CHAPTER 4715
DEPARTMENT OF HEALTH
MINNESOTA PLUMBING CODE

4715.0420 STANDARDS FOR PLUMBING MATERIALS.

[For text of subpart 1, see M.R.]

Subp. 2 **Abbreviations.** Abbreviations in subpart 3 refer to the following

[For text of items A to C, see M R]

D CSA, Canadian Standards Association, 178 Rexdale Boulevard, Rexdale (Toronto), Ontario, Canada M9W 1R3,

E CS, Commercial Standards available from Commodity Standards Division, Office of Industry and Commerce, U S Department of Commerce, Washington, D C 20234,

F. FS, Federal Specifications available from. Federal Supply Service, Standards Division, General Services Administration, Washington, D. C 20406,

G NSF, National Sanitation Foundation, Ann Arbor, Michigan 48106,

H FHA, Federal Housing Authority, Architectural Standards Division, Washington, D C

Subp 3 **Standards for plumbing materials.**

	DESCRIPTION	ANSI	ASTM	FS	OTHER
I. CAST IRON PIPE AND FITTINGS		A21 2 A21 6	A–74	WW–P–401C	CS188
1A	Cast Iron Pipe and Fittings Extra Heavy	A21 8			
1B	Cast Iron Pipe Centrifugally Cast Only and Fittings Service Weight	A21 6 A21 8	A–74	WW–P–401C	CS188

1C	Cast Iron Mechanical (Gland Type) Pipe	A21 11 A21 2 A21 6	WW–P–421a	
1D	Cast Iron Mechanical (Gland Type) Pipe Cement Lined	A21 8 A21 4 A21 2 A21 6 A21.8		
1E	Cast Iron Short Body Water Service Fittings (2"–12")	A21.10		AWWA C100
1F	Cast Iron Threaded Pipe	A40.5		
1G	High Silicon Pipe, Fittings Cast Iron			
1H	Cast Iron Threaded Fittings Black and Galvanized 125#	B16.4	WW–P–501	
1J	Cast Iron Drainage Fittings Black and Galvanized	B16.12	WW–P–491	
1K	Hubless Cast Iron Pipe and Fittings			CISPI Standard 301–69T CSA/CAN 3–B70
1L	Ductile Iron Pipe Flanged	A21 15		AWWA C115
1M	Ductile Iron Pipe Rubber Gasket Joints	A21 51		AWWA C151

II STEEL AND WROUGHT IRON PIPE FITTINGS

2A	Steel Pipe, Welded and Seamless Galvanized, Schedule 40 and Above	B36 1 B36.20			WW–P–406 6(1)
2B	Wrought Iron Pipe, Galvanized Schedule 40 and Above	B36 2			
2C	Stainless Steel Pipe	B36 19			
2D	Galvanized Malleable Fittings 150 psi and Above	B16 3	A197		
2E	Steel Unions, Galvanized			WW–V–531 C	

III COPPER AND COPPER BASE PIPE AND FITTINGS

3A	Red Brass Pipe, Regular and Heavier	H27 1	B42B		
3B	Seamless Brass Tube	H36.1			
3C	Brass or Bronze Threaded Fittings 125 lbs. and Over	B16 15	B62	WW–P–460	
3D	Brass or Bronze Flare Fittings 125 lbs and Over, Heavy Duty Long Collar Type		B62		
3E	Seamless Copper Tube Type K, Soft Temper	H23 1	B88		
3F	Seamless Copper Tube Type K, Hard Temper	H23.1	B88		

3G	Seamless Copper Tube Type L, Soft Temper	H23.1	B88	
3H	Seamless Copper Tube Type L, Hard Temper	H23.1	B88	
3H(a)	Welded Copper Alloy 194 Water, Tube, Type "Heavy," Hard Temper		B543–72	OFT194–101A Navfac TS–15400
3H(b)	Stainless Steel Water Tubing, Type SL, Copper Plated Coating (HWT–T439)		A–651	
3J	Seamless Copper Tube, Type M, Hard and Soft Temper	H23.1	B88	
3J(a)	Welded Copper Alloy 194 Water Tube, Type "Standard," Hard Temper		B543–72	OFT194–101A Navfac TS–15400
3J(b)	Stainless Steel Water Tubing, Type SM, Copper Plated Coating (HWT–T439)	A–268	A–651	
3K	Seamless Copper Tube Type DWV	H23 3	B306	
3L	Copper Pipe I.P.S.	H26.1	B42	
3M	Copper Pipe, Threadless Type T P and Fittings	H26.2	B302	
3N	Cast Bronze and Wrought Solder Joint Pressure Fitting	B16 22 H23 1 B16.18		

3O	Cast Bronze and Wrought Solder Joint D W V Fittings	B16 23		
3P	Copper Alloy Water Tube 1/2 Inch and 3/4 Inch	B447 B75		
3Q	Welded Brass Water Tube 1/2 Inch and 3/4 Inch	B587		

IV LEAD PIPE AND FITTINGS

4A	Lead Pipe AA		WW–P–325–44
4B	Lead Pipe AAA		WW–P–325–44
4C	Lead Bends and Traps		WW–P–325–44
4D	Sheet Lead		QQ–L201d

V SILICA AND EARTH PRODUCTS PIPE AND FITTINGS, NONMETALLIC

5A	Asbestos–Cement Pressure Pipe and Fitting	C500 C296	SS–P351	
5B	Asbestos–Cement Water Pipe and Fittings	C500	SS–P–351	AWWA C400
5C	Asbestos–Cement Nonpressure Pipe and Fittings	C428	XX–P–331	
5D	Asbestos–Cement Perforated Underdrain Pipe and Fittings	C508		
5E	Vitrified Clay Pipe, Standard Strength and Stronger Fittings	C13 C200		
5F	Unglazed Clay Pipe, Extra Strength and Fittings	C278		
5G	Perforated Clay Pipe and Fittings	C211		
5H	Borosilicate Glass Pipe and Fittings 60 psi			

