101.

AC-Exception: Interceptors that have a volume of not less than 1,000 gallons (3786 L) and that are located outdoors shall not be required to meet the requirements of this section.

~~AC-1003.3.4.1~~ **AC-1003.3.5.1 Grease interceptor capacity.** Grease interceptors shall have the grease retention capacity indicated in Table ~~AC-1003.3.4.1~~ **AC-1003.3.5.1** for the flow-through rates indicated. The minimum size grease interceptor at point of use inside a building is 25 gpm (95 L/m). The minimum size outside grease interceptor is 1,000 gallons (3786 L).

~~1003.3.4.2~~ **1003.3.5.2 Rate of flow controls.** Grease interceptors shall be equipped with devices to control the rate of water flow so that the water flow does not exceed the rated flow. The flow-control device shall be vented and terminate not less than 6 inches (152 mm) above the flood rim level or be installed in accordance with the manufacturer's instructions.

~~1003.3.5~~ **1003.3.6 Automatic grease removal devices.** Where automatic grease removal devices are installed, such devices shall be located downstream of each fixture or multiple fixtures in accordance with the manufacturer's instructions. The automatic grease removal device shall be sized to pretreat the measured or calculated flows for all connected fixtures or equipment. Ready access shall be provided for inspection and maintenance.

~~1003.3.6~~ **1003.3.7 Gravity grease interceptors and gravity grease interceptors with fats, oils, and greases disposal systems.** The required capacity of gravity grease interceptors and gravity grease interceptors with fats, oils, and greases disposal systems shall be determined by multiplying the peak drain flow into the interceptor in gallons per minute by a retention time of 30 minutes. Gravity grease interceptors shall be designed and tested in accordance with IAPMO/ANSI Z1001. Gravity grease interceptors with fats, oils, and greases disposal systems shall be designed and tested in accordance with ASME A112.14.6 and IAPMO/ANSI Z1001. Gravity grease interceptors and gravity grease interceptors with fats, oils, and greases disposal systems shall be installed in accordance with manufacturer's instructions. Where manufacturer's instructions are not provided, gravity grease interceptors and gravity grease interceptors with fats, oils, and greases disposal systems shall be installed in compliance with ASME A112.14.6 and IAPMO/ANSI Z1001.

~~1003.3.7~~ **1003.3.8 Direct connection.** The discharge piping from a grease interceptor shall be directly connected to the sanitary drainage system.

1003.6 Clothes washer discharge interceptor. Clothes washers shall discharge through an interceptor that is provided with a wire basket or similar device, removable for cleaning, that prevents passage into the

drainage system of solids 1/2 inch (12.7 mm) or larger in size, string, rags, buttons or other materials detrimental to the public sewage system.

Exceptions:

1. Clothes washers in individual dwelling units shall not be required to discharge through an interceptor.

2. A single clothes washer designed for use in individual dwelling units and installed in a location other than an individual dwelling unit shall not be required to discharge through an interceptor.

AC-1003.10.1 Maintenance schedule of interceptors, and separators. Interceptors and separators shall be maintained in efficient operating condition by periodic removal of accumulated grease, scum, oil, or other floating substances and solids deposited in the interceptor or separator. When interceptors and separators are installed, a maintenance schedule and records, including the hauler, shall be kept on the premises and made available upon request to the Administrative Authority. **All grease traps must be cleaned at a minimum of every calendar quarter.**

**CHAPTER 11
STORM DRAINAGE**

**SECTION 1102
MATERIALS**

1102.6 Roof drains. Roof drains shall conform to ASME A112.3.1 or ASME A112.6.4. Roof drains, other than siphonic roof drains, shall be tested and rated in accordance with ASME A112.6.4 or ASPE/IAPMO Z1034.

**SECTION 1104
CONDUCTORS AND CONNECTIONS**

~~1104.3~~ 1104.2 Floor drains. Floor drains shall not be connected to a storm drain;

~~AC-1104.2~~ AC-1104.3 Combining storm with sanitary drainage. The sanitary and storm drainage system of a building shall be entirely separate, except where a combined sewer is available, the building storm sewer may be connected in the same horizontal plane through a single wye fitting to the sanitary sewer. Such connection shall be made downstream of the sanitary building trap or beyond the property line or at a location approved by the Administrative Authority.

