

1 Department of Administration

2

3 Adopted Permanent Rules Relating to the Plumbing Code

4

5 Rules as Adopted

6 4715.0420 STANDARDS FOR PLUMBING MATERIALS.

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

8 Subp. 2. Abbreviations. Abbreviations in subpart 3 refer
9 to the following:

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

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

13 E. CS, Commercial Standards available from:
14 Commodity Standards Division, Office of Industry and Commerce,
15 U. S. Department of Commerce, Washington, D. C. 20234;

16 F. FS, Federal Specifications available from:
17 Federal Supply Service, Standards Division, General Services
18 Administration, Washington, D. C. 20406;

19 G. NSF, National Sanitation Foundation, Ann Arbor,
20 Michigan 48106;

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

23 Subp. 3. Standards for plumbing materials.

24	DESCRIPTION	ANSI	ASTM	FS	OTHER
25					
26	I. CAST IRON PIPE AND FITTINGS				
27		A21.2			
28		A21.6	A-74	WW-P-401C	CS188
29					
30	1A Cast Iron Pipe				
31	and Fittings	A21.8			
32	Extra Heavy				
33					
34	1B Cast Iron Pipe				
35	Centrifugally				
36	Cast Only and				
37	Fittings	A21.6	A-74	WW-P-401C	CS188
38	Service Weight	A21.8			
39					
40	1C Cast Iron				
41	Mechanical	A21.11			
42	(Gland Type)				
43	Pipe	A21.2		WW-P-421a	
44		A21.6			
45	1D Cast Iron				
46	Mechanical	A21.8			
47	(Gland Type)				

1	Pipe			
2	Cement Lined	A21.4		
3		A21.2		
4		A21.6		
5		A21.8		
6				
7	1E Cast Iron			
8	Short Body			
9	Water Service			
10	Fittings			
11	(2"-12")	A21.10		AWWA C100
12				
13	1F Cast Iron			
14	Threaded Pipe	A40.5		
15				
16	1G High Silicon			
17	Pipe, Fittings			
18	Cast Iron			
19				
20	1H Cast Iron			
21	Threaded			
22	Fittings	B16.4		WW-P-501
23	Black and			
24	Galvanized			
25	125#			
26				
27	1J Cast Iron			
28	Drainage			
29	Fittings	B16.12		WW-P-491
30	Black and			
31	Galvanized			
32				
33	1K Hubless Cast			
34	Iron Pipe and			CISPI
35	Fittings			Standard
36				301-69T
37				CSA/CAN 3-B70
38				
39	1L Ductile Iron			
40	Pipe Flanged	A21.15		AWWA C115
41				
42	1M Ductile Iron			
43	Pipe Rubber			
44	Gasket Joints	A21.51		AWWA C151
45				
46	II. STEEL AND WROUGHT IRON PIPE FITTINGS			
47				
48	2A Steel Pipe,			
49	Welded and			
50	Seamless			
51	Galvanized,			
52	Schedule 40			
53	and Above	B36.1		
54		B36.20		WW-P-406
55				6(1)
56				
57	2B Wrought Iron			
58	Pipe,			
59	Galvanized	B36.2		
60	Schedule 40			
61	and Above			
62				
63	2C Stainless			
64	Steel Pipe	B36.19		
65				
66	2D Galvanized			
67	Malleable			
68	Fittings	B16.3	A197	
69	150 psi and			
70	Above			
71				

