

COUNCIL ACTION FORM

SUBJECT: 2021 UNIFORM PLUMBING CODE AND 2021 INTERNATIONAL MECHANICAL CODE ADOPTION

BACKGROUND:

The Uniform Plumbing Code (UPC), published by the International Association of Plumbing and Mechanical Officials (IAPMO), and the International Mechanical Code (IMC), published by the International Code Council (ICC), are the two model codes of standards for plumbing and mechanical construction and maintenance in use throughout the United States.

These Codes are typically updated at three-year intervals to reflect the latest improvements in construction technology. However, the state of Iowa skipped the 2018 adoption cycle. Therefore, the City of Ames is currently regulated by the 2015 version of the codes. On June 23, 2021, the State adopted the 2021 Uniform Plumbing Code and the 2021 International Mechanical Code with amendments.

In previous years, local jurisdictions had the option to adopt different codes, so long as the code was not less restrictive than state law (e.g., the International Plumbing Code, which is published by a different organization than the UPC, could be amended and adopted if the City desired).

However, state law now requires adoption of the UPC and IMC. Alternative codes are not permitted, but local amendments to the UPC and IMC may be adopted so long as they are not less restrictive than the UPC and IMC. In previous years, the City adopted the International Fuel Gas Code (IFGC) for fuel gas installations in lieu of Chapter 12 of the UPC. With this year's requirement to adopt the same codes as the state, the City must adopt Chapter 12 of the UPC; therefore, the need for the City to adopt the IFGC has been eliminated.

CODE CHANGES:

The first step in the code adoption process was an in-depth review of the 2021 UPC and 2021 IMC and their state amendments by Inspections staff and the Legal Department. The state adopted several amendments to the 2021 UPC and IMC. In addition, the City historically had several local amendments to the Plumbing Code. Staff has reviewed the local amendments to determine if they are still applicable. Several of the amendments are no longer needed because they are included in the new State requirements. **Staff is proposing no new local amendments compared to previous versions of these codes.**

While not a change in a local requirement, one revision that is being proposed is the movement of the local cross-connection control amendments as they currently exist from Chapter 5 (Plumbing and other Codes) of the Ames Municipal Code to Chapter 28 (Utilities) of the Ames Municipal Code. Cross-connection controls are the requirements that protect the water utility system from contamination. Staff from the Inspections Division and Water and Pollution Control Department discussed the cross-connection requirements in the City's local amendments and agreed they would be better suited outside of Chapter 5 because they have different enforcement and appeal capabilities.

Attachment A reflects the proposed UPC and IMC with amendments as approved by the Building Board of Appeals. Attachment B shows the existing codes with strikethrough for those sections that are proposed to be deleted. It also has the sections that are being added underlined. All the underlined sections are amendments from the State of Iowa that the City is required to adopt. Attachment C highlights some of the more notable changes between the code editions.

PUBLIC INPUT:

After a staff review of the codes was completed, the process moved to the Building Board of Appeals. The Building Board of Appeals is a seven-member board tasked with reviewing proposed text amendments to *Ames Municipal Code*, Chapter 5, Building, Electrical, Mechanical and Plumbing Code. Each member is qualified by experience and training in matters pertaining to building construction. Proposed text amendments are reviewed by the Board with a public hearing and recommendation to the City Council.

On July 12, 2021, Inspections staff sent an e-mail to all plumbing and mechanical contractors who have done business with the Inspection Division within the last year, and to the Ames Home Builder's Association (AHBA) to notify them of the proposed 2021 UPC and IMC adoption process. They were informed that their attendance and input at the August 2, 2021, Building Board of Appeals meeting would be welcome. An additional email was sent on July 26, 2021 to the same group reminding them of the Board meeting on August 2, 2021 and providing them with a copy of the proposed code and significant changes.

The Building Board of Appeals held a public hearing on August 2, 2021. There were no contractors present for the meeting and no public input submitted. As a result, the Board made a motion to recommend to the City Council approval of the 2021 UPC and the 2021 IMC with the State of Iowa amendments and local amendments.

A third email was sent to contractors on August 3, 2021, notifying them of the Board's decision and Staff's intent to place this matter on the August 10, 2021 City Council Agenda to request that the required public hearing for adoption of the two codes be set for August 24, 2021.

ALTERNATIVES:

1. Set the public hearing for August 24, 2021 to review the proposal to adopt the 2021 edition of the Uniform Plumbing Code (UPC) and the 2021 edition of the International Mechanical Code (IMC) with the same amendments adopted by the State of Iowa and the local amendments recommended by the Building Board of Appeals.
2. Direct staff to work with the Building Board of Appeals to develop further local amendments to the recommended codes.

CITY MANAGER'S RECOMMENDED ACTION:

City staff and the Building Board of Appeals have reviewed the proposed codes and have recommended approval to the City Council. The State Codes were in effect on June 23, 2021 and all local jurisdictions are required to adopt, at minimum, the same code as the State Code at that time.

It is therefore the recommendation of the City Manager that the City Council adopt Alternative No. 1, as described above.

Proposed Code

Sec. 5.100(11) Mechanical. Delete this section in its entirety and replace with the following:

(11) Mechanical. The provisions of the International Mechanical Code (IMC) 2021 Edition, published by the International Code Council, 4051 West Flossmoor Road, Country Club Hills, IL 60478, are hereby adopted by reference with amendments as the City of Ames Mechanical Code.

Sec. 5.100(12) Plumbing. Delete this section in its entirety and replace with the following:

(12) Plumbing. The provisions of the Uniform Plumbing Code (UPC), Sections 101 and 102 and Chapters 2 through 17 of the Uniform Plumbing Code, 2021 Edition, as published by the International Association of Plumbing and Mechanical Officials, 4755 E. Philadelphia Street, Ontario, California 91761-2816, are hereby adopted by reference with amendments as the City of Ames Plumbing Code.

Sec. 5.100(13) Gas. Delete this section in its entirety and replace with the following:

(13) Gas. Fuel gas piping shall comply with the requirements of Chapter 12 of the Uniform Plumbing Code, 2021 Edition, as published by the International Association of Plumbing and Mechanical Officials, 4755 E. Philadelphia Street, Ontario, California 91761-2816 and adopted by the City of Ames with amendments as the City of Ames Fuel Gas Code, unless the provisions conflict with the Iowa Administrative code (IAC) 661-Chapter 226, Liquefied Petroleum Gas. Where Chapter 12(2021UPC) conflicts with 661-chapter 226(IAC), the provisions of Chapter 226 shall be followed.

Section 5.206 MECHANICAL. Delete Section 5.206 in its entirety and insert the following in lieu thereof:

Section 5.206. MECHANICAL.

