

1.1 **Minnesota Plumbing Board**

1.2 **Proposed Permanent Rules Adopting the 2018 Uniform Plumbing Code with**
1.3 **Amendments**

1.4 **4714.0050 TITLE; INCORPORATION BY REFERENCE.**

1.5 Chapters 2 to 11, ~~14~~ 16, and 17 of the ~~2012~~ 2018 edition of the Uniform Plumbing
1.6 Code (UPC) as promulgated by the International Association of Plumbing and Mechanical
1.7 Officials (IAPMO), Ontario, California, and UPC appendices A, B, and I, ~~except for IS~~
1.8 ~~12-2006, IS 13-2006, IS 26-2006, SIS 1-2003, and SIS 2-2003 of appendix I~~, are incorporated
1.9 by reference and made part of the Minnesota Plumbing Code except as qualified by the
1.10 applicable provisions in chapter 1300, and as amended in this chapter. The UPC is not
1.11 subject to frequent change and a copy of the UPC, with amendments for use in Minnesota,
1.12 is available in the office of the commissioner of labor and industry. Portions of this chapter
1.13 reproduce text and tables from the UPC, reproduced with permission. The UPC is copyright
1.14 ~~2012~~ 2018 by the IAPMO. All rights reserved.

1.15 **4714.0204 TERMS DEFINED BEGINNING WITH B.**

1.16 Subpart 1. Added definition. UPC section 204.0 is modified by adding the following
1.17 definition:

1.18 **Barometric Loop** - Means a section of pipe in the shape of an inverted "u" located upstream
1.19 and rising a minimum of 35 feet above the highest fixture it supplies.

1.20 Subp. 2. Amended definition. UPC section 204.0 is modified by amending the
1.21 following definition:

1.22 **Building Supply** - Means the pipe carrying potable water from the municipal water supply
1.23 or source of water supply to a building water meter, pressure tank, or other point of use or
1.24 distribution on the lot.

2.1 **4714.0207 TERMS DEFINED BEGINNING WITH E.**

2.2 UPC section 207.0 is modified by adding the following definition:

2.3 **Emergency Floor Drain** - Means floor drains that do not serve as a receptor that are located
2.4 in restrooms, under emergency eyewash/shower equipment, and in laundry rooms.

2.5 **4714.0214 TERMS DEFINED BEGINNING WITH L.**

2.6 UPC section 214.0 is modified by adding the following definition:

2.7 **Low Pressure Water Dispenser** - Means a terminal fitting located downstream of a
2.8 pressure-reducing valve that dispenses hot drinking water above 160 degrees Fahrenheit
2.9 (71 degrees Celsius) or cold water or both at a pressure of 15 psi (105 kPa) or less.

2.10 **4714.0220 TERMS DEFINED BEGINNING WITH R.**

2.11 UPC section 220.0 is modified by adding the following definition:

2.12 **Registered Design Professional Engineer** - For purposes of this code, "registered design
2.13 professional engineer," "engineer," or "registered professional engineer" means a person
2.14 practicing professional engineering as described in Minnesota Statutes, section 326.02,
2.15 subdivision 3, and who is licensed in the state of Minnesota as a professional engineer by
2.16 the Board of Architecture, Engineering, Land Surveying, Landscape Architecture,
2.17 Geoscience, and Interior Design under Minnesota Statutes, section 326.10.

2.18 **4714.0225 TERMS DEFINED BEGINNING WITH W.**

2.19 UPC section 225.0 is modified by adding the following definition:

2.20 **Water Conditioning Equipment or Water Treating Equipment** - Means any appliance,
2.21 appurtenance, or fixture, or any combination thereof, designed to treat potable water, so as
2.22 to alter, modify, add, or remove any minerals, chemicals, or bacteria contained in the water.
2.23 Water conditioning equipment and water treating equipment includes but is not limited to
2.24 ion exchange water softeners, backwashing water filters, oxidizing water filters, cartridge

3.1 filters, chemical feed cartridges, ultraviolet lights, and equipment for reverse osmosis,
3.2 ultrafiltration, nanofiltration, pH adjustment, nitrate and arsenic removal, and adsorption
3.3 onto activated carbon.

3.4 **4714.0301 SECTION 301.0 MATERIALS--STANDARDS AND ALTERNATIVES**
3.5 **GENERAL.**

3.6 Subpart 1. **Section 301.1 301.2.5 Existing Buildings.** UPC section 301.1 is amended
3.7 to read as follows: subsection 301.2.5 is deleted in its entirety.

3.8 **301.1 Minimum Standards.** ~~Pipe, pipe fittings, traps, fixtures, material, and devices used~~
3.9 ~~in a plumbing system shall:~~

3.10 ~~(1) be listed or labeled (third-party certified) by a listing agency (accredited conformity~~
3.11 ~~assessment body);~~

3.12 ~~(2) comply with the approved applicable recognized standards referenced in this code; and~~

3.13 ~~(3) be free from defects.~~

3.14 ~~Plastic pipe and the fittings used for plastic pipe shall meet the requirements of NSF 14.~~

3.15 ~~Unless otherwise provided for in this code, materials, fixtures, or devices used or entering~~
3.16 ~~into the construction of plumbing systems, or parts thereof, shall be submitted to the Authority~~
3.17 ~~Having Jurisdiction for approval.~~

3.18 **301.1.1 Marking.** ~~Each length of pipe and each pipe fitting, trap, fixture, material, and~~
3.19 ~~device used in a plumbing system shall have cast, stamped, or indelibly marked on it~~
3.20 ~~the manufacturer's mark or name, which shall readily identify the manufacturer to the~~
3.21 ~~end user of the product. Where required by the approved standard that applies, the~~
3.22 ~~product shall be marked with the weight and the quality of the product. Materials and~~
3.23 ~~devices used or entering into the construction of plumbing and drainage systems, or~~
3.24 ~~parts thereof, shall be marked and identified in a manner satisfactory to the Authority~~

4.1 ~~Having Jurisdiction. The marking shall be done by the manufacturer. Field markings~~
4.2 ~~shall not be acceptable.~~

4.3 ~~**301.1.2 Standards.** Standards listed or referred to in this chapter or other chapters~~
4.4 ~~cover materials that shall conform to the requirements of this code, where used in~~
4.5 ~~accordance with the limitations imposed in this or other chapters thereof and their~~
4.6 ~~listing. Where a standard covers materials of various grades, weights, quality, or~~
4.7 ~~configurations, the portion of the listed standard that is applicable shall be used. Design~~
4.8 ~~and materials for special conditions or materials not provided for herein shall be~~
4.9 ~~permitted to be used only by special permission of the Authority Having Jurisdiction~~
4.10 ~~after the Authority Having Jurisdiction has been satisfied as to their adequacy. A list~~
4.11 ~~of accepted plumbing material standards is referenced in Table 1401.1.~~

4.12 Subp. 2. ~~Section 301.2~~ 301.3. UPC section ~~301.2~~ 301.3 is amended to read as follows:

4.13 ~~301.2~~ 301.3 **Alternate Materials and Methods of Construction Equivalency.** Nothing
4.14 in this code is intended to prevent the use of systems, methods, or devices of equivalent or
4.15 superior quality, strength, fire resistance, effectiveness, durability, and safety over those
4.16 prescribed by this code. Prior to installation, technical documentation shall be submitted to
4.17 the Authority Having Jurisdiction to demonstrate equivalency. Unless prohibited by this
4.18 code or by law, the Authority Having Jurisdiction shall have the authority to approve or
4.19 disapprove the system, method, or device for the intended purpose.

4.20 However, the exercise of this discretionary approval by the Authority Having Jurisdiction
4.21 shall have no effect beyond the jurisdictional boundaries of the Authority Having Jurisdiction.
4.22 An alternate material or method of construction so approved shall not be considered as in
4.23 accordance with the requirements, intent, or both of this Code for a purpose other than that
4.24 granted by the Authority Having Jurisdiction where the submitted data does not prove
4.25 equivalency.

4.26 UPC subsections 301.2.1, 301.2.1.1, and 301.2.1.2 are preserved without amendment.

5.1 Subp. 3. **Section ~~301.4.6~~ 301.5.6.** UPC section ~~301.4.6~~ 301.5.6 is amended to read as
5.2 follows:

5.3 **~~301.4.6~~ 301.5.6 Inspection and Testing.** The alternative engineered design shall be
5.4 tested and inspected in accordance with the submitted testing and inspection plan and
5.5 the requirements of this code. Prior to the final plumbing inspection, the registered
5.6 professional engineer shall provide written certification to the administrative authority
5.7 that the system has been visually inspected by the registered professional engineer or
5.8 the registered professional engineer's designee, and the installation has been properly
5.9 implemented according to the certified plans, calculations, and specifications.

5.10 **4714.0313 HANGERS AND SUPPORTS.**

5.11 Subpart 1. **Section 313.** Table 313.3 is amended to read as follows:

5.12 **TABLE 313.3**

5.13 **HANGERS AND SUPPORTS**

5.14 <u>MATERIALS</u>	5.15 <u>TYPES OF JOINTS</u>	5.16 <u>HORIZONTAL</u>	5.17 <u>VERTICAL</u>
5.18 <u>Cast</u>	5.19 <u>Lead and Oakum</u>	5.20 <u>5 feet, except 10 feet where 10 foot lengths are installed^{1,2,3}</u>	5.21 <u>Base and each floor, not to exceed 15 feet</u>
	5.22 <u>Compression Gasket</u>	5.23 <u>Every other joint, unless over 4 feet then support each joint^{1,2,3}</u>	5.24 <u>Base and each floor, not to exceed 15 feet</u>
5.25 <u>Cast-Iron Hubless</u>	5.26 <u>Shielded Coupling</u>	5.27 <u>Every other joint, unless over 4 feet then support each joint^{1,2,3}</u>	5.28 <u>Base and each floor, not to exceed 15 feet</u>
5.29 <u>Copper & Copper Alloys</u>	5.30 <u>Soldered, Brazed, Threaded, or Mechanical</u>	5.31 <u>1-1/2 inches and smaller, 6 feet; 2 inches and larger, 10 feet</u>	<u>Each floor, not to exceed 10 feet⁵</u>
5.32 <u>Steel Pipe for Water or DWV</u>	5.33 <u>Threaded or Welded</u>	<u>3/4 inch and smaller, 10 feet; 1 inch and larger, 12 feet</u>	<u>Every other floor, not to exceed 25 feet⁵</u>

6.1	<u>Steel Pipe for</u>	<u>Threaded or</u>	<u>1/2 inch, 6 feet; 3/4 inch and</u>	<u>1/2 inch, 6 feet; 3/4 inch and</u>
6.2	<u>Gas</u>	<u>Welded</u>	<u>1 inch, 8 feet; 1-1/4 inches</u>	<u>1 inch, 8 feet; 1-1/4 inches</u>
6.3			<u>and larger, 10 feet</u>	<u>every floor level</u>
6.4	<u>Schedule 40</u>	<u>Solvent</u>	<u>All sizes, 4 feet; allow for</u>	<u>Base and each floor; provide</u>
6.5	<u>PVC and ABS</u>	<u>Cemented</u>	<u>expansion every 30 feet^{3,6}</u>	<u>mid-story guides; provide for</u>
6.6	<u>DWV</u>			<u>expansion every 30 feet⁶</u>
6.7	<u>CPVC</u>	<u>Solvent</u>	<u>1 inch and smaller, 3 feet;</u>	<u>Base and each floor; provide</u>
6.8		<u>Cemented</u>	<u>1-1/4 inches and larger, 4 feet</u>	<u>mid-story guides</u>
6.9	<u>CPVC-AL-CPVC</u>	<u>Solvent</u>	<u>1/2 inch, 5 feet; 3/4 inch, 65</u>	<u>Base and each floor; provide</u>
6.10		<u>Cemented</u>	<u>inches; 1 inch, 6 feet</u>	<u>mid-story guides</u>
6.11	<u>Lead</u>	<u>Wiped or</u>	<u>Continuous Support</u>	<u>Not to exceed 4 feet</u>
6.12		<u>Burned</u>		
6.13	<u>Steel</u>	<u>Mechanical</u>	<u>In accordance with standards acceptable to the Authority</u>	
6.14			<u>Having Jurisdiction</u>	
6.15	<u>PEX</u>	<u>Cold</u>	<u>1 inch and smaller, 32 inches;</u>	<u>Base and each floor; provide</u>
6.16		<u>Expansion,</u>	<u>1-1/4 inches and larger, 4 feet</u>	<u>mid-story guides</u>
6.17		<u>Insert, and</u>		
6.18		<u>Compression</u>		
6.19	<u>PEX-AL-PEX</u>	<u>Metal Insert</u>	<u>1/2 inch; 3/4 inch; 1 inch</u>	<u>Base and each floor; provide</u>
6.20		<u>and Metal</u>	<u>All sizes 98 inches</u>	<u>mid-story guides</u>
6.21		<u>Compression</u>		
6.22	<u>PE-AL-PE</u>	<u>Metal Insert</u>	<u>1/2 inch; 3/4 inch; 1 inch</u>	<u>Base and each floor; provide</u>
6.23		<u>and Metal</u>	<u>All sizes 98 inches</u>	<u>mid-story guides</u>
6.24		<u>Compression</u>		
6.25	<u>PE-RT</u>	<u>Insert and</u>	<u>1 inch and smaller, 32 inches;</u>	<u>Base and each floor; provide</u>
6.26		<u>Compression</u>	<u>1-1/4 inches and larger, 4 feet</u>	<u>mid-story guides</u>
6.27	<u>Polypropylene</u>	<u>Fusion Weld</u>	<u>1 inch and smaller, 32 inches;</u>	<u>Base and each floor; provide</u>
6.28	<u>(PP)</u>	<u>(socket, butt,</u>	<u>1-1/4 inches and larger, 4 feet</u>	<u>mid-story guides</u>
6.29		<u>saddle,</u>		
6.30		<u>electrofusion),</u>		
6.31		<u>Threaded</u>		
6.32		<u>(metal threads</u>		
6.33		<u>only), or</u>		
6.34		<u>Mechanical</u>		

6.35 For SI units: 1 inch = 25.4 mm, 1 foot = 304.8 mm

6.36 Notes:

- 7.1 ¹ Support adjacent to joint, not to exceed 18 inches (457 mm).
- 7.2 ² Brace not to exceed 40-foot (12,192 mm) intervals to prevent horizontal movement.
- 7.3 ³ Support at each horizontal branch connection.
- 7.4 ⁴ Hangers shall not be placed on the coupling.
- 7.5 ⁵ Vertical water lines shall be permitted to be supported in accordance with recognized
- 7.6 engineering principles with regard to expansions and contraction, where first approved by
- 7.7 the Authority Having Jurisdiction.
- 7.8 ⁶ For expansion joints, see Table 313.3.1.