1	2E	Steel Unions,			
2		Galvanized			WW-V-531 C
3					
4	III.	COPPER AND COPPER BASE PIPE AND FITTINGS			
5					
6	3A	Red Brass Pipe,			
7		Regular and			
8		Heavier	H27.1	B42B	
9					
10	3B	Seamless Brass			
11		Tube	H36.1		
12					
13	3C	Brass or Bronze			
14		Threaded			
15		Fittings 125			
16		lbs. and Over	B16.15	B62	WW-P-460
17					
18	3D	Brass or Bronze			
19		Flare Fittings			
20		125 lbs. and			
21		Over, Heavy			
22		Duty Long			
23		Collar Type		B62	
24					
25	3E	Seamless Copper			
26		Tube Type K,			
27		Soft Temper	H23.1	B88	
28					
29	3F	Seamless Copper			
30		Tube Type K,			
31		Hard Temper	H23.1	B88	
32					
33	3G	Seamless Copper			
34		Tube Type L,			
35		Soft Temper	H23.1	B88	
36					
37	3H	Seamless Copper			
38		Tube Type L,			
39		Hard Temper	H23.1	B88	
40					
41	3H(a)	Welded Copper			
42		Alloy			OFT194-101A
43		194 Water,			
44		Tube, Type	B543-72		Navfac
45		"Heavy,"			TS-15400
46		Hard Temper			
47					
48	3H(b)	Stainless			
49		Steel Water			
50		Tubing, Type			
51		SL, Copper			
52		Plated Coating			
53		(HWT-T439)	A-651		
54					
55	3J	Seamless Copper			
56		Tube, Type M,			
57		Hard and Soft			
58		Temper	H23.1	B88	
59					
60	3J(a)	Welded Copper			
61		Alloy 194 Water			OFT194-101A
62		Tube, Type			
63		"Standard,"			
64		Hard Temper	B543-72		Navfac
65					TS-15400
66	3J(b)	Stainless			
67		Steel Water	A-268		
68		Tubing, Type			
69		SM, Copper			
70		Plated Coating			
71		(HWT-T439)	A-651		

1					
2	3K	Seamless Copper			
3		Tube Type DWV	H23.3	B306	
4					
5	3L	Copper Pipe			
6		I.P.S.	H26.1	B42	
7					
8	3M	Copper Pipe,			
9		Threadless			
10		Type T P and			
11		Fittings	H26.2	B302	
12					
13	3N	Cast Bronze			
14		and Wrought	B16.22		
15		Solder Joint			
16		Pressure			
17		Fitting	H23.1		
18			B16.18		
19					
20	3O	Cast Bronze			
21		and Wrought			
22		Solder Joint			
23		D W V Fittings	B16.23		
24					
25	3P	Copper Alloy			
26		Water Tube			
27		1/2 Inch and		B447	
28		3/4 Inch		B75	
29					
30	3Q	Welded Brass		B587	
31		Water Tube			
32		1/2 Inch and			
33		3/4 Inch			
34					
35					
36	IV. LEAD PIPE AND FITTINGS				
37					
38	4A	Lead Pipe AA		WW-P-325-44	
39					
40	4B	Lead Pipe AAA		WW-P-325-44	
41					
42	4C	Lead Bends			
43		and Traps		WW-P-325-44	
44					
45	4D	Sheet Lead		QQ-L201d	
46					
47	V. SILICA AND EARTH PRODUCTS PIPE AND FITTINGS,				
48	NONMETALLIC				
49					
50	5A	Asbestos-Cement	C500	SS-P351	
51		Pressure Pipe			
52		and Fitting	C296		
53					
54	5B	Asbestos-Cement			
55		Water Pipe and			
56		Fittings	C500	SS-P-351	AWWA C400
57					
58	5C	Asbestos-Cement			
59		Nonpressure			
60		Pipe and Fittings	C428	XX-P-331	
61					
62	5D	Asbestos-Cement			
63		Perforated Underdrain			
64		Pipe and Fittings	C508		
65					
66	5E	Vitrified Clay Pipe,			
67		Standard Strength	C13		
68		and Stronger Fittings	C200		
69					
70	5F	Unglazed Clay Pipe,			
71		Extra Strength and			

