

STATE OF MINNESOTA

DEPARTMENT OF ADMINISTRATION

BUILDING CODES AND STANDARDS DIVISION

In the Matter of the Proposed  
Adoption of Amendments to the  
*Minnesota Plumbing Code*

STATEMENT OF NEED AND  
REASONABLENESS

- I. The Commissioner of the Minnesota Department of Administration proposed to adopt amendments to chapter 4715 of the Minnesota State Building Code entitled the *Minnesota Plumbing Code*. In addition to substantive changes, reorganization and grammatical changes are proposed to improve clarity and to conform with current style requirements.

The present *Minnesota Plumbing Code* Rules, 1990 printing effective July 16, 1990, contains Minnesota Rules 4715.0100 to 4715.6000.

The proposed rules contain certain amendments to the *Minnesota Plumbing Code*, chapter 4715.0100 to 4715.600.

The Department began the present rule notification process on July 8, 1991 publishing a note in the State Register (16 S.R. 68) soliciting opinions and information from the public on the rules regarding the Minnesota State Building Code.

II. Statement of Agency's Statutory Authority

The Commissioner of the Department of Administration and the Commissioner of the Department of Health have authority to adopt the rule amendments under Minnesota Statute 16B.61 subdivision 1, and 326.37 subdivision 1, respectively. However, Minnesota Statute 16B.64 requires the Commissioner of Administration to make all determinations regarding any subject matter dealt with in the code including those in which another state agency proposes to adopt or amend rules which are incorporated by reference into the code or whenever the commissioner proposes to incorporate those rules into the state building code.

16B.61 Subdivision 1. Adoption of code. Subject to sections 16B.59 to 16B.73, the commissioner shall by rule establish a code of standards for the construction, reconstruction, alteration, and repair of state-owned buildings, governing matters of structural materials, design and construction, fire protection, health, sanitation, and safety. The code must conform insofar as practicable to model building codes generally accepted

and in use throughout the United States. In the preparation of the code, consideration must be given to the existing statewide specialty codes presently in use in the state. Model codes with necessary modifications and statewide specialty codes may be adopted by reference. The code must be based on the application of scientific principles, approved tests, and professional judgement. To the extent possible, the code must be adopted in terms of desired results instead of the means of achieving those results, avoiding wherever possible the incorporation of specifications of particular methods or materials. To that end the code must encourage the use of new methods and new materials. Except as otherwise provided in the sections 16B.59 to 16B.73, the commissioner shall administer and enforce the provisions of those sections.

326.37 Subdivision 1. The state commissioner of health may, by rule, prescribe minimum standards which shall be uniform, and which standards shall thereafter be effective for all new plumbing installations, including additions, extensions, alterations, and replacements connected with any water or sewage disposal system owned or operated by or for any municipality, institution, factory, office building, hotel, apartment building, or any other place of business regardless of location or the population of the city or town in which located. Violation of the rules shall be a misdemeanor.

### III. Statement of Need

It is necessary to periodically amend the *Minnesota Plumbing Code* in order to maintain the most current plumbing code standards regarding health, sanitation, and safety by regulating the design, construction, quality of materials, use and maintenance of plumbing in buildings and structures. The proposed new *Minnesota Plumbing Code* includes amendments that are needed to address changes in technology, materials, and methods of construction.

### IV. Statement of Reasonableness

Minnesota Statutes Chapter 14 requires the agency to make an affirmative presentation of facts establishing the reasonableness of the proposed rules. This means that the agency must set forth the reasons for its proposal, and the reasons must not be arbitrary or capricious. However, to the extent that need and reasonableness are separate, need has come to mean that a problem exists which requires administrative attention, and reasonableness means that the solution proposed by the department is appropriate. The reasonableness of the proposed rules is discussed below.

#### A. Reasonableness of the Rules as a Whole

To reflect changes in technology, materials, and methods of construction, various elements of the proposed rules are to be repealed, revised, or contain an entirely new rewrite or section. The proposed amendments to the *Minnesota Plumbing*

*Code* have been recommended by the Minnesota Advisory Council on Plumbing Code and Examinations. The council is authorized under Minnesota Statute 326.41 and Minnesota Rule part 4715.0330 Subdivision 4. It is comprised of seven members, one of whom shall be a practical master plumber, one a practical journeyman plumber, and one a representative of the commissioner. Their purpose according to 4715.0330, Subdivision 4, is to study and make recommendations concerning the uses of new fixtures, appurtenances materials and methods. When evaluating proposed new system components and methods, the Advisory Council follows the provisions of part 4715.0330 regarding suitable, alternate fixtures, et al. The need and reasonableness of each rule will be discussed below.