7.9 Subp. 2. Section 313. Table 313.3.1 is added to read as follows:

TABLE 313.3.1

Schedule 40 PVC and ABS DWV and Storm Pipe Expansion Table

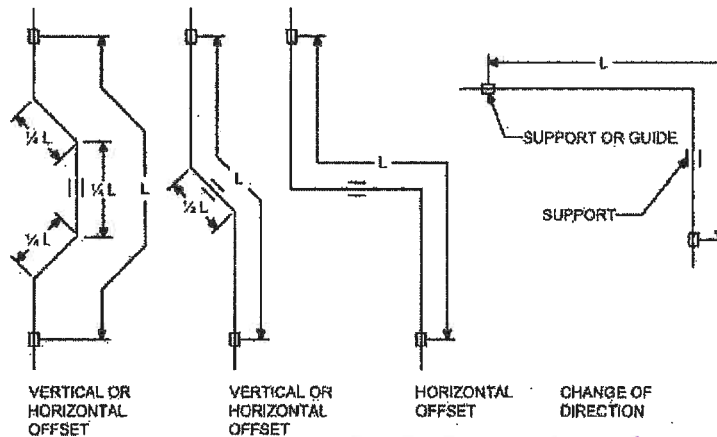
Inside the building thermal envelope

<u>Pipe Size</u>	<u>Length of Run (ft.)</u>		
	<u>10'</u>	<u>20'</u>	<u>30'</u>
	<u>Expansion joint length (in.) = L</u>		
<u>1.5"</u>	<u>20</u>	<u>28</u>	<u>34</u>
<u>2"</u>	<u>22</u>	<u>31</u>	<u>38</u>
<u>3"</u>	<u>27</u>	<u>38</u>	<u>46</u>
<u>4"</u>	<u>30</u>	<u>43</u>	<u>52</u>
<u>6"</u>	<u>37</u>	<u>52</u>	<u>63</u>
<u>8"</u>	<u>42</u>	<u>59</u>	<u>72</u>
<u>10"</u>	<u>47</u>	<u>66</u>	<u>80</u>
<u>12"</u>	<u>51</u>	<u>72</u>	<u>88</u>

Outside the building thermal envelope

	<u>Length of Run (ft.)</u>		
	<u>10'</u>	<u>20'</u>	<u>30'</u>

8.1	Pipe Size	Expansion joint length (in.) = L		
8.2	<u>1.5"</u>	<u>26</u>	<u>36</u>	<u>44</u>
8.3	<u>2"</u>	<u>29</u>	<u>41</u>	<u>50</u>
8.4	<u>3"</u>	<u>35</u>	<u>49</u>	<u>60</u>
8.5	<u>4"</u>	<u>40</u>	<u>56</u>	<u>68</u>
8.6	<u>6"</u>	<u>48</u>	<u>68</u>	<u>83</u>
8.7	<u>8"</u>	<u>55</u>	<u>77</u>	<u>94</u>
8.8	<u>10"</u>	<u>61</u>	<u>86</u>	<u>105</u>
8.9	<u>12"</u>	<u>66</u>	<u>94</u>	<u>114</u>



Footnote 1. Multiple offsets shall be allowed to provide expansion for each 30-foot developed length of run.

8.10 Subp. 3. Section 313.7. UPC section 313.7 is deleted in its entirety.

8.11 **4714.0403 [Renumbered 4714.0412]**

8.12 **4714.0403 4714.0412 WATER-CONSERVING FIXTURES AND FITTINGS.**

8.13 UPC section ~~403.3~~ subsection 412.1.1 is amended to read as follows:

8.14 **~~403.3 Urinals.~~** Urinals shall have an average water consumption not to exceed 1 gallon (4
8.15 L) of water per flush.

8.16 **403.3.1 412.1.1 Nonwater Urinals.** Nonwater urinals shall be listed and comply with
8.17 the applicable standards referenced in Table 1401.1. Nonwater urinals shall have a
8.18 barrier liquid sealant to maintain a trap seal. Nonwater urinals shall permit the

9.1 uninhibited flow of waste through the urinal to the sanitary drainage system. Nonwater
9.2 urinals shall be cleaned and maintained in accordance with the manufacturer's
9.3 instructions after installation. Where a nonwater urinal is installed, a water-supplied
9.4 fixture shall be installed upstream of the nonwater urinal at the end of that same drainage
9.5 branch.

9.6 ~~4714.0406~~ 4714.0405 **PROHIBITED FIXTURES.**

9.7 UPC section ~~406.3~~ 405.3 is deleted in its entirety.

9.8 **4714.0406 [Renumbered 4714.0405]**

9.9 **4714.0407 LAVATORIES.**

9.10 Subpart 1. UPC section 407.3. UPC section 407.3 is amended as follows:

9.11 **407.3 Limitation of Hot Water Temperature for Public Lavatories.** Hot water delivered
9.12 from public-use lavatories shall be limited to a maximum temperature of 110 degrees
9.13 Fahrenheit (43 degrees Celsius). The maximum temperature shall be regulated by one of
9.14 the following means:

9.15 (1) a limiting device conforming to ASSE 1070/ASME A112.1070/CSA B125.70; or

9.16 (2) a water heater conforming to ASSE 1084.

9.17 Subp. 2. UPC section 407.4 is deleted in its entirety.

9.18 **4714.0408 SHOWERS.**

9.19 ~~Subpart 1. UPC section 408.3 is amended to read as follows.~~

9.20 **408.3 Individual Shower and Tub/Shower Combination Control Valves.** Showers and
9.21 tub/shower combinations shall be provided with individual control valves of the pressure
9.22 balance, thermostatic, or combination pressure balance/thermostatic mixing valve type that
9.23 provide scald and thermal shock protection for the rated flow rate of the installed showerhead.
9.24 These valves shall be installed at the point of use and in accordance with ASSE 1016/ASME

10.1 A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1. Gang showers, where supplied
 10.2 with a single temperature-controlled water supply pipe, shall be controlled by a mixing
 10.3 valve that is in accordance with ASSE 1069. Handle position stops shall be provided on
 10.4 such valves. The maximum water temperature discharging from an individual showerhead
 10.5 shall be limited to 120 degrees Fahrenheit (49 degrees Celsius) by one of the following
 10.6 methods:

10.7 (1) a shower or tub/shower combination valve conforming to ASSE 1016/ASME
 10.8 A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 where either:

10.9 (a) the valve is field adjusted to the required maximum temperature; or

10.10 (b) the handle position stop is set in accordance with the manufacturer's instructions
 10.11 to the required maximum temperature;

10.12 (2) for gang showers supplied by a single water supply pipe, a mixing valve that

10.13 ~~conforms to ASSE 1069 that is field-adjusted to the required maximum temperature.~~ ^{STET}

10.14 ~~(3) a limiting device conforming to either ASSE 1070/ASME A112.1070/CSA B125.70~~

10.15 ~~or CSA B125.3; or~~

10.16 ~~(4) a water heater conforming to ASSE 1084.~~

10.17 Subp. 2. UPC section 408.7 is amended to read as follows:

10.18 **408.7 Lining for Showers and Receptors.** Shower receptors built onsite shall be watertight
 10.19 and shall be constructed from approved-type dense, nonabsorbent, and noncorrosive
 10.20 materials. Each such receptor shall be adequately reinforced; shall be provided with an
 10.21 approved flanged floor drain designed to make a watertight joint on the floor; and shall have
 10.22 smooth, impervious, and durable surfaces. Unless the shower receptor is poured on the
 10.23 ground as part of a slab, an approved shower liner must be provided in accordance with the
 10.24 requirements of this section.

11.1 Shower receptors shall have the subfloor and rough side of walls to a height of not less
11.2 than 3 inches (76 mm) above the top of the finished dam or threshold shall be first lined
11.3 with sheet plastic, lead, or copper, or shall be lined with other durable and watertight
11.4 materials. Showers that are provided with a built-in place, permanent seat or seating area
11.5 that is located within the shower enclosure, shall be first lined with sheet plastic, lead,
11.6 copper, or shall be lined with other durable and watertight materials that extend not less
11.7 than 3 inches (76 mm) above horizontal surfaces of the seat or the seating area.

11.8 Lining materials shall be pitched 1/4 inch per foot (20.8 mm/m) to weep holes in the
11.9 subdrain of a smooth and solidly formed subbase. Such lining materials shall extend upward
11.10 on the rough jambs of the shower opening to a point not less than 3 inches (76 mm) above
11.11 the horizontal surfaces of the seat or the seating area, the top of the finished dam or threshold
11.12 and shall extend outward over the top of the permanent seat, permanent seating area, or
11.13 rough threshold and be turned over and fastened on the outside face of both the permanent
11.14 seat, permanent seating area, or rough threshold and the jambs.

11.15 Nonmetallic shower subpans or linings shall be permitted to be built up on the job site
11.16 of not less than three layers of standard-grade 15-pound (6.8 kg) asphalt-impregnated roofing
11.17 felt. The bottom layer shall be fitted to the formed subbase and each succeeding layer
11.18 thoroughly hot-mopped to that below. Corners shall be carefully fitted and shall be made
11.19 strong and watertight by folding or lapping, and each corner shall be reinforced with suitable
11.20 webbing hot-mopped in place.

11.21 Folds, laps, and reinforcing webbing shall extend not less than 4 inches (102 mm) in
11.22 all directions from the corner, and webbing shall be of approved type and mesh, producing
11.23 a tensile strength of not less than 50 pounds per square foot (lb/ft²) (244 kg/m²) in either
11.24 direction. Nonmetallic shower subpans or linings shall be permitted to consist of multilayers
11.25 of other approved equivalent materials suitably reinforced and carefully fitted in place on
11.26 the job site as elsewhere required in this section.

12.1 Linings shall be properly recessed and fastened to the approved backing so as not to
12.2 occupy the space required for the wall covering, and shall not be nailed or perforated at a
12.3 point that is less than 1 inch (25.4 mm) above the finished dam or threshold. An approved
12.4 type subdrain shall be installed with a shower subpan or lining. Each such subdrain shall
12.5 be of the type that sets flush with the subbase and shall be equipped with a clamping ring
12.6 or other device to make a tight connection between the lining and the drain. The subdrain
12.7 shall have weep holes into the waste line. The weep holes located in the subdrain clamping
12.8 ring shall be protected from clogging.

12.9 UPC subsections 408.7.1 through 408.7.5 are maintained without amendment.

12.10 **4714.0409 BATHTUBS AND WHIRLPOOL BATHTUBS.**

12.11 Subpart 1. UPC section 409.1 is amended to read as follows:

12.12 **409.1 Application.** ~~Bathtubs and whirlpool bathtubs shall comply with the applicable~~
12.13 ~~standards referenced in Table 1401.1. Bathtubs shall comply with ASME A112.19.1/CSA~~
12.14 ~~B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4, CSA B45.5/IAPMO~~
12.15 ~~Z124, or CSA B45.12/IAPMO Z402. Whirlpool bathtubs shall comply with ASME~~
12.16 ~~A112.19.7/CSA B45.10. Pressure sealed doors within bathtubs and or whirlpool bathtub~~
12.17 ~~enclosures shall comply with the applicable standards referenced in Table 1401.1 ASME~~
12.18 ~~A112.19.15. Whirlpool pedicure tubs shall comply with general requirements and water~~
12.19 ~~retention sections of ASME A112.19.7/CSA B45.10, Hydromassage Bathtub Appliances,~~
12.20 ~~or IAPMO IGC 155, Pipeless Whirlpool Bathtub Appliances Systems.~~

12.21 Subp. 2. UPC section 409.4 is amended to read as follows:

12.22 **409.4 Limitation of Hot Water Temperature in Bathtubs and Whirlpool Bathtubs.**

12.23 The maximum hot water temperature discharging from the bathtub and whirlpool bathtub
12.24 filler shall be limited to 120 degrees Fahrenheit (49 degrees Celsius). The maximum
12.25 temperature shall be regulated by one of the following means:

13.1 (1) a limiting device conforming to either ASSE 1070/ASME A112.1070/CSA B125.70
13.2 or CSA B125.3; or

13.3 (2) a water heater conforming to ASSE 1084.

13.4 **4714.0410 BIDETS.**

13.5 UPC section 410.3 is amended to read as follows:

13.6 **410.3 Limitations of Water Temperature in Bidets.** The maximum hot water temperature
13.7 discharging from a bidet shall be limited to 110 degrees Fahrenheit (43 degrees Celsius).

13.8 The maximum temperature shall be regulated by one of the following means:

13.9 (1) a limiting device conforming to either ASSE 1070/ASME A112.1070/CSA B125.70
13.10 or CSA B125.3; or

13.11 (2) a water heater conforming to ASSE 1084.

13.12 **4714.0414 DISHWASHING MACHINES.**

13.13 UPC section 414.3 is amended to read as follows:

13.14 **414.3 Drainage Connection.** Domestic dishwashing machines shall discharge indirectly

13.15 ~~through an air gap fitting in accordance with section 807.3 into a waste receptor, a wye~~

13.16 ~~branch fitting on the tailpiece of a kitchen sink, or dishwasher connection of a food waste~~

13.17 ~~disposer, or run the discharge line as high as possible under the countertop, securely fastened.~~

13.18 Commercial dishwashing machines shall discharge indirectly through an air break or direct

13.19 connection. The indirect discharge for commercial dishwashing machines shall be in

13.20 accordance with section 807.1, and the direct discharge shall be in accordance with section

13.21 704.3.

13.22 **4714.0416 EMERGENCY EYEWASH AND SHOWER EQUIPMENT.**

13.23 UPC section 416.2 is amended to read as follows:

14.1 **416.2 Water Supply.** Emergency eyewash and shower equipment shall not be limited in
14.2 the water supply flow rates. Where hot and cold water is supplied to an emergency shower
14.3 or eyewash station, the temperature of the water supply shall be controlled by a temperature
14.4 actuated mixing valve complying with ASSE 1071. Where water is supplied directly to an
14.5 emergency shower or eyewash station from a water heater, the water heater shall comply
14.6 with ASSE 1085. Flow rate, discharge pattern, and temperature of flushing fluids shall be
14.7 provided in accordance with ISEA Z358.1 based on the hazardous material.

14.8 **4714.0417 FAUCETS AND FIXTURE FITTINGS.**

14.9 UPC section 417 is amended by adding subsection 417.6 to read as follows:

14.10 **417.6 Low-Pressure Water Dispenser.** Beverage faucets shall comply with ASME
14.11 A112.18.1/CSA B125.1. Low-pressure water dispensers that dispense electrically heated
14.12 water and have a reservoir vented to the atmosphere shall comply with ASSE 1023. Electric
14.13 devices that heat water shall comply with UL 499.

14.14 **4714.0418 FLOOR DRAINS.**

14.15 Subpart 1. Section 418.4. UPC section 418.4 is amended to read as follows:

14.16 **418.4 Food Storage Areas.** Where drains are provided in storerooms, walk-in freezers,
14.17 walk-in coolers, refrigerated equipment, or other locations where food is stored, the drains
14.18 shall have indirect waste piping. Separate waste pipes shall be run from each food storage
14.19 area, each with an indirect connection to the building sanitary drainage system. Traps shall
14.20 be provided in accordance with section ~~801.2.2~~ 801.3.2 and shall be vented.

14.21 Indirect drains shall be permitted to be located in freezers or other spaces where freezing
14.22 temperatures are maintained, provided that traps, where supplied, shall be located where
14.23 the seal will not freeze. Otherwise, the floor of the freezer shall be sloped to a floor drain
14.24 located outside of the storage compartment.

15.1 Subp. 2. **Section 418.** UPC section 418 is amended by adding the following
15.2 subsections.

15.3 **418.6 Elevator Pit Drain.** An elevator pit drain shall discharge to the sanitary sewer using
15.4 an indirect connection that precludes the possibility of sewage backup into the pit. If a sump
15.5 is used, it shall be outside the pit with a dry pan drain flowing to it.