1	Fittings	C278		
2				
3	5G Perforated Clay Pipe			
4	and Fittings	C211		
5				
6	5H Borosilicate Glass			
7	Pipe and Fittings			
8	60 psi			
9				
10	5J Nonreinforced			
11	Concrete			
12	Drain Tile	C412		AASHO M178
13				
14	5K Nonreinforced			
15	Concrete Pipe	C14	SS-P-371	AASHO M86 CSA-A257.1
16				
17	5L Perforated Concrete			
18	Pipe, Underdrainage	C444		
19				
20	5M Reinforced Concrete			
21	Pipe	C76	SS-P-375	CSA-A257.2
22				
23	5N Reinforced and			
24	Prestressed Concrete			
25	Pipe, Pressure Type			
26	and Fittings			
27				
28	5O Bituminized Fiber			
29	Drain and Sewer Pipe	D1860	SS-P-1540A	
30				
31	5P Perforated Bituminized			
32	Fiber Pipe for General			
33	Drainage	D2311	SS-P-1540A	
34				
35	VI. PLASTIC PIPE AND FITTINGS			
36				
37	DRAIN, WASTE AND VENT			
38				
39	6A Acrylonitrile-			
40	Butadiene-Styrene			
41	(ABS)	D2661	L-P-322a	HSF14
42				CSA-B181.1
43			FHA-MPS	CS270
44	Type 1, Schedule 40			
45	Cellular core	F628		
46				
47	6B (1) Polyvinyl Chloride			
48	(PVC)	D2665	L-P-320a	NSF14
49	Schedule 40 Unthreaded		FHA-MPS	CS272
50	Schedule 80 can be			CSA-B181.2
51	threaded			
52	Cellular core	F891		
53				
54	6B (2) Polyvinyl Chloride			
55	(PVC)			
56	Schedule 30 (3-inch			
57	only)	D2949	L-P-001221	
58				
59	BUILDING SEWER			
60				
61	6C (1) Styrene -- Rubber	D2852		CS228
62				
63				
64	6C (2) Polyvinyl Chloride			
65	(PVC)	D3033	FHA-UM-26	
66		D3034	WW-P-00380a	CSA-B182.2
67		F789		
68	6C (3) Acrylonitrile-			
69	Butadiene-Styrene			
70	(ABS)	D2751		CSA-B182.1
71				

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

4					
5	6D	Polyethylene			
6		(PE)	B72.1	D2239	LP-315a
7				D2737	FHA-UM-31C
8					NSF14
9					CS255
10	6E	Acrylonitrile-			
11		Butadiene-			
12		Styrene (ABS)	B72.3	D2282	
13					NSF14
14					CS254
15	6F	Polyvinyl			
16		Chloride (PVC)	B72.2	D2241	L-P-1036
17				D1785	FHA UM-41
18					NSF14
19					CS256
20	6G	Polybutylene		D2662	
21				D2666	
22					NSF14
23					CSA-B137.7

23 SPECIAL WASTES

24					
25	6H	Polyethylene		D2239	LP 315a
26					PS10-69
27					PS11-69
28					PS12-69
29	6J	Polypropylene		D2146	
30		(Type II 24308)			

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

38	6K	Polybutylene		D3309	
39					CSA-B137.8
40					(tubing)
41	6L	Chlorinated	119.1,	D2846	
42		polyvinyl	119.2		NSF14
43		chloride (CPVC)			FHA
44					Bulletin
45					#76
46					CSA-B137.6

47 GENERAL DRAINAGE ASTM

48					
49	6M	Polyethylene		F405	
50		(corrugated)			

51 4715.0510 WATER SERVICE PIPE.

52 The following materials may be used for water service pipe:

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

54 G. Plastic pipe 6D, 6E, 6F, and 6G may be used for
55 water service pipe only up to the water meter or pressure tank
56 and provided there is no more than two feet of such piping

1 exposed within the building. These materials shall be installed
2 in accordance with ASTM D 2774-72. Particular care shall be
3 taken to avoid sharp edges in contact with the pipe and to
4 provide for expansion and contraction.

5 H. Ductile iron pipe 1L and 1M.

6 4715.0800 MECHANICAL JOINTS.

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

8 Subp. 4. **Mechanical joints in hubless cast iron soil**
9 **pipe.** Mechanical joints for hubless cast-iron soil pipe and
10 fittings may be made by using a neoprene sleeve and stainless
11 steel retaining band as specified in CISPI standard 301, by
12 using a transition fitting made of elastomeric material (ASTM C
13 425 and ASTM C 564) and 300 series stainless steel bands and
14 bolts, or by using a two-part coupling whose housing is
15 fabricated of grey-cast iron (ASTM A 48), with a coupling gasket
16 made of neoprene rubber (ASTM C 564 or CSA/CAN 3-B70), and
17 coupling bolts and nuts made of 18-8 stainless steel.

18 Subp. 5. **Mechanical pipe couplings and fittings.**

19 Couplings must be made with the housing fabricated in two or
20 more parts of ductile or malleable iron castings in accordance
21 with Federal Specification QQ-I-666c, Grade 11, or with ASTM A47
22 or ASTM A339. The coupling gasket must be molded synthetic
23 rubber, per ASTM D-735-61, Grade No. R615BZ. Coupling bolts
24 must be oval neck track head type with hexagonal heavy nuts, per
25 ASTM-A-183-60, or ASTM A325.