5J	Nonreinforced Concrete Drain Tile	C412		AASHO M178
5K	Nonreinforced Concrete Pipe	C14	SS–P–371	AASHO M86 CSA–A257 1
5L	Perforated Concrete Pipe, Underdrainage	C444		
5M	Reinforced Concrete Pipe	C76	SS–P–375	CSA–A257 2
5N	Reinforced and Prestressed Concrete Pipe, Pressure Type and Fittings			
5O	Bituminized Fiber Drain and Sewer Pipe	D1860	SS–P–1540A	
5P	Perforated Bituminized Fiber Pipe for General Drainage	D2311	SS–P–1540A	
VI	PLASTIC PIPE AND FITTINGS DRAIN, WASTE AND VENT			
6A	Acrylonitrile–Butadiene–Styrene (ABS)	D2661	L–P–322a FHA–MPS	HSF14 CSA–B181 1 CS270
	Type 1, Schedule 40 Cellular core	F628		
6B	(1) Polyvinyl Chloride (PVC) Schedule 40 Unthreaded Schedule 80 can be threaded Cellular core	D2665 F891	L–P–320a FHA–MPS	NSF14 CS272 CSA–B181 2
6B	(2) Polyvinyl Chloride (PVC) Schedule 30 (3–inch only)	D2949	L–P–001221	
	BUILDING SEWER			
6C	(1) Styrene — Rubber	D2852		CS228
6C	(2) Polyvinyl Chloride (PVC)	D3033 D3034 F789	FHA–UM–26 WW–P–00380a	CSA–B182.2
6C	(3) Acrylonitrile–Butadiene–Styrene (ABS)	D2751		CSA–B182 1

WATER SERVICE – Minimum working pressure rating shall be at least 150 psi for municipal water service and 100 psi for other service.

6D	Polyethylene (PE)	B72 1	D2239 D2737	LP–315a FHA–UM–31C	NSF14 CS255 CSA–B137.1
6E	Acrylonitrile–Butadiene–Styrene (ABS)	B72.3	D2282		NSF14 CS254
6F	Polyvinyl Chloride (PVC)	B72.2	D2241 D1785	L–P–1036 FHA UM–41	NSF14 CS256 CSA–B137.3
6G	Polybutylene		D2662 D2666		NSF14 CSA–B137.7
	SPECIAL WASTES				
6H	Polyethylene		D2239	LP 315a	PS10–69 PS11–69 PS12–69
6J	Polypropylene (Type II 24308)		D2146		

WATER DISTRIBUTION – Polybutylene (PB) systems (PB tubing together with recommended fittings) and chlorinated polyvinyl chloride (CPVC) pipe together with fittings must be tested by the manufacturer at 150 psi and 210 degrees Fahrenheit for a period of not less than 48 hours by an independent testing laboratory acceptable to the administrative authority.

6K	Polybutylene		D3309		CSA–B137.8 (tubing)
6L	Chlorinated polyvinyl chloride (CPVC)	119 1, 119 2	D2846		NSF14 FHA Bulletin #76 CSA–B137.6
	GENERAL DRAINAGE			ASTM	
6M	Polyethylene (corrugated)		F405		

Statutory Authority: *MS s 16B 62, 326.37*

History: *19 SR 590*

4715.0510 WATER SERVICE PIPE.

The following materials may be used for water service pipe:

[For text of items A to F, see M.R.]

G. Plastic pipe 6D, 6E, 6F, and 6G may be used for water service pipe only up to the water meter or pressure tank and provided there is no more than two feet of such piping exposed within the building. These materials shall be installed in accordance with ASTM D 2774–72. Particular care shall be taken to avoid sharp edges in contact with the pipe and to provide for expansion and contraction.

H Ductile iron pipe 1L and 1M

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.0800 MECHANICAL JOINTS.

[For text of subps 1 and 2, see M R]

Subp 4 **Mechanical joints in hubless cast iron soil pipe.** Mechanical joints for hubless cast iron soil pipe and fittings may be made by using a neoprene sleeve and stainless steel retaining band as specified in CISPI standard 301, by using a transition fitting made of elastomeric material (ASTM C 425 and ASTM C 564) and 300 series stainless steel bands and bolts, or by using a two–part coupling whose housing is fabricated of grey–cast iron (ASTM A 48), with a coupling gasket made of neoprene rubber (ASTM C 564 or CSA/CAN 3–B70), and coupling bolts and nuts made of 18–8 stainless steel.

Subp. 5. **Mechanical pipe couplings and fittings.** Couplings must be made with the housing fabricated in two or more parts of ductile or malleable iron castings in accordance with Federal Specification QQ–I–666c, Grand 11, or with ASTM A47 or ASTM A339 The coupling gasket must be molded synthetic rubber, per ASTM D–735–61, Grade No. R615BZ. Coupling bolts must be oval neck track head type with hexagonal heavy nuts, per ASTM–A–183–60, or ASTM A325.

Pipe fittings used with these pipe couplings must be fabricated or malleable iron castings m accordance with Federal Specifications QQ–I–666c, Grade 11, or with ASTM A47, ductile iron ASTM A339, segweld steel ASTM53 or A106, or IAPMO–approved copper fittings with rolled grooves intended to be used together with copper tubing with cold rolled grooved ends

These couplings and fittings may be used above ground, for storm drams and leaders, and for water distribution pipe provided exposed parts in contact with water are galvanized, and may be used below ground for water distribution if couplings and fittings are galvanized and the exposed grooves are coal tar enamel coated and wrapped

Saddle–type fittings secured by steel electroplated U–bolts may be used for above-ground water distribution, if the fittings are galvanized, mclude a collar fitting into the pipe opening with a gasket, and have IAPMO approval

All grooving of galvanized pipe must be by the cut groove method.