The adopted provisions of the 2021 International Mechanical Code (IMC), are amended as follows:

- (1) Section 101.2 Scope.** is amended by deleting the words ‘by the International Fuel Gas Code’ in the last sentence and inserting the following in lieu thereof: ‘by Chapter 12 of the UPC as stated in Section 5.100(13) of this Chapter’.
- (2) Section 101.2 Scope.** is amended by deleting the following: “Exception: Detached one- and two- family dwellings and townhomes not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height shall comply with this code or the International Residential Code.”
- (3) Section 304.11 Guards.** is amended by deleting the exception and inserting the following new exception in lieu thereof: “**Exception:** Guards are not required where permanent fall arrest/restraint anchorage connector devices that comply with ANSI/ASSE Z 359.1 are affixed for use during the entire lifetime of the roof covering. The devices shall be evaluated for possible replacement when the entire roof covering is replaced. The devices shall be placed not more than 10 feet (3048 mm) on center along hip and ridge lines and placed not less than 10 feet (3048 mm) from roof edges and the open sides of walking surfaces.”
- (4) Section 306.1 Access.** is amended by deleting the last sentence and inserting the following in lieu thereof: “An unobstructed level working space at least 30 inches deep and 30 inches wide shall be provided on any side of equipment where service access is required. The authority having jurisdiction

- may approve service reductions prior to equipment installation, provided that the manufacturer's instructions are met.”
- (5) **Section 306.2 Appliances in attics.** is amended by deleting this section in its entirety and inserting the following section in lieu thereof: “**Section 306.2 Appliances in attics.** Appliances in rooms and closets. Rooms and closets containing appliances shall be provided with a door and an unobstructed passageway measuring not less than 36 inches wide and 80 inches high. A level service space not less than 30 inches deep and 30 inches wide shall be present at the front service side of the appliance with the door open.”
- (6) **Section 306.5. Equipment and appliances on roofs or elevated structures.** is amended by adding the following to the end of the section: “If the tenants of a multiple tenant building have, or are allowed to have, mechanical facilities on the roof or which penetrate the roof, then roof access ladders must be provided for use by all such tenants and their agents and contractors in a manner that does not require accessing space under the control of another tenant.” And deleting the following exception “Exception: This section shall not apply to Group R-3 occupancies.”
- (7) **Section 306.5.3 Visual screening of rooftop equipment.** is amended by deleting this section in its entirety and inserting the following section in lieu thereof: “**Section 306.5.3 Visual screening of rooftop equipment.** Equipment screening shall not be installed to the rooftop unit or the curb of the rooftop unit unless specified in the mechanical equipment manufacturer's installation instructions.”
- (8) **Section 401.1 Scope.** is amended by deleting the section in its entirety and inserting the following section in lieu thereof: “**Section 401.1 Scope.** This chapter shall govern the ventilation of spaces within a building intended to be occupied. These buildings shall meet either the requirements of ASHRAE Standard 62.1, “Ventilation for Acceptable Indoor Air Quality,” 2019 edition, published by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers, 1791 Tullie Circle N.E., Atlanta, GA 30329, or the requirements contained in this chapter. Mechanical exhaust systems, including exhaust systems serving clothes dryers and cooking appliances; hazardous exhaust systems; dust, stock, and refuse conveyor systems; sub slab soil exhaust systems; smoke control systems; energy recovery ventilation systems; and other systems specified in Section 502 shall comply with Chapter 5.”
- (9) **Table 4033.3.1.1 Minimum Ventilation Rates:** is amended by adding the following footnotes:
- i. For gym, stadium, arena (play area) categories of the sports and amusement occupancy. When combustion equipment is intended to be used on the playing surface, additional dilution ventilation and/or source control shall be provided.
 - j. For ventilation purposes, “smoking” includes both combustible tobacco products and accessories and electronic smoking devices and accessories.
- (10) **Section 504.9.2 Duct installation.** is amended by deleting the section in its entirety and inserting the following section in lieu thereof: “**504.8.2 Duct installation.** Exhaust ducts shall be supported at 4-foot (1219 mm) intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined by screws or similar fasteners that protrude into the inside of the duct.”
- (11) **Section 506.3.13.3 Termination location.** is amended by deleting the section in its entirety and inserting the following new section in lieu thereof: “**506.3.13.3 Termination location.** Exhaust outlets shall be located not less than 10 feet (3048 mm) horizontally from parts of the same or contiguous

- buildings, adjacent buildings and adjacent property line and shall be located not less than 10 feet (3048 mm) above the adjoining grade level. Exhaust outlets shall be located not less than 20 feet horizontally/vertically from or not less than five (5) feet above air intake openings and operable doors and windows into any building.”
- (12) **Section 507.3 Type II Hoods.** is amended by deleting the first sentence in its entirety and inserting the following sentence in lieu thereof: “Type II hoods shall be installed above dishwashers capable of heating water beyond 140 degrees Fahrenheit and appliances that produce heat or moisture and do not produce grease or smoke as a result of the cooking process, except where the heat and moisture loads from such appliances are incorporated into the HVAC system design or into the design of a separate removal system.”
- (13) **Section 508.1.1 Makeup air temperature.** is amended by deleting the section in its entirety and inserting the following section in lieu thereof: “**Section 508 .1.1 Makeup air temperature.** All kitchen makeup air systems shall be verified by a certified TAB (testing and balance) contractor to heat and cool makeup air to within 10 degrees of room temperature set point. The TAB contractor shall be certified by NEBB, TABB, or other certifying organization as approved by the Authority Having Jurisdiction.”
- (14) **Section 601.5 Return air openings.** is amended by adding the following two additional requirements for return air openings:
- “9. Return air openings shall be located at least 18 inches from supply air openings. Air throw shall be directed away from return air openings to reduce short cycling of air. Exception: Factory-made concentric duct terminations.
10. One return air opening per floor is required on a central duct return system per ACCA Manual D, Appendix 8. Return air transfer openings are required on all bedrooms when dedicated return air openings are not used.”
- (15) **Section 603 Duct Construction and Installation.** is amended by adding the following new subsection: “**603.1.1 Duct location.** Air plenums and ducts located in floor and wall cavities shall be separated from unconditioned space by construction with insulation to meet energy code requirements. These areas include but are not limited to exterior walls, cantilevered floors, and floors above garages.”
- (16) **Section 604.3 Coverings and linings.** is amended by deleting the section in its entirety and inserting the following new section in lieu thereof: “**604.3 Coverings and linings.** Duct coverings and linings, including adhesives where used, shall have a flame spread index of not more than 25 and a smoke-development index of not more than 50, when tested in accordance with ASTM E84 or UL 723, using the specimen preparation and mounting procedures of ASTM E2231. Duct coverings and linings shall not flame, glow, smolder or smoke when tested in accordance with ASTM C411 at the temperature to which they are exposed in service. The testing temperature shall not fall below 250°F (121°C). Coverings and linings shall be listed and labeled. The use of an air gap to meet R-value requirements for duct insulation shall be prohibited.”
- (17) **Section 607.6.2 Membrane Penetrations** is amended by adding the following exception: “**Exception:** Duct systems that originate and terminate entirely within one dwelling/sleeping unit and are constructed entirely of minimum 0.0187-inch-thick steel (No. 26 gauge) shall be allowed without installation of radiation dampers.”

(18) **Section 607.6.2.1.3.** is amended by deleting the section in its entirety and inserting the following new section in lieu thereof: “**607.6.2.1.3 Access.** Access to ceiling radiation dampers shall be provided with an approved means of access that is large enough to permit inspection and maintenance of the damper and its operating parts. Dampers equipped with fusible links, internal operators for both shall be provided with either an access door that is not less than 12 inches (305mm) square, or a removable duct section.”

(19) **Section 607.6.2.1.4.** is amended by inserting the following new section: “**607.6.2.1.4 Identification of access.** Access to ceiling radiation damper locations and access points shall be permanently identified on the exterior by a label or marking acceptable to the authority having jurisdiction.”

Sec. 5.208. PLUMBING. Delete Section 5.208 in its entirety and insert the following in lieu thereof:

Sec. 5.208 PLUMBING.

