

City of Ames amendments to the 2015 Uniform Plumbing Code (UPC)

Ames Municipal Code **Section 5.208. PLUMBING.**

The provisions of the 2015 Uniform Plumbing Code (UPC), are amended with the addition of Appendix A Recommended Rules for Sizing the Water Supply System, Appendix B Explanatory Notes on Combination Waste and Vent Systems, Appendix C Alternate Plumbing Systems (at the discretion of the AHJ), and Appendix D Sizing Storm Water Drainage Systems, and the revision of the following text as stated:

(1) **Section 102.4.1.1 Building Demolition** stating: Whenever a structure or building is to be demolished, before demolition begins the following must be completed:

- (a) Building sewer capped at curb line with a manufactured plug.
- (b) Foundation line capped at curb line with a manufactured plug.
- (c) Water service capped or plugged at main.
- (d) Plumbing inspector sign-off on demolition sheet given to contractor before demolition permit is issued.

(2) **Section 102.9 Annexed Building** stating:

When a structure or building is on land that has been or is being annexed into the City of Ames and connection to the public water or sewer system is requested for that building or structure, the City may require that its plumbing system be inspected to determine whether the system has adequate sewer venting and backflow prevention to protect the public water system, and to determine if it is otherwise free from hazards to those exposed or potentially exposed to that system. Based on that inspection, if it is determined that a cross connection or other hazard exists, then the Building Official shall determine what corrective action is needed to eliminate the hazard(s) and the owner shall complete the corrective action before connection to City services is allowed.

(3) **Section 104.4 Permit Issuance** is amended to delete the reference to Section 104.5.

(4) **Section 104.4.1 Approved Plans or Construction Documents** is deleted.

(5) **Section 104.4.3 Expiration** is deleted.

(6) **Section 104.4.6 Retention of Plans** is deleted.

(7) **Section 104.5 Fees** is amended to replace reference to Table 104.5 with Appendix U of the City of Ames Municipal Code.

(8) **Section 105.2.6 Reinspections** is amended by deleting the last two paragraphs of the section.

(9) **Section 106.3 Penalties** is deleted.

(10) **Section 107.0 Board of Appeals** and both subsections is deleted.

(11) **Section 411.1 Water Closet Bowls** is amended to state: All water closet bowls shall be of the elongated type with open front seats except in dwelling units and motel and hotel rooms. In nurseries, schools and other similar places where plumbing fixtures are provided for the use of children under six (6) years of age, water closets shall be of a size and height suitable for children's use. All water closets shall be equipped with seats as required below.

(12) **Section 418.3 Location of Floor Drains** is amended by adding subsection 418.3(5) as follows: In all buildings, a three-inch (3") floor drain shall be located on the lowest floor level and where the water

meter is located. A three-inch (3") or larger floor drain shall be located in same room where a reduced pressure principle backflow prevention assembly is installed that discharges water. A two-inch (2") or larger floor drain shall be provided in the same room the water heater is located on the lowest floor level.

Exception: Existing water heaters and water meters unless relocated.

(13) **Table 422.1 Minimum Plumbing Facilities** is amended by adding the following: With prior approval, Authority Having Jurisdiction may allow use of Chapter 29 of the 2015 International Building Code.

(14) **Section 422.3 Fixture Requirements for Special Occupancies** is amended by replacing the last sentence and inserting the following in lieu thereof: In food establishments the fixture requirements may be determined by the statutes and regulations of the State of Iowa. The following requirements apply to food establishments, bars and night clubs:

(a) Bars, taverns and nightclubs shall be provided with a three (3) compartment glass washing sink and a drain board with hot and cold running water. The sink shall have an indirect waste with an air gap to a floor sink with a 3" trap.

(b) A restaurant shall have either a three (3) compartment ware washing sink or an automatic dish washing machine of commercial type, including a booster heater along with a two compartment sink.

(c) A hand-washing sink with hot and cold running water shall be installed in each food preparation area in restaurants and behind each bar area of bars, taverns and nightclubs.

(d) A mop/utility sink shall be required with hot and cold running water in each restaurant, bar, tavern or nightclub, for mop and waste water. The mop/utility sink shall not be used as a hand-washing sink.

(15) **Section 603 Cross-Connection Control** is amended as follows:

(a) **Section 603.2 Approval of Devices or Assemblies** is amended by deleting the last sentence and inserting the following in lieu thereof: "Testing or maintenance shall be performed by a registered backflow assembly tester approved by the Authority Having Jurisdiction".

(b) **Section 603.4.2 Testing** is amended by deleting the text and inserting the following in lieu thereof:

(i) The premise owner or responsible party shall have the backflow prevention assembly tested by a registered tester at the time of installation, repair, or relocation and not less than on an annual schedule thereafter, or more often when required by the Authority Having Jurisdiction. The periodic testing shall be performed in accordance with procedures approved by the Administrative Authority. The Authority Having Jurisdiction may establish the annual schedule.

(ii) Backflow prevention assemblies which are in place, but have been out of service for more than three months, shall be tested before being put back into service. Backflow prevention assemblies used in seasonal applications shall be tested before being put into operation each season.

(iii) The Authority Having Jurisdiction may periodically verify test procedures and results.

(iv) When warranted, the Authority Having Jurisdiction may require backflow prevention assemblies to be tested at any time in addition to the annual testing requirement. Examples of this include, but are not limited to, assemblies with a history of repeated failures or assemblies that have been subjected to fire, flood, or other unusual environmental conditions.

(v) The tester shall report the results of all inspections and tests of a backflow prevention assembly to the customer and to the Authority Having Jurisdiction on a form approved by the Authority Having Jurisdiction within ten working days. The tester shall immediately report to the Authority Having Jurisdiction when and where a test indicates that an assembly fails to meet standards and no immediate repair is done to make the assembly meet standards.

(vi) Before being placed back into service, any backflow prevention assembly which fails a test shall be repaired or replaced. In the case when a reported value is less than the minimum, the Director of the City of Ames Water and Pollution Control Department may approve temporary restoration of service.”