[For text of subps 6 to 7, see M R]

Statutory Authority: *MS s 16B 62; 326 37*

History: *19 SR 590*

4715.0805 PUSH–ON JOINTS.

Push–on joints may be used in cast iron and ductile iron water service pipe located underground outside the building, and must comply with ANSI–A21 11–85 Lead–tipped gaskets are prohibited.

Statutory Authority: *MS s 16B.62, 326 37*

History: *19 SR 590*

4715.0810 PLASTIC JOINTS.

Subpart 1 **Joint methods.** Every joint in plastic piping must be made with approved fittings using solvent welded connections, fusion welded connections, insert fittings with metal clamps and screws of corrosion–resistant material or approved crimp rings, threaded joints according to accepted standards, or special IAPMO listed fittings of other types Large diameter water service pipe may have approved elastomeric–gasket push–on type joints which comply with ASTM D 3139 All solvent materials must meet approved recognized standards. Expansion and contraction joint materials and dimensions must conform to ASTM D 2661 or ASTM D 2665 and shall be of an approved type

[For text of subp 2, see M R.]

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.0870 FLANGED FIXTURE CONNECTIONS.

Fixture connections between drainage pipes and water closets, pedestal urinals, and earthenware trap standards shall be made by means of brass, plastic, or iron flanges, caulked, soldered, solvent welded, or screwed to the drainage pipe m accordance with the manufacturer's recommendations and approved by the administrative authority The connection shall be bolted, with an approved gasket, washer, or setting compound between the earthenware and the connection Floor flanges of other equivalent materials may be used when approved by the administrative authority

The bottom of the floor flange shall be set on the top of the finished floor or on a structurally firm base Closet bends or stubs must be cut off so as to present a smooth surface, even with the top of the closet flange Use of commercial putty or plastic as fixture setting compound is prohibited

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.1020 CLEANOUT MATERIALS.

The bodies of cleanout ferrules shall be made to standard pipe sizes, conform m thickness to that required for pipes and fittings of the same material and extend not less than one–fourth inch above the hub The cleanout cover or plug shall be of brass, cast iron, or approved plastic and be provided with a raised nut or recessed socket for removal

Neoprene or nordel rubber with a plastic disc and a single stainless steel (300 series) band may be used for a cleanout cover provided that it is exposed and readily accessible

Statutory Authority: *MS s 16B.62, 326 37*

History: *19 SR 590*

4715.1100 INTERCEPTORS AND SEPARATORS REQUIRED.

Interceptors for oil, grease, sand, and other substances harmful or hazardous to the building drainage system shall be provided as stated elsewhere in these rules

The size, type, and location of each interceptor, and of each separator shall conform to the requirements of this chapter, except that units may be accepted which are engineered and manufactured specifically for the intended function and which are documented by the manufacturer and project design engineer to be properly designed and sized for the specific project, and no waste other than those requiring treatment or separation shall discharge into any interceptor.

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.1110 GREASE INTERCEPTORS FOR COMMERCIAL BUILDINGS.

A grease interceptor of sufficient size and efficiency shall be installed in the waste line leading from sinks, drains, or other fixtures when, in the opinion of the administrative authority, greasy wastes can be introduced into the drainage system in quantities that can cause line stoppage Grease interceptors shall be placed as near as possible to the fixture and the grease interceptor shall be vented No food waste disposer or dishwashing machine shall discharge into the building drainage system through a grease interceptor Sinks or other fixtures served by grease interceptors shall be trapped and vented ahead of the grease interceptor

Grease interceptors, when used, shall have a grease retention capacity in pounds of grease, of at least twice the flow–through rate, m gallons per minute

Grease interceptors shall be equipped with devices to control the rate of water flow through the interceptors so that it does not exceed the rated flow of the interceptor Air openings on flow control devices must connect to the plumbing vent system

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.1120 OIL AND FLAMMABLE LIQUIDS SEPARATOR.

Enclosed garages of over 1,000 square feet or housing more than four motor vehicles, repair garages, gasoline stations with grease racks, work or wash racks, auto washes, and all

buildings where oily and/or flammable liquid wastes are produced shall have a separator installed into which all oil, grease, and sand bearing and/or flammable wastes shall be discharged before emptying into the building drainage system or other point of disposal, when floor drains or trench drains are provided

Exception Private garages classified as Group U, Division 1 occupancies serving one– and two–family dwellings.

Each separator shall be of watertight construction and of not less than 35 cubic feet holding capacity, be provided with a water seal of not less than three inches on the inlet and not less than 18 inches on the outlet. The minimum depth below the invert of the discharge dram shall be three feet. The minimum size of the discharge drain shall be four inches The separator may be constructed of monolithic poured reinforced concrete with a mimmum floor and wall thickness of six inches, or of iron or steel of a minimum thickness of 3/16 inch, protected with an approved corrosion resistant coating on both the inside and the outside

The separator must be provided with a nonperforated iron or steel cover and ring of not less than 24 inches in diameter, and the air space in the top of the tank must have a three–inch vent pipe, constructed of approved metallic material, extending separately to a point at least 12 inches above the roof of the building Drains and piping from motor vehicle areas must be a minimum of three inches in size. Drains discharging to an interceptor must not be trapped. In motor vehicle wash facilities, a sand interceptor which meets the requirements of part 4715 1130, subpart 1, except that no water seal is permitted, may be installed to receive wastes before discharging into a flammable waste separator.

No cleanout, mechanical joint, or backwater valve shall be installed inside the separator which could provide a bypass of the trap seal Only wastes that require separation shall discharge into the separator, except that a water supplied and trapped sink may be connected to the vent of the separator. Whenever the outlet branch drain serving a separator is more than 25 feet from a vented drain, such branch drain shall be provided with a two inch vent pipe. A backwater valve shall be installed in the outlet branch drain whenever in the judgment of the administrative authority backflow from the building drain could occur (See part 4715 4000, subpart 4.)