The adopted provisions of the 2021 Uniform Plumbing Code (UPC), are amended as follows:

- (1) **Section 102.4.1 Building Sewers and Drains.** is amended by adding the following new section:
“**Section 102.4.1.1 Building Demolition.** 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 102.0 Applicability.** is amended by adding a new subsection “**Section 102.9 Annexed Building.** 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 City 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 301.5 Alternative Engineered Design.** is amended by adding the following sentence to the end of the section: “No engineered single-stack drainage system shall be installed.”
- (4) **Section 309.6 Dead Legs.** is amended by adding the following sentence to the end of the section: “The authority having jurisdiction can determine the method of flushing.”
- (5) **Section 312.6 Freeze Protection.** is amended by adding the following at the end of the section: “Systems requiring protection from freezing 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.”
- (6) **Section 314.4.1 Installation of Thermoplastic Pipe and Fittings.** is deleted in its entirety and a new section is inserted in lieu thereof: “**Section 314.4.1 Installation of Thermoplastic Pipe and Fittings.** Trench width for thermoplastic pipe shall be limited to six times the outside diameter of the piping at the base. Thermoplastic piping shall be bedded in not less than 4 inches (102 mm) of aggregate bedding material supporting the pipe. Initial backfill shall encompass the pipe. Aggregate material shall be three-eighths (3/8) inch p-gravel or 1-inch clean class one bedding.”
- (7) **Section 402.5 Setting.** is amended by adding the following sentence to the end of the section that begins “Exception:”: “Sanitary napkin receptors are not dispensers and shall not be within the clear space of the water closet.”

- (8) **Section 407.3 Limitation of Hot Water Temperature for Public Lavatories.** is amended by adding the following sentence to the end of the section: “These devices shall be installed at or as close as possible to the point of use.”
- (9) **Section 408.3.2 Temperature Limiting.**
- (1) Amend this section by adding the following to the end of (3): “and installed at or as close as possible to the point of use.”
 - (2) Amend this section by adding the following to the end of (5): “may be used downstream of other allowed device. TAFR valves are not intended to be installed in place of devices complying with ASSE 1016, ASSE 1017, ASSE 1066, ASSE 1069, or ASSE 1070.”
- (10) **Section 408.0 Showers.** is amended by adding a new subsection: “**Section 408.11 Shampoo Bowls and Grooming Stations.** Limitation of Hot Water Temperature of Hair Shampoo Bowls and Pet Grooming Stations. The maximum hot water temperature discharging from hair shampoo bowls and pet grooming stations shall be limited to 120°F (49°C). The maximum temperature shall be regulated by one of the following means, which shall be installed at or as close as possible to the point of use:
- “(1) A limiting device conforming to ASSE 1070, ASME A112.1070, CSA B125.70, or CSA B125.3.
 - “(2) A water heater conforming to ASSE 1084.”
- (11) **Section 409.4 Limitation of Hot Water in Bathtubs and Whirlpool Bathtubs.** is amended by adding the following sentence to the end of the section: “These devices shall be installed at or as close as possible to the point of use.”
- (12) **Section 410.3 Limitation of Water Temperature in Bidets.** is amended by adding the following sentence to the end of the section: “These devices shall be installed at or as close as possible to the point of use.”
- (13) **Section 416.5 Drain.** is amended by deleting the last sentence, which states: “Where a drain is provided, the discharge shall be in accordance with Section 811.0.”
- (14) **Section 418.3 Location of Floor Drains** is amended by adding the following new subsection:
“**418.3(5)** 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 the same room where a reduced pressure principal 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.”
- (15) **Section 422.1 Fixture Count.**
- (1) Amend the section by deleting the first paragraph and inserting the following in lieu thereof: “Plumbing fixtures shall be provided in each building for the type of building occupancy and in the minimum number shown in Table 2902.1 and its associated foot notes of the 2021 International Building Code. Required public facilities shall be designated by a legible sign for each sex. Signs shall be readily visible and located near the entrance to each toilet facility.”
 - (2) Amend the section by deleting the second paragraph and inserting the following in lieu thereof: “The minimum number of fixtures shall be calculated at 50 percent male and 50 percent female based on the total occupant load. Where information submitted indicates a difference in the distribution of the

- sexes, such information shall be used to determine the number of fixtures for each sex. Once the occupancy load and occupancy are determined, Table 2902.1 shall be applied to determine the minimum number of plumbing fixtures required. When gender-neutral restrooms are provided, the total number of fixtures provided must be the sum of men's and women's fixtures as figured, and urinals in gender-neutral restrooms shall not be substituted for more than 67 percent of men's water closets in assembly and educational occupancies or 50 percent of men's water closets in all other occupancies. Where gender-neutral fixtures are provided in addition to separate men's and women's facilities, those gender-neutral fixtures shall be included in determining the number of fixtures provided in an occupancy. Where applying the fixture ratios in Table 2902.1 results in fractional numbers, such numbers shall be rounded to the next whole number. For multiple occupancies, fractional numbers shall be first summed and then rounded to the next whole number.”
- (16) **Section 422.1.1 Family or Assisted-Use Toilet and Bathing Facilities.** is amended by adding the following sentence to the end of the section: “Required family or assisted-use fixtures are permitted to be included in the number of required fixtures for either the male or female occupants in assembly and mercantile occupancies.”
- (17) **Table 422.1 Minimum Plumbing Facilities.** Delete the table.
- (18) **Section 422.2 Separate Facilities.** is amended by adding the following additional exception: “(4) Separate facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by any gender and sufficient privacy for water closets is installed. Partitions or compartment walls shall extend from no more than 1 inch from the floor to no less than 84 inches from the floor. 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.”
- (19) **Section 422.0 Minimum Number of Required Fixtures.** is amended by inserting the following new subsection: “**422.6 Substitution for Water Closets.** “In each bathroom or toilet room, urinals shall not be substituted for more than 67 percent of the required water closets in assembly and educational occupancies. Urinals shall not be substituted for more than 50 percent of the required water closets in all other occupancies. (Reprinted from the 2018 International Plumbing Code section 424.2)”
- (21) **Section 604.6 Cast-Iron Fittings** is deleted.
- (22) **Section 604.7 Malleable Iron Fittings** is deleted.
- (23) **Section 604.10.1 Tracer Wire.** is deleted and the following is inserted in lieu thereof: “**604.10.1 Tracer Wire.** Plastic materials for building supply outside underground 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 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.”
- (24) **Section 609.1 Installation.** is deleted in its entirety and the following is inserted in lieu thereof: “**Section 609.1 Installation.** Water piping shall be adequately supported in accordance with Table 313.3. Burred ends shall be reamed to the full bore of the pipe or tube. Changes in direction shall be made by the appropriate use of fittings, except that changes in direction in copper or copper alloy tubing shall be permitted to be made with bends, provided that such bends are made with bending

equipment that does not deform or create a loss in the cross-sectional area of the tubing. Changes in direction are allowed with flexible pipe and tubing without fittings in accordance with the manufacturer's instructions. Provisions shall be made for expansion in hot-water piping. Piping, equipment, appurtenances, and devices shall be installed in a workmanlike manner in accordance with the provisions and intent of the code. Building supply yard piping shall be not less than 60 inches below earth cover."

(25) **Section 609.1 Installation.** is amended by adding the following new sections 609.1.1 through 609.1.9
 "Section 609.1.1 **New Service Location.** In a new subdivision the water service line shall be installed at the center of the property unless otherwise approved by the Administrative Authority.