26 Pipe fittings used with these pipe couplings must be
27 fabricated of malleable iron castings in accordance with Federal
28 Specifications QQ-I-666c, Grade 11, or with ASTM A47; ductile
29 iron ASTM A339; segweld steel ASTM53 or A106; or IAPMO-approved
30 copper fittings with rolled grooves intended to be used together
31 with copper tubing with cold rolled grooved ends.

32 These couplings and fittings may be used above ground, for
33 storm drains and leaders, and for water distribution pipe
34 provided exposed parts in contact with water are galvanized, and
35 may be used below ground for water distribution if couplings and

1 fittings are galvanized and the exposed grooves are coal tar
2 enamel coated and wrapped.

3 Saddle-type fittings secured by steel electroplated U-bolts
4 may be used for aboveground water distribution, if the fittings
5 are galvanized, include a collar fitting into the pipe opening
6 with a gasket, and have IAPMO approval.

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

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

10 4715.0805 PUSH-ON JOINTS.

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

15 4715.0810 PLASTIC JOINTS.

16 Subpart 1. Joint methods. Every joint in plastic piping
17 must be made with approved fittings using solvent welded
18 connections, fusion welded connections, insert fittings with
19 metal clamps and screws of corrosion-resistant material or
20 approved crimp rings, threaded joints according to accepted
21 standards, or special IAPMO listed fittings of other types.
22 Large diameter water service pipe may have approved
23 elastomeric-gasket push-on type joints which comply with ASTM D
24 3139. All solvent materials must meet approved recognized
25 standards. Expansion and contraction joint materials and
26 dimensions must conform to ASTM D 2661 or ASTM D 2665 and shall
27 be of an approved type.

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

29 4715.0870 FLANGED FIXTURE CONNECTIONS.

30 Fixture connections between drainage pipes and water
31 closets, pedestal urinals, and earthenware trap standards shall
32 be made by means of brass, plastic, or iron flanges, caulked,
33 soldered, solvent welded, or screwed to the drainage pipe in
34 accordance with the manufacturer's recommendations and approved

1 by the administrative authority. The connection shall be
2 bolted, with an approved gasket, washer, or setting compound
3 between the earthenware and the connection. Floor flanges of
4 other equivalent materials may be used when approved by the
5 administrative authority.

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

11 4715.1020 CLEANOUT MATERIALS.

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

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

21 4715.1100 INTERCEPTORS AND SEPARATORS REQUIRED.

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

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

33 4715.1110 GREASE INTERCEPTORS FOR COMMERCIAL BUILDINGS.

34 A grease interceptor of sufficient size and efficiency

1 shall be installed in the waste line leading from sinks, drains,
2 or other fixtures when, in the opinion of the administrative
3 authority, greasy wastes can be introduced into the drainage
4 system in quantities that can cause line stoppage. Grease
5 interceptors shall be placed as near as possible to the fixture
6 and the grease interceptor shall be vented. No food waste
7 disposer or dishwashing machine shall discharge into the
8 building drainage system through a grease interceptor. Sinks or
9 other fixtures served by grease interceptors shall be trapped
10 and vented ahead of the grease interceptor.

11 Grease interceptors, when used, shall have a grease
12 retention capacity in pounds of grease, of at least twice the
13 flow-through rate, in gallons per minute.

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

19 4715.1120 OIL AND FLAMMABLE LIQUIDS SEPARATOR.

20 Enclosed garages of over 1,000 square feet or housing more
21 than four motor vehicles, repair garages, gasoline stations with
22 grease racks, work or wash racks, auto washes, and all buildings
23 where oily and/or flammable liquid wastes are produced shall
24 have a separator installed into which all oil, grease, and sand
25 bearing and/or flammable wastes shall be discharged before
26 emptying into the building drainage system or other point of
27 disposal, when floor drains or trench drains are provided.

28 Exception: Private garages classified as Group U, Division
29 1 occupancies serving one- and two-family dwellings.

30 Each separator shall be of watertight construction and of
31 not less than 35 cubic feet holding capacity, be provided with a
32 water seal of not less than three inches on the inlet and not
33 less than 18 inches on the outlet. The minimum depth below the
34 invert of the discharge drain shall be three feet. The minimum
35 size of the discharge drain shall be four inches. The separator

1 may be constructed of monolithic poured reinforced concrete with
2 a minimum floor and wall thickness of six inches, or of iron or
3 steel of a minimum thickness of 3/16 inch, protected with an
4 approved corrosion resistant coating on both the inside and the
5 outside.