SECTION 1105

ROOF DRAINS

~~AC-1105.4~~ **1105.1 General.** Roof drains shall be installed in accordance with the manufacturer's **manufacturer's** instructions. The inside opening for the roof drain shall not be obstructed by the roofing membrane material.

1105.2 Roof drain flow rate. The published roof drain flow rate, based on the head of water above the roof drain, shall be used to size the storm drainage system in accordance with Section 1106. The flow rate used for sizing the storm drainage piping shall be based on the maximum anticipated ponding at the roof drain.

~~1105.1~~ **AC-1105.3 Strainers.** Roof drains shall have strainers extending not less than 4 inches (102 mm) above the surface of the roof immediately adjacent to the roof drain. Strainers shall have an available inlet area, above roof level, of not less than one and one-half times the area of the conductor or leader to which the drain is connected.

~~1105.2~~ **AC-1105.4 Flat decks.** Roof drain strainers for use on sun decks, parking decks and similar areas that are normally serviced and maintained shall comply with Section 1105.1 or shall be of the flat-surface type, installed level with the deck, with an available inlet area not less than two times the area of the conductor or leader to which the drain is connected.

~~1105.3~~ **AC-1105.5 Roof drain flashings.** The connection between roofs and roof drains which pass through the roof and into the interior of the building shall be made watertight by the use of approved flashing material.

SECTION 1106

SIZE OF CONDUCTORS, LEADERS AND STORM DRAINS

~~1106.1~~ **AC-1106.1 General.** The size of the vertical conductors and leaders, building storm drains, building storm sewers, and any horizontal branches of such drains or sewers shall be based on rainfall rates **of 4" per hour.**

~~1106.2~~ **AC-1106.2 Vertical conductors and leaders.** Vertical conductors and leaders shall be sized for the maximum projected roof area, in accordance with Tables **AC-1106.2(1)** and **1106.2(2).**

1106.5 Parapet wall scuppers. Where scuppers are used for primary roof drainage or for secondary (emergency overflow) roof drainage or both, the quantity, size, location and inlet elevation of the scuppers shall be chosen to prevent the depth of ponding water on the roof from exceeding the maximum water depth that the roof was designed for as determined by Section 1611.1 of the International Building Code. Scupper openings shall be not less than 4 inches (102 mm) in height and have a width that is equal to or greater than the circumference of a roof drain sized for the same roof area. The flow through the primary system shall not be considered when locating and sizing secondary scuppers.

SECTION 1107

SIPHONIC ROOF DRAINAGE SYSTEMS

1107.1 General. Siphonic roof drains and drainage systems shall be designed in accordance with ASME A112.6.9 and ASPE 45.

SECTION ~~AC-1107~~ AC-1108

SECONDARY (EMERGENCY) ROOF DRAINS

~~AC-1107.1~~ AC-1108.1 Secondary drainage required. Secondary (emergency) roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. Where primary and secondary roof drains are manufactured as a single assembly, the inlet and outlet for each drain shall be independent.

~~1107.2~~ 1108.2 Separate systems required. Secondary roof drain systems shall have the end point of discharge separate from the primary system. Discharge shall be above grade, in a location that would normally be observed by the building occupants or maintenance personnel.

~~1107.3~~ 1108.3 Sizing of secondary drains. Secondary (emergency) roof drain systems shall be sized in accordance with Section 1106 based on the rainfall rate for which the primary system is sized in Tables 1106.2, 1106.3 and 1106.6. Scuppers shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1101.7. Scuppers shall not have an opening dimension of less than 4 inches (102 mm). The flow through the primary system shall not be considered when sizing the secondary roof drain system.

SECTION ~~AC-1108~~ AC-1109
COMBINED SANITARY AND STORM SYSTEM

~~AC-1108.1~~ AC-1109.1 **Size of combined drains and sewers.** The size of a combination sanitary and storm drain, or sewer shall be computed in accordance with the method in Section 1106.3. The fixture units shall be converted into an equivalent projected roof or paved area. Where the total fixture load on the combined drain is less than or equal to 256 fixture units, the equivalent drainage area in horizontal projection shall be taken as 1,000 square feet (93 m²). Where the total fixture load exceeds 256 fixture units, each additional fixture unit shall be considered the equivalent of 3.9 square feet (0.362 m²) of drainage area. These values are based on a rainfall rate of 4 inches (101.6 mm) per hour.