Section 609.1.2 Threaded Taps on Water Mains. 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

Section 609.1.3 Corporation Cock Required. 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.

Section 609.1.4 Service Valve Required. 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.

Section 609.1.5 Service Saddles. 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 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 service saddle shall be a stainless-steel full wrap around saddle. 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

(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

Section 609.1.6 Curb Stop required. There shall be a curb stop 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. Curb Stops shall be of the quarter turn ball valve type with the grip joint ends. The curb stop 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 stop, or equal, provided with T handle and extension rod keyed and locked to curb stop and shall be the same diameter as the pipe served. The curb stop shall be kept in an operative condition at all times.

Section 609.1.7 Curb Box required. The curb stop 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 stop 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. 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.

Section 609.1.8 Water Services Serving Fire Sprinkler Systems. Sprinkler systems used for fire protection may be permitted to be attached to the water mains by a licensed Plumbing Contractor. 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. 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. Water services shall be sized to accommodate the requirements of the fire sprinkler system.

Section 609.1.9. 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 $\frac{3}{4}$ 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.

(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 from the Authority Having Jurisdiction.

- (26) **Section 609.12 Pipe Insulation.** is deleted in its entirety and the following section is inserted in lieu thereof: “**Section 609.12 Pipe Insulation.** Insulation of domestic hot water piping shall be in accordance with the applicable energy conservation code.”
- (27) **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.
- (28) **Table 610.4 Fixture Unit Table for Determining Water Pipe and Meter Sizes** is amended by deleting footnote 2 and inserting the following in lieu thereof: “Building supply, one (1) inch nominal size minimum.”
- (29) **Section 610.8 Size of Meter and Building Supply Pipe Using Table 610.4** is amended by adding the following exception.
“**Exception:** 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.”
- (30) **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.”
- (31) **Section 611.4 Sizing of Residential Softeners.** is amended by adding the following to the end of the last sentence in the section: “or as specified in the manufacturer’s installation instructions.”
- (32) **Section 612 Residential Fire Sprinkler Systems.** is amended by deleting sections 612.0 through 612.7.2.
- (33) **Table 702.1 Notes. Note #8.** is amended by adding the following at the end of the footnote: “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.”
- (34) **Table 702.1 Notes. Note #9.** is amended by deleting “a maximum shower size of 36 inches (914 mm) in width and 60 inches (1524 mm) in length” and inserting the following in lieu thereof: “showers having only one shower head rated at a maximum of 2.5 gpm.”
- (35) **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.”

- (36) **Section 704.3 Commercial Sinks** is deleted in its entirety and the following section inserted in lieu of: **Section 704.3 Commercial Sinks.** “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.”
- (37) **Section 710.1 Backflow Protection.** is amended by adding the following sentences to the end of the section: “The requirement for the installation of a backwater valve shall apply only when determined necessary by the Authority Having Jurisdiction based on local conditions. When a valve is required by the Authority Having Jurisdiction, it shall be a manually operated gate valve or fullway ball valve. An automatic backwater valve may also be installed but is not required.”
- (38) **Section 715.2 Joining Methods and Materials** is amended by adding the following exception: “No molded rubber coupling 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.”
- (39) **Section 717.1 General, Size of Building Sewers.** is amended by deleting the first paragraph and inserting the following in lieu thereof: “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. With prior approval from the Building Official, 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 two (2) inch line shall at all times be a minimum of five (5) feet deep or freeze protection is required. The sewage ejector shall be vented with a minimum two (2) inch pipe.”
- (40) **Section 718.2 Support.** is deleted in its entirety and the following section inserted in lieu thereof: “**Section 718.2 Support.** 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.”
- (41) **Section 719.6 Manholes** is amended by deleting the second paragraph.
- (42) **Section 807.3 Domestic Dishwashing Machine.** is deleted in its entirety and the following section is inserted in lieu thereof: “**Section 807.3 Domestic Dishwashing Machine.** 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. 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.”
- (43) **Section 814.5 Point of Discharge.** is deleted in its entirety and the following section is inserted in lieu thereof: “**Section 814.5 Point of Discharge.** Air-conditioning condensate waste pipes shall connect indirectly to a properly trapped fixture, floor drain, or open sight drain, or where permitted in Section

- 814.6, to the drainage system through an air gap or air break to trapped and vented receptors, dry wells, leach pits, sump pump, the tailpiece of plumbing fixtures or indirectly to the building storm sewer through a roof drain. A condensate drain shall be trapped in accordance with appliance manufacturer's instructions or as approved.”
- (44) **Section 901.1 Applicability.** is amended by adding the following sentence to the end of the section: “No engineered single-stack drainage systems shall be installed.”
- (45) **Section 901.2 Vents Required.** is amended by adding the following at the end of the section: “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.”
- (46) **Section 906.1 Roof Termination.** is amended by deleting the last sentence.
- (47) **Section 906.7 Frost or Snow Closure.** is amended by deleting “two (2) inches (50.8mm)” in the first sentence and inserting “three (3) inches (76.2 mm)” in lieu thereof.
- (48) **Section 908.2.2 Size.** is amended by deleting the second sentence in this section and inserting the following new sentence in lieu thereof: “The wet vent shall be not less than two (2) inches (50 mm) in diameter for six (6) drainage fixture units (dfu) or less, and not less than three (3) inches (80 mm) in diameter for seven (7) dfu or more.”
- (49) **Table 1002.2 Horizontal Lengths of Trap Arms** is amended to read as follows:

Table 1002.2
Horizontal Lengths of Trap Arms
(Except for Water Closets and Similar features)^{1,2}

Trap Arm Diameter (inches)	Distance trap to vent Minimum(inches)	Length Maximum (feet)
1-1/4	2-1/2	5
1-1/2	3	6
2	4	8
3	6	12
4	8	12
Exceeding 4	2 x Diameter	12

For SI units: 1 inch = 25.4 mm

Notes:

1 Maintain ¼ inch per foot slope (20.8 mm/m).

2 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 6 feet (1829 mm).

- (50) **Section 1007.1 Trap Seal Protection. General.** is amended by deleting “not deemed necessary for safety or sanitation by the Authority Having Jurisdiction” and inserting the following in lieu thereof: “floor drains or similar traps that receive a liquid discharge year-round.”

- (51) **Section 1014.1.3 Food Waste Disposers and Dishwashers.** is amended by deleting the second sentence and inserting the following in lieu thereof: “Commercial food waste disposers shall discharge into the building’s drainage system in accordance with the requirements of the Authority Having Jurisdiction.”
- (52) **Section 1101.6.2 Sump.** is amended by replacing “fifteen (15) gpm” with “17 gpm with a 17-foot head” and adding the following to the end of the section: “The sump pump line 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, freeze protection shall be provided. 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 as required by the State of Iowa for elevators. 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) **Sections 1205.0 through 1205.2 Authority to Render Gas Service.** are deleted.
- (56) **Sections 1207.0 and 1207.1 Temporary Use of Gas.** are deleted.
- (57) **Section 1208.6.4.5 Corrugated Stainless Steel Tubing.** is deleted in its entirety and the following section is inserted in lieu thereof: “**Section 1208.6.4.5 Corrugated Stainless Steel Tubing.** Only CSST with an arc-resistant jacket or covering system listed in accordance with ANSI LC-1 (Optional Section 5.16)/CSA 6.26-2016 shall be installed, in accordance with the terms of its approval, the conditions of listing, the manufacturer’s instructions and this code, including electrical bonding requirements in Section 1211.2. CSST shall not be used for through-wall penetrations from the point of delivery of the gas supply to the inside of the structure. CSST shall not be installed in locations where subject to physical damage unless protected in an approved manner.”
- (58) **Section 1211.3 Arc-Resistant Jacketed CSST.** is deleted.

