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Building Code Act, 1992

O. Reg. 332/12

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7.6.1.15. Mobile Home Water Service

(1) A water service pipe intended to serve a mobile home shall,
   (a) be not less than ¾ in. in size,
   (b) be terminated above ground, and
   (c) be provided with,
       (i) a tamperproof terminal connection that is capable of being repeatedly connected, disconnected and sealed,
       (ii) a protective concrete pad,
       (iii) a means to protect it from frost heave, and
       (iv) a curb stop and a means of draining that part of the pipe located above the frost line when not in use.

7.6.1.16. Thermal Expansion

(1) Protection against thermal expansion shall be required when a check valve is required by Article 7.6.1.10., a backflow preventer is required by Article 7.6.2.2., or a pressure reducing valve is required by Article 7.6.3.3. (See Appendix Note A-120)

7.6.2. Protection from Contamination

7.6.2.1. Connection of Systems

(1) Connections to potable water systems shall be designed and installed so that non-potable water or substances that may render the water non-potable cannot enter the system.

(2) No connection shall be made between a potable water system supplied with water from a drinking water system and any other potable water system without the consent of the water purveyor.

7.6.2.2. Back-Siphonage

(1) Every potable water system that supplies a fixture or tank that is not subject to pressures above atmospheric shall be protected against back-siphonage by a backflow preventer.

(2) Where a potable water supply is connected to a boiler, tank, cooling jacket, lawn sprinkler system or other device where a non-potable fluid may be under pressure that is above atmospheric or the water outlet may be submerged in the non-potable fluid, the water supply shall be protected against backflow by a backflow preventer.

(3) Where a hose bibb is installed outside a building, inside a garage, or where there is an identifiable risk of contamination, the potable water system shall be protected against backflow by a backflow preventer.

7.6.2.3. Protection from Backflow

(1) Except as provided in Sentence (3) and Articles 7.6.2.4. to 7.6.2.6., where a backflow preventer is required by this Subsection, the backflow preventer shall be selected, installed and tested in conformance with CSA B64.10.

“Selection and Installation of Backflow Preventers” (See Appendix Note A-121)

(2) Backflow preventers shall be provided in conformance with Sentence 7.2.10.10.(1).

(3) Tank type water closet valves shall be provided with a back-siphonage preventer in conformance with Sentence 7.2.10.10.(2).

NEW ARTICLE: formerly Reserved.

7.6.2.4. Backflow from Fire Protection Systems

(1) A backflow preventer shall not be required in a residential full flow through fire sprinkler system, in which the pipe and fittings are constructed of potable water system materials.

(2) Except as required in Sentence (4), potable water system connections to fire sprinkler and standpipe systems shall be protected against backflow caused by back-siphonage or back pressure in conformance with the following Clauses:

   (a) Residential partial flow through fire sprinkler systems in which the pipes and fittings are constructed of potable water system materials shall be protected by a dual check valve backflow preventer conforming to CAN/CSA-B64.6.1, “Dual Check Valve Backflow Preventers for Fire Protection Systems (DuCF)”, provided that the systems do not use antifreeze or other additives of any kind and all pipes and fittings are constructed of potable water system materials,

   (b) Class 1 fire sprinkler/standpipe systems shall be protected by a single check valve backflow preventer conforming to CAN/CSA-B64.9, “Single Check Valve Backflow Preventers for Fire Protection Systems (SCVAF)”, provided that the systems do not use antifreeze or other additives of any kind, and all pipes and fittings are constructed of potable water system materials,

   (c) Class 1 fire sprinkler/standpipe systems not covered by Clause (b) as well as Class 2 and Class 3 fire sprinkler/standpipe systems shall be protected by a double check valve backflow preventer conforming to CAN/CSA-B64.5.1, “Double Check Valve Backflow Preventers for Fire Protection Systems (DCVAF)”, provided that the systems do not use antifreeze or other additives of any kind,