SECTION ~~1109~~ 1114
VALUES FOR CONTINUOUS FLOW

~~AC-1109.1~~ AC-1114.1 **Equivalent roof area.** Where there is a continuous or semicontinuous discharge into the building storm drain or building storm sewer, such as from a pump, ejector, air conditioning plant or similar device, each gallon per minute (gpm) of such discharge shall be computed as being equivalent to 24 square feet (2.23 m²) of roof area, based on a rain-fall rate of 4 inches (101.6 mm) per hour.

CHAPTER 12
SPECIAL PIPING AND STORAGE SYSTEMS

SECTION 1202
MEDICAL GASES

[F] 1202.1 Nonflammable medical gases. Nonflammable medical gas systems, inhalation anesthetic systems and **vacuum piping systems shall be installed, tested and labeled** in accordance with NFPA 99.

Exceptions:

1. This section shall not apply to portable systems or cylinder storage.
2. Vacuum system exhaust terminations shall comply with the International Mechanical Code.

CHAPTER 13
NONPOTABLE WATER SYSTEMS

SECTION 1301
GENERAL

1301.1 General. The provisions of Chapter 13 shall govern the materials, design, construction and installation of systems for the collection, storage, treatment and distribution of non-potable water. For non-potable rainwater systems, the provisions of CSA B805/ICC 805 shall be an alternative for regulating the materials, design, construction and installation of systems for rainwater collection, storage, treatment and distribution of nonpotable water. The use and application of non-potable water shall comply with laws, rules and ordinances applicable in the jurisdiction.

1301.9 Non-potable water storage tanks. Non-potable water storage tanks shall comply with Sections 1301.9.1 through ~~1301.9.11~~ **1301.9.10.**

CHAPTER 14 SUBSURFACE GRAYWATER SOIL ABSORPTION SYSTEMS

SECTION 1401 **GENERAL**

AC-1401.1 Scope. The provisions of this chapter shall govern the materials, design, construction and installation of subsurface graywater soil absorption systems connected to non-potable water from on-site water reuse systems. For reference see: DEP Act 537. Chapters 71, 72, and 73 deal with onsite private sewage disposal systems.

1401.2 Materials. Above-ground drain, waste and vent piping for subsurface graywater soil absorption systems shall conform to one of the standards listed in Table 702.1. Subsurface graywater soil absorption systems, underground building drainage and vent pipe shall conform to one of the standards listed in Table 702.2.

1401.3 Tests. Drain, waste and vent piping for subsurface graywater soil absorption systems shall be tested in accordance with Section 312.

1401.4 Inspections. Subsurface graywater soil absorption systems shall be inspected in accordance with Section 112.

1401.5 Disinfection. Disinfection shall not be required for on-site non-potable water reuse for subsurface graywater soil absorption systems.

1401.6 Coloring. On-site non-potable water reuse for subsurface graywater soil absorption systems shall not be required to be dyed.

SECTION 1402

SYSTEM DESIGN AND SIZING

1402.1 Sizing. The system shall be sized in accordance with the sum of the output of all water sources connected to the subsurface graywater soil absorption system. Where graywater collection piping is connected to subsurface landscape irrigation systems, graywater output shall be calculated according to the gallons-per-day-per-occupant number based on the type of fixtures connected. The graywater discharge shall be calculated by the following equation:

$$**C = A \times B**$$

where:

A = Number of occupants: Residential-Number of occupants shall be determined by the actual number of occupants, but not less than two occupants for one bedroom and one occupant for each additional bedroom. Commercial-Number of occupants shall be determined by the International Building Code. B = Estimated flow demands for each occupant: Residential-25 gallons per day (94.6 Lpd) per occupant for showers, bathtubs and lavatories and 15 gallons per day (56.7 Lpd) per occupant for clothes washers or laundry trays. Commercial-Based on type of fixture or water use records minus the discharge of fixtures other than those discharging graywater. C = Estimated graywater discharge based on the total number of occupants.