A separator must be installed to be readily accessible for service and maintenance, and must be maintained by periodic removal of accumulated liquids and solids from the separator.

Statutory Authority: *MS s 16B 62; 326.37*

History: *19 SR 590*

4715.1160 BACKWATER VALVES.

Subpart 1. **Where used.** Drainage piping serving fixtures that are located below the elevation of the curb or property line at the point where the building sewer crosses under the curb or property line, and above the crown level of the main sewer, shall drain by gravity into the main sewer, and shall be protected from back flow of sewage by installing an approved backwater valve, and each such backwater valve shall be installed only in that branch or section of the drainage system which receives the discharge from fixtures located below the elevation of the curb or property line.

Further, in every building hereafter erected or remodeled so that the erection or remodeling creates a new dwelling use which is located below the elevation of the point where the building sewer crosses under the curb or property line, all fixtures installed below such point shall be connected to a separate branch drain. Each such branch drain shall be protected by an approved backwater valve and a gate valve The gate valve shall be located on the sewer connection side of the backwater valve

Further, the backwater valve and gate valve may be waived by the administrative authority whenever the sanitary sewer does not receive any storm water drainage and the building is located at a sufficient height above the public sanitary sewer so flooding by backflow will not occur, in the opinion of the administrative authority.

[For text of subps 2 to 4, see M R.]

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.1210 REQUIRED MINIMUM NUMBER OF FIXTURES.

Plumbing fixtures shall be provided for the type of building occupancy and in the minimum number shown as required in chapter 1305 of the Minnesota State Building Code

Statutory Authority: *MS s 16B.62; 326 37*

History: *19 SR 590*

4715.1215 [Repealed, 19 SR 590]

4715.1240 BATHTUBS.

[For text of subpart 1, see M R]

Subp 2 **Whirlpool bathtubs.** Whirlpool bathtubs and their installation must comply with ANSI 112 19.7 and ANSI 112 19 8

Subp 3 **Drop–in bathtubs.** Bathtubs which do not have a factory applied flange for installation against a wall are considered drop–in–type and must not be installed against a wall

Statutory Authority: *MS s 16B 62, 326.37*

History: *19 SR 590*

4715.1260 DRINKING FOUNTAINS.

Drinking fountains must be constructed of impervious nonoxidizing material and must be so designed that they may be easily cleaned The water should be carried to the fixture m an independent pipe, and no part of the fixture must be used m conveying water to the jet. The design of the fixture must be such that no part of the supply pipe can be submerged in the fixture, or in the waste pipe from the fixture The jet must be slanting and the orifice of the jet must be protected in such a manner that it cannot be contaminated by droppings from the mouth or by splashing from the basin The orifice of the jet must be at least one inch above the rim of the basin. All fountains should be so designed that their proper use is self–evident.

Installation of a combined cold water faucet and drinking fountain bubbler is prohibited for public use. If a drinking fountain bubbler is provided at a public use sink, it must have at least an 18–inch separation from any other faucet spout.

Statutory Authority: *MS s 16B 62, 326.37*

History: *19 SR 590*

4715.1300 FLOOR DRAINS.

[For text of subpart 1, see M R.]

Subp. 2. **Basement floor drains.** Basement floor drains or floor drains installed in floors which are laid directly on the ground shall be provided with either an integral trap constructed with a spigot outlet or a "P" trap of cast iron or other approved materials compatible with the drainage pipe with a spigot outlet and provisions for a caulked connection to the drain body. A vacuum breaker shall be installed on the water supply to flush rim floor drains

[For text of subps 3 and 4, see M R.]

Subp 5. [Repealed, 19 SR 590]

Subp 6. **Garage and parking area floor drains.** Floor area drains in open parking areas, including open areas of parking ramps, must discharge to the storm sewer if available. Floor drains in parking areas which are enclosed, and floor drains m areas open or enclosed which are used for maintenance or as a vehicle wash bay, must discharge to the sanitary sewer if a municipal sewer is available. Oil and flammable liquid separators must be provided if required by part 4715 1120

Exception Floor drams in private garages classified as Group U, Division 1 occupancies serving one– and two–family dwellings may discharge to daylight if approved by the administrative authority.

Statutory Authority: *MS s 16B 62; 326 37*

History: *19 SR 590*

4715.1330 FLUSH TANKS.

Subpart 1 **Water supply for flush tanks.** An adequate quantity of water shall be provided to flush and clean the fixture served The fixture supply to a flush tank must have a

shut–off valve The water supply to flush tanks equipped for manual flushing shall be controlled by a float valve or other automatic device designed to refill the tank after each discharge and to completely shut off the water flow to the tank when the tank is filled to operational capacity Provision shall be made to automatically supply water to the fixture so as to refill the trap seal after each flushing, the water supply to flush tanks equipped for automatic flushing shall be controlled by a suitable timing device (See part 4715 1770, subpart 2)

[For text of subp 2, see M R]

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.1380 SHOWERS.

[For text of subpart 1, see M R]

Subp 2 **Shower waste outlet.** Waste outlets, other than those in bathtubs, serving a single shower shall be at least 1–1/2 inches in diameter and have removable strainers not less than three inches in diameter having strainer openings not less than one–fourth inch in minimum dimension Waste outlets shall be securely fastened to the waste pipe making a watertight connection thereto Waste outlets serving showers, except single–head showers, must be at least two inches m diameter and must have removable strainers not less than three inches in diameter Where each shower space is not provided with an individual waste outlet, the waste outlet must be located and the floor pitched so that the water from one shower does not flow over the floor area serving another shower

[For text of subp 3, see M.R]

Subp 4 **Shower compartments.** No shower stall or receptor shall have a finished interior dimension which is less than 30 inches, and each shower compartment shall be of a finished size capable of completely encompassing a 30–inch circle measured at the height of the shower control handles, when the door or curtain is closed, and of a horizontal cross sectional area of not less than 900 square inches The 30–inch requirement shall not apply to a bathtub used as a shower or to showers installed in remodeling

Subp 5 **Anti–scald devices.** A shower or combination shower–bath in a new or remodeled installation must be equipped with an anti–scald type shower control valve The valve must be of the thermostatic or pressure–balancing type in accordance with ANSI/ASSE standard 1016–90

The temperature of mixed water to multiple showers must be controlled by a master anti–scald type thermostatic blender, or the showers must be individually equipped with approved anti–scald type shower control valves

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.1440 PROTECTION OF PLASTIC PIPE.