15.6 **418.7 Garage and Parking Area Floor Drains.** Floor area drains in open parking areas,
15.7 including open areas of parking ramps, shall discharge to the storm sewer or to a place of
15.8 disposal satisfactory to the sewer authority. Floor drains in parking areas that are enclosed,
15.9 and floor drains in areas open or enclosed that are used for maintenance or as vehicle wash
15.10 bays, shall discharge to the sanitary sewer if a municipal sewer is available. An oil and
15.11 flammable liquid interceptor shall comply with section 1017 and shall be provided if required
15.12 by section 1017 sections 1009.1, 1011.1, and 1017.1.

15.13 **Exception:** Floor drains in private garages serving one- and two-family dwellings may
15.14 discharge to daylight if approved by the administrative authority.

15.15 **4714.0420 SINKS.**

15.16 UPC section ~~420.3~~ 420.4 is amended to read as follows:

15.17 ~~420.3~~ 420.4 Waste Outlet. Kitchen and laundry sinks shall have a waste outlet and fixture
15.18 tailpiece not less than 1-1/2 inches (40 mm) in diameter, except commercial pot and scullery
15.19 sinks shall be provided with waste outlets not less than 2 inches (50 mm) in diameter. Service
15.20 sinks shall have a waste outlet and fixture tailpiece not less than 2 inches (50 mm) in
15.21 diameter. Fixture tailpieces shall be constructed from the materials specified in Section
15.22 701.1 for drainage piping, provided, however, that the connections where exposed or
15.23 accessible shall be permitted to be of seamless drawn brass not less than No. 20 B & S
15.24 Gauge (0.032 inches) (0.81 mm). Waste outlets shall be provided with an approved strainer.

16.1 **4714.0423 TRENCH DRAINS.**

16.2 UPC section 423 is added as follows:

16.3 **423.0 Trench Drains.**

16.4 **423.1 Trench Drains.** Trench drains shall comply with ASME A112.6.3, ASME A112.3.1,
16.5 or be constructed of watertight material and watertight joints, and be tested for watertightness
16.6 by filling with water to the level of the flood rim of the trench drain.

16.7 **4714.0501 GENERAL.**

16.8 UPC section 501.1 is amended to read as follows:

16.9 **501.1 Applicability.** The regulations of this chapter ~~as amended in this code~~ shall govern
16.10 the construction, location, and installation of fuel-burning and other water heaters heating
16.11 potable water. The minimum capacity for storage water heaters shall be in accordance with
16.12 the first hour rating listed in Table 501.1 501.1(2). ~~Design, construction, and workmanship~~
16.13 ~~shall be in accordance with accepted engineering practices, manufacturer's instructions, and~~
16.14 ~~applicable standards and shall be of such character as to secure the results sought to be~~
16.15 ~~obtained by this code.~~ No water heater shall be hereinafter installed that does not comply
16.16 with the type and model of each size thereof approved by the Authority Having Jurisdiction.
16.17 A list of accepted water heater appliance standards is referenced in Table 501.1(1). Listed
16.18 appliances shall be installed in accordance with the manufacturer's installation instructions.
16.19 Unlisted water heaters shall be permitted in accordance with section 504.3.2.

16.20 **4714.0504 WATER HEATER REQUIREMENTS.**

16.21 Subpart 1. **Sections 504.1 to 504.2.** UPC sections 504.1 to 504.2 are deleted in their
16.22 entirety.

16.23 Subp. 2. **Section 504.6.** UPC section 504.6 is amended to read as follows:

17.1 **504.6 Temperature, Pressure, and Vacuum Relief Devices.** The installation of temperature,
17.2 pressure, and vacuum relief devices, or combinations thereof, shall be installed in accordance
17.3 with the terms of their listings and the manufacturer's installation instructions. A shutoff
17.4 valve shall not be placed between the relief valve and the water heater or on discharge pipes
17.5 between the valves and the atmosphere. The hourly British thermal units (Btu) (kW h)
17.6 discharge capacity or the rated steam relief capacity of the device shall be not less than the
17.7 input rating of the water heater. ~~[NFPA 54:10.28.5]~~ Discharge piping shall be installed in
17.8 accordance with section 608.5.

17.9 **4714.0507 OTHER WATER HEATER INSTALLATION REQUIREMENTS.**

17.10 Subpart 1. **Sections 507.6 to 507.11 and 507.14 to 507.23.** UPC sections 507.6 to
17.11 507.11 and 507.14 to 507.23 are deleted in their entirety.

17.12 Subp. 2. [See repealer.]

17.13 **4714.0508 APPLIANCES ON ROOFS.**

17.14 UPC sections ~~508.0~~ 508.1 to ~~508.4~~ 508.3.3 are deleted in their entirety.

17.15 **4714.0509 VENTING OF APPLIANCES.**

17.16 UPC sections 509.0 to ~~509.14~~ 509.15, including all tables and figures, are deleted in
17.17 their entirety.

17.18 **4714.0601 HOT AND COLD WATER REQUIRED.**

17.19 UPC section ~~601.1~~ 601.2 is amended to read as follows:

17.20 ~~601.1~~ 601.2 **General.** Each plumbing fixture shall be provided with an adequate supply of
17.21 potable running water piped to it in an approved manner, so arranged as to flush and keep
17.22 the fixture in a clean and sanitary condition without danger of backflow or cross-connection.
17.23 Water closets and urinals shall be flushed by means of an approved flush tank or flushometer
17.24 valve.

18.1 **Exception:** Listed fixtures that do not require water for their operation and are not
18.2 connected to the water supply.

18.3 ~~601.1.1~~ 601.2.1 **Hot Water Required.** In occupancies where plumbing fixtures are
18.4 installed for private use, hot water shall be required for bathing, washing, laundry,
18.5 cooking purposes, dishwashing, and maintenance. In occupancies where plumbing
18.6 fixtures are installed for public use, hot water shall be required for bathing and washing
18.7 purposes. This requirement shall not supersede the requirements for individual
18.8 temperature control limitations for public lavatories, bidets, bathtubs, whirlpool bathtubs,
18.9 and shower control valves.

18.10 ~~601.1.2~~ 601.2.2 **Hot Water Recirculation.** Hot water supply systems in four-story
18.11 buildings or higher, or buildings where the developed length of hot water piping from
18.12 the source of hot water supply to the farthest fixture supplied exceeds 100 feet, shall
18.13 be of the return circulation type.

18.14 **4714.0603 CROSS-CONNECTION CONTROL.**

18.15 *[For text of subparts 1 to 3, see Minnesota Rules]*

18.16 Subp. 4. **Section ~~603.5.18~~ 603.5.17.** UPC section ~~603.5.18~~ 603.5.17 is amended to
18.17 read as follows:

18.18 ~~603.5.18~~ 603.5.17 **Potable Water Outlets and Valves.** Potable water outlets,
18.19 freeze-proof yard hydrants, combination stop-and-waste valves, or other fixtures that
18.20 incorporate a stop-and-waste feature that drains into the ground shall not be installed
18.21 underground except for a freeze-proof yard hydrant that is located at least two feet
18.22 above the water table and at least ten feet from any sewer or similar source of
18.23 contamination.

18.24 Subp. 5. **Section 603.5.** UPC section 603.5 is amended by adding the following
18.25 subsections:

19.1 **603.5.22 Barometric Loop.** A barometric loop is an acceptable method of protection
19.2 of water connections where an actual or potential backsiphonage hazard exists that is
19.3 not subject to backpressure.

19.4 **603.5.23 Installation of Testable Backflow Prevention Assembly.** Testable backflow
19.5 prevention assemblies meeting ASSE Standard 1013, 1015, 1020, 1047, 1048, or 1056
19.6 shall be installed, tested, maintained, and removed in accordance with sections
19.7 603.5.23.1 through 603.5.23.4.

19.8 **603.5.23.1 Notification of Installation.** The administrative authority shall be
19.9 notified before installation of a testable backflow prevention assembly. The public
19.10 water supplier shall be notified of the installed testable backflow preventer assembly
19.11 within 30 days following installation on a community public water system.

19.12 **603.5.23.2 Testing and Maintenance.** The installation of a testable backflow
19.13 prevention assembly is permitted only when a periodic testing and inspection
19.14 program conducted by qualified personnel is provided by an agency acceptable to
19.15 the administrative authority. Inspection intervals shall not exceed one year. The
19.16 administrative authority may require more frequent testing if deemed necessary
19.17 to ensure protection of the potable water. A testable backflow prevention assembly
19.18 shall be inspected after initial installation to ensure that it has been properly installed
19.19 and that debris resulting from the piping installation has not interfered with the
19.20 functioning of the assembly.

19.21 **603.5.23.3 Inspection and Records.** A test and inspection tag shall be affixed to
19.22 the testable backflow prevention assembly. The tester shall date and sign the tag
19.23 and include the tester's backflow prevention tester certification number. Written
19.24 records of testing and maintenance shall be maintained and submitted to the
19.25 administrative authority, and to the public water supplier, within 30 days of testing
19.26 if installed on a community public water system.

20.1 **603.5.23.4 Notification of Removal.** The Authority Having Jurisdiction, in addition
20.2 to the public water supplier, shall be notified within 30 days following removal
20.3 of a testable backflow prevention assembly from a community public water system.

20.4 **4714.0607 POTABLE WATER SUPPLY TANKS.**

20.5 Subpart 1. **Section 607.3.** UPC section 607.3 is amended to read as follows:

20.6 **607.3 Venting.** Tanks used for potable water shall be tightly covered and vented in
20.7 accordance with manufacturer's installation instructions. Such vent shall open downward
20.8 and be screened with a corrosion-resistant material of not less than number 24 mesh. The
20.9 vent opening shall not be located in an environment that can contaminate the water supply.

20.10 Subp. 2. **Section 607.4.** UPC section 607.4 is amended to read as follows:

20.11 **607.4 Overflow.** Tanks shall have an overflow that opens downward and is screened with
20.12 a corrosion-resistant material of not less than number 24 mesh. The overflow pipe shall be
20.13 of sufficient diameter to permit waste of water in excess of the maximum filling rate. The
20.14 overflow pipe shall discharge through an air gap.

20.15 **4714.0608 WATER PRESSURE, PRESSURE REGULATORS, PRESSURE RELIEF**
20.16 **VALVES, AND VACUUM RELIEF VALVES.**

20.17 UPC section 608.5 is amended to read as follows:

20.18 ~~**608.5 Drains.** Relief valves located inside a building shall be provided with: (1) a drain~~
20.19 ~~that is not smaller than the relief valve outlet and piping and fittings made of galvanized~~
20.20 ~~steel, hard-drawn copper, CPVC, or PP; or (2) a listed relief valve drain tube with fittings.~~
20.21 ~~The drain and drain tube shall not reduce the internal bore of the pipe or tubing (straight~~
20.22 ~~lengths as opposed to coils) and shall terminate to a safe place of disposal or within 18~~
20.23 ~~inches of the floor.~~

21.1 ~~Relief valve drains shall not terminate in a building's crawl space. No part of a drain~~
21.2 ~~pipe shall be trapped or subject to freezing. The terminal end of the drain pipe shall not be~~
21.3 ~~threaded.~~

21.4 608.5 Discharge Piping. The discharge piping serving a temperature relief valve, pressure
21.5 relief valve, or combination of both shall have no valves, obstructions, or means of isolation
21.6 and shall:

21.7 (1) be equal to the size of the valve outlet and shall discharge full size to the flood level of
21.8 the area receiving the discharge and pointing down;

21.9 (2) consist of materials rated at not less than the operating temperature of the system and
21.10 shall be approved for such use or comply with ASME A112.4.1;

21.11 (3) discharge independently by gravity through an air gap to a safe place of disposal or
21.12 within 18 inches of the floor. Relief valve drains shall not terminate in a building's crawl
21.13 space;

21.14 (4) discharge in such a manner that does not cause personal injury or structural damage;

21.15 (5) not consist of any part that may be trapped or subject to freezing;

21.16 (6) not consist of a threaded terminal end of the pipe; and

21.17 (7) not discharge from a relief valve into a water heater pan.

21.18 **4714.0609 INSTALLATION, TESTING, UNIONS, AND LOCATION.**

21.19 Subpart 1. Section 609.1. UPC section 609.1 is amended to read as follows:

21.20 609.1 Installation. Water piping shall be adequately supported in accordance with Table
21.21 313.3. Burred ends shall be reamed to the full bore of the pipe or tube. Changes in directions
21.22 shall be made by the appropriate use of fittings, except that changes in direction in copper
21.23 or copper alloy tubing shall be permitted to be made with bends, provided that such bends
21.24 are made with bending equipment that does not deform or create a loss in the cross-sectional

22.1 area of the tubing. Changes in direction are allowed with flexible pipe and tubing without
22.2 fittings in accordance with the manufacturer's instructions. Provisions shall be made for
22.3 expansion in hot-water piping. Piping, equipment, appurtenances, and devices shall be
22.4 installed in a workmanlike manner in accordance with the provisions and intent of this code.
22.5 Building supply and yard piping shall be located not less than 12 inches (305 mm) below
22.6 the maximum local frost depth, in accordance with Section 312.6, or an alternative approved
22.7 by the Authority Having Jurisdiction. The cover shall be not less than 12 inches (305 mm)
22.8 below finish grade.

22.9 Subpart 1. [Renumbered subp 2]

22.10 ~~Subpart 1~~ Subp. 2. Section 609.6. UPC section 609.6 is amended to read as follows:

22.11 **609.6 Location.** Except as provided in section 609.7, no building supply shall be located
22.12 in a lot other than the lot that is the site of the building or structure served by the building
22.13 supply.

22.14 **609.6.1 Water Supply Near Sources of Contamination.** Potable water supply pipes
22.15 shall not be located in, under, or above cesspools, septic tanks, septic tank drainage
22.16 fields, seepage pits, soil treatment systems, contaminated soil, sewer manholes, catch
22.17 basins, storm water storage tanks, buried tanks containing chemicals or petroleum
22.18 products, or any other source of contamination that in the judgment of the administrative
22.19 authority might contaminate the potable water supply. A horizontal separation of ten
22.20 feet shall be maintained between the outer edge of the water supply pipe and the outer
22.21 edge of the contamination source.

22.22 Subp. 2. [Renumbered subp 4]

22.23 Subp. 3. Section 609.10. UPC section 609.10 is amended to read as follows:

22.24 **609.10 Water Hammer.** Building supply systems where water hammer occurs shall be
22.25 provided with water hammer arrestors to absorb the resulting high pressures. Water hammer

23.1 arrestors shall be approved mechanical devices that comply with ASSE 1010 or PDI-WH-201
 23.2 and shall be installed as close as possible to quick-acting valves.

23.3 Subsection 609.10.1 Mechanical Devices is not amended.

23.4 Subp. ~~2~~ 4. **Section 609.** UPC section 609 is amended by adding the following
 23.5 subsection:

23.6 ~~609.11~~ **609.12 Water Meters.** Water meters shall be located in an approved location inside
 23.7 a building as close as possible to the point of entrance of the potable water supply pipe,
 23.8 installed at least 12 inches above the finished floor, and readily accessible. All water meter
 23.9 installations shall be rigidly supported with a permanent support in order to prevent the
 23.10 meter from vibrating when the water is passing through it.

23.11 **Exceptions:** Where installation inside a building is not possible, the water meter may
 23.12 be installed in an enclosed structure not subject to flooding, high groundwater, or
 23.13 surface drainage runoff, provided the meter is protected from freezing. Provisions shall
 23.14 be made to install the meters above grade when possible. When installed below grade,
 23.15 the top of the structure shall be located at least 12 inches above the finished grade, be
 23.16 secured, and be accessible. This structure shall not be connected to any storm or sanitary
 23.17 sewer system.