6 The separator must be provided with a nonperforated iron or
7 steel cover and ring of not less than 24 inches in diameter, and
8 the air space in the top of the tank must have a three-inch vent
9 pipe, constructed of approved metallic material, extending
10 separately to a point at least 12 inches above the roof of the
11 building. Drains and piping from motor vehicle areas must be a
12 minimum of three inches in size. Drains discharging to an
13 interceptor must not be trapped. In motor vehicle wash
14 facilities, a sand interceptor which meets the requirements of
15 part 4715.1130, subpart 1, except that no water seal is
16 permitted, may be installed to receive wastes before discharging
17 into a flammable waste separator.

18 No cleanout, mechanical joint, or backwater valve shall be
19 installed inside the separator which could provide a bypass of
20 the trap seal. Only wastes that require separation shall
21 discharge into the separator, except that a water supplied and
22 trapped sink may be connected to the vent of the separator.
23 Whenever the outlet branch drain serving a separator is more
24 than 25 feet from a vented drain, such branch drain shall be
25 provided with a two inch vent pipe. A backwater valve shall be
26 installed in the outlet branch drain whenever in the judgment of
27 the administrative authority backflow from the building drain
28 could occur. (See part 4715.4000, subpart 4.)

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

32 4715.1160 BACKWATER VALVES.

33 Subpart 1. Where used. Drainage piping serving fixtures
34 that are located below the elevation of the curb or property
35 line at the point where the building sewer crosses under the

1 curb or property line, and above the crown level of the main
2 sewer, shall drain by gravity into the main sewer, and shall be
3 protected from back flow of sewage by installing an approved
4 backwater valve, and each such backwater valve shall be
5 installed only in that branch or section of the drainage system
6 which receives the discharge from fixtures located below the
7 elevation of the curb or property line.

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

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

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

24 4715.1210 REQUIRED MINIMUM NUMBER OF FIXTURES.

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

28 4715.1240 BATHTUBS.

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

30 Subp. 2. **Whirlpool bathtubs.** Whirlpool bathtubs and their
31 installation must comply with ANSI 112.19.7 and ANSI 112.19.8.

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

1 4715.1260 DRINKING FOUNTAINS.

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

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

19 4715.1300 FLOOR DRAINS.

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

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

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

30 Subp. 5. [See repealer.]

31 Subp. 6. **Garage and parking area floor drains.** Floor area
32 drains in open parking areas, including open areas of parking
33 ramps, must discharge to the storm sewer if available. Floor
34 drains in parking areas which are enclosed, and floor drains in
35 areas open or enclosed which are used for maintenance or as a

1 vehicle wash bay, must discharge to the sanitary sewer if a
2 municipal sewer is available. Oil and flammable liquid
3 separators must be provided if required by part 4715.1120.

4 Exception: Floor drains in private garages classified as
5 Group U, Division 1 occupancies serving one- and two-family
6 dwelling may discharge to daylight if approved by the
7 administrative authority.

8 4715.1330 FLUSH TANKS.

9 Subpart 1. Water supply for flush tanks. An adequate
10 quantity of water shall be provided to flush and clean the
11 fixture served. The fixture supply to a flush tank must have a
12 shut-off valve. The water supply to flush tanks equipped for
13 manual flushing shall be controlled by a float valve or other
14 automatic device designed to refill the tank after each
15 discharge and to completely shut off the water flow to the tank
16 when the tank is filled to operational capacity. Provision
17 shall be made to automatically supply water to the fixture so as
18 to refill the trap seal after each flushing, the water supply to
19 flush tanks equipped for automatic flushing shall be controlled
20 by a suitable timing device. (See part 4715.1770, subpart 2.)

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

22 4715.1380 SHOWERS.

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

24 Subp. 2. Shower waste outlet. Waste outlets, other than
25 those in bathtubs, serving a single shower shall be at least
26 1-1/2 inches in diameter and have removable strainers not less
27 than three inches in diameter having strainer openings not less
28 than one-fourth inch in minimum dimension. Waste outlets shall
29 be securely fastened to the waste pipe making a watertight
30 connection thereto. Waste outlets serving showers, except
31 single-head showers, must be at least two inches in diameter and
32 must have removable strainers not less than three inches in
33 diameter. Where each shower space is not provided with an
34 individual waste outlet, the waste outlet must be located and
35 the floor pitched so that the water from one shower does not

1 flow over the floor area serving another shower.