Existing Code with Proposed Deletions and Additions

~~(11) — **Mechanical.** The provisions of the International Mechanical Code (IMC) 2015 Edition published by the International Code Council, Inc., as adopted and amended in this code, shall apply to the installation, alteration, repair and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air conditioning and refrigeration systems, incinerators and other energy related systems.~~

~~**Exception:** One and two family dwellings shall comply with the 2015 International Residential Code.~~

Sec. 5.100(11) Mechanical. Delete this section in its entirety and replace with the following

(11) **Mechanical.** The provisions of the International Mechanical Code (IMC) 2021 Edition, published by the International Code Council, 4051 West Flossmoor Road, Country Club Hills, IL 60478, are hereby adopted by reference with amendments as the City of Ames Mechanical Code.

~~(12) — **Plumbing.** The provisions of the Uniform Plumbing Code (UPC) 2015 Edition published by the International Association of Plumbing and Mechanical Officials, 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, are hereby adopted and designated, together with and subject to the additions, deletions, and modifications hereinafter stated in the amendments to this code, shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, all aspects of a medical gas system, and fuel gas piping.~~

Sec. 5.100(12) Plumbing. Delete this section in its entirety and replace with the following

(12) **Plumbing.** The provisions of the Uniform Plumbing Code (UPC), Sections 101 and 102 and Chapters 2 through 17 of the Uniform Plumbing Code, 2021 Edition, as published by the International Association of Plumbing and Mechanical Officials, 4755 E. Philadelphia Street, Ontario, California 91761-2816, are hereby adopted by reference with amendments as the City of Ames Plumbing Code.

~~(13) — **Gas.** The provisions of the International Fuel Gas Code (IFGC) 2015 Edition published by the International Code Council, Inc., as adopted and amended in this code, shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in this code. These requirements apply to gas piping systems extending from the point of delivery to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories. **Exception:** One and two family dwellings shall comply with the 2015 International Residential Code.~~

Sec. 5.100(13) Gas. Delete this section in its entirety and replace with the following

(13) **Gas.** Fuel gas piping shall comply with the requirements of Chapter 12 of the Uniform Plumbing Code, 2021 Edition, as published by the International Association of Plumbing and Mechanical Officials, 4755 E. Philadelphia Street, Ontario, California 91761-2816 and adopted by the City of Ames with amendments, unless the provisions conflict with the Iowa Administrative code (IAC) 661-Chapter 226, Liquefied Petroleum Gas. Where Chapter 12(2021UPC) conflicts with 661-chapter 226(IAC), the provisions of Chapter 226 shall be followed.

Sec. 5.206. — MECHANICAL.

The provisions of the 2015 International Mechanical Code (IMC), are amended as follows:

- (1) ~~Section 103 Department of Mechanical Inspections~~ and associated subsections is deleted.
- (2) ~~Section 106.4.1 Approved construction documents~~ is deleted.
- (3) ~~Section 106.4.3 Expiration~~ is deleted.
- (4) ~~Section 106.4.4 Extensions~~ is deleted.
- (5) ~~Section 106.4.8 Posting of permit~~ is deleted.
- (6) ~~Section 106.5 Fees~~ is deleted.
- (7) ~~Section 106.5.1 Work commencing before permit issuance~~ is amended to read “Any person who commences work on a mechanical system before obtaining the necessary permits may be subject to 100 percent of the usual permit fee in addition to the required permit fees.”
- (8) ~~Section 106.5.2 Fee schedule~~ is amended to read “The fees for mechanical work shall be indicated in Appendix U of the Ames Municipal Code.”
- (9) ~~Section 106.5.3 Fee refunds~~ is deleted.
- (10) ~~Section 108.4 Violation penalties~~ is deleted.
- (11) ~~Section 108.5 Stop work orders~~ is deleted.
- (12) ~~Section 109 Means Of Appeal~~ and associated subsections is deleted.
- (13) ~~Section 607.6.2 Membrane Penetrations~~ is amended by adding the following exception:
Exception: Duct systems constructed entirely of minimum 0.0187 inch thick steel (No. 26 gauge) shall be allowed without installation of radiation dampers.

Section 5.206 MECHANICAL. Delete Section 5.206 in its entirety and insert the following in lieu of:

Section 5.206. MECHANICAL.

The adopted provisions of the 2021 International Mechanical Code (IMC), are amended as follows:

- (1) Section 101.2 Scope. is amended by deleting the words ‘by the International Fuel Gas Code’ in the last sentence and inserting the following in lieu thereof: ‘by Chapter 12 of the UPC as stated in Section 5.100(13) of this Chapter’.
- (2) Section 101.2 Scope. is amended by deleting the words “Exception: Detached one- and two- family dwellings and townhomes not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height shall comply with this code or the International Residential Code.”
- (3) Section 304.11 delete the exception and inserting in lieu thereof the following new exception:
Exception: Guards are not required where permanent fall arrest/restraint anchorage connector devices that comply with ANSI/ASSE Z 359.1 are affixed for use during the entire lifetime of the roof covering. The devices shall be evaluated for possible replacement when the entire roof covering is replaced. The devices shall be placed not more than 10 feet (3048 mm) on center along hip and ridge lines and placed not less than 10 feet (3048 mm) from roof edges and the open sides of walking surfaces.
- (4) Section 306.1 Access. Delete the last sentence and inserting in lieu thereof: “An unobstructed level working space at least 30 inches deep and 30 inches wide shall be provided on any side of equipment where service access is required. The authority having jurisdiction may approve service reductions prior to equipment installation, provided that the manufacturer’s instructions are met.”
- (5) Section 306.2 Appliances in attics. Delete this section in its entirety and insert in lieu thereof the following new section. Appliances in rooms and closets. Rooms and closets containing appliances shall be provided with a door and an unobstructed passageway measuring not less than 36 inches wide