(b) **Section 603.4.8 Drain Lines** is amended inserting at the start of the section the following: “Provisions shall be made to convey the discharge of water from any reduced-pressure principle backflow prevention assembly (RP) to a suitable drain.”

(c) **Section 603.4.9 Prohibited Locations** is amended by adding at the end of the section the following: “Backflow prevention devices with atmospheric vents or ports shall be protected from flooding. No backflow prevention device shall be installed in a place where it would create a safety hazard such as, but not limited to, over an electrical panel or above ceiling level.”

(d) **Section 603.4 General Requirements** is amended by adding a new **Section 603.4.10 Repairs** as follows:

(i) All repairs to backflow prevention assemblies shall be performed by registered backflow prevention assembly testers.

(ii) The tester shall not change the design, material, or operational characteristics of a backflow prevention assembly during repair or maintenance. The tester shall use only original manufacturer replacement parts or equivalent parts approved by the University of Southern California – Foundation for Cross-Connection Control and Hydraulic Research.

(iii) The tester shall report the repair of a backflow prevention assembly to the customer and to the Authority Having Jurisdiction within ten working days. The report shall include the list of materials or replacement parts used and subsequent tests.”

(e) **Section 603.0 Cross-Connection Control** is further amended by adding after the last numbered section a new **section 603.10** as follows:

(i) Purpose. The purpose of these containment regulations is:
a. to protect the City of Ames Public Water Supply (PWS) from the possibility of contamination or pollution by containing within the customer's internal distribution system(s) or the customer's private water system(s) such contaminants or pollutants that could backflow into the PWS; and

b. to provide for the maintenance of a continuing program of containment that will systematically and effectively prevent the contamination or pollution of the PWS.

(ii) Definitions. As used in this section:

a. Approved Backflow Prevention Assembly For Containment means: A backflow prevention assembly which is approved by the University of Southern California - Foundation for Cross-Connection Control and Hydraulic Research. The backflow prevention assembly must also be listed by the International Association of Plumbing and Mechanical Officials, or by the American Society of Sanitary Engineering. The approval and listing requirements do not apply to an air gap used as an approved backflow

prevention assembly for containment.

b. Auxiliary Water Supply means: Any source of water that is available to the customer over which the City of Ames water utility does not have sanitary control to reduce pollution, contamination, or other conditions that make that source of water unacceptable as a potable water supply, such as, but not limited to

1. a public or private water supply other than the City of Ames water utility,
2. public or private wells, or
3. lakes, naturally-fed ponds, storm water basins, and flowing waters (rivers, creeks, etc.) from which water is drawn.

c. Available to the Customer means: The water utility customer has authority to use, or direct the use of, the auxiliary water supply by virtue of ownership, contract, or other arrangement for control.

d. Backflow means: The undesirable reversal of flow into the public water distribution system.

e. Backflow Prevention Assembly means: An assembly or means to prevent backflow.

1. Air Gap means: This is a physical break between the PWS and the customer's water system. The air gap is to create an unobstructed vertical distance between the opening of any pipe or faucet conveying water to a tank, plumbing fixture, receptor, or other assembly and the flood level of the receptacle. The air gap shall conform to the requirements of UPC **Table 603.3.1 Minimum Airgaps for Water Distribution.**

2. Reduced-Pressure Principle Backflow Prevention Assembly (RP) means: The RP consists of two independently acting check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves. These units are located between two tightly closing resilient-seated valves as an assembly, and equipped with properly located resilient-seated test shutoffs.

3. Double Check Valve Assembly (DC) means: The DC consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shutoff valves with properly located resilient-seated test shutoffs.

f. Commercial/Industrial Fluid means: Any liquid, gas, or solution that is a chemical, biological, or other substance in a form, quantity, or concentration that would constitute a hazard (health or non-health) if introduced into the public water supply, such as, but not limited to

1. polluted or contaminated waters;
2. all types of process and used waters (waters which originated from the public water supply but may have deteriorated in sanitary quality);
3. chemicals in fluid form;
4. plating acids and alkalis;
5. circulated cooling waters (except for those solely used for air conditioning);
6. oils, gases, caustic and acid solutions;
7. other liquid and gaseous fluids used industrially, agriculturally,

commercially, or for other non-domestic purposes.

g. Commercial/Industrial Fluid System means: Any system used by the water utility customer to store or utilize any commercial/industrial fluid in a manner that may constitute a hazard (health or non-health) to the public water supply, such as, but not limited to

1. car washes,
2. microbreweries,
3. chlorinators,
4. clean-in-place systems,
5. bulk fluid storage with remote dispensing (motor oil, antifreeze,

etc.), and

6. injection molding with integral heating and cooling. However,

commercial/industrial fluid systems do not include:

1. fuel gas (propane or natural gas) systems;
2. air conditioning, cooling, refrigeration, and similar systems using only Freon or similar refrigerants;
3. sanitary sewer, rainwater, or storm sewer lines; and
4. boilers.

h. Containment means: A method of backflow prevention which requires the installation of a backflow prevention assembly at the water service connection.

i. Contamination means: An impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality of the water and creates a health hazard.

j. Cross-Connection means: An actual or potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances, would allow such substances to enter the potable water system.

k. Hazard, Degree of means: The rating of a cross-connection or service connection which indicates if it has the potential to cause contamination or pollution. The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

1. Hazard - Health means: A hazard upon the PWS involving any substance that, if introduced in the potable water supply, could cause death, illness, spread disease, or have a high probability of causing such effects.