All plastic and copper pipe and tubing passing through studs or plates that are within one and one–fourth inches of the outside of the stud or plate must be protected by the provision of 1/16 inch or 0 060 mild steel plates attached to the outside of the stud or plate, or equivalent protection

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.1510 INDIRECT WASTE PIPING.

Indirect waste piping must be installed so as to permit ready access for flushing and cleaning, and must meet the material requirements of the code Except as otherwise herein provided, the size and construction of indirect waste piping must be in accordance with parts 4715 2300 to 4715.2660, regulating the installation of waste and vent piping

Indirect waste pipes from appliances, devices, or other equipment not regularly classed as plumbing fixtures, but which are equipped with drainage outlets, must be trapped, but the traps need not be vented and the waste pipe must be a minimum of three–fourths inch size, but not less than the size of the outlet or tail piece of the fixture, appliance, or equipment

served However, overflow pans and drip outlets need not be trapped and may be the same size as the outlet Alternate materials may be accepted for drains from overflow pans and drip outlets if proper pitch, alignment, and support are maintained

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.1590 RECEPTORS OR SUMPS.

[For text of subps 1 to 3, see M R]

Subp 4 **Stand pipe receptors.** The stand pipe receptor for an automatic clothes washer shall be trapped and vented, except that multiple clothes washers in the same room may be discharged to multiple standpipes that are manifolded together and use a single trap The stand pipe shall extend not more than 30 inches, nor less than 18 inches above its trap, and the trap shall be installed at least six inches above the floor

Subp 5 [Repealed, 19 SR 590]

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.1710 WATER SERVICE.

[For text of subpart 1, see M R]

Subp 2 **Separation of water service and building sewer.** Except as permitted in this subpart, the underground water service pipe and the building drain or building sewer shall not be less than ten feet apart horizontally and shall be separated by undisturbed or compacted earth

NOTE. See chapter 4725 relating to wells and borings regarding separation of buried sewers from wells

The water service pipe may be placed in the same trench with the building dram and the building sewer provided approval is given by the administrative authority and the following conditions are met

[For text of items A to E, see M R]

[For text of subp 3, see M R]

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.2000 WATER OUTLETS.

A potable water system shall be protected against backflow and back–siphonage by providing and maintaining at each outlet

[For text of item A, see M R]

B a backflow preventer device or assembly to prevent the drawing of contamination into the potable water system

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.2020 DEVICES OR ASSEMBLIES FOR THE PROTECTION OF THE POTABLE WATER SUPPLY.

Approved devices or assemblies to protect against backflow and back–siphonage must be installed at any plumbing fixture or equipment where backflow or back–siphonage may occur and where a minimum air gap cannot be provided between the water outlet to the fixture or equipment and its flood level rim

Statutory Authority: *MS s 16B 62; 326 37*

History: *19 SR 590*

4715.2030 APPROVAL OF DEVICES OR ASSEMBLIES.

Before any device or assembly for the prevention of backflow or back–siphonage is installed, it shall have first been certified by a recognized testing laboratory acceptable to the

administrative authority. Devices or assemblies installed in a building potable water supply distribution system for protection against backflow shall be maintained in good working condition by the person or persons responsible for the maintenance of the system.

Statutory Authority: *MS s 16B.62, 326.37*

History: *19 SR 590*

4715.2100 BACKFLOW PREVENTERS.

[For text of item A, see M.R.]

B Pressure vacuum breaker assembly (PVB):

[For text of subitems (1) to (3), see M R.]

[For text of items C and D, see M.R.]

E. Reduced pressure zone backflow preventer assembly (RPZ):

[For text of subitems (1) to (3), see M R]

[For text of item F, see M R]

Statutory Authority: *MS s 16B.62; 326 37*

History: *19 SR 590*

4715.2110 TYPES OF DEVICES REQUIRED WHERE AN AIR GAP CANNOT BE PROVIDED. [1]

					Only allowed where no back pressure is possible	
	RPZ	DCV IAV	DCVA	PVB	AVB	Hose VB
[For text of items A to H, see M R.]						
I. Dental units (separate assembly required for each unit)		X				
[For text of items J to CC, see M R]						
DD. Threaded hose connections, including hose bibbs, hydrants, service sinks, laundry trays						X
[For text of items EE and FF, see M.R.]						

[1] For installations not listed in this part, review with the Administrative Authority.

[2] Installations must comply with AWWA–M14, chapter 6 (1990) except that the following statement is deleted from section 6.3 At any time where the fire sprinkler piping is not an acceptable potable water system material, there shall be a backflow–prevention assembly isolating the fire sprinkler system from the potable water system.

Statutory Authority: *MS s 16B 62, 326.37*

History: *19 SR 590*

4715.2120 LOCATION OF BACKFLOW PREVENTERS.

Backflow and back–siphonage preventing devices or assemblies must be located so as to be readily accessible, preferably in the same room with the fixture they serve. Installation m utility or service spaces, provided they are readily accessible, is also permitted.

The access area must provide enough space for testing and maintenance of the device. A backflow preventer must not be installed in a pit or other confined area subject to recurrent flooding. When a conductor pipe is provided from a backflow preventer dram, a visible air gap must be provided at the device. New installations must be at least 12 inches, but not more than six feet, above the finished floor or ground level

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.2150 CONNECTIONS NOT SUBJECT TO BACK PRESSURE.