## B. Reasonableness of Individual Rules

### 4715.0420 Standards for Plumbing Materials.

This part is amended to include Canadian Standards Association (CSA) as a recognized standards setting organization, and to include certain specific CSA standards in the rule to: hubless cast iron soil pipe; nonreinforced and reinforced concrete pipe; acrylonitrile-butadiene-styrene drain-waste and vent pipe; polyvinyl chloride drain and waste pipe; polyvinyl chloride sewer pipe; acrylonitrile-butadiene-styrene sewer pipe; polyethylene, polyvinyl chloride, and polybutylene water service pipe; and polybutylene and chlorinated polyvinyl chloride water distribution pipe. All of these standards were reviewed by the Advisory Council on Plumbing Codes and Examinations and found to be at least equivalent to other standards for the same type of material which are already included in this part of the rules as authorized by part 4715.0330. The inclusion of these standards was recommended by the advisory council. This part is further amended to delete extraneous notes which indicated the dates when certain previous amendments were made to the code. These are deleted because the practice of adding such dates was discontinued after 1973 even though there have been many changes to this part of the rule subsequent to that date, and it is no longer clear which provisions of the rule are referred to by the amendment.

### 4715.0420, Subp. 3.VI. Plastic Pipe and Fittings.

6A. This subpart is being amended to use the current technology of "cellular" core in lieu of "foam" core for these types of pipe which include a closed cell cellular core between an inner and outer layer of solid pipe.

6B. This subpart is being added to permit the use of another acceptable plastic pipe material for drain, waste, and vent pipe. It is polyvinyl chloride cellular core pipe, similar in design to the acrylonitrile-butadiene-styrene cellular core pipe already listed in the code. The pipe must be manufactured to comply with ASTM Standard F891 to assure minimum acceptable quality of the pipe.

4715.0510 G. Water Service Pipe

G. Item "G" is amended to delete an extraneous "." in the site of ASTM D2774-72.

4715.0510. H. Water Service Pipe.

H. Item H is added to include another acceptable material for water service pipe, namely "ductile iron". It complies with the same standards as ductile iron pipe used for watermains to ensure integrity of the system and protection of the potable water.

4715.0800 Subp. 4 Mechanical Joints.

This item is amended to include CSA Standard CSA/CAN 3-B70 for neoprene rubber coupling gaskets for mechanical joints in hubless cast iron soil pipe. This standard was reviewed by the Advisory Council on Plumbing and Examinations, and determined to be at least equivalent to the ASTM standard which is already listed in the rule for this type of gasket and should be included in the code.

4715.0800. Subp. 5 Mechanical pipe couplings and fittings.

This amendment is recommended by the Advisory Council to permit the use of a new type of pipe joining system which includes special copper fittings with rolled grooves, together with special ductile iron couplings. Copper tubing used with this system would have field applied cold rolled grooves to accept the couplings. The fittings are required to have approval by the International Association of Plumbing and Mechanical Officials (IAPMO) to assure that the products are properly tested, and as an indication of product acceptance by an international product listing organization. IAPMO is an organization comprised of inspectors, plumbers, engineers, and industry representatives, that evaluate plumbing materials, fixtures, and methods of construction, for safe use in buildings.

This subpart is further amended to permit use of certain galvanized saddle-type fittings, which are secured by steel electroplated U-bolts, for above-ground water distribution. This fitting is also required to have IAPMO approval, to assure proper testing and as an indication of product acceptance by an international product listing organization.

4715.0805 Push-on Joints.

This part is amended to clarify that gaskets in cast iron and ductile iron water service lines may not be lead tipped. This is consistent with efforts to eliminate contact of drinking water with lead surfaces in plumbing systems. Lead in drinking water has been implicated as a source of lead consumption for children which results in decreased learning capability.

4715.0810 Subp. 1 Plastic Joints.

This amendment requires that currently recognized push-on type gasketed joints in water service pipe comply with the industry standard, ASTM D3139. Compliance with this standard is necessary to assure tight joints and minimize the potential for detrimental effect on the portable water.

4715.0870 Flanged Fixture Connections.

This part is amended to clarify that certain types of fixtures, such as floor mounted back outlet water closets, may be installed without a flange at the drainage pipe connection if they are designed by the manufacturer to be used without a flange. The former language appeared to require a flange for all installations, including when not needed or desirable for a functional installation.

4715.1020 Cleanout Materials.

This part is amended to delete some extraneous language which refers to a detail for cleanout covers which has been removed from the code.