2. Hazard - Non-health means: A hazard upon the PWS involving any substance that generally would not be a health hazard but, if introduced into the PWS, could cause a nuisance by introducing color, taste or odor, or would alter the quality of the PWS physically, chemically, or biologically.

l. Permanent Swimming Pool means: A pool or tub with a capacity of 1,000 gallons or more of chemically treated water that has a filtration system with a pump and rigidly supported walls/sides. Above-ground movable pools and tubs that meet the above criteria shall be deemed "permanent swimming pools."

m. Pollution means: The presence of any foreign substance in water that impairs, alters, or degrades its quality but does not constitute a health hazard.

n. Registered Backflow Prevention Assembly Technician (Technician)

means: A person who is registered by the State of Iowa to test or repair backflow prevention assemblies and report on the condition of those assemblies.

o. Service Connection means: The terminal end of the pipe connected to, directly or indirectly, the City of Ames water main; that is, the point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. Service connections shall also include, but not be limited to, a temporary water service connection from a fire hydrant and all other temporary or emergency water service connections from the public water system.

p. Thermal Expansion means: Volumetric increase of water due to heating resulting in increased pressure in a closed system.

(iii) Administrative Authority

a. The Administrative Authority is the Ames City Council acting through such persons or departments as the City Council shall designate.

b. The Administrative Authority shall have the right to enter, with the consent of the customer or upon the basis of a suitable warrant issued by a court of appropriate jurisdiction, any property to determine if the conditions for a partial or total exemption have been satisfied or if a backflow prevention assembly has been properly installed for containment.

1. All backflow prevention assemblies shall be available for City inspection within a short notice by the Administrative Authority. Short notice is considered to be less than 24 hours.

2. The entrance to the property to determine if the conditions for a partial or total exemption have been satisfied will not be necessary if the customer has properly installed, tested, and maintained an approved RP or air gap on every and all service connections serving the customer's premises.

c. The Administrative Authority may collect fees for the administration of this program.

d. The Administrative Authority shall maintain records of containment hazard surveys, and of the installation, testing, and repair of all backflow prevention assemblies installed for containment purposes

(iv) Where Containment Is Required

a. An RP or air gap is required for containment for every direct or indirect service connection unless such connection:

1. qualifies for a total or partial exemption; or
2. supplies a fire protection system.

b. A DC may be installed for containment in place of an RP or air gap when a partial exemption is granted.

c. A partial exemption shall be granted only if all of the following conditions precedent are met.

1. The entire facilities are within the scope and applicability of the plumbing regulations of the City of Ames, Iowa.

2. All water uses are protected by the "isolation" provisions

of Chapter 6 of the Uniform Plumbing Code.

3. There are no auxiliary water supplies.
4. There are no solar heating systems.
5. There are no permanent swimming pools.
6. There are no commercial/industrial fluid systems.
7. The entire facilities and all pertinent circumstances and

conditions are fully accessible for inspection by representatives of the City's Water and Pollution Control Department.

d. No backflow prevention assembly is required for containment when a total exemption is granted.

e. A total exemption shall be granted when a partial exemption has been granted and all of the following conditions precedent are met.

1. There is only one service connection, not including services for fire protection systems.

2. The facility is less than four stories above grade.

f. Failure of the Administrative Authority to notify a customer that they do not qualify for an exemption and that they shall install backflow prevention assemblies for containment shall in no way relieve a customer of the responsibility to comply with all requirements of these regulations.

g. The Director of the City of Ames Water and Pollution Control Department may require installation of an air gap, by and at the customer's sole expense, at the service connection where records indicate a history of threat to the public water supply system because of inappropriate handling of health hazard substances or actual backflow into the PWS.

(v) New Service Connections

a. Plans shall be submitted to the Administrative Authority for review on all new service connections in order to determine if a partial or total exemption shall be granted.

b. The Administrative Authority shall require the installation of the appropriate backflow prevention assembly for containment before the initiation of water service.

(vi) Fire Protection Systems

a. A backflow prevention assembly to be used in a fire protection system shall meet the requirements of Factory Mutual Research Corporation (FM) and Underwriters Laboratory (UL) and the requirements of the fire code and the building code of the City of Ames, in addition to the requirements of paragraph (ii)a. Assemblies sized smaller than 2-1/2 inches which have not been tested by FM and listed by UL may be allowed if approved by the City of Ames Fire Department Chief.

b. An RP shall be installed on all new and existing fire protection systems which the Administrative Authority determines to have any of the following:

1. Interconnections with auxiliary supplies such as reservoirs, rivers, ponds, wells, mills, or other industrial water systems; or

2. Use of antifreeze or other additives in the fire protection system unless an RP is used to isolate the loop or branch containing antifreeze or other additives when a DC is installed at the service connection; or

3. Any other facility, connection, or condition which may

cause contamination

c. A DC will be required for all other fire protection systems. The DC shall be required on all new systems at the time of installation and on existing systems at the time that they are modified.

(vii) Portable Tanks. Portable tanks and vessels shall be filled through a properly installed and maintained backflow prevention assembly or vacuum breaker.

(viii) Installation of Backflow Prevention Assemblies

a. All backflow prevention assemblies for containment shall be installed so that they are accessible for testing as stated in the UPC at **Section 603.4.3** thereof. The installation shall also provide the same clearances as called for the water meter in the City of Ames Municipal Code, Section 28.205.(5).

b. The required backflow prevention assemblies for containment shall be installed in horizontal plumbing immediately following the meter or as close to that location as deemed practical by the Administrative Authority unless approved in writing by the Administrative Authority. In any case, it shall be located upstream of any branch piping. Installation at this point does not eliminate the responsibility of the customer to protect the water supply system from contamination or pollution between the backflow prevention assembly and the water main, and to protect the water supply system from contamination or pollution within the premises.

c. If hot water is used within the water system, thermal expansion shall be provided for when installing a backflow prevention assembly for containment.

d. If interruption of water service during testing and repair of backflow assemblies for containment is unacceptable to the customer, another backflow prevention assembly for containment, sized to handle the temporary water flow needed during the time of test or repair, shall be installed in parallel piping.

(ix) Removal of Backflow Prevention Assemblies

a. The use of an assembly may be discontinued and the assembly removed from service upon presentation of sufficient evidence that the customer qualifies for an exemption.

(x) Testing of Backflow Prevention Assemblies

a. When water service has been terminated for noncompliance, the backflow prevention assembly for containment shall be repaired or replaced and then tested prior to the resumption of water service.