- and 80 inches high. A level service space not less than 30 inches deep and 30 inches wide shall be present at the front service side of the appliance with the door open.
- (6) **Section 306.5. Equipment and appliances on roofs or elevated structures.** Is amended by adding the following to the end of the section: “If the tenants of a multiple tenant building have, or are allowed to have, mechanical facilities on the roof or which penetrate the roof, then roof access ladders must be provided for use by all such tenants and their agents and contractors in a manner that does not require accessing space under the control of another tenant.” And deleting the following exception “Exception: This section shall not apply to Group R-3 occupancies.”
- (7) **Section 306.5.3** insert the following new section: **Section 306.5.3 Visual screening of rooftop equipment.** Equipment screening shall not be installed to the rooftop unit or the curb of the rooftop unit unless specified in the mechanical equipment manufacturer’s installation instructions.
- (8) **Section 401.1 Scope.** Delete the section in its entirety and insert in lieu thereof the following new **section 401.1:** This chapter shall govern the ventilation of spaces within a building intended to be occupied. These buildings shall meet either the requirements of ASHRAE Standard 62.1, “Ventilation for Acceptable Indoor Air Quality,” 2019 edition, published by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers, 1791 Tullie Circle N.E., Atlanta, GA 30329, or the requirements contained in this chapter. Mechanical exhaust systems, including exhaust systems serving clothes dryers and cooking appliances; hazardous exhaust systems; dust, stock, and refuse conveyor systems; sub slab soil exhaust systems; smoke control systems; energy recovery ventilation systems; and other systems specified in Section 502 shall comply with Chapter 5.
- (9) **Table 4033.3.1.1 Minimum Ventilation Rates:** is amended by adding the following footnotes.
- i. For gym, stadium, arena(play area) categories of the sports and amusement occupancy. When combustion equipment is intended to be used on the playing surface, additional dilution ventilation and/or source control shall be provided.
- j. For ventilation purposes, “smoking” includes both combustible tobacco products and accessories and electronic smoking devices and accessories.
- (10) **Section 504.9.2 Duct installation.** Delete section 504.9.2 in its entirety and insert in lieu thereof the following new section: **504.8.2 Duct installation.** Exhaust ducts shall be supported at 4-foot (1219 mm) intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined by screws or similar fasteners that protrude into the inside of the duct.
- (11) **Section 506.3.13.3** delete section 506.3.13.3 in its entirety and insert in lieu thereof the following new section: **506.3.13.3 Termination location.** Exhaust outlets shall be located not less than 10 feet (3048 mm) horizontally from parts of the same or contiguous buildings, adjacent buildings and adjacent property line and shall be located not less than 10 feet (3048 mm) above the adjoining grade level. Exhaust outlets shall be located not less than 20 feet horizontally/vertically from or not less than 5 feet above air intake openings and operable doors and windows into any building.
- (12) **Section 507.3 Type II Hoods.** Replace the first sentence in its entirety with the following sentence: “Type II hoods shall be installed above dishwashers capable of heating water beyond 140 degrees Fahrenheit and appliances that produce heat or moisture and do not produce grease or smoke as a result of the cooking process, except where the heat and moisture loads from such appliances are incorporated into the HVAC system design or into the design of a separate removal system.”
- (13) **Section 508.1.1 Makeup air temperature.** Delete section 508.1.1 in its entirety and insert in lieu thereof the following section. **Section 508 .1.1 Makeup air temperature.** All kitchen makeup air systems shall be verified by a certified TAB (testing and balance) contractor to heat makeup air to within 10 degrees of room temperature set point. The TAB contractor shall be certified by NEBB, TABB, or other certifying organization as approved by the Authority Having Jurisdiction.
- (14) **Section 601.5 Return air openings.** Is amended by adding the following two additional requirements for return air openings.

9. Return air openings shall be located at least 18 inches from supply air openings. Air throw shall be directed away from return air openings to reduce short cycling of air. Exception: Factory-made concentric duct terminations.
10. One return air opening per floor is required on a central duct return system per ACCA Manual D, Appendix 8. Return air transfer openings are required on all bedrooms when dedicated return air openings are not used.
- (15) Section 603 Duct Construction and Installation. 603.1.1 Duct location. Air plenums and ducts located in floor and wall cavities shall be separated from unconditioned space by construction with insulation to meet energy code requirements. These areas include but are not limited to exterior walls, cantilevered floors, and floors above garages.
- (16) Section 604.3 Coverings and linings. Delete section 604.3 in its entirety and insert in lieu thereof the following new section: 604.3 Coverings and linings. Duct coverings and linings, including adhesives where used, shall have a flame spread index of not more than 25 and a smoke-development index of not more than 50, when tested in accordance with ASTM E84 or UL 723, using the specimen preparation and mounting procedures of ASTM E2231. Duct coverings and linings shall not fame, glow, smolder or smoke when tested in accordance with ASTM C411 at the temperature to which they are exposed in service. The testing temperature shall not fall below 250°F (121°C). Coverings and linings shall be listed and labeled. The use of an air gap to meet R-value requirements for duct insulation shall be prohibited.
- (17) **Section 607.6.2 Membrane Penetrations** is amended by adding the following exception: **Exception;** Duct systems that originate and terminate entirely within one dwelling/sleeping unit and are constructed entirely of minimum 0.0187 inch thick steel (No. 26 gauge) shall be allowed without installation of radiation dampers.
- (18) **Section 607.6.2.1.3. Insert the following new section 607.6.2.1.3 Access.** Access to ceiling radiation dampers shall be provided with an approved means of access that is large enough to permit inspection and maintenance of the damper and its operating parts. Dampers equipped with fusible links, internal operators for both shall be provided with either an access door that is not less than 12 inches (305mm) square, or a removable duct section.
- (19) **Section 607.6.2.1.4. Insert the following new section 607.6.2.1.4 Identification of access.** Access to ceiling radiation damper locations and access points shall be permanently identified on the exterior by a label or marking acceptable to the authority having jurisdiction.

~~Sec. 5.207. — GAS.~~

The provisions of the 2015 International Fuel Gas Code (IFGC), are amended as follows:

- (1) ~~Section 106 Permits and associated subsections is deleted.~~
- (2) ~~Section 108 Violations and associated subsections is deleted.~~
- (3) ~~Section 109 Means Of Appeal and associated subsections is deleted.~~

Section 5.208 PLUMBING. Delete Section 5.208 in its entirety and insert the following in lieu thereof:

Sec. 5.208. PLUMBING.

The provisions of the ~~2015~~ 2021 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.~~

(3) **Section 301.5 Alternative Engineered Design.** is amended by adding the following sentence to the end of the section: “No engineered single-stack drainage system shall be installed.”

(4) **Section 309.6 Dead Legs.** is amended by adding the following sentence to the end of the section: “The authority having jurisdiction can determine the method of flushing.”

(5) **Section 312.6 Freeze Protection.** is amended by adding the following at the end of the section: “Systems requiring protection from freezing 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.”

- (6) Section 314.4.1 Installation of Thermoplastic Pipe and Fittings. is deleted in its entirety and a new section is inserted in lieu thereof: "Section 314.4.1 Installation of Thermoplastic Pipe Fittings. Trench width for thermoplastic pipe shall be limited to six times the outside diameter of the piping at the base. Thermoplastic piping shall be bedded in not less than 4 inches (102 mm) of aggregate bedding material supporting the pipe. Initial backfill shall encompass the pipe. Aggregate material shall be three-eighths (3/8) inch p-gravel or 1-inch clean class one bedding."
- (7) Section 402.5 Setting. is amended by adding the following sentence to the end of the section that begins "Exception.": "Sanitary napkin receptors are not dispensers and shall not be within the clear space of the water closet."
- (8) Section 407.3 Limitation of Hot Water Temperature for Public Lavatories. is amended by adding the following sentence to the end of the section: "These devices shall be installed at or as close as possible to the point of use."
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- (9) Section 408.3.2 Temperature Limiting.
- (1) Amend this section by adding the following to the end of (3): "and installed at or as close as possible to the point of use."
 - (2) Amend this section by adding the following to the end of (5): "may be used downstream of other allowed device. TAFR valves are not intended to be installed in place of devices complying with ASSE 1016, ASSE 1017, ASSE 1066, ASSE 1069, or ASSE 1070."
- (10) Section 408.0 Showers. is amended by adding a new subsection: "Section 408.11 Shampoo Bowls and Grooming Stations. Limitation of Hot Water Temperature of Hair Shampoo Bowls and Pet Grooming Stations. The maximum hot water temperature discharging from hair shampoo bowls and pet grooming stations shall be limited to 120°F (49°C). The maximum temperature shall be regulated by one of the following means, which shall be installed at or as close as possible to the point of use:
- "(1) A limiting device conforming to ASSE 1070, ASME A112.1070, CSA B125.70, or CSA B125.3.
 - "(2) A water heater conforming to ASSE 1084."
- (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.~~
- (11) Section 409.4 Limitation of Hot Water in Bathtubs and Whirlpool Bathtubs. is amended by adding the following sentence to the end of the section: "These devices shall be installed at or as close as possible to the point of use."
- (12) Section 410.3 Limitation of Water Temperature in Bidets. is amended by adding the following sentence to the end of the section: "These devices shall be installed at or as close as possible to the point of use."