23.18 **4714.0611 WATER CONDITIONING EQUIPMENT.**

23.19 Subpart 1. Section 611. UPC sections 611.0 to 611.3 are amended to read as follows:

23.20 **611.0 Water Conditioning Equipment.**

23.21 **611.1 Application.** Water conditioning equipment shall comply with the requirements in
 23.22 this section.

23.23 ~~**611.1.1 Definition.** "Water conditioning equipment" means any appliance, appurtenance,~~
 23.24 ~~or fixture, or any combination thereof, designed to treat potable water, so as to alter,~~

24.1 ~~modify, add, or remove any minerals, chemicals, or bacteria contained in water. Water~~
 24.2 ~~conditioning equipment includes but is not limited to ion exchange water softeners,~~
 24.3 ~~backwashing water filters, oxidizing water filters, cartridge filters, chemical feed~~
 24.4 ~~cartridges, ultraviolet lights, and equipment for reverse osmosis, ultrafiltration,~~
 24.5 ~~nanofiltration, pH adjustment, nitrate and arsenic removal, and adsorption onto activated~~
 24.6 ~~carbon.~~

24.7 **611.1.2 611.1.1 Manufacture and Assembly.** Water conditioning equipment shall:
 24.8 (1) be manufactured as a complete system; or (2) be assembled as a complete system
 24.9 by a licensed plumbing contractor or licensed water conditioning contractor, using
 24.10 various types of water conditioning equipment. Wetted surface materials used in water
 24.11 conditioning equipment shall comply with ANSI/NSF 61 standards, or the equipment
 24.12 shall comply with the applicable NSF standards as listed in Table ~~1401.1~~ 1701.1.

24.13 **Exception:** Water conditioning equipment that treats water for nonpotable uses
 24.14 that are protected by an approved backflow device, assembly, or method as required
 24.15 in Chapter 6, as amended.

24.16 **611.1.3 611.1.2 Labeling.** All conditioning equipment shall be labeled by:

24.17 (1) the manufacturer of equipment manufactured as a complete system; or
 24.18 (2) the licensed plumbing contractor or licensed water conditioning contractor who assembled
 24.19 the complete system
 24.20 so as to clearly identify the type of equipment and the name and address of the manufacturer,
 24.21 licensed plumbing contractor, or licensed water conditioning contractor.

24.22 **611.2 Airgap Discharge.** Any discharge from water conditioning equipment shall enter the
 24.23 drainage system through an airgap in accordance with Table 603.3.1 or an airgap device in
 24.24 accordance with Table 603.2, NSF 58, or IAPMO PS 65.

25.1 **611.3 Connection Tubing.** The tubing to and from water conditioning units shall be of a
25.2 size and material as recommended by the manufacturer. The tubing shall comply with the
25.3 requirements of NSF 14, NSF 42, NSF 44, NSF 53, NSF 55, NSF 58, NSF 62, or the
25.4 appropriate material standards referenced in Table ~~1401.1~~ 1701.1.

25.5 Subp. 2. Section 611.5. Section 611.5 is added.

25.6 **611.5 Isolation and Bypass.** Every water conditioning installation shall include the
25.7 installation of isolation valves and a bypass valve which would allow the equipment to be
25.8 serviced or removed without the need for shutting off the water service completely.

25.9 **4714.0701 MATERIALS.**

25.10 UPC section ~~701.1~~ 701.2 is amended to read as follows:

25.11 ~~701.1~~ **701.2 Drainage Piping.** Materials for drainage piping shall be in accordance with
25.12 one of the referenced standards in Table ~~701.1~~ 701.2 except that:

25.13 (1) Galvanized wrought-iron and galvanized steel pipe shall not be used underground and
25.14 shall be kept not less than 6 inches (152 mm) aboveground.

25.15 (2) ABS and PVC DWV piping installations shall be installed in accordance with applicable
25.16 standards referenced in Table ~~1401.1~~ 701.2.

25.17 (3) No vitrified clay pipe or fittings shall be used aboveground or where pressurized by a
25.18 pump or ejector. They shall be kept not less than 12 inches (305 mm) belowground.

25.19 (4) Copper tube for drainage and pipe venting shall have a weight of not less than that of
25.20 copper drainage tube type DWV.

25.21 (5) Stainless steel 304 pipe and fittings shall not be installed underground and shall be kept
25.22 not less than 6 inches (152 mm) aboveground.

25.23 (6) Cast-iron soil pipe and fittings shall be listed and tested in accordance with standards
25.24 referenced in Table ~~1401.1~~ 701.2. Such pipe and fittings shall be marked with country of

26.1 origin and identification of the original manufacturer in addition to markings required by
26.2 referenced standards.

26.3 UPC Table 701.1 701.2 is ~~not~~ amended, as follows:

STET *STET*

26.4

~~TABLE 701.2~~

26.5

~~Materials for Drain, Waste, Vent Pipe, and Fittings~~

26.6

<u>Material</u>	<u>Underground Drain, Waste, Vent Pipe, and Fittings</u>	<u>Aboveground Drain, Waste, Vent Pipe, and Fittings</u>	<u>Building Sewer Pipe and Fittings</u>	<u>Referenced Standard(s) Pipe</u>	<u>Referenced Standard(s) Fittings</u>
<u>ABS (Schedule 40)</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>ASTM D2661, ASTM D2680¹</u>	<u>ASTM D2661, ASTM D2680¹</u>
<u>Cast-Iron</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>ASTM A74, ASTM A888, CISPI 301</u>	<u>ASME B16.12, ASTM A74, ASTM A888, CISPI 301</u>
<u>Co-Extruded ABS (Schedule 40)</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>ASTM F628</u>	<u>ASTM D2661, ASTM D2680¹</u>
<u>Co-Extruded Composite (Schedule 40)</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>ASTM F1488</u>	<u>ASTM D2661, ASTM D2665, ASTM F794¹, ASTM F1336¹, ASTM F1866</u>
<u>Co-Extruded PVC (Schedule 40)</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>ASTM F891, ASTM F1760</u>	<u>ASTM D2665, ASTM F794¹, ASTM F1336¹, ASTM F1866</u>

delete

26.31

26.32

26.33

26.34

26.35

26.36

27.1	<u>Copper and Copper Alloys (Type DWV)</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>ASTM B43, ASTM B75, ASTM B251, ASTM B302, ASTM B306</u>	<u>ASME B16.23, ASME B16.29</u>
27.2						
27.3						
27.4						
27.5						
27.6	<u>Galvanized Malleable Iron</u>	<u>--</u>	<u>x</u>	<u>--</u>	<u>--</u>	<u>ASME B16.3</u>
27.7						
27.8	<u>Galvanized Steel</u>	<u>--</u>	<u>x</u>	<u>--</u>	<u>ASTM A53</u>	<u>--</u>
27.9						
27.10	<u>Polyethylene</u>	<u>--</u>	<u>--</u>	<u>x</u>	<u>ASTM F714, ASTM F894, ASTM F2306^{2,3}, ASTM F2648^{3,4}</u>	<u>--</u>
27.11						
27.12						
27.13						
27.14						
27.15						
27.16	<u>Polypropylene</u>	<u>--</u>	<u>--</u>	<u>x</u>	<u>ASTM F2736³, ASTM F2764³, ASTM F2881^{2,3e}</u>	<u>ASTM F2736³, ASTM F2764³</u>
27.17						
27.18						
27.19						
27.20						
27.21	<u>PVC (Schedule 40)</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>ASTM D1785, ASTM D2665, ASTM F794¹</u>	<u>ASTM D2665, ASTM F794¹, ASTM F1866</u>
27.22						
27.23						
27.24						
27.25						
27.26	<u>PVC (Sewer and Drain)</u>	<u>--</u>	<u>--</u>	<u>x</u>	<u>ASTM D2729</u>	<u>ASTM D2729</u>
27.27						
27.28	<u>PVC PSM</u>	<u>--</u>	<u>--</u>	<u>x</u>	<u>ASTM D3034</u>	<u>ASTM D3034</u>
27.29	<u>Reinforced Concrete Pipe</u>	<u>--</u>	<u>--</u>	<u>x</u>	<u>ASTM C76²</u>	<u>ASTM C443</u>
27.30						
27.31	<u>Stainless Steel 304</u>	<u>--</u>	<u>x</u>	<u>--</u>	<u>ASME A112.3.1</u>	<u>ASME A112.3.1</u>
27.32						
27.33	<u>Stainless Steel 316L</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>ASME A112.3.1</u>	<u>ASME A112.3.1</u>
27.34						
27.35	<u>Vitrified Clay (Extra Strength)</u>	<u>--</u>	<u>--</u>	<u>x</u>	<u>ASTM C700</u>	<u>ASTM C700</u>
27.36						
27.37						

delete

28.1 ¹For building sewer applications.

28.2 ²For storm sewer application only.

28.3 ³With no change in direction and deflection testing for pipe sizes 12 inches and larger per

28.4 Section 1107.2.4 directional fittings allowed

28.5 ⁴For yard drainage only. applications

28.6 **4714.0707 CLEANOUTS.**

28.7 UPC section 707.4 is amended by adding a new subsection to read as follows:

28.8 **707.4.1 Back-to-Back.** A cleanout shall be provided on a common vertical fixture
 28.9 drain or common vent serving two fixture traps that connect to a vertical drain at the
 28.10 same level. The cleanout shall be the same nominal pipe size as the drain serving the
 28.11 fixtures. Where the vertical drain is accessible through the trap opening, the cleanout
 28.12 may be eliminated.

28.13 **707.4 Location.** Each horizontal drainage pipe shall be provided with a cleanout at its upper
 28.14 terminal and each run of piping that is more than 100 feet (30,480 mm) in total developed
 28.15 length shall be provided with a cleanout for each 100 feet (30,480 mm), or fraction thereof,
 28.16 in length of such piping. An additional cleanout shall be provided in a drainage line for each
 28.17 aggregate horizontal change in direction exceeding 135 degrees (2.36 rad). A cleanout shall
 28.18 be installed above the fixture connection fitting, serving each urinal, regardless of the location
 28.19 of the urinal in the building.

28.20 **Exceptions:**

28.21 (1) Cleanouts shall be permitted to be omitted on a horizontal drain line less than 5 feet
 28.22 (1,524 mm) in length unless such line is serving sinks or urinals.

28.23 (2) Cleanouts shall be permitted to be omitted on a horizontal drainage pipe installed
 28.24 on a slope of 72 degrees (1.26 rad) or less from the vertical angle (one-fifth bend).

29.1 (3) Excepting the building drain, its horizontal branches, kitchen sinks, and urinals, a
29.2 cleanout shall not be required on a pipe or piping that is above the floor level of the
29.3 lowest floor of the building.

29.4 (4) An approved type of two-way cleanout fitting, installed inside the building wall
29.5 near the connection between the building drain and the building sewer or installed
29.6 outside of a building at the lower end of a building drain and extended to grade, shall
29.7 be permitted to be substituted for an upper terminal cleanout.

29.8 **4714.0710 DRAINAGE OF FIXTURES LOCATED BELOW THE NEXT**
29.9 **UPSTREAM MANHOLE OR BELOW THE MAIN SEWER LEVEL.**

29.10 Subpart 1. Section 710.10. UPC section 710.10 is amended to read as follows:

29.11 **710.10 Sump and Receiving Tank Covers and Vents.** Sumps and receiving tanks shall
29.12 be provided with substantial covers having a bolt-and-gasket-type manhole or equivalent
29.13 opening to permit access for inspection, repairs, and cleaning. The top shall be provided
29.14 with a vent pipe that shall extend separately through the roof or, where permitted, be
29.15 combined with other vent pipes. The vent pipe shall be large enough to maintain atmospheric
29.16 pressure within the sump under normal operating conditions and in no case shall be less in
29.17 size than that required by Table 703.2 for the number and type of fixtures discharging into
29.18 the sump, nor less than 1-1/2 inches (40 mm) in diameter. Where the preceding requirements
29.19 are met and the vent, after leaving the sump, is combined with vents from fixtures discharging
29.20 into the sump, the size of the combined vent need not exceed that required for the total
29.21 number of fixtures discharging into the sump. No vent from an air-operating sewage ejector
29.22 shall combine with other vents.

29.23 **Exception:** Vents serving sumps connected to elevator pit drains or swimming pool
29.24 deck drains need not extend through the roof and must not connect to any other vent
29.25 pipe.

29.26 Subpart 1. [Renumbered subp 2]

30.1 ~~Subpart 1~~ Subp. 2. **Section 710.12.** UPC section 710.12 is amended to read as follows:

30.2 **710.12 Grinder Pump Ejector.** Grinder pumps shall be permitted to be used. The sump
30.3 basin storage volume and the pump capacity shall be sized adequately to prevent overloading
30.4 and shall at a minimum accommodate water demand peak flow from all fixtures.

30.5 **710.12.1 Discharge Piping.** The discharge piping shall be sized in accordance with
30.6 the manufacturer's installation instructions and shall be not less than 1 1/4 inches (32
30.7 mm) in diameter. A check valve and fullway-type shutoff valve shall be located within
30.8 the discharge line.

30.9 Subp. 2. [Renumbered subp 3]

30.10 Subp. ~~2~~ 3. **Section 710.13.** UPC section 710.13 is amended to read as follows:

30.11 **710.13 Macerating Toilet Systems.** Listed macerating toilet systems shall be permitted as
30.12 an alternate to a sewage pump system only in one- or two-family dwellings when gravity
30.13 flow is not possible. Not more than one bathroom group is permitted to discharge into a
30.14 macerating toilet system. One bathroom group consists of: a toilet; a lavatory; and a shower
30.15 or bathtub. Components of macerating toilet systems shall be accessible.

30.16 **710.13.1 Sumps.** The sump shall be watertight and gastight.

30.17 **710.13.2 Discharge Piping.** The discharge piping shall be sized in accordance with
30.18 the manufacturer's instructions and shall be not less than 3/4-inch (20 mm) in diameter.
30.19 The developed length of the discharge piping shall not exceed the manufacturer's
30.20 instructions. A check valve and fullway-type shutoff valve shall be located within the
30.21 discharge line or internally within the device.

30.22 **710.13.3 Venting.** The plumbing fixtures that discharge into the macerating device
30.23 shall be vented in accordance with this code. The sump shall be vented in accordance
30.24 with the manufacturer's instructions and the vent shall be permitted to connect to the
30.25 fixture venting.

31.1 **4714.0712 TESTING.**

31.2 [For text of subpart 1, see Minnesota Rules]

31.3 Subp. 2. **Section 712.** UPC section 712 is amended by adding subsections to read as
31.4 follows:

31.5 **712.4 Negative Test.** Concrete manholes and sewer lines shall be tested by negative pressure
31.6 in accordance with ASTM Standards ~~C1214-13~~ C1214-19 and ~~C1244-11~~ C1244-17 or the
31.7 Hydrostatic Test Method in section ~~H109.2.2~~ 1107.2.3(B).

31.8 **712.5 Finished Plumbing.** After the plumbing fixtures have been set and their traps filled
31.9 with water, their connections shall be tested and proven gastight and watertight by plugging
31.10 the stack openings on the roof and the building drain where it leaves the building, and air
31.11 introduced into the system equal to the pressure of a 1-inch water column. Such pressure
31.12 shall remain constant for 15 minutes or the duration of the inspection without the introduction
31.13 of additional air.

31.14 **712.6 Test Plugs or Caps.** Test plugs or caps for roof terminals shall extend above or
31.15 outside the end of the vent pipe to provide a visible indication for removal after the test has
31.16 been completed.