(xi) Backflow Incidents

a. The customer shall immediately notify the Administrative Authority when the customer becomes aware that backflow has occurred in the building, property, or private water system receiving water service.

b. The Administrative Authority may order that water service be temporarily shut off when backflow occurs in a customer's building, property, or private water system. Such shut off is to protect the system from further contamination or pollution and to allow time for locating and mitigating the cause and extent of the contamination or pollution.

(xii) Existing Backflow Prevention Assemblies For Containment

a. All backflow prevention assemblies for containment installed

prior to November 1, 1996, that do not meet the requirements of these regulations but were approved testable assemblies for the purpose described herein at the time of installation and that have been properly installed and maintained, shall, except for the testing, inspection, and maintenance requirements under Section (x) and Section (xi), be excluded from the requirements of these rules so long as the Administrative Authority is assured that they will satisfactorily protect the PWS. Whenever the existing assembly for containment is moved from the present location, requires replacement, or when the use of the service area protected by the assembly changes so that the Administrative Authority determines that the customer no longer qualifies for a partial exemption, the unit shall be replaced by an approved backflow prevention assembly for containment meeting the requirements of these regulations.

(xiv) Customer Non-compliance

a. In case of non-compliance with these regulations, the Administrative Authority shall notify the customer to comply within ten working days. In the event of failure or upon refusal of the customer to comply as ordered, the Administrative Authority may, after notice and reasonable opportunity for hearing, terminate water service. Non-compliance includes, but is not limited to, the following:

1. Refusal to allow the Administrative Authority access to the property to determine if the conditions for a partial or total exemption have been satisfied, except when an RP or air gap is properly installed for containment and properly maintained
2. Providing inadequate backflow prevention
3. Failure to install a backflow prevention assembly for containment which has been required by the Administrative Authority
4. Failure to test, maintain, or properly repair a backflow prevention assembly for containment as required by the Administrative Authority
5. Failure to comply with the requirements of these regulations
6. Refusal to replace a faulty backflow prevention assembly
7. Removal of a backflow prevention assembly for containment which has been required by the Administrative Authority except for seasonal removal as in Section (viii) f
8. Bypassing of a backflow prevention assembly for containment which has been required by the Administrative Authority
9. Failure to report a backflow incident
10. Direct connection between the PWS and a sewer line
11. A situation which presents an immediate health hazard to the PWS

b. For conditions 7, 8, 9, 10, and 11, the Administrative Authority will take the following steps.

1. Make a reasonable effort to advise the customer of intent to terminate water service.
2. Terminate water service and lock service valve. The water service will remain inactive until correction of the violation has been approved by the Administrative Authority.

(xv) COMMITTEE OF ADJUSTMENT There is hereby established the Containment Committee of Adjustment.

a. The Committee shall consist of three members as follows: the Building Official of the City or that official's designee; the Director of Water and Pollution Control or the Director's designee; and a representative of the Building Board of Appeals, selected from among the members of that Board by majority vote of the Board's members.

b. The said Committee of Adjustment shall have the following powers.

1. To hear and decide appeals that allege an error in any decision or determination made in the administration and enforcement of Section 5.208(8)(c) of the Municipal Code of the City of Ames, Iowa

2. To authorize, in specific cases, such exemption from the requirements of Section 5.208(8)(c) of the Municipal Code of the City of Ames, Iowa, as will not be contrary to the laws of the State of Iowa, when due to special circumstances not of the property owner's own creation, a strict literal interpretation of Section 5.208(8)(c) would result in undue expenses to the property owner in view of an alternative measure agreed to by the property owner that will not be contrary to the public interest

(xvi) Presumptive Exemptions The following water uses shall generally be presumed exempt from the containment requirements of Section 5.208(8)(c): water closets, lavatories, bath tubs, showers, water softeners, single-faucet water treatment units, boilers, sinks, irrigation systems, clothes washers, dishwashers, pre-rinse stations, garden hose connections, drinking fountains, urinals, carbonators/beverage dispensers, garbage disposals, ice makers, cleaning chemical dispensers, and private fire hydrants. However, when warranted by the facts and circumstances of a particular situation, the Administrative Authority, with notice and opportunity to be heard extended to the property owners, may apply to the Containment Committee of Adjustment for a determination that containment measures are required under such facts and circumstances.

(16) **Section 603.5.8 Water-Cooled Equipment** is amended to read: Water-cooled compressors, degreasers, or any other water-cooled equipment shall be protected by an approved reduced pressure principle backflow prevention assembly.

(17) **Section 603.5.10 Steam or Hot Water Boilers** is amended to read: Potable water make up connections to boilers, sterilizers, chillers, commercial clothes washers, or water heaters for radiant heat, shall have a reduced pressure principle backflow prevention assembly.

(18) **Section 604.1 Pipe, Tube, and Fittings** is amended by adding the following: The following type of pipe and fittings are allowed in the interior/exterior of a building or structure:

Interior

Above concrete floor (lowest level)

(a) soft copper (Type K, L, M)

(b) rigid copper (Type K, L, M)

(c) brass

(d) cross linked polyethylene (PEX) (as approved by Chapter 17 of the Uniform Plumbing

Code), (e) ductile iron (four (4) inch or larger).

(f) CPVC

Below concrete floor (lowest level)

- (a) soft copper (type K) (approved flared or compression fittings only)
- (b) PEX(as approved byChapter14 of the Uniform Plumbing Code)
- (c) Polyethylene, IPS 200 p.s.i. SLDR-7, PE3408
- (d) ductile iron (four (4) inch or larger) with flanged mechanical joints
- (e) C-900 PVC DR 14 (fire line).

Exterior

(a) PEX(as approved by Chapter14 17 of the Uniform Plumbing Code),and which meets manufacturer's specifications.