   (d) Class 1, Class 2 or Class 3 fire sprinkler/standpipe systems, in which antifreeze or other additives are used, shall be protected by a reduced pressure principle backflow preventer conforming to CAN/CSA-B64.4.1, “Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)”, installed on the portion of the system that uses the additives and the balance of the system shall be protected as required by Clause (b) or (c),

   (e) Class 4 and Class 5 fire sprinkler/standpipe systems shall be protected by a reduced pressure principle backflow preventer conforming to CAN/CSA-B64.4.1, “Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)”,

   (f) Class 6 fire sprinkler/standpipe systems shall be protected,

       (i) by a double check valve backflow preventer conforming to CAN/CSA-B64.5.1, “Double Check Valve Backflow Preventers for Fire Protection Systems (DCVAF)”, or
(ii) where a severe hazard may be caused by backflow, by a reduced pressure principle backflow preventer conforming to CAN/CSA-B64.4.1, “Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)”, and

CLARIFICATION: standard designations updated.

(g) backflow preventers on fire sprinkler and standpipe systems shall be selected and installed in conformance with Table 7.6.2.4.

REVISION: “prevention devices” replaced with “backflow preventers”.

Table 7.6.2.4.
Backflow Preventers on Fire Sprinkler and Standpipe Systems

Forming Part of Sentence 7.6.2.4.(2)

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Notes to Table 7.6.2.4.:

P – Permitted
NP – Not Permitted

(1) The product is only permitted for use on fire sprinkler and standpipe systems.

(2) Minor Hazard, Moderate Hazard and Severe Hazard have the same meaning as indicated in CSA B64.10 “Selection and Installation of Backflow Prevention Devices”.

CLARIFICATION: “CAN/CSA-B64.10 “Manual for the Selection and Installation of Backflow Prevention Devices” replaced with “CSA B64.10 “Selection and Installation of Backflow Preventers”.

(3) The backflow preventer required by Sentence (2) shall be installed upstream of the fire department pumper connection.

(4) Where a reduced pressure principle backflow preventer is required on the water service pipe at a service connection located on the same premises as the fire service main in Class 3, 4, 5 and 6 fire sprinkler/standpipe systems, a reduced pressure principle backflow preventer conforming to CAN/CSA-B64.4.1, “Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)”, shall also be provided on the fire service connection.

CLARIFICATION: “Backflow Preventers, Reduced Pressure Principle Type for Fire Systems (RPF)” replaced with “Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)”. 

DELETED: Sentences (5) to (9).

7.6.2.5. Backflow from Buildings with a Solar Domestic Hot Water System

(1) Except as permitted by Sentence (2) and as provided in Sentences (3) and (4), a potable water system shall be protected against backflow where the heat transfer loop of a solar domestic hot water system is directly connected to the potable water system.

(2) Where the heat transfer loop of the solar domestic hot water system consists of direct flow-through of potable water only, protection against backflow is not required.

(3) A potable water system that is directly connected to the heat transfer loop of a solar domestic hot water system that serves a residential occupancy within the scope of Part 9 shall be provided with a backflow preventer selected in accordance with CAN/CSA-F379.1, “Packaged Solar Domestic Hot Water Systems (Liquid-to-Liquid Heat Transfer)”.

(4) Where a solar domestic hot water system includes a single wall heat exchanger and contains only a relatively harmless heat transfer fluid as described in CAN/...
7.6.2.6. Premise Isolation

(1) Buildings or facilities where a moderate hazard or severe hazard may be caused by backflow shall be provided with premise isolation of the potable water system by the installation of a backflow preventer selected in accordance with Clauses 5.3.4.2.(b) and (c) of CSA B64.10, “Selection and Installation of Backflow Preventers”. (See Appendix Note A-123)

(2) Buildings of residential occupancy within the scope of Part 9 are not required to be isolated unless they have access to an auxiliary water supply.

(3) Except as provided in Sentence (1), where no direct connection exists between the auxiliary water supply and the potable water system, premise isolation shall be provided by a dual check valve backflow preventer conforming to CAN/CSA-B64.6, “Dual Check Valve Backflow Preventers (DuC)”.

NEW ARTICLE: formerly Reserved.