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

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

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

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

21 4715.1440 PROTECTION OF PLASTIC PIPE.

22 All plastic and copper pipe and tubing passing through
23 studs or plates that are within one and one-fourth inches of the
24 outside of the stud or plate must be protected by the provision
25 of 1/16 inch or 0.060 mild steel plates attached to the outside
26 of the stud or plate, or equivalent protection.

27 4715.1510 INDIRECT WASTE PIPING.

28 Indirect waste piping must be installed so as to permit
29 ready access for flushing and cleaning, and must meet the
30 material requirements of the code. Except as otherwise herein
31 provided, the size and construction of indirect waste piping
32 must be in accordance with parts 4715.2300 to 4715.2660,
33 regulating the installation of waste and vent piping.

34 Indirect waste pipes from appliances, devices, or other
35 equipment not regularly classed as plumbing fixtures, but which

1 are equipped with drainage outlets, must be trapped, but the
2 traps need not be vented and the waste pipe must be a minimum of
3 three-fourths inch size, but not less than the size of the
4 outlet or tail piece of the fixture, appliance, or equipment
5 served. However, overflow pans and drip outlets need not be
6 trapped and may be the same size as the outlet. Alternate
7 materials may be accepted for drains from overflow pans and drip
8 outlets if proper pitch, alignment, and support are maintained.

9 4715.1590 RECEPTORS OR SUMPS.

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

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

18 Subp. 5. [See repealer.]

19 4715.1710 WATER SERVICE.

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

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

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

28 The water service pipe may be placed in the same trench
29 with the building drain and the building sewer provided approval
30 is given by the administrative authority and the following
31 conditions are met:

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

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

34 4715.2000 WATER OUTLETS.

1 A potable water system shall be protected against backflow
2 and back-siphonage by providing and maintaining at each outlet:

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

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

6 4715.2020 DEVICES OR ASSEMBLIES FOR THE PROTECTION OF THE
7 POTABLE WATER SUPPLY.

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

13 4715.2030 APPROVAL OF DEVICES OR ASSEMBLIES.

14 Before any device or assembly for the prevention of
15 backflow or back-siphonage is installed, it shall have first
16 been certified by a recognized testing laboratory acceptable to
17 the administrative authority. Devices or assemblies installed
18 in a building potable water supply distribution system for
19 protection against backflow shall be maintained in good working
20 condition by the person or persons responsible for the
21 maintenance of the system.

22 4715.2100 BACKFLOW PREVENTERS.

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

24 B. Pressure vacuum breaker assembly (PVB):

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

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

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

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

30 [For text of item F, see M.R.]

31 4715.2110 TYPES OF DEVICES REQUIRED WHERE AN AIR GAP CANNOT BE
32 PROVIDED. 1.

33 Only allowed

1 where no
2 back pressure
3 is possible

4 DCV Hose
5 RPZ IAV DCVA PVB AVB VB

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

7 I. Dental units (separate
8 assembly required for each unit) X

9 [For text of items J to CC, see M.R.]

10 DD. Threaded hose connections, X
11 including: hose bibbs, hydrants,
12 service sinks, laundry trays

13 [For text of items EE and FF, see M.R.]

- 14 1. For installations not listed in this part, review with the
- 15 Administrative Authority.
- 16 2. Installations must comply with AWWA-M14, chapter 6 (1990)
- 17 except that the following statement is deleted from section
- 18 6.3: At any time where the fire sprinkler piping is not an
- 19 acceptable potable water system material, there shall be a
- 20 backflow-prevention assembly isolating the fire sprinkler system
- 21 from the potable water system.

22 4715.2120 LOCATION OF BACKFLOW PREVENTERS.

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

28 The access area must provide enough space for testing and
29 maintenance of the device. A backflow preventer must not be
30 installed in a pit or other confined area subject to recurrent
31 flooding. When a conductor pipe is provided from a backflow
32 preventer drain, a visible air gap must be provided at the
33 device. New installations must be at least 12 inches, but not

1 more than six feet, above the finished floor or ground level.

2 4715.2150 CONNECTIONS NOT SUBJECT TO BACK PRESSURE.