- (b) Soft copper (Type K) (approved flared or compression fittings only)
- (c) Brass
- (d) Ductile iron (mechanical joint) (bolts shall be teflon coated)
- (e) PVC meeting AWWA C-900 standards, DR14 for fire lines and Dr18 for nonfire lines.
- (f) Polyethylene, IPS 200 p.s.i. SLDR-7, PE3408

Note: Polyethylene, PEX and PVC C-900 shall be installed with a 14-gauge solid copper tracer wire in a blue jacket affixed to the pipe at appropriate intervals. The tracer wire will start with a 5 foot electrical ground stake at the water main, continue to the water meter, and be terminated at a weatherproof junction box at an approved location on the building exterior. An appropriate splice may be used at the water meter. The junction box shall be accessible and be labeled to identify it as a tracer wire termination.

(19) **Section 604.6 Cast-Iron Fittings** is deleted.

(20) **Section 604.7 Malleable Iron Fittings** is deleted.

(21) **Section 605.0 Joints and Connections** is amended by adding new subsections 605.0.1 through 605.0.13 as follows:

Sec. 605.0.1. Curb Stops shall be of the quarter turn ball valve type with the grip joint ends.

Sec. 605.0.3. All threaded taps on the main shall be at least 24 inches apart and shall be at least $\frac{3}{4}$ inch in size. If more than one tap is made for a service line, the taps will be staggered on the pipe. No more than three (3) threaded taps shall be made for a service connected to a 4-inch or larger main. Maximum threaded tap size for a 4 inch main is $\frac{3}{4}$ inch. All taps will be made in the top half of the water main, but not more than 45" above the horizontal plane. All services having two (2) taps or more shall be combined through a brass wye pipe connection. The maximum length of service from the main to the wye shall be four (4) feet. The following table lists appropriate number of taps for different service sizes.

Service Size Taps

1 inch = two $\frac{3}{4}$ inch or one 1 inch

1 $\frac{1}{4}$ inch = two 1 inch

1 $\frac{1}{2}$ inch = two 1 inch

Sec. 605.0.4. Service saddles allowed on four (4) inch or larger water mains when water service is $\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ ", and 1 $\frac{1}{2}$ " shall be a Smith-Blair, or equivalent, #317, #357, #372, #393 or #397. The saddles shall have a stainless steel strap with two bolts wide minimum. The bolts or nuts shall be either stainless steel or blue coated. When tapping a four (4) inch or larger main for water services for a two (2) inch or larger water service, the Smith-Blair, or equivalent stainless steel full wrap around saddle, #238, #239, #264, or #265 shall be used. The bolts and nuts shall be either stainless steel or blue coated. Any water service that is larger than a two(2) inch shall require a tapping valve and sleeve at the main or private main. The Post

Indicator Valve (PIV) for fire line shall not serve as the water service valve after the main. All tapping valve sleeves shall meet the Urban Standard Specifications as follows:

- (1) Valve: Tapping valve conforming to ANSI/AWWA C509.
- (2) Sleeve:
 - (a) Minimum 14 gauge
 - (b) Stainless steel, ASTM A240, Type 304
 - (c) Working pressure 200 psi.
 - (d) Must fully surround pipe
 - (e) Approved sleeves
 - (i) Cascade Water Works Manufacturing Company, Style CST-EX
 - (ii) PowerSeal Pipeline Products Corporation, Model 3490AS
 - (iii) JCM Industries, Inc. Model JCM 432
 - (iv) Approved equal
- (3) Gasket:
 - (a) To completely surround pipe
 - (b) Minimum thickness 0.125 inch
 - (c) Material: nitrile rubber.
- (4) Outlet Flange:
 - (a) Stainless steel, ASTM A240, Type 304
 - (b) ANSI B 16.1, 125 pound pattern
- (5) Bolts: Stainless steel, ASTM A240, Type 304

Sec. 605.0.5. In the event a curb box is set in any location where a concrete or asphalt surface is to be placed, a sleeve shall be placed around the cap to allow for expansion and contraction.

Sec. 605.0.6. In a new subdivision the water service line shall be installed at the center of the property unless otherwise approved by the Administrative Authority.

Sec. 605.0.7. There shall be a curb cock in every service connection to the main. It shall be located on the property line or as close as possible thereto and in alleys within one foot of the alley line, except two (2) inch and larger, which shall have a street valve box over the valve at the water main. The curb cock to be used for services from three-fourths ($\frac{3}{4}$) inch to two (2) inches shall be the style known as Mueller Mark II Oriseal or Ford Ball Valve with 90° curb cock, or equal, provided with T handle and extension rod keyed and locked to curb cock and shall be the same diameter as the pipe served. The curb cock shall be kept in an operative condition at all times.

Sec. 605.0.8. The curb cock shall be covered by a curb box of the Western pattern No. 100, or equal, extending to the curb grade. In cases where the surface of the ground is higher than the curb grade to the extent that the curb box will not extend sufficiently to be in plain view, then the curb box shall be extended to the ground surface. Whenever a water service is renewed the curb box shall be brought to the curb grade or present natural ground level and moved to the property line. In placing the curb cock in position, care must be exercised to provide against settlement of the curb box, by providing a base of brick, stone or concrete block set on solid earth for support. A support shall be placed across the ditch and wired to the curb box near the top to keep it in a vertical position while filling the ditch.

Sec. 605.0.9. A corporation cock of either a Mueller or Ford make, or its equivalent, shall be inserted in every tap one and one half inch or less in diameter made in the water main. The connection to

the main shall be made by a regulation corporation cock and copper service with a compression joint if the pipe is plastic SIDR-7 200 P 3408. All connections to the water main shall be adequately looped to prevent breakage from ditch settlement.

Sec. 605.0.10. A service valve shall be installed immediately following a two (2) inch or larger tap on all take offs from the water main or private main.

Sec. 605.0.11. Where a single water service line provides service to a new duplex or is split for any other reason, the service line shall be at least one inch in diameter. Where an existing structure is to be converted to a duplex a 1" equivalent service may be provided by a separate tap. The new service lines shall be divided by a wye at the property line. Existing 1" services may be split inside the building so long as shut-offs are available in a common area. Separate curb boxes shall be installed, and separate ¾ inch service lines shall be run to the individual customer units.