Subpart 1. **Requirements.** Where a water connection is not subject to back pressure an atmospheric type vacuum breaker shall be installed on the discharge side of the last valve on

the line serving the fixture or equipment Where a valve is installed on the discharge side of a vacuum breaker, that vacuum breaker must be a pressure–type vacuum breaker assembly which complies with part 4715.2030. A list of some conditions requiring protective devices of this kind is given in subpart 2

Subp. 2. **Cross–connections where protective devices are required and critical level (C–L) settings for backflow preventers.** Critical level (C–L) is defined as the level to which the backflow preventer (vacuum breaker) may be submerged before backflow will occur Where the C–L is not shown on the preventer, the bottom of the device shall be taken as the C–L

Fixture or Equipment	Method of Installation
Aspirators and Ejectors	C–L at least 6 inches above flood level of receptacle.
Dental units	On models without built–in vacuum breakers C–L at least 6 inches above flood level rim of bowl
Dishwashing machines	C–L at least 6 inches above flood level of machine Install on both hot and cold water supply lines
Flushometer (Closet & Urinal)	C–L at least 6 inches above top of fixture supplied.
Garbage can cleaning machine	C–L at least 6 inches above flood level of machine. Install on both hot and cold water supply lines
Hose outlets	C–L at least 6 inches above highest point on hose line
Laundry machines	C–L at least 6 inches above flood level of machine. Install on both hot and cold water supply lines
Lawn sprinklers	C–L at least 12 inches above highest sprinkler or discharge outlet
Steam tables	C–L at least 6 inches above flood level
Tank and vats	C–L at least 6 inches above flood level rim or line.
Trough urinals	C–L at least 30 inches above perforated flush pipe
Flush tanks	Equip with approved ball cock. Where ball cocks touch tank water equip with vacuum breaker with C–L at least 1 inch above overflow outlets Where ball cock does not touch tank water, install

	ball cock outlet at least 1 inch above overflow outlet or provide vacuum breaker as specified above
Hose bibbs (Where aspirators or ejectors could be connected)	C–L at least 6 inches above flood level of receptacle served

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.2161 INSTALLATION OF REDUCED PRESSURE BACKFLOW PREVENTERS.

Subpart 1 **Notification of installation.** The administrative authority must be notified before installation of a reduced pressure backflow preventer assembly

Subp 2 **Testing and maintenance.** The installation of reduced pressure backflow preventers shall be permitted only when a periodic testing and inspection program conducted by qualified personnel will be provided by an agency acceptable to the administrative authority Inspection intervals shall not exceed one year, and overhaul intervals shall not exceed five years The administrative authority may require more frequent testing if deemed necessary to assure protection of the potable water Backflow preventers shall be inspected frequently after initial installation to assure that they have been properly installed and that debris resulting from the piping installation has not interfered with the functioning of the assembly

[For text of subp 3, see M R]

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.2215 THERMAL EXPANSION CONTROL.

A device for controlling thermal expansion shall be installed on the water distribution system when thermal expansion within the system, in combination with a check valve or backflow preventer, causes the water pressure to exceed the pressure setting of the pressure relief valve on the water heater

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.2280 WATER METER INSTALLATION.

Water meters shall be placed at least 12 inches above the finished floor and shall be rigidly supported with a permanent support in order to prevent the meter from vibrating when the water is passing through it

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.2300 LOAD ON DRAINAGE PIPING.

Subpart 1 **Computation of drain load.** The load on drainage system piping shall be computed in terms of drainage fixture units in accordance with subparts 2, 2a, and 3, except the administrative authority may allow variations where it is shown by a hydraulic analysis of the piping system, submitted to the administrative authority, that such variation would result in a more desirable flow rate in the piping system

[For text of subp 2, see M R]

Subp 2a **Values for intermittent flows.** Fixture unit values for intermittent flows from appliances and equipment which are specially designed for low water use, and used for retrofit in existing plumbing systems only, may be determined as follows

Discharge Capacity (in gallons per minute)	Fixture Unit Value
up to 7–1/2	1 unit
8 to 15	2 units
16 to 30	4 units
31 to 50	6 units

A standpipe used for discharge from such appliances and equipment which is sized using these values must be labeled as intended for special low–water–use equipment only Drainage piping in new construction must comply with subpart 3

Subp 3 **Table of fixture unit values for various plumbing fixtures.**

Type of Fixture	Fixture Unit Value	Minimum Fixture Trap and Drain Size
Clothes washer (domestic use)	2	1–1/2
Clothes washer (public use in groups of 3 or more)	6 each	
Bath tub with or without shower	2	1–1/2
Bidet	2	1–1/2
Dental unit or cuspidor	1	1–1/4
Drinking fountain	1	1–1/4
Dishwasher, domestic (gravity drain)	2	1–1/2
Dishwasher, commercial	4	2
Floor drain with 2 inch waste	2	2
Floor drain with 3 inch waste	3	3
Floor drain with 4 inch waste	4	4
Lavatory	1	1–1/4
Laundry tray (1 or 2 compartment)	2	1–1/2
Shower stall, domestic	2	1–1/2
Shower (gang) per head	1	
SINKS		
Classroom, with or without drinking fountain	2	1–1/2
Combination, sink and tray (with disposal unit)	3	1–1/2
Combination, sink and tray (with one trap)	2	1–1/2
Domestic	2	1–1/2
Domestic, with disposal unit	2	1–1/2
Surgeons	3	1–1/2
Laboratory, cup sink	1	1–1/2
Flushrim or bedpan washer	6	3
Service	3	2
Pot or scullery	4	2
Soda fountain	2	1–1/2
Commercial, flat rim, bar, or counter	3	1–1/2
Wash, circular, or multiple (per set of faucets)	2	1–1/2
URINAL pedestal, wall hung, with 3 inch trap (blowout and syphon jet)	6	3
Wall hung with 2 inch trap	3	2
Wall hung with 1–1/2 inch trap	2	1–1/2
Trough (per 6 foot section)	2	1–1/2
Stall	3	2

WATER CLOSET	6	3
Unlisted Fixture or Trap Size		
1–1/4 inch	1	
1–1/2 inch	2	
2 inch	3	
2–1/2 inch	4	
3 inch	5	
4 inch	6	

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.2440 DESIGN OF SUMPS.