31.17 **4714.0717 SIZE OF BUILDING SEWERS.**

31.18 UPC section 717, Table 717.1, is amended to read as follows:

31.19 **TABLE 717.1**
31.20 **Maximum/Minimum Fixture Unit Loading on Building Sewer Piping**

		SLOPE (inches per foot)		
Size of Pipe (inches)		1/16	1/8	1/4
31.21	6 and smaller	(As specified in Table 703.2/No minimum loading)		
31.22	8	1950/1500	2800/625	3900/275

32.1	10	3400/1600	4900/675	6800/300
32.2	12	5600/1700	8000/725	11 200/325

32.3 *Loadings less than the listed minimums must be approved by the Authority Having
 32.4 Jurisdiction.

32.5 For SI units: 1 inch = 25 mm, 1 inch per foot = 83.3 mm/m

32.6 **4714.0719 CLEANOUTS.**

32.7 UPC section 719.6 is amended to read as follows:

32.8 **719.6 Manholes.** Approved manholes shall be permitted to be installed in lieu of cleanouts,
 32.9 where first approved by the Authority Having Jurisdiction. The maximum distance between
 32.10 manholes shall not exceed 300 feet (91,400 mm). Connections to manhole and similar
 32.11 structures must be provided as follows:

32.12 1. The inlet and outlet connections shall be made by the use of a flexible compression joint
 32.13 not less than 12 inches (305 mm) and not exceeding 3 feet (914 mm) from the manhole. No
 32.14 flexible compression joints shall be embedded in the manhole base.

32.15 2. Approved resilient rubber joints must be used to make watertight connections to manholes,
 32.16 catch basins, and other structures.

32.17 **4714.0724 RECREATIONAL VEHICLE SANITARY DISPOSAL STATION.**

32.18 UPC chapter 7 is amended by adding the following sections:

32.19 **724.0 Recreational Vehicle Sanitary Disposal Station.**

32.20 **724.1 Construction.** Each recreational vehicle sanitary disposal (dump) station shall have
 32.21 a concrete slab with the drainage system located as to be on the road (left) side of the
 32.22 recreational vehicle. The slab shall be not less than 3 feet by 3 feet (914 mm by 914 mm),
 32.23 not less than 3-1/2 inches (89 mm) thick, and properly reinforced. The slab surface shall be
 32.24 troweled to a smooth finish and sloped from each side inward to a drainage system inlet.

33.1 The drainage system inlet shall consist of a 4-inch (102 mm), self-closing, foot-operated
33.2 hatch of materials meeting these rules with the cover milled to fit tight. The hatch body
33.3 shall be set in the concrete of the slab with the lip of the opening flush with its surface to
33.4 facilitate the cleansing of the slab with water. The hatch shall be properly connected to a
33.5 drainage system inlet, which shall discharge to a public or private sewer meeting the standards
33.6 ~~of this section~~ same requirements as provided in this code for building sewers.

33.7 **724.2 Flushing Device.** The recreational vehicle sanitary disposal station flushing device
33.8 shall consist of a supported riser terminating not less than 2 feet (610 mm) above the ground
33.9 surface, with a 3/4-inch (20 mm) valved outlet adaptable for a flexible hose. The flexible
33.10 hose shall be designed such that it cannot lie on the ground. The water supply to the flushing
33.11 device shall be protected from backflow by means of a listed vacuum breaker or backflow
33.12 prevention device located downstream from the last shutoff valve. A pressure-type vacuum
33.13 breaker backflow device must be provided if a shut-off valve is installed downstream of
33.14 the backflow device. Direct connections between:

33.15 (1) the water piping and sewer-connected waste piping; and

33.16 (2) the water piping and the recreational vehicle holding tank;

33.17 are not allowed to exist under any condition with or without backflow protection.

33.18 Adjacent to the recreational vehicle sanitary disposal station shall be posted a sign of
33.19 durable material not less than 2 feet by 2 feet (610 mm by 610 mm) in size. Inscribed on
33.20 the sign in clearly legible letters shall be the following:

33.21 "DANGER - NOT TO BE USED FOR DRINKING OR DOMESTIC PURPOSES."

33.22 **724.3 Drainage Pipe Sizes.** The minimum pipe diameters of drainage pipes serving
33.23 recreational vehicle sites shall be in accordance with Table 724.3.

33.24 **TABLE 724.3**

33.25 **DRAINAGE PIPE SIZES**

34.1	<u>Maximum Number of Recreational</u>	
34.2	<u>Vehicles Served</u>	<u>Minimum Pipe Sizes (Inches)</u>
34.3	<u>36</u>	<u>4</u>
34.4	<u>71</u>	<u>5</u>
34.5	<u>120</u>	<u>6</u>
34.6	<u>440</u>	<u>8</u>

34.7 **4714.0801 INDIRECT WASTES.**

34.8 Subpart 1. **Section ~~801.2.2~~ 801.3.2.** UPC section ~~801.2.2~~ 801.3.2 is amended to read
34.9 as follows:

34.10 **~~801.2.2~~ 801.3.2 Walk-In Coolers.** Floor drains shall not be located inside walk-in
34.11 coolers unless they are specifically required by the licensing authority. Where required,
34.12 floor drains shall be connected to a separate drainage line discharging into an outside
34.13 receptor. The flood-level rim of the receptor shall not be less than 6 inches (152 mm)
34.14 lower than the lowest floor drain. The floor drains shall be trapped and individually
34.15 vented. Cleanouts shall be provided at 90 degree (1.57 rad) turns and shall be accessibly
34.16 located. The waste shall discharge through an air gap or air break into a trapped and
34.17 vented receptor, except that a full-size air gap is required where the indirect waste pipe
34.18 is under vacuum.

34.19 Subp. 2. **Section ~~801.2.3~~ 801.3.3.** UPC section ~~801.2.3~~ 801.3.3 is amended to read as
34.20 follows:

34.21 **~~801.2.3~~ 801.3.3 Food-Handling Fixtures.** Cooking ranges, steam kettles, potato peelers,
34.22 ice cream dipper wells, and similar equipment shall be indirectly connected to the
34.23 drainage system by means of an air gap. Bins, cooling counters, compartments, and
34.24 other equipment having drainage connections and used for the storage of unpackaged
34.25 ice used for human ingestion, or used in direct contact with ready-to-eat food, shall be
34.26 indirectly connected to the drainage system by means of an air gap. Each indirect waste

35.1 pipe from food-handling fixtures, storage or holding compartments, or equipment shall
 35.2 be separately trapped and piped to the indirect waste receptor and shall not combine
 35.3 with other indirect waste pipes. The piping from the equipment to the receptor shall be
 35.4 not less than the drain on the unit, and in no case less than 3/4 inch (20 mm).

35.5 Subp. 3. **Section 801.3 801.4.** UPC section ~~801.3~~ 801.4 is deleted in its entirety.

35.6 **4714.0807 APPLIANCES.**

35.7 UPC section 807.3 is amended to read as follows:

35.8 **807.3 Domestic Dishwashing Machine.** No domestic dishwashing machine shall be directly
 35.9 connected to a drainage system or food waste disposer without the use of an approved
 35.10 dishwasher air gap fitting on the discharge side of the dishwashing machine or run the
 35.11 discharge line as high as possible under the countertop, securely fastened. Listed air gaps
 35.12 shall be installed with the flood level (FL) marking at or above the flood level of the sink
 35.13 or drainboard, whichever is higher.

35.14 **4714.0810 STEAM AND HOT WATER DRAINAGE CONDENSERS AND SUMPS.**

35.15 UPC section 810 is amended to read as follows:

35.16 **810.0 Steam and Hot Water Drainage Condensers and Sumps.**

35.17 **810.1 High-Temperature Discharge.** No steam pipe shall be directly connected to a
 35.18 plumbing or drainage system, nor shall water having a temperature above 140°F (60°C) be
 35.19 discharged under pressure directly into a drainage system.

35.20 **4714.0811 PLASTIC WASTE AND VENT PIPES.**

35.21 *UPC Section 811 is amended to add subsection 811.9 as follows:*
 35.22 Expansion and thermal contraction compensation shall be provided for thermoplastic
 35.23 pipng as shown in Table 313.3.1.

1. 811.9 Waste and Vent.

for a horizontal or vertical length of run 30 feet e

for every 30 feet of develop

35.23 **4714.0813 SWIMMING POOLS.**

35.24 UPC section 813.1 is amended to read as follows:

(developed)
for every 30 feet of developed horizontal or vertical length of run

36.1 **813.1 General.** Pipes carrying wastewater from swimming or wading pools, including pool
36.2 drainage and backwash from filters, water from scum gutter drains and pool deck drains,
36.3 shall be installed as an indirect waste. Pool deck drains need not be trapped and vented per
36.4 section 803.1. Pool deck drain piping must be pitched at a minimum of 1/8-inch per foot
36.5 for pipe sizes 3 inches and larger. Where a pump is used to discharge waste pool water to
36.6 the drainage system, the pump discharge shall be installed as an indirect waste.

36.7 **4714.0814 CONDENSATE WASTES AND CONTROL.**

36.8 Subpart 1. **Section 814.1.** UPC section 814.1 is amended to read as follows:

36.9 **814.1 Condensate Disposal.** ~~Condensate from air washers, air-cooling coils, fuel-burning~~
36.10 ~~condensing appliances, the overflow from evaporative coolers, and similar water-supplied~~
36.11 ~~equipment or similar air-conditioning equipment shall be collected and discharged to an~~
36.12 ~~approved plumbing fixture or disposal area.~~ Where discharged into the drainage system,
36.13 equipment shall drain by means of an indirect waste pipe. ~~The waste pipe shall have a slope~~
36.14 ~~of not less than 1/8 inch per foot (10.4 mm/m) or 1 percent slope and shall be made of an~~
36.15 ~~approved corrosion-resistant material.~~

36.16 Subp. 2. **Table 814.1 814.3.** UPC Table ~~814.1~~ 814.3 is deleted.

36.17 Subp. 3. **Section 814.2 814.3.** UPC section ~~814.2~~ 814.3 is deleted in its entirety.

36.18 Subp. 4. **Section 814.3 814.5.** UPC section ~~814.3~~ 814.5 is amended to read as follows:

36.19 **814.3 814.5 Point of Discharge.** Air-conditioning condensate waste pipes shall connect
36.20 indirectly to the interior drainage system through an air gap or air break to: (1) properly
36.21 trapped and vented receptors; (2) the tailpiece of an approved plumbing fixture; or (3) an
36.22 exterior place of disposal approved by the Minnesota Pollution Control Agency.

36.23 Condensate waste shall not drain over a public way or in areas causing a nuisance.

37.1 **4714.0903 MATERIALS.**

37.2 UPC section 903.1 is amended to read as follows:

37.3 **903.1 Applicable Standards.** Vent pipes and fittings shall comply with the applicable
37.4 standards referenced in Table ~~701.1~~ 701.2, except that:

37.5 (1) Galvanized steel or 304 stainless steel pipe shall not be installed underground and shall
37.6 be not less than 6 inches (152 mm) aboveground.

37.7 (2) ABS and PVC DWV piping installations shall be in accordance with the applicable
37.8 standards referenced in Table ~~1401.1~~ 1701.1.

37.9 **4714.1001 TRAPS REQUIRED.**

37.10 UPC section ~~1001.1~~ 1001.2 is amended to read as follows:

37.11 ~~1001.1~~ **1001.2 Where Required.** Each plumbing fixture shall be separately trapped by an
37.12 approved type of liquid seal trap. This section shall not apply to fixtures with integral traps.
37.13 Not more than one trap shall be permitted on a trap arm. Food waste disposal units installed
37.14 with a set of restaurant, commercial, or industrial sinks shall be connected to a separate trap.
37.15 Each domestic clothes washer and each laundry tub shall be connected to a separate and
37.16 independent trap, except that a laundry tub shall be permitted to also receive the waste from
37.17 a clothes washer set adjacent thereto. The vertical distance between a fixture outlet and the
37.18 trap weir shall be as short as practicable, but in no case shall the tailpiece from a fixture
37.19 exceed 24 inches (610 mm) in length. One trap shall be permitted to serve a set of not more
37.20 than three single compartment sinks or laundry tubs of the same depth or three lavatories
37.21 immediately adjacent to each other and in the same room where the waste outlets are not
37.22 more than 30 inches (762 mm) apart and the trap is centrally located where the three
37.23 compartments are installed.

37.24 **4714.1002 TRAPS PROTECTED BY VENT PIPES.**

37.25 UPC section 1002.2 is amended to read as follows:

38.1 **1002.2 Fixture Traps.** Each fixture trap shall have a protecting vent located so that the
38.2 developed length of the trap arm from the trap weir to the inner edge of the vent shall be
38.3 within the distance given in Table 1002.2 but in no case less than two times the diameter
38.4 of the trap arm.

38.5 **Exception:** Emergency floor drains, tell tale floor drains, and floor drains not used as
38.6 waste receptors installed within 25 feet of a vented branch or main.

38.7 **4714.1006 FLOOR DRAIN TRAPS.**

38.8 UPC section 1006.1 is amended to read as follows:

38.9 **1006.1 General.** Floor drains shall connect into a trap constructed so that the trap can be
38.10 readily cleaned and be of a size to efficiently serve the purpose for which the trap is intended.
38.11 The drain inlet shall be located so that it is in full view. Where subject to the reverse flow
38.12 of sewage or liquid waste, such drains shall be equipped with an approved backwater valve.

38.13 **Exception:** Floor drains or trench drains that connect to sand interceptors or oil and
38.14 flammable liquid interceptors do not need to be trapped.

38.15 **4714.1009 ~~INDUSTRIAL~~ INTERCEPTORS (CLARIFIERS) AND SEPARATORS.**

38.16 Subpart 1. UPC section 1009.2 is amended to read as follows:

38.17 **1009.2 Approval.** The size, type, and location of each interceptor (clarifier) or separator
38.18 shall meet the requirements of this chapter.

38.19 **Exception:** Interceptors or separators that are engineered and manufactured and are
38.20 documented by the manufacturer and the project registered professional engineer to be
38.21 properly designed and sized for the specific project, and are approved by the Authority
38.22 Having Jurisdiction.

38.23 No wastes other than those requiring treatment or separation shall be discharged into an
38.24 interceptor (clarifier) or separator unless specifically permitted elsewhere in this code.

39.1 Subp. 2. Section 1009.4 is amended to read as follows:

39.2 **1009.4 Relief Vent.** Interceptors (clarifiers) shall be so designed that they will not become
39.3 air-bound where closed covers are used. Each interceptor (clarifier) shall be properly vented.
39.4 Interceptor (clarifier) and neutralization tank vent ports shall be located above the highest
39.5 liquid flow level.

39.6 **4714.1016 SAND INTERCEPTORS.**

39.7 UPC section 1016.4 is amended to read as follows:

39.8 **1016.4 Separate Use.** Sand and similar interceptors shall be so designed and located as to
39.9 be readily accessible for cleaning, have a water seal of not less than 6 inches (152 mm), and
39.10 be vented.

39.11 **Exception:** Sand interceptors connecting to oil and flammable liquid interceptors
39.12 meeting the requirements of section 1017 do not require a water seal or vent.