4715.1100 Interceptors and Separators Required.

Part 1100 is amended to allow an option for the design of interceptors and separators. Designers may now either follow the specific design and size parameters which previously existed in the rules, or provide an engineered manufactured unit with documentation from the manufacturer and the project engineer stating that the unit is properly designed and sized for the project. This is needed to clarify that such engineered units are acceptable.

4715.1110 Grease Interceptors for Commercial Buildings.

This part is amended to require that air openings on grease trap flow control devices be connected to the plumbing vent system, and that all fixtures be trapped and vented ahead of the grease trap. This is necessary to prevent sewer gasses from entering the building since grease traps can allow internal air bypass.

4715.1120 Oil and Flammable Liquids Separator.

This part is amended to require all enclosed garages over 1000 square feet in floor area to have any drains discharge through a flammable waste trap. This is needed because the former language required a flammable waste trap when four or more vehicles would be housed. During plan review and inspection, an area requirement provides more definite criteria when the future use may not be known.

This part is further amended to clarify that the corrosion resistance coating already required for a metal flammable waste trap must be on both the inside and the outside of the tank. This has always been the intent of the rule, and the way the rule has been enforced, but the clarification will eliminate any doubts as to the intent.

This part is further amended to require the flammable waste trap vent pipe

to be metallic material. This change is to provide integrity to the system, including in the event of a fire, when plastic pipe would fail.

This part is further amended to clarify that a sand trap ahead of a flammable waste trap in a car wash is not permitted to have a water seal. This is to prevent flammable liquids from collecting in an open sand trap, which would create a fire or explosion potential.

This part is further amended to prohibit the use of mechanical joints within oil and flammable liquid separators. Mechanical joints are too easily disconnected, allowing removal of the trap seal on the outlet. When this occurs, the separator no longer provides its intended function.

This part is further amended to require a flammable liquid separator to be readily accessible for service and maintenance, and to require proper maintenance by periodic removal of accumulated liquids and solids. This is needed to assure that the separator will continue to perform its intended function, and will not be overloaded which may result in allowing flammable liquids to be discharged from the trap instead of being retained.

#### 4715.1160, Subp. 1, Backwater Valves.

Subp. 1, Where used. This amendment is to clarify the intent of the rule. The original provision was based on the existence of many combined sanitary and storm sewers which increased the likelihood of a sewer being surcharged and resulting in backup into buildings. With most combined sewers now being separated, the concern of backup is reduced. This clarification is to provide additional guidance to the administrative authority when reviewing whether the provision for a backwater valve may be waived.

#### 4715.1210 Required Minimum Number of Fixtures.

Because the plumbing fixture reference in the building code periodically changes, it is necessary to make a more general reference as to where the provisions may be found. Part 4715.1215 is repealed to reduce duplication of the requirements and avoid conflict when the plumbing fixture requirements in the building code undergo change.

#### 4715.1240 Bathtubs.

Subp. 2. Whirlpool bathtubs. This part is amended to refer to the current industry standards for whirlpool type bathtubs. The standards which were formerly referenced has been eliminated by the standard setting organization.

Subp. 3. Drop-in bathtubs. This amendment is added to require that all bathtubs that are installed against a wall be provided with a factory applied flange to permit an installation which will have a water-tight joint at the wall. This to prevent water from leaking between the tub and the wall and causing damage to the building finishes or structure. Contractors have often been unable to provide a suitable sealed water-tight joint without such a flange. Tubs without such a flange would only be allowed where tubs are not located against a wall.

#### 4715.1260 Drinking Fountains.

This part is amended to make this part consistent with the requirement in part 4715.2010 subp. 4.

#### 4715.1300 Floor Drains.

Subp. 2. Basement floor drains. This subpart is amended to permit the use of materials other than cast-iron pipe for floor drains. Floor drains of PVC and ABS plastic pipe are now available which can provide a complying, testable installation, and should be permitted by the code.

Subp. 6. Garage and parking area floor drains. This subpart is a new amendment to provide clarity in order to achieve uniform application, and to be consistent with efforts to separate storm water from sanitary sewers. It provides different requirements for open parking areas and enclosed garages. Open parking areas must discharge to the storm sewer, and enclosed garages which are not subject to storm water drainage must discharge to the sanitary sewer. Vehicle maintenance and wash areas must also discharge to the sanitary sewer to prevent the possibility of oily or flammable wastes being discharged to storm water retention ponds or surface waters.