Sec. 605.0.12. Sprinkler systems used for fire protection may be permitted to be attached to the water mains by registered plumbing contractors by direct connection without meters under the direction and supervision of the City. No open connection can be incorporated in the system, and there shall be no valves except the service valve at the main unless a post indicator valve (PIV) is required by the Fire Inspector.. One and two family residential sprinkler lines shall be metered through the single meter. The property owner or tenant shall promptly report to the City any seal which has been broken for the closing of the system. A detailed drawing of the sprinkler system shall be filed with the City and free access to the building shall be granted the City for inspection purposes. No charge will be made for water used for fire purposes through a sprinkler system. The fire line shall be a minimum four (4) inch diameter with a shutoff valve installed after the tap into the main. When required, the PIV shall be a minimum of forty (40) feet from the building or at a location determined by the fire inspector. Exception: The fire line may be smaller than 4" in size if hydraulic calculations by the fire sprinkler company show that a 4" would not be required.

Sec. 605.0.13. Where required, a post indicator valve (PIV) must be set at 36" above final grade. The termination flange, inside the building, shall not be more than twelve (12) inches above finished floor level and be set at a true vertical position. When entering through a wall, the termination flange shall not be more than twelve (12) inches from the wall and set in a true horizontal position. The fire line shall have a two hundred (200) pound pressure test done for a minimum of two (2) hours without losing any pressure. The fire line shall be tested from the tap at the main to the termination flange with the PIV open and the curb box closed. No fire line static pressure test shall be started after 1:30 p.m., Monday through Friday. A certified fire sprinkler installer may install the backflow device to the sprinkler system for containment. The termination flange, inside the building, from horizontal to the vertical position or from horizontal to the horizontal position traveling through an exterior wall or floor, shall have no smaller than ¾ inch galvanized or equivalent all-thread rod used between said flanges to keep fire line termination stable. The fire line located in the trench may use mega-lug type supports, however, a concrete thrust block shall be in front of fire line traveling from horizontal to vertical prior to the termination flange. Only PVC C-900 DR 14 and ductile iron shall be used for the fire line service. The fittings shall be mechanical joint type. The tapping valve, PIV, and all other fittings and pipe shall be marked to withstand 200 p.s.i. Before requesting a BacT test, the fire line shall be flushed thoroughly by the plumbing contractor. The contractor shall request, from the Inspection Division, a Bac-T test form, complete the form and return it to the Inspection Division. Utility Maintenance Division will collect the sample for testing. If the fire line passes Bac-T test, the Inspection Division will contact the plumbing contractor. The termination flange shall have a two (2) inch ball valve to

properly flush the fire line.

(a) If the fire line and water service are on one line, the domestic water service shall have the take off so that the domestic service will have a curb stop and stop box at the property line. If a PIV is required, the domestic service will branch off prior to the PIV and have a curb stop and stop box adjacent to the PIV. The take off for the water service shall be either brass, ductile iron, C-900 PVC DR14, or copper to the curb box.

(b) The curb stop and stop box may be installed at another location with prior approval of the Inspections Division and the Water and Pollution Control Department.

(22) **Section 608.5 Drains** is amended by deleting and replacing “the outside of the building” with “a properly drained surface”.

(23) **Section 609.1 Installation** is amended by deleting the last two sentences in the section and inserting the following in lieu thereof: All water service lines shall be installed at least five feet below finish grade. If the water service cannot be buried below frost depth at any point, the trench shall be lined with 1 ½” thick “Blue Board” insulation or equivalent as approved by the Administrative Authority. Sand backfill material shall then be placed to a depth of one foot above the top of pipe, then 1 ½” “Blue Board” or equivalent will be installed so that the entire trench width and length in the area needing protection against freezing is insulated and then backfilled. The insulation shall be at least five (5) feet in depth.

(24) **Section 609.5 Unions** is amended by adding the following to the end of the section: Exception: water heaters and boilers.

(25) **Section 609.10 Water Hammer** is amended by adding: Exception: Single family dwelling units.

(26) **Section 610.1 Size, Size of Potable Water Piping**, is amended by deleting the words “each water meter and” from the first sentence and adding “Water meter sizing shall be determined by the Water Meter Division” to the end of the section.

(27) **Section 610.8(6) Size of Meter and Building Supply Pipe Using Table 610.4** is amended by deleting the last sentence and inserting the following in lieu thereof: No building water service line shall be less than one (1) inch diameter.

(28) Amend **Table 610.4 Fixture Unit Table for Determining Water Pipe and Meter Sizes** is amended by deleting the language in footnote 2 and inserting the following in lieu thereof: Replace “Building supply, three-quarter(3/4) inch nominal size minimum.” With “Building supply, one (1) inch nominal size minimum.”

(29) **Section 701.2 Drainage Piping** is amended to read as follows: Drainage pipe and fittings used inside a new building or an existing building for underground shall be copper (type L), brass, ABS (schedule 40), PVC (schedule 40) or cast iron. Exception: Galvanized may be used on a sewage ejector system when the discharge line is three (3) inch or larger. The galvanized shall only be piped no more than four (4) feet out of pit. Above ground piping shall be the same as underground except that ABS and PVC pipe may be coextruded and copper tube and fittings may be type M for commercial and structures that are more than a one and two-family dwelling. A one and two-family dwelling may use type DWV copper tube.

(30) **Table 702.1 Drainage Fixtures Unit Values (DFU)** is amended by adding the following to footnote #8: Public use shall be any building or structure that is not a dwelling unit. Fraternities and sororities are not classified by this section as a dwelling unit.

(31) **Section 703.1 Minimum Size, Size of Drainage Piping**, is amended by adding the following at the end of the section: No underground drainage piping or vent shall be less than two (2) inches inside

diameter.

(32) **Section 704.3 Commercial Sinks** is amended to read "At the discretion of the Plumbing Inspector and Sanitarian" pot sinks, scullery sinks, dishwashing sinks, silverware sinks, and other similar fixtures shall have an airgap indirect waste connection to a properly trapped and vented floor sink. Commercial kitchens must have at least one floor sink with a three inch waste line serving the main scullery sink.