[For text of subps 1 to 3, see M R]

Subp. 4 **Covers.** Sumps and receiving tanks must be provided with gastight covers, except that float control or switch rods must operate without binding The cover must be of a bolt and gasket type or equivalent manhole opening to permit access for inspection, repairs, and cleaning. Covers must be metal or other structurally sound material that is water–resistant and impervious to moisture, and must be adequate to support anticipated loads in the area of use

[For text of subps 5 to 7, see M.R]

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.2820 METHOD OF TESTING.

[For text of subps 1 to 6, see M R.]

Subp 7 **Test plugs or caps.** Test plugs or caps for roof terminals must extend above or outside the end of the vent pipe to provide a visible indication for removal after the test has been completed

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.3140 EXAMINATION AND LICENSING OF PLUMBERS.

Subpart 1 **Examinations.** An applicant for a plumber's license must satisfactorily pass an examination given by the commissioner of health. Examinations for journeyman and master plumber licenses shall be held in March and September of each year. Applications for the March examination must be filed not later than February 15 and for the September examination not later than August 15.

A. An applicant for the master plumber examination must, in addition to the practical plumbing experience requirement for a master plumber specified in subpart 2, have at least one of the following.

(1) a current Minnesota journeyman plumber license;

(2) a master plumber license from another state where the requirements of the licensing jurisdiction are equivalent to those of Minnesota, as determined by the commissioner, or

(3) five years of verifiable experience in business as a plumbing contractor in Minnesota.

B An applicant for the journeyman examination must be a registered apprentice in Minnesota and have satisfied the practical plumbing experience requirement specified in subpart 2 for a journeyman plumber or must hold a current state journeyman plumber's license from another state where the licensing jurisdiction requires at least four years of practical plumbing experience and an examination to qualify for licensure

Subp. 2. **Experience.** An applicant for the journeyman plumber's license examination must have not less than four years of practical plumbing experience and the applicant for a master plumber's license examination must have not less than five years of practical plumbing experience

A. One year of practical plumbing experience consists of at least 1,750 hours

B Not more than two years of the practical plumbing experience from a state other than Minnesota shall be credited unless the applicant first obtains a plumber's license in the other state

C. The apprentice or applicant is responsible for verifying practical plumbing experience The commissioner of health may require work records, time cards, pay records, or other documentation necessary to evaluate practical plumbing experience The commissioner shall make the final determination about the adequacy and acceptability of an apprentice's or applicant's practical plumbing experience

Statutory Authority: *MS s 16A.128, 16A.1285; 144.12; 326.37 to 326 45; 326 57 to 326.65*

History: *18 SR 1519*

4715.3150 FEES.

Subpart 1. **Examination application fee.** Applications to take the journeyman or master plumber's examination must be submitted to the commissioner of health on forms prepared by the commissioner together with a fee of $50. The fee must be submitted with the application and is not refundable.

Subp 2 **Fees for license.** Any applicant who receives a passing grade on the examination may submit an application for license on forms prepared by the commissioner of health The application must be accompanied by a fee of $55 for a journeyman plumber's license or $120 for a master plumber's license, except that an application for initial licensure that is submitted during the last three months of a licensing year must be accompanied by a fee of $27 50 for a journeyman plumber's license or $60 for a master plumber's license.

Statutory Authority: *MS s 16A 128, 16A.1285; 144.12, 326 37 to 326.45; 326.57 to 326.65*

History: *18 SR 1519*

4715.3160 EXPIRATION OF LICENSES.

[For text of subpart 1, see M.R.]

Subp 2 **License renewals.** Applications for license renewal must be submitted to the commissioner of health on forms prepared by the commissioner no later than December 31 of the year preceding the year for which application is made. The application must be accompanied by a fee of $55 for a journeyman plumber and $120 for a master plumber Journeyman and master plumbers who submit their license renewal applications after the time specified in subpart 1 but within two years after expiration of the previously issued license must pay all past due renewal fees plus an additional $25

[For text of subp 3, see M.R.]

Statutory Authority: *MS s 16A.128; 16A 1285, 144 12, 326.37 to 326.45, 326 57 to 326.65*

History: *18 SR 1519*

4715.3170 REGISTRATION OF PLUMBER'S APPRENTICE.

Effective July 1, 1987, no person shall work as a plumber's apprentice until that person has submitted an application and fee for registration to the commissioner of health. Registration must be renewed annually and shall be for the period from July 1 of each year to June 30 of the following year. Applications for initial and renewal registration must be submitted to the commissioner of health before July 1 of each registration period on forms provided by the commissioner, and must be accompanied by a fee of $25. A plumber's apprentice who submits a registration application after July 1 in any year must pay the past due renewal fee plus an additional $25 late fee.

A A plumber's apprentice must be at least 18 years of age or be a high school graduate, except that an apprentice employed and supervised by the apprentice's parent must be at least 16 years of age.

B At the time of registration, an apprentice must provide a name, address, date of birth, social security number, and information about education and practical plumbing experience on forms prepared by the commissioner of health

C The practical plumbing experience for an apprentice must include at least the following number of hours in the plumbing aspects specified in subitems (1) to (3) The remaining required hours of practical plumbing experience may be in any aspect of plumbing work included in the definition of plumbing in part 4715 0100, however, the type of work and corresponding number of hours must be specified

(1) water distribution system installation, 2,000 hours,

(2) drain, waste, and vent system installation, 2,000 hours, and

(3) fixture installation, 1,000 hours.