#### 4715.1330 Flush Tanks.

This subpart is amended to clarify that flush tanks are a specific type of gravity tank which requires a shut off valve in the water supply line. Such fixtures require periodic maintenance, and the valve allows the fixture to be isolated for maintenance without affecting water supply to other fixtures.

#### 4715.1380 Showers.

Subp. 2. Shower waste outlet. This part is amended to specify the necessary size of the drain and drain cover in showers which have more than one shower head to assure that they will be adequately sized to handle the wastewater flow. The rules previously specified the minimum drain size to serve a single shower head, but did not adequately address installations with multiple heads which would create a greater flow. This part is further amended to require multiple shower installations be constructed with drains located to prevent the wastewater from one shower flowing over the floor area serving another shower. This is needed because some multiple shower facilities have been constructed which requires users to stand in or walk through the wastewater from others. This is an unsanitary situation, and has resulted in complaints from users of such facilities. Both of these amendments to this part are consistent with the requirements for shower installation in the BOCA National Plumbing Code which is a national consensus code.

Subp. 4. Shower compartments. This amendment is to clarify that the minimum dimension of 30 inches in shower stalls is to be measured at the height of the shower control handle(s). This is needed to make it clear where the

dimension is intended to be measured. Questions have arisen as to whether the minimum dimension must be provided at the floor level in the shower stall or at some other location.

Subp. 5. Anti-scald devices. This part is amended to refer to the current standard for anti-scald shower valves instead of a previous standard, which is no longer used by the industry. Valves are no longer tested and certified by the old standard.

#### 4715.1440 Protection of Plastic Pipe.

This part is amended to clarify that the 1/16th inch thick requirement for steel plates used to protect pipe passed through studding is for mild steel, and to allow the use of other material which is demonstrated to provide equivalent protection, such as tempered steel of a lesser dimension.

#### 4715.1510 Indirect Waste Piping.

This part is amended to add language on indirect waste piping which is merely relocated from part 4715.1590, subp. 5, and now located in a more appropriate section of the code. This part is further amended to allow the use of alternate materials for indirect waste lines from certain overflow pans and drip outlets, if properly pitched, aligned, supported, and maintained. Such alternate material may include non-rigid plastic tubing which has already come into use, and is found to perform satisfactorily if properly installed.

#### 4715.1590 Receptors or Sumps.

Subp. 4. Standpipe receptors. This part is amended to remove the word "individually" which is extraneous and therefore confusing as to intent. It was also inconsistent with other provisions of this subpart which do not require individual trapping and venting of all clothes washer discharge standpipes.

Subp. 5. Installation of indirect waste piping. This subpart is deleted because the language has been relocated to part 4715.1510.

#### 4715.1710 Water Service.

Subp. 2. Separation of water service and building sewer. This part is amended to add a note directing users to a new provision in the rules which specifies required isolation distances between buried sewer or drain lines and water wells. The note is provided in this part because it is also a part which specifies isolation distances for sewers.

4715.2000, 2020, 2030, 2100, 2110, 2120, 2150, 2161 Protection of Potable Water Against Backflow and Back-siphonage. These subparts are amended to clarify that a backflow preventer is sometimes a single unit or device, but other times is an assembly consisting of the device plus isolating valves on each side to permit proper testing and maintenance. This clarification is needed to assure that the same types of valves which the device is tested and certified with are used for



field installations, and to permit proper testing.

4715.2110 Types of devices required where an air gap cannot be provided.

This part is further amended to require that waterlines to dental units each be provided with a separate backflow preventer, and that the backflow preventer be a reduced pressure zone type. This amendment is needed because dental units are now considered to have a high risk potential regarding the spread of disease, considering current concerns with blood borne pathogens. If backflow should occur, it could spread blood from one patient into the water which comes in contact with open wounds in another patient. Footnote number 2 is amended to reference the current edition of AWWA-M14 for fire sprinkler system backflow prevention, in place of reference to the previous edition. The edition now referenced reflects current industry standards, and is readily available.

4715.2120 Location of Backflow Preventers. This part is amended to add specific location requirements for all new backflow preventer installations. They must be located to be accessible for required observation, maintenance, and testing. The range for such accessibility is 12 inches to 6 feet high. This amendment is needed because installers are continuing to locate devices at heights which do not permit the necessary access for maintenance and testing.

4715.2150 Connections not Subject to Backpressure.

Flush tanks. This part is amended to correct a typographical error. The term "C-L" which refers to the critical level was incorrectly shown as "3-L".