(33) **Section 705.0.1** is added: No molded rubber coupling (Fernco Coupling or equivalent) shall be used on any sanitary sewer or storm sewer. Appropriate stainless steel shielded molded rubber couplings may be used as connections when connecting sanitary or storm sewers. Single band shielded couplings (no hub clamps) are not allowed on any exterior building sanitary sewer, or storm sewer.

(34) **Section 717.1 General, Size of Building Sewers**, is amended to read as follows: 2017-3 5-35 Rev. 07-01-17 The minimum size of any building sewer shall be determined on the basis of the total number of fixture units drained by such sewer, in accordance with Table 717.1 Maximum/Minimum Fixture Unit Loading on Building Sewer Piping. No building sewer shall be smaller than four (4) inches. The building sewer shall not be smaller than the building drain. In unusual circumstances, with prior approval from the plumbing inspector, a sewage ejector may discharge the building sewer to the public sewer manhole when the public main is too shallow to allow the building sewer discharge to flow by gravity. The pipe material to be used shall be Polyethylene (P.E.) Two (2) inch SDR 7, 3408. The 2" line shall at all times be a minimum of five (5) feet deep or be blue-boarded. The sewage ejector shall be vented with a minimum two (2) inch pipe. The ejector pumps shall comply with section 710.9

(35) **Section 718.2 Support** is amended to read as follows: Building sewer pipe made of cast iron, copper, or extra strength vitrified clay shall be laid on a firm bed. Pipe consisting of Schedule 40 PVC/ABS, PVC SDR 23.5/35 and PVC truss pipe shall be enveloped on bottom, sides and top with a minimum of four (4) inches of either one (1) inch clean or 3/8" minus crushed rock, 3/8" washed chip or "pea gravel". After enveloping the pipe, the remainder of the ditch may be filled once the inspection is complete.

(36) **Section 718.3 Protection from Damage** is amended to read as follows: No building drain or sewer shall be closer than two (2) feet from the building structure or footing that is not made out of cast iron, Schedule 40 PVC, or Type "L" copper. At no point shall the building sewer be less than five (5) feet in depth on new construction or when replacing existing sewers. If less than five (5) feet in depth, the trench shall be lined with 1 ½" thick blue-board insulation. The insulation of the sides shall be at least five (5) feet below finished grade with a cap over the two sides. One (1) inch clean 3/8" minus, 3/8" washed chips, and pea gravel rock shall be placed on the bottom, sides and top of pipe whenever any type of PVC is used. Whenever cast iron is used sand may take the place of the one (1) inch rock. Whenever possible, the building sewer shall be at a depth of nine (9) feet below street grade from the main to the property line on new construction. Whenever possible on a duplex or singlefamily dwelling, the building sewer shall not be located under a driveway.

(37) **Section 719.6 Manholes** is amended by deleting the second paragraph.

(38) **Section 801.4 Bar and Fountain Sink Traps** is amended to read as follows: Sinks (except hand sinks) in a bar, nightclub, tavern, or soda fountain shall drain to an approved and properly trapped and vented floor sink through an approved airgap or airbreak. The floor sink, drain line, trap, and strainer inlet shall be at least three (3) inch pipe size. The developed length from the fixture outlet to the floor sink shall not exceed five (5) feet.

(39) **Section 807.3 Domestic Dishwashing Machine** is amended to read as follows: No domestic dishwashing machine shall be directly connected to a drainage system or food waste disposer without the use of an approved dishwasher air gap fitting on the discharge side of the dishwashing machine, or without looping the discharge line of the dishwasher as high as possible near the flood level of the kitchen sink where the waste disposer is connected. The looped discharge line of the dishwasher shall be supported or strapped. Listed air gap fittings shall be installed with the flood level (FL) marking at or above the flood level of the sink or drainboard, whichever is higher.

(40) **Section 901.2 Vents Required**, is amended by adding new sub-section 901.2.1 Section 901.2.1 All single-family or two-family dwelling units with a basement shall be provided with a two (2) inch future vent. The future vent shall be combined with other vents or terminate through the roof. Such vent shall be capped in the floor joist area of the basement for future use. The two (2) inch vent is for a future basement bathroom or other approved fixtures.

(41) **Section 902.2 Bars, Soda Fountains, and Counter, Vents Not Required**, is amended to read as follows: Sinks (except hand sinks) in a bar, nightclub, tavern, or soda fountain shall drain to an approved and properly trapped and vented floor sink through an approved airgap or airbreak. The floor sink, its drain line, trap, and strainer inlet shall be at least three (3) inch pipe size. The developed length from the fixture outlet to the floor sink shall not exceed five (5) feet.

(42) **Section 903.1 Applicable Standards, Materials**, is amended to read as follows: Drainage and vent pipe and fitting used inside a new building or an existing building for underground shall be copper (Type L), brass, ABS (Schedule 40), PVC (Schedule 40) or cast iron. Above ground piping shall be the same as underground except that coextruded PVC and ABS may be used, and copper tube and fittings may be Type M for commercial and structures that are other than a one and two-family dwelling. One and two-family dwellings may use type DWV copper tube.

(43) **Section 903.2 Use of Copper or Copper Alloy Tubing** is amended to remove "type DWV" and replace it with "type L".

(44) **Section 903.2.1 Aboveground** is amended to remove "type DWV" and replace it with "type L", and to add Exception: Single-family and two-family dwellings may use copper tube type DWV.

(45) **Section 904.1 Size**, Add after second sentence "No vent smaller than 2 inch is allowed below ground".

(46) **Section 906.7 Frost or Snow Closure, Vent Termination**, is amended to read as follows: Change two (2) inches to three (3) inches and ten (10) inches to twelve (12) inches and remove reference to mm.

(47) **Section 908.2 Horizontal Wet Venting for a Bathroom Group**. is amended to Water closets, bathtubs, showers and floor drains within one bathroom group located on the same floor level and for private use shall be permitted to be vented by a horizontal wet vent where all of the conditions of Section 908.2.1 through Section 908.2.5 are met.