(Equation 14-1)

1402.2 Percolation tests.

The permeability of the soil in the proposed absorption system shall be determined by percolation tests or permeability evaluation.

1402.2 Percolation tests. The permeability of the soil in the proposed absorption system shall be determined by percolation tests or permeability evaluation.

1402.2.1 Percolation tests and procedures. Not fewer than three percolation tests in each system area shall be conducted. The holes shall be spaced uniformly in relation to the bottom depth of the proposed absorption system. More percolation tests shall be made where necessary, depending on system design.

1402.2.1.1 Percolation test hole. The test hole shall be dug or bored. The test hole shall have vertical sides and a horizontal dimension of 4 inches to 8 inches (102 mm to 203mm). The bottom and sides of the hole shall be scratched with a sharp-pointed instrument to expose the natural soil. Loose material shall be removed from the hole and the bottom shall be covered with 2 inches (51 mm) of gravel or coarse sand.

1402.2.1.2 Test procedure, sandy soils. The hole shall be filled with clear water to not less than 12 inches (305 mm) above the bottom of the hole for tests in sandy soils. The time for this amount of water to seep away shall be determined, and this procedure shall be repeated if the water from the second filling of the hole seeps away in 10 minutes or less. The test shall proceed as follows: Water shall be added to a point not more than 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, water levels shall be measured at 10-minute intervals for a period of 1 hour. Where 6 inches (152 mm) of water seeps away in less than 10 minutes, a shorter interval between measurements shall be used, but in no case shall the water depth exceed 6 inches (152 mm). Where 6 inches (152 mm) of water seeps away in less than 2 minutes, the test shall be stopped and a rate of less than 3 minutes per inch (7.2 s/mm) shall be reported. The final water level drop shall be used to calculate the percolation rate. Soils not meeting the requirements of this section shall be tested in accordance with Section 1402.2.1.3.

1402.2.1.3 Test procedure, other soils. The hole shall be filled with clear water, and a minimum water depth of 12 inches (305 mm) shall be maintained above the bottom of the hole for a 4-hour period by refilling whenever necessary or by use of an automatic siphon. Water remaining in the hole after 4 hours shall not be removed. Thereafter, the soil shall be allowed to swell not less than 16 hours or more than 30 hours. Immediately after the soil swelling period, the measurements for determining the

percolation rate shall be made as follows: any soil sloughed into the hole shall be removed and the water level shall be adjusted to 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, the water level shall be measured at 30-minute intervals for a period of 4 hours, unless two successive water level drops do not vary by more than 1/16 inch (1.59 mm). Not fewer than three water level drops shall be observed and recorded. The hole shall be filled with clear water to a point not more than 6 inches (152 mm) above the gravel or coarse sand whenever it becomes nearly empty. Adjustments of the water level shall not be made during the three measurement periods except to the limits of the last measured water level drop. Where the first 6 inches (152 mm) of water seeps away in less than 30 minutes, the time interval between measurements shall be 10 minutes and the test run for 1 hour. The water depth shall not exceed 5 inches (127 mm) at any time during the measurement period. The drop that occurs during the final measurement period shall be used in calculating the percolation rate.

1402.2.1.4 Mechanical test equipment. Mechanical percolation test equipment shall be of an approved type.

1402.2.2 Permeability evaluation. Soil shall be evaluated for estimated percolation based on structure and texture in accordance with accepted soil evaluation practices. Borings shall be made in accordance with Section 1402.2.1.1 for evaluating the soil.

1402.3 Subsurface graywater soil absorption site location. The surface grade of all soil absorption systems shall be located at a point lower than the surface grade of any water well or reservoir on the same or adjoining lot. Where this is not possible, the site shall be located so surface water drainage from the site is not directed toward a well or reservoir. The soil absorption system shall be located with a minimum horizontal distance between various elements as indicated in Table 1402.3. Private sewage disposal systems in compacted areas, such as parking lots and driveways, are prohibited. Surface water shall be diverted away from any soil absorption site on the same or neighboring lots.