D All practical plumbing experience for an apprentice must be certified by the licensed plumber or plumbing contractor responsible for the work performed. A licensed plumber or plumbing contractor may only certify that part of the practical plumbing experience work done under the licensed plumber's or plumbing contractor's supervision

E Only practical plumbing experience gained in the 12–month period immediately prior to registration or submission of the renewal application for registration shall be considered, except that late registration renewals may be accepted for a period not exceeding three months, with payment of a late fee

F The 1,750 hours necessary to gain one year of practical plumbing experience may be worked in more than one 12–month registration period as a plumber's apprentice, however, not more than 1,750 hours shall be credited for one registration period

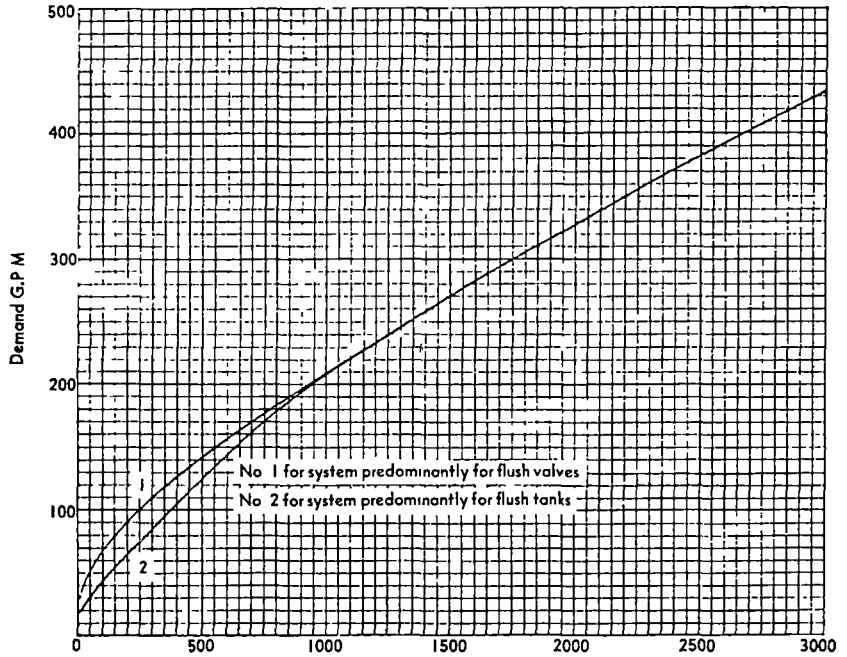
Statutory Authority: *MS s 16A.128, 16A 1285, 144 12; 326 37 to 326 45, 326 57 to 326 65*

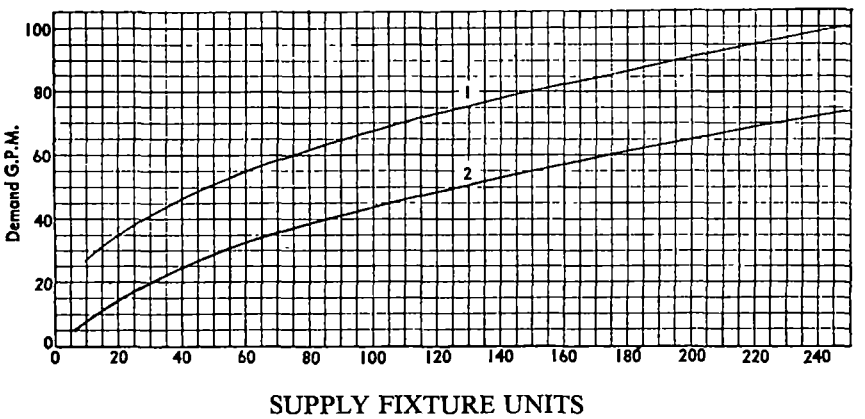
History: *18 SR 1519*

4715.3700 DETERMINATION OF PEAK DEMAND.

[For text of subps 1 to 4, see M.R]

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





The estimated demand load in gallons per minute for fixtures used intermittently on any water supply pipe shall be obtained by multiplying the total number of each kind of fixture, supplied through that pipe by its supply fixture unit value from subpart 2, adding the products, and then, referring to the appropriate columns of subpart 4, or using subpart 5, select the demand in GPM Examples are given below. The additional load of any continuously flowing outlets such as hose outlets shall be computed separately and added to the total demand of intermittently used fixtures See subpart 6

[For text of subps 6 to 24, see M R.]

Statutory Authority: *MS s 16B 62, 326 37*

History: *19 SR 590*

4715.5900 FEES.

Subpart 1 **Examination application fee.** The fee for application for examination or reexamination is $50 for a water conditioning installer, and $50 for a water conditioning contractor. The examination application fee is not refundable.

Subp. 2 **License fee.** The fee for a new license or for renewal of an existing license is as follows: water conditioning installer, $35, water conditioning contractor, $70, except that an application for initial licensure that is submitted during the last three months of the calendar year must be accompanied by a fee of $17 50 for a water conditioning installer or $35 for a water conditioning contractor

[For text of subp 3, see M R]

Statutory Authority: *MS s 16A 128; 16A.1285, 144.12, 326.37 to 326 45, 326.57 to 326 65*

History: *18 SR 1519*

4715.6000 RENEWAL.

A license expires on December 31 of the year for which it was issued. An application for renewal of a license must be received by the Minnesota Department of Health no later than December 31 Any person who submits an application for license renewal after December 31 must pay a penalty of $25 m addition to the annual license fee A person who does not renew a license issued pursuant to parts 4715 5000 to 4715 6000, within two years of the date on which the former license expired, is no longer entitled to a renewal license The person must apply for reexamination and a new license

Statutory Authority: *MS s 16A 128, 16A.1285, 144 12, 326.37 to 326 45, 326 57 to 326.65*

History: *18 SR 1519*