(48) **Table 1002.2 Horizontal Lengths of Trap Arms** is amended to read as follows:

Maximum Allowable Horizontal Length Of Trap Arms

1-1/4"	5' 0"
1-1/2"	6' 0"
2"	8' 0"
3"	12' 0"
4" and larger	13' 0"

The developed length between the trap of a water closet or similar fixture (measured from the top of the closet flange to the inner edge of the vent) and its vent shall not exceed six feet.

(49) **Section 1101.3 Storm Water Drainage to Sanitary Sewer Prohibited** is amended by adding the following: Whenever such connection or arrangement is found to exist in violation of the ordinances of this city and Chapter 5, whereby surface water runoff, subsoil or footing drainage is discharged or diverted into the sanitary sewer system, the inspector shall issue a written notice to the owner to cause such to be abated by ordering a connection to a public storm main or collector line.

(50) **Section 1101.4 Material Uses** is amended to read as follows:
Rainwater piping placed within the interior of a building to two (2) feet out of building or footings shall be cast iron, brass, copper (Type M), Schedule 40 PVC or Schedule 40 ABS DWV. Schedule 40 PVC and ABS pipe installed within a duct or plenums shall be insulated with an insulation having a flame-spread index of not more than 25 and a smoke index of not more than 50. Coextruded PVC & ABS pipe not allowed below grade.

Rainwater piping placed outside a building shall be cast iron, brass, copper (Type M), Schedule 40 PVC or Schedule 40 ABS DWV, reinforced concrete pipe (RCP), vitrified clay pipe (VCP), SDR 23.5 PVC, SDR 35 PVC, PVC truss pipe, PVC A2000 pipe, and corrugated high-density polyethylene (P.E.) SDR 23.5 PVC, SDR 35 PVC, schedule 40 PVC or Schedule 40 ABS, PVC truss, PVC A2000, and corrugated polyethylene pipe outside a building shall be enveloped with four (4) inches of crushed rock, either one (1) inch clean or 3/8" minus 3/8" washed chips, or "pea gravel", on the top, bottom and sides. Coextruded PVC & ABS pipe not allowed below grade. The storm water sewer may be connected to the City storm main at intakes, manholes, or connected directly into the storm main. Whenever a direct connection is made to the storm main, the connection shall be made by a clamping saddle or a fitting with a sealant that makes the joints water and root proof. If the storm sewer is one-half (½) or more of the size of the storm main, a manhole shall be required at the point of connection to the storm main. All manholes shall meet the Iowa Statewide Urban Standards (SUDAS).

All direct taps into the storm main shall be installed on the top one-half (½) of the main. 2017-3 5-37 Rev. 07-01-17 The storm sewer shall have a cleanout installed every one hundred (100) feet and every change of direction exceeding 135°. In place of a cleanout every one hundred (100) feet, a manhole shall be placed every three hundred (300) feet (manhole shall meet Iowa Statewide Urban Standards (SUDAS)). No Fernco coupling or no-hub clamp shall be used on the storm sewer or main. Exception: When converting to PVC truss pipe or clay pipe, a Fernco stainless steel shielded coupling shall be used on storm sewer.

(51) **Section 1101.6.1 Discharge, Subsoil Drains**, is amended to read as follows: The subsoil drains may be allowed to discharge to a pond, or waterway if approved by the Building Official. If not allowed by the Building Official, the subsoil drain shall be discharged to a storm main. Regardless, the gravity line shall have a backwater valve. In existing buildings, if granted permission by the plumbing inspector, the perimeter tile may flow by gravity to a storm main, intake, or manhole if there is at least ten (10) feet vertical height difference between the perimeter tile and the storm main, intake, or manhole.

(52) **Section 1101.6.2 Sump**, is amended by replacing "fifteen (15) gpm" with "17 gpm with a seventeen (17) foot head" and adding the following to the end of the section: The sump pumpline may be either Schedule 40 PVC or Schedule 80 PVC pipe. The fittings shall be either schedule 80 PVC deep socket or schedule 40 deep socket pressure fittings. The sump pump line may also be 1 ½" polyethylene (PE) SDR 9,

3408. The PE joints shall be made with ribbed insert fittings secured by stainless steel clamps. The sump line shall be buried no less than five (5) feet in depth from finished grade. If this depth cannot be maintained, the sides and top of pipe wall shall be covered with 1 ½" blue board insulation. The sides of the insulation shall be at least five (5) feet in depth. When the sump line is discharged into a storm manhole, intake, or storm main that is not five (5) feet below final surface grade, a quarter (¼) of an inch hole shall be drilled into the bottom portion of the horizontal 90°elbow before pipe is placed in the vertical position.

If two sump lines are combined together, the sump line shall be a two (2) inch line to the storm main, intake, or manhole. The sump pump shall have an electrical outlet within reach of the manufacturer's cord. No foundation drain service line shall be discharged onto property, someone else's property, or into the building drain or building sewer. No floor drain, clothes washer, or any other plumbing fixture shall be discharged into the foundation sump pit.

Every sump pit in an elevator shaft shall meet the rules and regulations of the State of Iowa Elevator Inspector. No hydraulic elevator sump shall be discharged into a storm or sanitary sewer.

(53) **Section 1101.6.3 Splash Blocks** is deleted.

(54) **Section 1101.6.5 Open Area** is deleted.

(55) **Tables 1101.8 Sizing of Horizontal Rainwater Piping, 1101.12 Sizing of Roof Drains, Leaders, and Vertical Rainwater Piping, and 1103.3 Size of Gutters** are amended by adding the following note to the end of each table:

Rainfall rates for the City of Ames shall be based at three and one-half (3 ½) inches of rain per hour.

(56) **D102.1 General**, of Appendix D UPC is amended to add at the end of the section: The maximum rainfall rate for the City of Ames shall be based on three and one-half (3 ½) inches per hour in Table D101.1 Maximum Rates of Rainfall for Various Cities for design.

(Ord. 4044, 9-28-10)