TABLE 1402.3 LOCATION OF SUBSURFACE GRAYWATER SOIL ABSORPTION SYSTEM



ELEMENT	MINIMUM HORIZONTAL DISTANCE	
	Storage tank (feet)	Absorption field (feet)
Buildings	5	2
Lot line adjoining private property	5	5
Public water main	10	10
Seepage pits	5	5
Septic tanks	0	5
Streams and lakes	50	50
Water service	5	5
Water wells	50	100

For SI: 1 foot = 304.8 mm.

SECTION 1403 INSTALLATION

1403.1 Installation. Absorption systems shall be installed in accordance with Sections 1403.1.1 through 1403.1.5.

1403.1.1 Absorption area. The total absorption area required shall be computed from the estimated daily graywater discharge and the design-loading rate based on the percolation rate for the site. The required absorption area equals the estimated graywater discharge divided by the design-loading rate from Table 1403.1.1.

TABLE 1403.1.1 DESIGN LOADING RATE



PERCOLATION RATE (minutes per inch)	DESIGN LOADING FACTOR (gallons per square foot per day)
0 to less than 10	1.2
10 to less than 30	0.8
30 to less than 45	0.72
45 to 60	0.4

For SI: 1 minute per inch = min/25.4 mm, 1 gallon per square foot = 40.7 L/m².

1403.1.2 Seepage trench excavations. Seepage trench excavations shall be not less than 1 foot (305 mm) in width and not greater than 5 feet (1524 mm) in width. Trench excavations shall be spaced not less than 2 feet (610 mm) apart. The soil absorption area of a seepage trench shall be computed by using the bottom of the trench area (width) multiplied by the length of pipe.

Individual seepage trenches shall be not greater than 100 feet (30 480mm) in developed length.

1403.1.3 Seepage bed excavations. Seepage bed excavations shall be not less than 5 feet (1524 mm) in width and have more than one distribution pipe. The absorption area of a seepage bed shall be computed by using the bottom of the trench area. Distribution piping in a seepage bed shall be uniformly spaced not greater than 5 feet (1524 mm) and not less than 3 feet (914 mm) apart, and greater than 3 feet (914 mm) and not less than 1 foot (305mm) from the sidewall or headwall.

1403.1.4 Excavation and construction. The bottom of a trench or bed excavation shall be level. Seepage trenches or beds shall not be excavated where the soil is so wet that such material rolled between the hands forms a soil wire. Smeared or compacted soil surfaces in the sidewalls or bottom of seepage trench or bed excavations shall be scarified to the depth of smearing or compaction and the loose material removed. Where rain falls on an open excavation, the soil shall be left until sufficiently dry so a soil wire will not form when soil from the excavation bottom is rolled between the hands. The bottom area shall then be scarified and loose material removed.

1403.1.5 Aggregate and backfill. Not less than 6 inches (152 mm) in depth of aggregate, ranging in size from 1/2 to 2 1/2 inches (12.7 mm to 64 mm), shall be laid into the trench below the distribution piping elevation. The aggregate shall be evenly distributed not less than 2 inches (51 mm) in depth over the top of the distribution pipe. The aggregate shall be covered with approved synthetic materials or 9 inches (229 mm) of uncompacted marsh hay or straw. Building paper shall not be used to cover the aggregate. Not less than 9 inches (229 mm) of soil backfill shall be provided above the covering.

1403.2 Distribution piping. Distribution piping shall be not less than 3 inches (76 mm) in diameter. Materials shall comply with Table 1403.2. The top of the distribution pipe shall be not less than 8 inches (203 mm) below the original surface. The slope of the distribution pipes shall be not less

than 2 inches (51 mm) and not greater than 4 inches (102 mm) per 100 feet (30 480 mm).

TABLE 1403.2DISTRIBUTION PIPE



MATERIAL	STANDARD
Polyethylene (PE) plastic pipe	ASTM F405
Polyvinyl chloride (PVC) plastic pipe	ASTM D2729
Polyvinyl chloride (PVC) plastic pipe with a 3.5-inch O.D. and solid cellular core or composite wall	ASTM F1488

For SI: 1 inch = 25.4 mm.

1403.2.1 Joints. Joints in distribution pipe shall be made in accordance with Section 705.