39.13 **4714.1017 OIL AND FLAMMABLE LIQUID INTERCEPTORS.**

39.14 Subpart 1. **Section 1017.1.** UPC section 1017.1 is amended to read as follows:

39.15 **1017.1 Interceptors Required.** Repair garages and gasoline stations with grease racks or
39.16 grease pits, parking garages over 1,000 square feet, vehicle wash facilities, and factories
39.17 that have oily waste, flammable waste, or both as a result of manufacturing, storage,
39.18 maintenance, repair, or testing processes, shall be provided with an oil or flammable liquid
39.19 interceptor that shall be connected to necessary floor drains. The separation or vapor
39.20 compartment shall be independently vented to the outer air. Where two or more separation
39.21 or vapor compartments are used, each shall be vented to the outer air or shall be permitted
39.22 to connect to a header that is installed at a minimum of 6 inches (152 mm) above the spill
39.23 line of the lowest floor drain and vented independently to the outer air. The minimum size
39.24 of a flammable vapor vent shall be not less than 2 inches (51 mm) and, where vented through
39.25 a sidewall, the vent shall be not less than 10 feet (3,048 mm) above the adjacent level at an

40.1 approved location. The interceptor shall be vented on the sewer side and shall not connect
40.2 to a flammable vapor vent. Oil and flammable interceptors shall be provided with gastight
40.3 cleanout covers that shall be readily accessible. Drains discharging into interceptors must
40.4 not be designed to retain liquid waste. The waste line shall be not less than 3 inches (80
40.5 mm) in diameter with a full-size cleanout to grade. Where an interceptor is provided with
40.6 an overflow, it shall be provided with an overflow line, not less than 2 inches (50 mm) in
40.7 diameter, to an approved waste oil tank having a minimum capacity of 550 gallons (2,082
40.8 L) and meeting the requirements of the Authority Having Jurisdiction. The waste oil from
40.9 the separator shall flow by gravity or shall be pumped to a higher elevation by an automatic
40.10 pump. Pumps shall be adequately sized and accessible. Waste oil tanks shall have a 2 inch
40.11 (50 mm) minimum pumpout connection at grade and a 1-1/2 inch (38 mm) minimum vent
40.12 to atmosphere at an approved location not less than 10 feet (3,048 mm) above grade.

40.13 Subp. 2. **Section 1017.2.** UPC section 1017.2 is amended to read as follows:

40.14 **1017.2 Design of Interceptors.** Each manufactured interceptor that is rated shall be stamped
40.15 or labeled by the manufacturer with an indication of its full discharge rate in gpm (L/s). The
40.16 full discharge rate of such an interceptor shall be determined at full flow. Each interceptor
40.17 shall be rated equal to or greater than the incoming flow and shall be provided with an
40.18 overflow line to an underground tank.

40.19 Interceptors not rated by the manufacturer shall have a depth of not less than 2 feet
40.20 (610 mm) below the invert of the discharge drain. The outlet opening shall have not less
40.21 than an 18 inch (457 mm) water seal and shall have a minimum capacity as follows: Where
40.22 not more than three motor vehicles are serviced, stored, or both, interceptors shall have a
40.23 minimum capacity of 6 cubic feet and 1 cubic foot of capacity shall be added for each vehicle
40.24 up to 10 vehicles. Above 10 vehicles, each interceptor shall have a holding capacity of not
40.25 less than 35 cubic feet. Where vehicles are serviced and not stored, interceptor capacity

41.1 shall be based on a net capacity of 1 cubic foot (0.03 m³) for each 100 square feet (9.29 m²)
41.2 of the surface to be drained into the interceptor, with a minimum of 6 cubic feet (0.2 m³).

41.3 **1017.2.1 Maintenance.** Service and maintenance records shall be kept by the owner
41.4 and available for viewing by the Authority Having Jurisdiction upon request. The
41.5 service and maintenance records shall demonstrate periodic removal of accumulated
41.6 substances in the oil and flammable liquid interceptor based on the interceptor's capacity
41.7 as required by the manufacturer's recommended maintenance instructions. Where the
41.8 Authority Having Jurisdiction determines that an interceptor is not being properly
41.9 cleaned or maintained, the Authority Having Jurisdiction shall have the authority to
41.10 mandate a maintenance program.

41.11 **4714.1101 GENERAL.**

41.12 Subpart 1. **Section ~~1101.1~~ 1101.2.** UPC section ~~1101.1~~ 1101.2 is amended to read as
41.13 follows:

41.14 **~~1101.1~~ 1101.2 Where Required.** Roofs, paved areas, yards, courts, courtyards, vent shafts,
41.15 light wells, or similar areas having rainwater, shall be drained into a separate storm sewer
41.16 system or into a combined sewer system where a separate storm sewer system is not available,
41.17 or to some other place of disposal satisfactory to the Authority Having Jurisdiction. In no
41.18 case shall water from roofs or any building roof drainage flow onto the public sidewalk. In
41.19 the case of one- and two-family dwellings, storm water shall be permitted to be discharged
41.20 on flat areas, such as lawns, so long as the storm water shall flow away from the building
41.21 and away from adjoining property and shall not create a nuisance.

41.22 Subp. 2. **Section ~~1101.2~~ 1101.3.** UPC section ~~1101.2~~ 1101.3 is amended to read as
41.23 follows:

42.1 ~~1101.2~~ 1101.3 **Storm Water Drainage to Sanitary Sewer Prohibited.** Storm water shall
42.2 not be drained into sewers intended for sanitary drainage unless approved by the municipal
42.3 sewer authority or stated elsewhere in this code.

42.4 Subp. 3. **Section ~~1101.3~~ 1101.4.** UPC section ~~1101.3~~ 1101.4 is amended to read as
42.5 follows:

42.6 ~~1101.3~~ 1101.4 **Material Uses.** Rainwater piping placed within the interior of a building or
42.7 run within a vent or shaft shall be of cast-iron, galvanized steel, wrought iron, brass, copper,
42.8 lead, Schedule 40 ABS DWV, Schedule 40 PVC DWV, stainless steel 304 or 316L [stainless
42.9 steel 304 pipe and fittings shall not be installed underground and shall be kept not less than
42.10 6 inches (152 mm) aboveground], or other approved materials. Changes in direction shall
42.11 be in accordance with Section 706.0. ABS and PVC DWV piping installations shall be
42.12 installed in accordance with ~~IS-5 and IS-9~~ applicable standards referenced in Table 1701.1.
42.13 UPC subsections 1101.4.1 through 1101.4.6 are maintained without amendment.

42.14 Subp. 4. **Section ~~1101.11~~ 1101.12.** UPC section ~~1101.11~~ 1101.12 is amended to read
42.15 as follows:

42.16 ~~1101.11~~ 1101.12 **Roof Drainage.**

42.17 ~~1101.11.1~~ 1101.12.1 **Primary Roof Drainage.** When roof areas of a building are
42.18 drained by roof drains, the location and sizing of the drains shall be coordinated with
42.19 the structural design and pitch of the roof in accordance with section 1106 or as
42.20 permitted elsewhere in this code. The roof drainage system shall be sized on a basis of
42.21 a rate of rainfall of at minimum 4 inches per hour.

42.22 ~~1101.11.2~~ 1101.12.2 **Secondary Drainage.** Secondary (emergency) roof drainage shall
42.23 be provided in accordance with Minnesota Rules, chapter 1305.

42.24 1101.12.2.1 **Location.** Unless roof design is certified by a Registered Design
42.25 Professional specializing in Structural Engineering for the maximum possible

43.1 depth of water that will pond in accordance with Minnesota Rules, chapter 1305,
 43.2 secondary roof drainage shall be located 2 inches above the lowest point of the
 43.3 roof surface.

43.4 **1101.12.2.2 Engineered System.** Engineered siphonic roof drainage systems must
 43.5 not be utilized in the design of a secondary roof drainage system.

43.6 UPC Table ~~1101.11~~ 1103.1 is not amended.

43.7 Subp. 5. Sections ~~1101.11.2.1~~ 1101.12.2.1, ~~1101.11.2.2~~ 1101.12.2.2, ~~1101.2.2 (A)~~
 43.8 1101.12.2.2.1, and ~~1101.11.2.2 (B)~~ 1101.12.2.2.2. UPC subsections ~~1101.11.2.1~~ 1101.12.2.1,
 43.9 ~~1101.11.2.2~~ 1101.12.2.2, ~~1101.11.2.2 (A)~~, and ~~1101.11.2.2 (B)~~ 1101.12.2.2.1, and
 43.10 1101.12.2.2.2 are deleted in their entirety.

43.11 **4714.1106 [Renumbered 4714.1103]**

43.12 ~~4714.1106~~ 4714.1103 **SIZE OF LEADERS, CONDUCTORS, AND STORM DRAINS.**

43.13 UPC section ~~1106.3~~ is amended to read as follows:

43.14 UPC sections 1103.1, 1103.2, and 1103.3 are amended to read as follows:

43.15 **1103.1 Vertical Conductors and Leaders.** Vertical conductors and leaders shall be sized
 43.16 by the maximum projected roof area and Table 1103.1. For sizes not listed under Table
 43.17 1103.1, a minimum rainfall rate of 4 inches per hour must be used to size the rainwater
 43.18 pipng.

43.19 **1103.2 Size of Horizontal Storm Drains and Sewers.** The size of building storm drains,
 43.20 or building storm sewers or their horizontal branches shall be based on the maximum
 43.21 projected roof or paved area to be handled and Table 1103.2. For sizes not listed under
 43.22 Table 1103.1, a minimum rainfall rate of 4 inches per hour must be used to size the rainwater
 43.23 pipng.

44.1 ~~1106.3~~ **1103.3 Reduction in Size Prohibited.** Except for siphonic roof drainage systems,
44.2 storm drain piping shall not reduce in size in the direction of flow, including changes in
44.3 direction from horizontal to vertical.

44.4 **4714.1108 [Renumbered 4714.1105]**

44.5 ~~4714.1108~~ **4714.1105 CONTROLLED-FLOW ROOF DRAINAGE.**

44.6 UPC section ~~1108.1~~ 1105.1 is amended to read as follows:

44.7 ~~1108.1~~ **1105.1 Application.** The controlled-flow roof drainage system shall be sized on the
44.8 basis of controlled flow and storage of the storm water on the roof, provided the design is
44.9 based on a minimum of 4 inches per hour and the following conditions are met:

44.10 (1) The water from a 25-year-frequency storm shall not be stored on the roof for more than
44.11 24 hours.

44.12 (2) During the storm, the water depth on the roof shall not exceed the depths specified in
44.13 Table ~~1108.1(2)~~ 1105.1(1).

44.14 (3) Not less than two drains shall be installed in roof areas of 10,000 square feet (929 m²)
44.15 or less, and not less than one additional drain shall be installed for each additional 10,000
44.16 square feet (929 m²) or less of roof area.

44.17 (4) Each roof drain shall have a precalibrated, fixed (nonadjustable), and proportional weir
44.18 (notched) in a standing water collar inside the strainer. No mechanical devices or valves
44.19 shall be allowed.

44.20 (5) Pipe sizing shall be based on the precalibrated rate of flow (gpm) (L/s) of the precalibrated
44.21 weir for the maximum allowable water depth, and Tables ~~1101.7~~ 1103.1 and ~~1101.11~~ 1103.2.

44.22 (6) The height of stones or other granular material above the waterproofed surface shall not
44.23 be considered in water depth measurement, and the roof surface in the vicinity of the drain
44.24 shall not be recessed to create a reservoir.

45.1 (7) Roof design, where controlled-flow roof drainage is used, shall be such that the design
45.2 roof live load is not less than 40 lb/ft².

45.3 (8) Scuppers shall be provided in parapet walls. The distance of scupper bottoms above the
45.4 roof level at the drains shall not exceed the maximum distances specified in Table ~~1108.1(8)~~
45.5 1105.1(2).

45.6 (9) Scupper openings shall be not less than 4 inches (102 mm) high and have a width equal
45.7 to the circumference of the roof drain required for the area served, sized in accordance with
45.8 Table ~~1101.1~~ 1103.1.

45.9 (10) Flashings shall extend above the top of the scuppers.

45.10 (11) At a wall or parapet, 45-degree (0.79 rad) cants shall be installed.

45.11 (12) Separate storm and sanitary drainage systems shall be provided within the building.

45.12 (13) Calculations for the roof drainage system shall be submitted, along with the plans, to
45.13 the Authority Having Jurisdiction for approval.

45.14 UPC Table ~~1108.1(2)~~ 1105.1(1) and Table ~~1108.1(8)~~ 1105.1(2) are not amended.

45.15 **4714.1109 [Renumbered 4714.1107]**

45.16 ~~4714.1109~~ 4714.1107 TESTING.

45.17 Subpart 1. **Section ~~1109.1~~ 1107.1**. UPC section ~~1109.1~~ 1107.1 is amended to read as
45.18 follows:ˆ

45.19 ~~1109.1~~ 1107.1 **Testing Required.** Building storm drainage systems that are new and parts
45.20 of existing systems that have been altered, extended, or repaired shall be tested in accordance
45.21 with section 712 to disclose leaks and defects, except as provided in section ~~1109.2~~ 1107.2.3.

45.22 Any section of the building storm sewer that passes through contaminated soils or
45.23 contaminated water must be air tested in accordance with section 712.3.

46.1 Subp. 2. **Section ~~1109.2~~ 1107.2.3**. UPC ~~section 1109.2~~ subsection 1107.2.3 is amended
 46.2 to read as follows:

46.3 **~~1109.2~~ 1107.2.3 Exceptions.**

46.4 **~~1109.2.1~~ (A)** Testing is not required for:

46.5 (1) outside leaders;

46.6 (2) perforated or open drain tile; or

46.7 (3) portions of storm drainage system and sewers that are located more than ten feet
 46.8 from buildings, more than ten feet from buried water lines, and more than 50 feet from
 46.9 water wells, and that do not pass through soil or water identified as being contaminated.

46.10 **~~1109.2.2~~ (B)** Building storm sewers shall be tested in accordance with section 712 or
 46.11 the Hydrostatic Test Method from the City Engineers Association of Minnesota. The
 46.12 Hydrostatic Test Method, provisions E2 and E3, as specified in Standard Utilities
 46.13 Specifications for Watermain and Service Line Installation and Sanitary Sewer and
 46.14 Storm Sewer Installation, written and published by the City Engineers Association of
 46.15 Minnesota, ~~2013~~ 2018 edition, is incorporated by reference, is not subject to frequent
 46.16 change, and is available in the office of the commissioner of labor and industry.

46.17 ~~**1107.2.4 Deflection Testing.**~~

46.18 ~~**A.** Perform deflection tests on entire length of installed thermoplastic pipeline.~~

46.19 ~~Test at least 30 days after backfilling and all fill placement. It may be necessary to clean or~~
 46.20 ~~flush all lines prior to testing.~~

46.21 ~~**B.** Use a mandrel or laser profiler to ensure pipe deflection does not exceed five~~
 46.22 ~~percent of the actual inside diameter of the pipe, unless prescribed differently in ASTM.~~

46.23 ~~**(1)** Mandrel (Standard)~~

delete

47.1 (a) Pull 9 arm deflection mandrel, with pulling rings on each end and
47.2 complying with applicable ASTM Standards, through the sewer by hand. This is a pass or
47.3 fail test. The mandrel shall be rigid, nonadjustable, engraved with the nominal pipe size and
47.4 mandrel outside diameter (OD). Proving rings shall be used to verify the mandrel OD.

47.5 (b) A failed mandrel test shall indicate deflection exceeded five percent.