(13) Section 416.5 Drain. is amended by deleting the last sentence, which states: “Where a drain is provided, the discharge shall be in accordance with Section 811.0.”

(14) **Section 418.3 Location of Floor Drains** is amended by adding section 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 principal 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.~~

(15) Section 422.1 Fixture Count.

(1) Modify the section by deleting the first paragraph and inserting the following in lieu thereof:
“Plumbing fixtures shall be provided in each building for the type of building occupancy and in the minimum number shown in Table 2902.1 and its associated foot notes of the 2021 International Building Code.

Required public facilities shall be designated by a legible sign for each sex. Signs shall be readily visible and located near the entrance to each toilet facility.”

(2) Modify the section by deleting the second paragraph and inserting the following in lieu thereof:

“The minimum number of fixtures shall be calculated at 50 percent male and 50 percent female based on the total occupant load. Where information submitted indicates a difference in the distribution of the sexes, such information shall be used to determine the number of fixtures for each sex. Once the occupancy load and occupancy are determined, Table 2902.1 shall be applied to determine the minimum number of plumbing fixtures required. When gender-neutral restrooms are provided, the total number of fixtures provided must be the sum of men’s and women’s fixtures as figured, and urinals in gender-neutral restrooms shall not be substituted for more than 67 percent of men’s water closets in assembly and educational occupancies or 50 percent of men’s water closets in all other occupancies. Where gender-neutral fixtures are provided in addition to separate men’s and women’s facilities, those gender-neutral fixtures shall be included in determining the number of fixtures provided in an occupancy. Where applying the fixture ratios in Table 2902.1 results in fractional numbers, such numbers shall be rounded to the next whole number. For multiple occupancies, fractional numbers shall be first summed and then rounded to the next whole number.

(16) Section 422.1.1 Family or Assisted-Use Toilet and Bathing Facilities.

Modify the section by adding the following sentence to the end of the section: “Required family or assisted-use fixtures are permitted to be included in the number of required fixtures for either the male or female occupants in assembly and mercantile occupancies.”

(17) Table 422.1 Minimum Plumbing Facilities. Delete the table

(18) Section 422.2 Separate Facilities. Modify this section by adding an Additional exception:
“(4) Separate facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by any gender and sufficient privacy for water closets is installed. Partitions or compartment walls shall extend from no more than 1 inch from the floor to no less than 84 inches from the floor. 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.”

(19) Section 422.6 Substitution for Water Closets. Insert the following new section: “In each bathroom or toilet room, urinals shall not be substituted for more than 67 percent of the required water closets in assembly and educational occupancies. Urinals shall not be substituted for more than 50 percent of the required water closets in all other occupancies. (Reprinted from the 2018 International Plumbing Code section 424.2)”

~~(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.~~

~~(20) — 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."~~

(a) ~~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."

(b) ~~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.~~

~~e. 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.~~

~~e. ——— 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 non-compliance, 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~~

regulations 5. ~~Failure to comply with the requirements of these~~

assembly 6. ~~Refusal to replace a faulty backflow prevention~~

containment which has been required by the Administrative Authority except for seasonal removal as in Section (viii) f 7. ~~Removal of a backflow prevention assembly for~~

containment which has been required by the Administrative Authority 8. ~~Bypassing of a backflow prevention assembly for~~

9. ~~Failure to report a backflow incident~~

10. ~~Direct connection between the PWS and a sewer line~~

to the PWS 11. ~~A situation which presents an immediate health hazard~~

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

intent to terminate water service. 1. ~~Make a reasonable effort to advise the customer of~~

water service will remain inactive until correction of the violation has been approved by the Administrative Authority. 2. ~~Terminate water service and lock service valve. The~~

(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.

(20) ~~Section 603.0 Cross Connection Control~~ is amended by deleting the text and inserting the following in lieu thereof: Section 603.0 Cross Connection Control shall be in compliance with Section 28.209B of the City of Ames Municipal Code.

(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 by Chapter 14 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 Chapter 14 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 non fire 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.

(21) ~~Section 604.6 Cast-Iron Fittings~~ is deleted.

- (22) **Section 604.7 Malleable Iron Fittings** is deleted.
- (23) **Section 604.10.1 Tracer Wire.** Delete Section 604.10.1 and insert the following in lieu thereof.
Plastic materials for building supply outside underground 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 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.

~~(23) **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 (¾) 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 SDR 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 shut off 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 Bac T 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 609.1 Installation.** Delete Section 609.1 and insert the following in lieu thereof:
Section 609.1 Installation. Water piping shall be adequately supported in accordance with Table 313.3. Burred ends shall be reamed to the full bore of the pipe or tube. Changes in direction shall be made by the appropriate use of fittings, except that changes in direction in copper or copper alloy tubing shall be permitted to be made with bends, provided that such bends are made with bending equipment that does not deform or create a loss in the cross-sectional area of the tubing. Changes in direction are allowed with flexible pipe and tubing without fittings in accordance with the manufacturer's instructions. Provisions shall be made for expansion in hot-water piping. Piping, equipment, appurtenances, and devices shall be installed in a workmanlike manner in accordance with the provisions and intent of the code. Building supply yard piping shall be not less than 60 inches below earth cover.

(25) **Section 609.1 Installation.** is amended by adding the following new sections 609.1.1 through 609.1.9

Section 609.1.1 New Service Location. In a new subdivision the water service line shall be installed at the center of the property unless otherwise approved by the Administrative Authority.

Section 609.1.2 Threaded Taps on Water Mains. 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

Section 609.1.3 Corporation Cock Required. 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.

Section 609.1.4 Service Valve Required. 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.

Section 609.1.5 Service Saddles. 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 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 service saddle shall be a stainless-steel full wrap around saddle. 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
- (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

Section 609.1.6 Curb Stop required. There shall be a curb stop 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. Curb Stops shall be of the quarter turn ball valve type with the grip joint ends. The curb stop 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 stop, or equal, provided with T handle and extension rod keyed and locked to curb stop and shall be the same diameter as the pipe served. The curb stop shall be kept in an operative condition at all times.

Section 609.1.7 Curb Box required. The curb stop 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 stop 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. 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.

Section 609.1.8 Water Services Serving Fire Sprinkler Systems. Sprinkler systems used for fire protection may be permitted to be attached to the water mains by a licensed Plumbing Contractor. 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. 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. Water services shall be sized to accommodate the requirements of the fire sprinkler system.

accommodate the requirements of the fire sprinkler system.

Section 609.1.9. 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 $\frac{3}{4}$ 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.

(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 from the Authority Having Jurisdiction.

~~(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 609.12 Pipe Insulation. Delete Sections 609.11 through 609.11.2 and insert the following in lieu thereof: Section 609.12 Pipe Insulation. Insulation of domestic hot water piping shall be in accordance with the applicable energy conservation code.~~

(27) **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.