4715.2161 Installation of Reduced Pressure Backflow Preventers.

Subpart 2. Testing and maintenance. This part is further amended to allow an authority administering the code to require testing of reduced pressure zone backflow preventers more often than once a year where it is deemed necessary to protect the potable water supply. This flexibility is needed for situations where an installation is problematic, or the degree of hazard is unusually high.

4715.2215 Thermal Expansion Control.

This is a new provision which is intended to eliminate problems associated with thermal expansion of water in a distribution system when a device exists that prevents relief of excess pressure to the municipal watermain. The provision is needed to prevent damage to heating equipment, and possibly other parts of the system, from excessive internal pressures. It is reasonable in that it only requires installation of an expansion control device in systems where the pressure is found to be so high that it will cause the pressure relief valve on the water heater to be actuated.

#### 4715.2280 Water Meter Installation

This is amended to require water meters to be 12 inches above the finish floor level instead of the basement floor level because many water meters are not installed in basements, and the clearance is needed for all installations.

#### 4715.2300 Load on Drainage Piping.

Subp 1 and 2a. Computation of drain load. This part and a new subpart are amended and added to provide criteria for determining the drain pipe sizing necessary for certain new types of low-water-use appliances and equipment which are added to buildings with the desire of being able to use the existing plumbing system without major alteration. The criteria does not apply to new construction since the smaller size drain line permitted will necessarily limit the type of equipment and appliances which can discharge to the line to only certain specially designed low-water-use or conventional systems. This amendment is consistent with the requirements for intermittent discharge flows in the *Uniform Plumbing Code* which is a national consensus code.

Subp. 3. Table of fixture values for various plumbing fixtures. This part is amended to clarify that only gravity drain type domestic dishwashers, which have their own drain, are to be considered as having a separate fixture unit value when figuring the drainage pipe size. This clarification is needed so that domestic dishwashers with pumped discharge to sink tail pieces are not assigned a fixture unit value in addition to that of the sink. This part is further amended to clarify the proper fixture unit value for classroom sinks, and to clarify that the type of laboratory sink which has a fixture value of only (1) is a cup sink, not a deep counter sink. Requests for interpretation, and nonuniform application have demonstrated that these clarifications are necessary.

#### 4715.2440 Design of Sumps

Subpart 4. Covers. It is necessary to delete the reference to "metal" covers in the first paragraph in order to be consistent with the performance language in the last sentence where "metal or other structurally sound material" (for covers) is referenced.

#### 4715.2820 Methods of Testing.

Subp. 7. Test plugs or caps. This subpart is added to require that plugs or caps placed in rooftop vent openings, during testing of the system, must be visible from the ground. Plumbers sometimes forget or decline to remove the plugs after testing the system, and the plumbing vent system is then prevented from functioning as it lacks openings to the outside. The visibility would allow inspectors or owners to be aware of their presence and require their removal.

#### 4715.3700 Determination of Peak Demand.

Subp. 5. Graph of supply demand for various loads in supply fixture units.

This graph is amended to label the lower axis of the graph for clarification.

Subp. 6 and 7. Examples. These examples are amended to make references consistent with headings now used in parts of the code which had previously been changed.

## V. Small Business Considerations

Minnesota Statute 14.115, subdivision 2 (1988) requires the department, when proposing rules which may affect small businesses, to consider the following methods for reducing the impact on small businesses:

- (a) the establishment of less stringent compliance or reporting requirements for small businesses;
- (b) the establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses;
- (c) the consolidation or simplification of compliance or reporting requirements for small businesses;
- (d) the establishment of performance standards for small businesses to replace design or operational standards required in the rule; and
- (e) the exemption of small businesses from any or all requirements of the rule.

The division has evaluated the effect of the proposed rules on small businesses and has considered each of the methods listed above the reducing the impact of the rules on small businesses.

Since Chapter 4715 contains no scheduling, deadline or reporting requirements, items (a), (b) and (c) are not applicable.

Chapter 4715 is performance based for all uses, not just for small businesses identified in item (d).

Item (e) is not applicable as Minnesota Statute 16B.59 requires the commissioner of administration to administer a state code of building construction which will provide basic and uniform performance standards for all residents of the state.

## VI. Fiscal Impact


Minnesota Statutes, section 14.11, subdivision 1, does not apply because adoption of these rules will not result in additional spending by local public bodies in excess of

\$100,000 per year for the first two years following adoption of the rules.

VII. Conclusion

Based on the foregoing the proposed amendments to Minnesota Rules Chapter 4715 are both needed and reasonable.

Dated: 4-12, 1994



DebraRae Anderson, Commissioner  
Department of Administration