47.6 (2) Laser Profiler

47.7 (a) Inspect the interior of the pipe with laser profiling equipment. Utilize
47.8 low barrel distortion video equipment for pipe sizes 48 inches or less. Use a camera in the
47.9 pipe both vertically and horizontally. The camera with a suitable lighting to allow a clear
47.10 picture of the entire periphery of the pipe interior. Center the camera in the pipe both
47.11 vertically and horizontally. The camera must be able to pan and tilt to a 90-degree angle
47.12 with the axis of the pipe rotating 360 degrees. Use equipment to move the camera through
47.13 the pipe that will not obstruct the camera's view or interfere with proper documentation of
47.14 the pipe's condition. The video image shall be clear, focused, and relatively free from roll
47.15 static or other image distortion qualities that would prevent the reviewer from evaluating
47.16 the condition of the pipe.

47.17 (b) For initial post-installation inspections for pipe sizes larger than 48
47.18 inches, a visual inspection shall be completed of the pipe diameter.

47.19 C. When deflection readings exceed allowable deflection of the actual inside
47.20 diameter of the pipe, remove and replace with new pipe. Retest 30 days after completing
47.21 backfill and leakage testing.

47.22 D. Inspection Reporting.

47.23 (1) Provide a copy of the documented inspection to the administrative
47.24 authority upon completion of the tests. Include photo of the mandrel, line detail including

48.1 ~~direction of pull, date line was installed, date line was tested, engineer approval to deviate~~
48.2 ~~from design, and any other project information.~~

48.3 ~~(2) Retest request may be made within seven business days of submitted~~
48.4 ~~report.~~

48.5 **4714.1110 [Renumbered 4714.1106]**

48.6 ~~4714.1110~~ **4714.1106 SIPHONIC ROOF DRAINAGE SYSTEM.**

48.7 UPC chapter 11 is amended by adding a new section and subsections as follows:

48.8 ~~1110.0~~ **1106.0 Siphonic Roof Drainage System.**

48.9 ~~1110.1~~ **1106.1 General Requirements.** Siphonic roof drainage systems shall be designed
48.10 as an engineered siphonic roof drainage system when allowed by the administrative authority.

48.11 The engineered siphonic roof drainage system shall meet the requirements of sections ~~1110.2~~
48.12 1106.2 and ~~1110.3~~ 1106.3.

48.13 ~~1110.2~~ **1106.2 Design Criteria.** The siphonic roof drainage system shall be designed and
48.14 certified by a registered professional engineer.

48.15 ~~1110.2.1~~ **1106.2.1 Sizing.** The system shall be sized on the basis of a minimum rate of
48.16 rainfall of 4 inches per hour.

48.17 ~~1110.2.2~~ **1106.2.2 Design.** The drainage system shall be designed according to ASPE
48.18 Standard 45, Siphonic Roof Drainage, and according to the manufacturer's
48.19 recommendations and requirements. Manufacturer design software shall be in accordance
48.20 with ASPE Standard 45.

48.21 ~~1110.2.3~~ **1106.2.3 Roof Drain Bodies.** Roof drains shall meet ASME A112.6.9,
48.22 Siphonic Roof Drains.

49.1 ~~110.2.4~~ **1106.2.4 Water Accumulation.** When designed for water accumulation, the
49.2 roof shall be designed for the maximum possible water accumulation according to
49.3 section ~~1108.1~~ 1105.1 (7), as amended in this code, and Minnesota Rules, chapter 1305.

49.4 ~~110.2.5~~ **1106.2.5 Pipe Size and Cleanouts.** Minimum pipe size shall be 1-1/2 inches.
49.5 All pipe sizes and cleanouts in the drainage system shall be designed and installed
49.6 according to ASPE Standard 45.

49.7 ~~110.2.6~~ **1106.2.6 Horizontal Pipes.** Horizontal pipe size shall not reduce in the
49.8 direction of flow.

49.9 ~~110.2.7~~ **1106.2.7 Plans and Specifications.** The plans and specifications for the
49.10 drainage system shall indicate the siphonic roof drainage system as an engineered
49.11 method used for the design.

49.12 ~~110.2.8~~ **1106.2.8 Markings.** The installed drainage system shall be permanently and
49.13 continuously marked as a siphonic roof drainage system at approved intervals and
49.14 clearly at points where piping passes through walls and floors. Roof drains shall be
49.15 marked in accordance with ASME A112.6.9.

49.16 ~~110.2.9~~ **1106.2.9 Transition Locations.** The transition locations from the siphonic
49.17 roof drainage system to a gravity system shall be determined by the registered
49.18 professional engineer at a location approved by the administrative authority. The design,
49.19 sizing, and venting of the transition location shall be in accordance with ASPE Standard
49.20 45. The gravity portion of the building storm sewer system receiving the siphonic roof
49.21 drainage system shall be sized for the design rate but not less than a rainfall rate of 4
49.22 inches per hour and in accordance with section ~~1106.0~~ 1103.0.

49.23 ~~110.2.10~~ **1106.2.10 Required Submissions.** All plans, specifications, and calculations
49.24 shall be signed and sealed by the registered professional engineer and submitted to the
49.25 administrative authority. The submitted calculations shall include performance data

50.1 for the drainage system for the required rainfall rate, including the minimum and
50.2 maximum calculated operating pressures and velocities verifying that the design solution
50.3 is within the operating parameters required by the design standard. All performance
50.4 data shall be reported as the extreme maximum and minimum calculations and shall
50.5 not be presented as averaged data.

50.6 ~~1110.3~~ 1106.3 **Proof of Suitability.** Upon completion of the project: proper tests, inspections,
50.7 and certification of the siphonic roof drainage system shall be performed according to items
50.8 ~~1110.3.1~~ 1106.3.1 and ~~1110.3.2~~ 1106.3.2:

50.9 ~~1110.3.1~~ 1106.3.1 **Testing.** Testing shall be performed according to ASPE Standard
50.10 45.

50.11 ~~1110.3.2~~ 1106.3.2 **Written Certification.** Prior to the final plumbing inspection, the
50.12 registered professional engineer shall provide written certification to the administrative
50.13 authority that the system has been visually inspected by the registered professional
50.14 engineer or the registered professional engineer's designee and the installation has been
50.15 properly implemented according to the certified design, plans, calculations, and
50.16 specifications. The submitted written certification shall include any field modification
50.17 from the initial design involving dimensions, location, or routing of the siphonic roof
50.18 drainage system that shall be reapproved and recertified by the registered professional
50.19 engineer and be accompanied by a final as-built design of the altered system and
50.20 supported by calculated data to show that the overall system remains in accordance
50.21 with ASPE Standard 45.

50.22 **4714.1401 [Renumbered 4714.1701]**

50.23 **4714.1605 INSPECTION AND TESTING.**

50.24 UPC section 1605.3 is amended to read as follows:

51.1 **1605.3 Cross-Connection Inspection and Testing.** The potable and rainwater catchment
51.2 water systems shall be isolated from each other and independently inspected and tested to
51.3 ensure there is no cross-connection in accordance with sections 1605.3.1 through 1605.3.4.

51.4 **1605.3.1 Visual System Inspection.** Prior to commencing the cross-connection testing
51.5 and annually thereafter, a dual system inspection shall be conducted as follows:

51.6 Pumps, equipment, equipment room signs, and exposed piping in an equipment room
51.7 shall be inspected for visible cross-connections, proper operation, and damage.

51.8 **1605.3.2 Cross-Connection Test.** The following procedure shall be followed by the
51.9 plumbing contractor in the presence of the Authority Having Jurisdiction to determine
51.10 whether a cross-connection has occurred:

51.11 (1) The potable water system shall be activated and pressurized. The rainwater
51.12 catchment water system shall be shut down and completely drained.

51.13 (2) The potable water system shall remain pressurized while the rainwater catchment
51.14 water system is completely drained. The minimum period the rainwater catchment
51.15 water system is to remain completely drained shall be determined based on the
51.16 size and complexity of the potable water system and rainwater catchment water
51.17 distribution system, but in no case shall that period be less than one hour.

51.18 (3) Fixtures, potable water, and rainwater, shall be tested and inspected for flow.
51.19 Flow from a rainwater catchment water system outlet indicates a cross-connection.
51.20 No flow from a potable water outlet indicates that it is connected to the rainwater
51.21 catchment water system.

51.22 (4) The drain on the rainwater catchment water system shall be checked for flow
51.23 during the test and at the end of the testing period.

51.24 (5) The potable water system shall then be completely drained.

- 52.1 (6) The rainwater catchment water system shall then be activated and pressurized.
- 52.2 (7) The rainwater catchment water system shall remain pressurized for a minimum
- 52.3 time specified by the Authority Having Jurisdiction while the potable water system
- 52.4 is completely drained. The minimum period the potable water system is to remain
- 52.5 completely drained shall be based on the size and complexity of the potable water
- 52.6 system and rainwater catchment water distribution system but in no case shall that
- 52.7 period be less than one hour.
- 52.8 (8) Fixtures, potable and rainwater catchment, shall be tested and inspected for
- 52.9 flow. Flow from a potable water system outlet indicates a cross-connection. No
- 52.10 flow from a rainwater catchment water outlet indicates that it is connected to the
- 52.11 potable water system.
- 52.12 (9) The drain on the potable water system shall be checked for flow during the test
- 52.13 and at the end of the testing period.
- 52.14 (10) Where there is no flow detected in the fixtures that would indicate a
- 52.15 cross-connection, the potable water system shall be repressurized.
- 52.16 **1605.3.3 Discovery of Cross-Connection.** In the event that a cross-connection is
- 52.17 discovered, the following procedure, in the presence of the Authority Having
- 52.18 Jurisdiction, shall be activated immediately:
- 52.19 (1) Rainwater catchment water piping to the building shall be shut down at the
- 52.20 meter and the rainwater water riser shall be drained.
- 52.21 (2) Potable water piping to the building shall be shut down at the meter.
- 52.22 (3) The cross-connection shall be uncovered and disconnected.
- 52.23 (4) The building shall be retested following procedures listed in sections 1605.3.1
- 52.24 and 1605.3.2.

53.1 (5) The potable water system shall be chlorinated with 50 ppm chlorine for 24
53.2 hours.

53.3 (6) The potable water system shall be flushed after 24 hours, and a standard
53.4 bacteriological test shall be performed. Where test results are acceptable, the
53.5 potable water system shall be permitted to be recharged.

53.6 **1605.3.4 Inspection.** An annual inspection of the rainwater catchment water system,
53.7 following the procedures in Section 1605.3.1, shall be required. Cross-connection
53.8 testing, following the procedures listed in section 1605.3.2, shall be required every five
53.9 years.

53.10 Alternate testing requirements shall be permitted by the Authority Having
53.11 Jurisdiction.

53.12 ~~4714.1401~~ **4714.1701 REFERENCED STANDARDS.**

53.13 Subpart 1. UPC Table 1401.1 1701.1 is amended modified to add the following:

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTIONS
53.16 53.17 53.18	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe	Piping, Nonmetallic	Table 701.2
53.19	Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for	Piping, Plastic	Table 701.2
53.20 53.21 53.22 53.23 53.24	6 to 30 in. (152 to 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Double Wall Pipe	Piping, Plastic	Table 701.2
53.25 53.26 53.27 53.28 53.29	30 to 60 in. (750 to 1500 mm) Polypropylene (PP) Triple Wall Pipe and Fittings for	Piping, Plastic	Table 701.2

Gravity-Flow storm sewer and subsurface drainage Applications

*Sewer Applications**Piping, Plastic**Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm*

54.1

54.2

54.3

54.4

54.5

54.6

54.7

54.8

54.9

54.10

54.11

54.12

54.13

54.14

54.15

54.16

54.17

54.18

54.19

54.20

54.21

54.22

54.23

54.24

54.25

54.26

54.27

54.28

	<u>Non-pressure Sanitary Sewer Applications</u>		
	<u>ASTM F2881</u>	<i>Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm</i>	<i>Piping, Plastic</i> <u>Table 701.2</u>
	<u>ASSE 1084-2018</u>	<u>Water Heaters with Temperature Limiting Capacity</u>	<u>Appliances</u> <u>407.3, 408.3, 409.4, 410.3</u>
	<u>ASSE 1085-2018</u>	<u>Water Heaters for Emergency Equipment</u>	<u>Appliances</u> <u>416.2</u>
	<u>ASTM Standards C1214-19</u>	<u>Concrete Pipe Sewerlines by Negative Air Pressure (Vacuum) Test Method</u>	<u>712.4</u>
	<u>ASTM Standards C1244-17</u>	<u>Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill</u>	<u>712.4</u>
	<u>CSA B125.3-2018</u>	<u>Plumbing Fittings</u>	<u>Fittings</u> <u>408.3, 409.4, 410.3</u>
	<u>Hydrostatic Test Method (City Engineers Association of Minnesota) - 2018</u>	<u>Standard Utilities Specifications for Watermain and Service Line Installation and Sanitary Sewer and Storm Sewer Installation</u>	<u>Storm Drainage</u> <u>1107.2.3(A) and 1107.2.3(B)</u>

54.29

ASPE Standard 45, Siphonic Roof Drainage, and applies to roof drainage referenced

54.30

in sections 1110.2.5, 1110.2.9, 1110.3.1, and 1110.3.2.

54.31

ASTM Standards C1214-13 referenced in section 712.4.

54.32

ASTM Standards C1244-11 referenced in section 712.4.

54.33

IAPMO IGC 155-2008, Pipeless Whirlpool Bathtub Appliances referenced in section

54.34

409.1.

55.1 Standard Utilities Specifications for water main and service line installation and sanitary
 55.2 sewer and storm sewer installation referenced in section 1109.2.2.

55.3 Subp. 2. UPC Table 1701.1 is modified by amending the following:

<u>STANDARD NUMBER</u>	<u>STANDARD TITLE</u>	<u>APPLICATION</u>	<u>REFERENCED SECTIONS</u>	
55.4 55.5 55.6 55.7 55.8	ASME A112.18.1 - 2018 / CSA B125.1 - 2018	Plumbing Supply Fittings	Fittings	408.3, 417.1, 417.2, 417.3, 417.4, 603.5.19
55.9 55.10	ASPE Standard 45	Siphonic Roof Drainage	Roof Drainage	1106.2.5, 1106.2.9, 1106.3.1, 1106.3.2
55.11 55.12	ASSE 1023-2019	Electrically Heated or Cooled Water Dispensers	Appliances	417.6

55.13 Unless amended above, all other entries in UPC Table 1701.1 are not amended.

55.14 Subp. 3. UPC Table 1701.2 is modified to delete the following:

<u>STANDARD NUMBER</u>	<u>STANDARD TITLE</u>	<u>APPLICATION</u>	
55.15 55.16 55.17 55.18	ASSE 1023-1979	Hot Water Dispensers Household Storage Type - Electrical	Appliances

55.19 Subp. 4. UPC Table 1701.2 is modified by adding the following:

<u>STANDARD NUMBER</u>	<u>STANDARD TITLE</u>	<u>APPLICATION</u>	
55.20 55.21 55.22 55.23 55.24	ASSE 1082-2018	Water Heaters with Integral Temperature Control Devices for Hot Water Distribution Systems	Appliances

55.25 **4714.1701 [Renumbered 4714.1601]**

55.26 **~~4714.1701~~ 4714.1601 GENERAL.**

55.27 Subpart 1. Section 1601.1. UPC section ~~1701.1~~ 1601.1 is amended to read as follows:

56.1 ~~1701.1~~ **1601.1 Applicability.** The provisions of this chapter shall apply to the installation,
56.2 construction, alteration, and repair of rainwater catchment systems for nonpotable applications
56.3 listed in section ~~1702.1~~ 1602.1.