(28) **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($\frac{3}{4}$) inch nominal size minimum.” With “Building supply, one (1) inch nominal size minimum.

(29) **Section 610.8 Size of Meter and Building Supply Pipe Using Table 610.4** is amended by adding the following exception.

Exception: 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 $\frac{3}{4}$ inch service lines shall be run to the individual customer units.

(30) **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.

(31) Section 611.4 Sizing of Residential Softeners. Modify the section by adding the following to the end of the last sentence in the section: “or as specified in the manufacturer’s installation instructions.”

(32) Section 612 Residential Fire Sprinkler Systems. Delete sections 612.0 through 612.7.2.

- (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.
- (33) **Table 702.1 Notes . Note #8.** Modify this note by adding the following at the end of the footnote:
 “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.”
- (34) **Table 702.1 Notes. Note #9.** Modify this note by deleting “a maximum shower size of 36 inches (914 mm) in width and 60 inches (1524 mm) in length” and inserting the following in lieu thereof: “showers having only one shower head rated at a maximum of 2.5 gpm.”
- (35) **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.
- (36) **Section 704.3 Commercial Sinks** is amended to read “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.
- (37) **Section 710.1 Backflow Protection.** Modify the section by adding the following sentences to the end of the section: “The requirement for the installation of a backwater valve shall apply only when determined necessary by the Authority Having Jurisdiction based on local conditions. When

a valve is required by the Authority Having Jurisdiction, it shall be a manually operated gate valve or fullway ball valve. An automatic backwater valve may also be installed but is not required.”

- (38) **Section 715.2 Joining Methods and Materials** is amended by adding the following exception:
No molded rubber coupling 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.
- (39) **Section 717.1 General, Size of Building Sewers.** Delete the first paragraph and insert the following in lieu thereof: “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. With prior approval from the Building Official, 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 freeze protection is required. The sewage ejector shall be vented with a minimum two (2) inch pipe.
- (40) **Section 718.2 Support.** Delete this section in its entirety and replace by inserting the following in lieu thereof: 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 single family dwelling, the building sewer shall not be located under a driveway.~~
- (41) **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.~~

- (42) Section 807.3 Domestic Dishwashing Machine. Modify the section by deleting the section and inserting the following language in lieu thereof: “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. 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.”
- (43) Section 814.5 Point of Discharge. Delete Section 814.5 and insert the following in lieu thereof: Section 814.5 Point of Discharge. Air-conditioning condensate waste pipes shall connect indirectly to a properly trapped fixture, floor drain, or open sight drain, or where permitted in Section 814.6, to the drainage system through an air gap or air break to trapped and vented receptors, dry wells, leach pits, sump pump, the tailpiece of plumbing fixtures or indirectly to the building storm sewer through a roof drain. A condensate drain shall be trapped in accordance with appliance manufacturer’s instructions or as approved.
- (44) Section 901.1 Applicability. Modify the section by adding the following sentence to the end of the section: “No engineered single-stack drainage systems shall be installed.”
- (45) **Section 901.2 Vents Required,** is amended by adding the following at the end of the section: “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.
- (46) Section 906.1 Roof Termination. Modify the section by deleting the last sentence.
- (47) Section 906.7 Frost or Snow Closure. Modify the section by deleting “two (2) inches (50.8mm)” in the first sentence and inserting “three (3) inches (76.2 mm)” in lieu thereof.
- (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) Section 908.2.2 Size. Delete the second sentence in this section and insert the following new sentence in lieu thereof: “The wet vent shall be not less than 2 inches (50 mm) in diameter for 6 drainage fixture units (dfu) or less, and not less than 3 inches (80 mm) in diameter for 7 dfu or more.”
- (49) Table 1002.2 Horizontal Lengths of Trap Arms is amended to read as follows:

Table 1002.2
Horizontal Lengths of Trap Arms
(Except for Water Closets and Similar features)^{1,2}

<u>Trap Arm Diameter</u> <u>(inches)</u>	<u>Distance trap to vent</u> <u>Minimum(inches)</u>	<u>Length Maximum</u> <u>(feet)</u>
1-1/4	2-1/2	5
1-1/2	3	6
2	4	8
3	6	12
4	8	12
Exceeding 4	2 x Diameter	12

For SI units: 1 inch = 25.4 mm

Notes:

1 Maintain ¼ inch per foot slope (20.8 mm/m).

2 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 6 feet (1829 mm).

- (50) **Section 1007.1 Trap Seal Protection**. General. Modify this section by deleting “not deemed necessary for safety or sanitation by the Authority Having Jurisdiction” and inserting the following in lieu thereof: “floor drains or similar traps that receive a liquid discharge year round.”
- (51) Section 1014.1.3 Food Waste Disposers and Dishwashers. Modify the section by deleting the second sentence and inserting the following in lieu thereof: “Commercial food waste disposers shall discharge into the building’s drainage system in accordance with the requirements of the Authority Having Jurisdiction.”

- (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 (1/2) 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 (1/2) of the main.~~

~~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 pump line 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, freeze protection shall be provided. 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 as required by the State of Iowa for elevators. 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.~~

(55) **Sections 1205.0 through 1205.2 Authority to Render Gas Service.** Delete the sections

(56) **Sections 1207.0 and 1207.1 Temporary Use of Gas.** Delete the sections.

(57) **Section 1208.6.4.5 Corrugated Stainless Steel Tubing.** Delete section 1208.6.4.5 and insert the following in lieu thereof: Corrugated Stainless Steel Tubing. Only CSST with an arc-resistant jacket or covering system listed in accordance with ANSI LC-1 (Optional Section 5.16)/CSA 6.26-2016 shall be installed, in accordance with the terms of its approval, the conditions of listing, the manufacturer's instructions and this code, including electrical bonding requirements in Section 1211.2. CSST shall not be used for through-wall penetrations from the point of delivery of the gas supply to the inside of the structure. CSST shall not be installed in locations where subject to physical damage unless protected in an approved manner.

(58) **Section 1211.3 Arc-Resistant Jacketed CSST.** Delete the section.

Significant Changes for the UPC

- New provisions for temperature limiting devices allows conforming water heaters to be utilized for temperature limiting of the hot water. 407.3(2)
- New provisions for the required guardrails around equipment located on elevated surfaces. 508.2.11
- New standard introduced for leak detection devices for water supply and distribution. 606.8-606.9
- New design standard for potable water pumps. 609.8.1-609.8.2
- New design and installation standards for plastic DWV piping. 701.2
- New design standard for cleanout fittings and caps. 707.2
- New requirements for circuit venting 911.2.1-911.5

Significant Changes for the IMC

- New standard for condensate line termination. 307.1.1, 307.2.1.1, 307.2.3.3
- New, more relaxed, standards for factory combustion/intake and exhaust. 401.4(3)
- New standards for whole-house ventilation. 403.2.1 Exceptions 2-2.2
- New standards for manicure/pedicure operations. 520.20
- New standards for clothes dryer exhausts. 504.4.1, 504.6
- New regulation for grease duct cleanouts 506.3.9(6,7)
- New requirements for polyurethane spray-foam. 602.2.2.1.8, 604.3
- New standards for fire and smoke dampers. 607.4.1-607.4.2
- Updated refrigerant tables. 1101.1.1, 1101.1.2, Table 1101.2