3 Subpart 1. Requirements. Where a water connection is not
4 subject to back pressure an atmospheric type vacuum breaker
5 shall be installed on the discharge side of the last valve on
6 the line serving the fixture or equipment. Where a valve is
7 installed on the discharge side of a vacuum breaker, that vacuum
8 breaker must be a pressure-type vacuum breaker assembly which
9 complies with part 4715.2030. A list of some conditions
10 requiring protective devices of this kind is given in subpart 2.

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

17 Fixture or Equipment	Method of Installation
18 Aspirators and Ejectors	19 C-L at least 6 inches above 20 flood level of receptacle.
21 Dental units	22 On models without built-in 23 vacuum breakers C-L at least 24 6 inches above flood level 25 rim of bowl.
26 Dishwashing machines	27 C-L at least 6 inches above 28 flood level of machine. 29 Install on both hot and cold 30 water supply lines.
31 Flushometer (Closet & Urinal)	32 C-L at least 6 inches above 33 top of fixture supplied.
34 Garbage can cleaning machine	35 C-L at least 6 inches above 36 flood level of machine. 37 Install on both hot and cold 38 water supply lines.
39 Hose outlets	40 C-L at least 6 inches above 41 highest point on hose line.
42 Laundry machines	43 C-L at least 6 inches above 44 flood level of machine. 45 Install on both hot and cold 46 water supply lines.
47 Lawn sprinklers	48 C-L at least 12 inches above 49 highest sprinkler or 50 discharge outlet.
51 Steam tables	52 C-L at least 6 inches above 53 flood level.

54

- 1 Tank and vats C-L at least 6 inches above
- 2 flood level rim or line.
- 3
- 4 Trough urinals C-L at least 30 inches above
- 5 perforated flush pipe.
- 6
- 7 Flush tanks Equip with approved ball cock.
- 8 Where ball cocks touch tank
- 9 water equip with vacuum
- 10 breaker with C-L at
- 11 least 1 inch above overflow
- 12 outlets. Where ball cock does
- 13 not touch tank water, install
- 14 ball cock outlet at least 1
- 15 inch above overflow outlet
- 16 or provide vacuum breaker
- 17 as specified above.
- 18
- 19 Hose bibbs (Where C-L at least 6 inches above
- 20 aspirators or ejectors could be flood level of receptacle
- 21 connected) served.

22 4715.2161 INSTALLATION OF REDUCED PRESSURE BACKFLOW PREVENTERS.

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

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

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

39 4715.2215 THERMAL EXPANSION CONTROL.

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

1 4715.2280 WATER METER INSTALLATION.

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

6 4715.2300 LOAD ON DRAINAGE PIPING.

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

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

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

20 Discharge Capacity	20 Fixture Unit Value
21 (in gallons per	
22 minute)	
23	
24 up to 7-1/2	1 unit
25 8 to 15	2 units
26 16 to 30	4 units
27 31 to 50	6 units
28	

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

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

35 Type of Fixture	36 Fixture	37 Unit	38 Minimum
	39 Value		40 Fixture
			41 Trap and
			42 Drain Size
40 Clothes washer (domestic use)	2		1-1/2
41 Clothes washer (public use in groups of	6	each	
42 3 or more)			
43 Bath tub with or without shower	2		1-1/2
44 Bidet	2		1-1/2

1	Dental unit or cuspidor	1	1-1/4
2	Drinking fountain	1	1-1/4
3	Dishwasher, domestic (gravity drain)	2	1-1/2
4	Dishwasher, commercial	4	2
5	Floor drain with 2 inch waste	2	2
6	Floor drain with 3 inch waste	3	3
7	Floor drain with 4 inch waste	4	4
8	Lavatory	1	1-1/4
9	Laundry tray (1 or 2 compartment)	2	1-1/2
10	Shower stall, domestic	2	1-1/2
11	Shower (gang) per head	1	
12	SINKS:		
13	Classroom, with or without	2	1-1/2
14	drinking fountain		
15	Combination, sink and tray (with		
16	disposal unit)	3	1-1/2
17	Combination, sink and tray (with		
18	one trap)	2	1-1/2
19	Domestic	2	1-1/2
20	Domestic, with disposal unit	2	1-1/2
21	Surgeons	3	1-1/2
22	Laboratory, cup sink	1	1-1/2
23	Flushrim or bedpan washer	6	3
24	Service	3	2
25	Pot or scullery	4	2
26	Soda fountain	2	1-1/2
27	Commercial, flat rim, bar,		
28	or counter	3	1-1/2
29	Wash, circular, or multiple (per		
30	set of faucets)	2	1-1/2
31	URINAL pedestal, wall hung, with 3 inch		
32	trap (blowout and syphon jet)	6	3
33	Wall hung with 2 inch trap	3	2
34	Wall hung with 1-1/2 inch trap	2	1-1/2
35	Trough (per 6 foot section)	2	1-1/2
36	Stall	3	2
37	WATER CLOSET	6	3
38	Unlisted Fixture or Trap Size		
39	1-1/4 inch	1	
40	1-1/2 inch	2	
41	2 inch	3	
42	2-1/2 inch	4	
43	3 inch	5	
44	4 inch	6	

45 4715.2440 DESIGN OF SUMPS.