56.4 ~~1701.1.1~~ **1601.1.1 Irrigation.** Rainwater catchment systems used for lawn irrigation
56.5 are not covered under this chapter.

56.6 ~~1701.1.2~~ **1601.1.2 Combination Systems.** Rainwater catchment systems used for lawn
56.7 irrigation in combination with any uses listed in section ~~1702.1~~ 1602.1 shall meet the
56.8 requirements of this chapter. The irrigation system shall be separated by an air gap or
56.9 proper backflow protection as required for potable water.

56.10 Subp. 2. Section 1601.11. UPC section 1601.11 is amended to read as follows:

56.11 **1601.11 Abandonment.** All rainwater catchment systems that are no longer in use and fail
56.12 to be maintained in accordance with section 1601.5 shall be considered abandoned.

56.13 Abandoned rainwater catchment systems are subject to sections 1601.11.1 and 1601.11.2.

56.14 **1601.11.1 General.** Every abandoned rainwater catchment system or part thereof
56.15 covered under the scope of this chapter, as amended in this code, shall be disconnected
56.16 from any remaining systems, drained, plugged, and capped per the requirements of this
56.17 code. Storm drainage systems of abandoned rainwater catchment systems must comply
56.18 with chapter 11, Storm Drainage, as amended.

56.19 **1601.11.2 Underground Tank.** Every underground water storage tank that has been
56.20 abandoned or otherwise discontinued from use in a rainwater catchment system covered
56.21 under the scope of this chapter, as amended in this code, shall be completely drained
56.22 and filled with earth, sand, gravel, or concrete or removed in a manner approved by
56.23 the administrative authority.

56.24 **4714.1702 NONPOTABLE RAINWATER CATCHMENT SYSTEMS.**

56.25 Subpart 1. [Renumbered 4714.1602 subpart 1]

- 57.1 Subp. 2. [Renumbered 4714.1602 subp 2]
- 57.2 Subp. 3. [Renumbered 4714.1602 subp 3]
- 57.3 Subp. 4. [Renumbered 4714.1602 subp 4]
- 57.4 Subp. 5. [Renumbered 4714.1602 subp 5]
- 57.5 Subp.6. [Renumbered 4714.1602 subp 6]
- 57.6 Subp.7. [Renumbered 4714.1602 subp 7]
- 57.7 Subp.8. [Renumbered 4714.1602 subp 8]
- 57.8 Subp. 9. [Renumbered 4714.1603 subpart 1]
- 57.9 Subp. 10. [Renumbered 4714.1603 subp 2]
- 57.10 Subp. 11. [Renumbered 4714.1603 subp 3]
- 57.11 Subp. 12. [Renumbered 4714.1603 subp 4]
- 57.12 Subp. 13. [Renumbered 4714.1603 subp 5]
- 57.13 Subp. 14. [Renumbered 4714.1603 subp 6]
- 57.14 Subp. 15. [Renumbered 4714.1603 subp 7]
- 57.15 Subp. 16. [Renumbered 4714.1604]
- 57.16 Subp. 17. [Renumbered 4714.1605]
- 57.17 Subp. 18. [See repealer.]
- 57.18 Subp. 19. [See repealer.]
- 57.19 Subp. 20. [See repealer.]
- 57.20 Subp. 21. [See repealer.]
- 57.21 Subp. 22. [Renumbered 4714.1601 subp 2]

58.1 ~~4714.1702~~ 4714.1602 **NONPOTABLE RAINWATER CATCHMENT SYSTEMS.**

58.2 Subpart 1. **Section ~~1702.1~~ 1602.1.** UPC section ~~1702.1~~ 1602.1 is amended to read as
58.3 follows:

58.4 ~~1702.1~~ 1602.1 **General.** The installation, construction, alteration, and repair of rainwater
58.5 catchment systems intended to supply uses such as water closets, urinals, trap primers for
58.6 floor drains and floor sinks, industrial processes, water features, vehicle washing facilities,
58.7 cooling tower makeup, and similar uses shall be approved by the commissioner.

58.8 Subp. 2. **Section ~~1702.2~~ 1602.2.** UPC section ~~1702.2~~ 1602.2 is amended to read as
58.9 follows:

58.10 ~~1702.2~~ 1602.2 **Plumbing Plan Submission.** No permit for a rainwater catchment system
58.11 shall be issued until complete plumbing plans have been submitted and approved by the
58.12 commissioner in accordance with Minnesota Rules, part 1300.0215, subpart 6.

58.13 Subp. 3. **Section ~~1702.4~~ 1602.4.** UPC section ~~1702.4~~ 1602.4 is amended to read as
58.14 follows:

58.15 ~~1702.4~~ 1602.4 **Connections to Potable or Reclaimed (Recycled) Water Systems.** Rainwater
58.16 catchment systems shall have no direct connection to a potable water supply or alternate
58.17 water source system. Potable or reclaimed (recycled) water is permitted to be used as makeup
58.18 water for a rainwater catchment system provided the potable or reclaimed (recycled) water
58.19 supply connection is protected by an air gap or reduced-pressure principle backflow preventer
58.20 in accordance with this code. An automatic means to supply the rainwater catchment system
58.21 with makeup water shall be installed when there is insufficient rainwater to meet the required
58.22 demand or due to system failure.

58.23 Subp. 4. **Section ~~1702.5~~ 1602.5.** UPC section ~~1702.5~~ 1602.5 is amended to read as
58.24 follows:

59.1 ~~1702.5~~ **1602.5 Initial Cross-Connection Test.** Where a portion of a rainwater catchment
59.2 system is installed within a building, a cross-connection test is required in accordance with
59.3 section ~~1702.11.2~~ 1605.3, as amended. Before the building is occupied or the system is
59.4 activated, the plumbing contractor shall perform the initial cross-connection test in the
59.5 presence of the Authority Having Jurisdiction. The test shall be ruled successful before final
59.6 approval is granted.

59.7 Subp. 5. **Section ~~1702.7~~ 1602.7.** UPC section ~~1702.7~~ 1602.7 is amended to read as
59.8 follows:

59.9 ~~1702.7~~ **1602.7 Rainwater Catchment System Materials.** Rainwater catchment system
59.10 materials shall comply with sections ~~1702.7.1~~ 1602.7.1 through ~~1702.7.4~~ 1602.7.4.

59.11 ~~1702.7.1~~ **1602.7.1 Water Supply and Distribution Materials.** Rainwater catchment
59.12 water supply and distribution materials shall comply with Chapter 6, as amended in
59.13 this code, and the requirements of this code for potable water supply and distribution
59.14 systems, unless otherwise provided for in this section.

59.15 ~~1702.7.2~~ **1602.7.2 Rainwater Catchment System Drainage Materials.** Materials
59.16 used in rainwater catchment drainage systems, including gutters, downspouts,
59.17 conductors, and leaders shall be in accordance with Chapter 11, as amended in this
59.18 code, and the requirements of this code for storm drainage.

59.19 ~~1702.7.3~~ **1602.7.3 Storage Tanks.** Rainwater storage tanks shall comply with section
59.20 ~~1702.9.5~~ 1603.1, as amended in this code.

59.21 ~~1702.7.4~~ **1602.7.4 Collection Surfaces.** The collection surface shall be constructed of
59.22 a hard, impervious material.

59.23 Subp. 6. **Section ~~1702.9~~ 1602.9.** UPC section ~~1702.9.3~~ is sections 1602.9.3 and
59.24 1602.9.5 are amended to read as follows:

60.1 ~~1702.9.3~~ **1602.9.3 Collection Surfaces.** Rainwater catchment systems shall collect
 60.2 rainwater only from roof surfaces. Rainwater catchment systems shall not collect
 60.3 rainwater from:

60.4 (1) vehicular parking surfaces;

60.5 (2) surface water runoff;

60.6 (3) bodies of standing water; or

60.7 (4) similar nonroof surfaces.

60.8 ~~1702.9.3.1~~ **1602.9.5 Prohibited Discharges.** Overflows and bleed-off pipes from
 60.9 roof-mounted equipment and appliances, condensate, and other waste disposal shall
 60.10 not discharge onto roof surfaces that collect rainwater for rainwater catchment systems.

60.11 Subp. 7. **Section ~~1702.9~~ 1602.9.** UPC section ~~1702.9.4~~ **1602.9.6** is amended to read
 60.12 as follows:

60.13 ~~1702.9.4~~ **1602.9.6 Minimum Water Quality.** The minimum water quality for rainwater
 60.14 catchment systems shall meet the applicable water quality recommendations in Table
 60.15 ~~1702.9.4~~ **1602.9.6.**

60.16 Subp. 8. **Section ~~1702.9.4~~ Table 1602.9.6.** UPC section ~~1702.9.4~~ **Table 1602.9.6** is
 60.17 amended by adding the following table to read as follows:

60.18 **TABLE ~~1702.9.4~~ 1602.9.6**

60.19 Measure	Limit
60.20 Turbidity (NTU)	<1
60.21 E. coli (MPN/100 mL)	2.2
60.22 Odor	Non-offensive
60.23 Temperature (degrees Celsius)	MR
60.24 Color	MR
60.25 pH	MR

61.1 MR = measured and recorded only

61.2 Treatment:

61.3 ~~5-micron~~ 100-micron or smaller absolute filter

61.4 Minimum ~~.5-log inactivation~~ 3.5-log reduction of ~~viruses~~ bacteria

61.5 Subp. 17. [Renumbered 4714.1605]

61.6 Subp. 18. [See repealer.]

61.7 Subp. 19. [See repealer.]

61.8 Subp. 20. [See repealer.]

61.9 Subp. 21. [See repealer.]

61.10 Subp. 22. [Renumbered 4714.1601 subp 2]

61.11 **4714.1603 RAINWATER STORAGE TANKS.**

61.12 ~~Subp. 9. Subpart 1. Section 1702.9.5~~ **1603.2.** UPC subsection ~~1702.9.5.1~~ section

61.13 1603.2 is amended to read as follows:

61.14 ~~1702.9.5.1~~ **1603.2 Construction.** Rainwater storage shall be constructed of solid, durable
61.15 materials not subject to excessive corrosion or decay, watertight, and suitable for rainwater
61.16 storage.

61.17 Subp. ~~10~~ 2. **Section 1702.9.5** **1603.7.** UPC section ~~1702.9.5.6(A)~~ 1603.7 is amended

61.18 to read as follows add the following:

61.19 ~~1702.9.5.6 (A)~~ **1603.7 Animals and Insects.** Rainwater tank openings shall be
61.20 protected to prevent the entrance of insects, birds, or rodents into the tank and
61.21 piping system. Screen installed on vent pipes, inlets, and overflow pipes shall be
61.22 corrosion-resistant and have an aperture of not greater than 1/16 inch (1.6 mm)
61.23 and shall be close-fitting.

62.1 Subp. ~~11~~ 3. **Section ~~1702.9.5~~ 1603.9**. UPC section ~~1702.9.5~~ 1603.9 is amended by
62.2 ~~adding a new subsection~~ to read as follows:

62.3 **~~1702.9.5.8~~ 1603.9 Storage Tank Venting**. A vent shall be installed on each tank.
62.4 The vent shall extend from the top of the tank and terminate a minimum of 12
62.5 inches above grade, shall be a minimum of 1-1/2 inches in diameter, and shall be
62.6 turned downward.

62.7 Subp. ~~12~~ 4. **Section ~~1702.9.6~~ 1603.10**. UPC section ~~1702.9.6~~ 1603.10 is amended to
62.8 read as follows:

62.9 **~~1702.9.6~~ 1603.10 Pumps**. Pumps serving rainwater catchment systems shall be listed. Pumps
62.10 supplying water to water closets, urinals, and trap primers shall be capable of delivering
62.11 not less than 15 pounds-force per square inch (psi) (103 kPa) residual pressure at the highest
62.12 and most remote outlet served. Where the water pressure in the rainwater supply system
62.13 within the building exceeds 80 psi (552 kPa), a listed pressure-reducing valve reducing the
62.14 pressure to 80 psi (552 kPa) or less to water outlets in the building shall be installed in
62.15 accordance with this code.

62.16 Subp. ~~13~~ 5. **Section ~~1702.9.7~~ 1603.11**. UPC section ~~1702.9.7~~ 1603.11 is amended to
62.17 read as follows:

62.18 **~~1702.9.7~~ 1603.11 Roof Drains**. Primary and secondary roof drain systems shall be designed
62.19 and installed in accordance with Chapter 11, as amended in this code. Secondary roof drains
62.20 shall be equipped with a working alarm.

62.21 Subp. ~~14~~ 6. **Section ~~1702.9.8~~ 1603.12**. UPC section ~~1702.9.8~~ 1603.12 is amended to
62.22 read as follows:

62.23 **~~1702.9.8~~ 1603.12 Water Quality Devices and Equipment**. The rainwater catchment system
62.24 shall include filtration and disinfection to maintain the minimum water quality requirements
62.25 in Table ~~1702.9.4~~ 1602.9.6. At a minimum, a ~~5-micron~~ 100-micron absolute filter shall be

63.1 provided along with disinfection to provide a ~~0.5-log inactivation~~ 3.5-log reduction of ~~viruses~~
 63.2 bacteria. Devices and equipment used to treat rainwater shall be suitable for rainwater
 63.3 catchment system applications, properly designed, sized, and documented for the specific
 63.4 project by a Minnesota registered professional engineer.

63.5 Subp. ~~15~~ 7. ~~Sections 1702.9.11 1603.15 and 1702.9.12 1603.16~~. UPC sections
 63.6 ~~1702.9.11 1603.15 and 1702.9.12 1603.16~~ are deleted in their entirety.

63.7 **4714.1604 SIGNS.**

63.8 Subp. ~~16~~. ~~Section 1702.10~~. UPC section ~~1702.10.1 1604.2~~ is amended to read as
 63.9 follows:

63.10 ~~1702.10.1 1604.2~~ **Commercial, Industrial, and Institutional Restroom Signs.** A sign
 63.11 shall be installed in restrooms in commercial, industrial, and institutional occupancies using
 63.12 nonpotable rainwater for water closets, urinals, or both. Each sign shall contain 1/2-inch
 63.13 (12.7 mm) letters of a highly visible color on a contrasting background. The location of the
 63.14 sign(s) shall be such that the sign(s) shall be visible to users. Each sign shall contain one of
 63.15 the following texts as determined by the application:

63.16 ~~1702.10.1 1604.2~~ (A) TO CONSERVE WATER, THIS BUILDING USES
 63.17 RAINWATER TO FLUSH TOILETS AND URINALS.

63.18 ~~1702.10.1 1604.2~~ (B) TO CONSERVE WATER, THIS BUILDING USES
 63.19 RAINWATER TO FLUSH TOILETS.

63.20 ~~1702.10.1 1604.2~~ (C) TO CONSERVE WATER, THIS BUILDING USES
 63.21 RAINWATER TO FLUSH URINALS.

63.22 ~~1702.10.1 1604.2~~ (D) TO CONSERVE WATER, THIS BUILDING USES
 63.23 RAINWATER TO * _____ *

63.24 * _____ * shall indicate the rainwater usage.

- 64.1 **REPEALER.** Minnesota Rules, parts 4714.0314; 4714.0507, subpart 2; 4714.0511;
- 64.2 4714.0604; 4714.0705; and 4714.1702, subparts 18, 19, 20, and 21, are repealed.