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

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

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

56 4715.2820 METHOD OF TESTING.

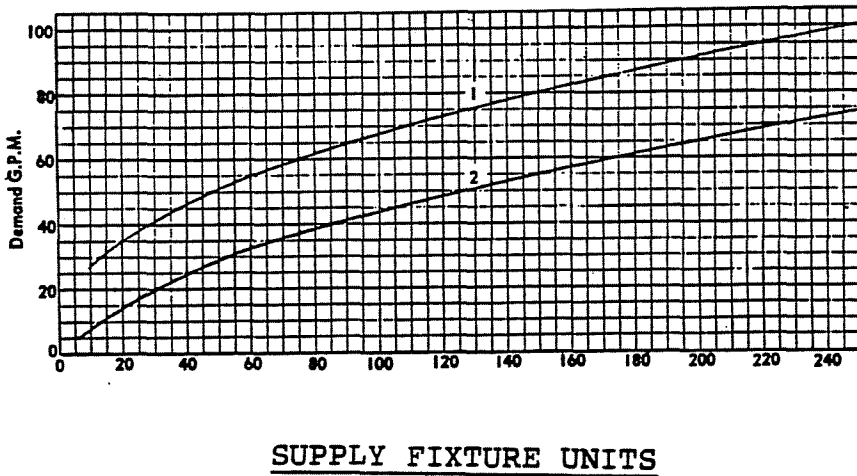
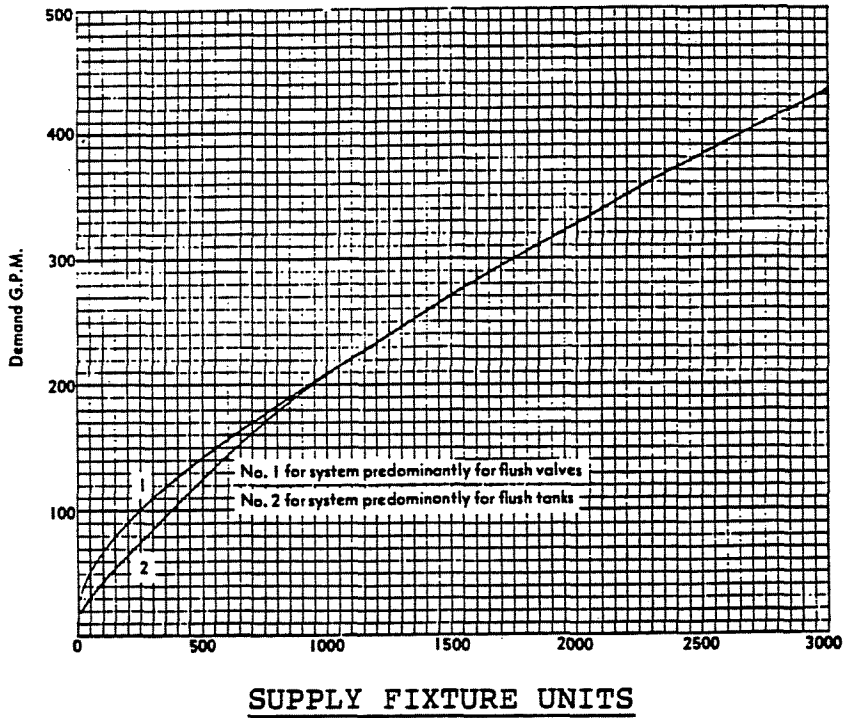
57 [For text of subps 1 to 6, see M.R.]

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

5 4715.3700 DETERMINATION OF PEAK DEMAND.

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

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



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

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

12 REPEALER. Minnesota Rules, parts 4715.1215; 4715.1300, subpart
13 5; and 4715.1590, subpart 5, are repealed.