7.6.2.7. Reserved

7.6.2.8. Cleaning of Systems

(1) A newly installed part of a potable water system shall be cleaned and then flushed with potable water before the system is put into operation. (See Appendix Note A-123)

7.6.2.9. Air Gap

(See Appendix Note A-122)

(1) An air gap shall not be located in a noxious environment.

(2) Every air gap shall be not less than 25 mm high and at least twice the diameter of the opening of the water supply outlet in height.

7.6.2.10. Vacuum Breakers and Flood Levels

(See Appendix Note A-124)

(1) Where the critical level is not marked on an atmospheric vacuum breaker or pressure vacuum breaker, the critical level shall be taken as the lowest point on the device.

(2) Where an atmospheric vacuum breaker is installed, it shall be located on the downstream side of the fixture control valve or faucet so that it will be subject to water supply pressure,

(a) only when the fixture control valve or faucet is open, and

(b) for periods of use not to exceed 12 h continuous.

(3) An atmospheric vacuum breaker shall be installed so that the critical level is at least the distance specified by the manufacturer at which the device will operate safely but not less than 25 mm above,

(a) the flood level rim of a fixture or tank, or

(b) the highest point open to atmosphere in an irrigation system.

(4) A pressure vacuum breaker shall be installed with its critical level at least 300 mm above, (See Appendix Note A-123)

(a) the flood level rim of a fixture or tank, or

(b) the highest point open to atmosphere in an irrigation system.

7.6.3. Size and Capacity of Pipes

7.6.3.1. Design, Construction and Installation

REVISION: Article 7.6.3.1. revised to accommodate sizing of water distribution systems under Article 7.6.3.2.

(1) Every water distribution system shall be designed to provide peak demand flow when the flow pressures at the supply openings conform to the plumbing supply fitting manufacturer’s specifications.

(2) A potable water system shall be designed, constructed and installed to conform to good engineering practice appropriate to the circumstances, such as that described in the ASHRAE Handbooks and ASPE Data Books. (See Appendix Notes A-125 to A-140)

(3) Every pipe that supplies a fixture shall have a capacity that will produce a flow in the fixture that will flush the fixture and keep it in a sanitary condition.

REVISION: article 7.6.3.1. revised to accommodate sizing of water distribution systems under 8.6.3.2.

DELETED: Table 7.6.3.1. Pipe Sizing for Water Supply to Fixture Device

7.6.3.2. Hydraulic Load

(1) Except as provided in Sentence (3), the hydraulic load of a fixture or device that is listed in Table 7.6.3.2.A. shall be the number of fixture units given in the Table.

(2) Except as provided in Sentences (1) and (3), the hydraulic load of a fixture that is not listed in Table 7.6.3.2.A. is the number of fixture units listed in Table 7.6.3.2.D.

(3) Where fixtures are supplied with both hot and cold water, the hydraulic loads for maximum separate demands shall be 75% of the hydraulic load of the fixture units given in Tables 7.6.3.2.A. and 7.6.3.2.D. when using a detailed engineering design method.

(4) The hydraulic load of urinals and water closets with direct flush valves shall be the number of fixture units listed in Tables 7.6.3.2.B. and 7.6.3.2.C.
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When there is low pressure or the water is shut-off and the riser is draining, non-potable water is fed to the lower fixtures from the extra hose on the Laundry Tray (Tub) faucet, the fillvalve below the water level in the toilet tank or the handheld hose left in a bathtub filled with water.
A-1.4.1.2, 7.2.10.10

BACKFLOW PREVENTER
DUAL CHECK VALVE WITH ATMOSPHERIC PORT (DCAP)

(a) Normal Flow - Checks Open - Vent Closed

With flow through first check valve (1) opens away from diaphragm (2). Atmospheric vent remains closed by deflection of diaphragm seal (2). Secondary check valve (4) opens away from downstream seat (5) permitting flow of water through the valve.

(b) Negative Supply Pressure - Checks Closed - Vent Open

With a back-siphonage condition created, secondary check (4) seals tightly against downstream seat (5). First check valve (1) seals tightly against diaphragm (2). Atmospheric vent (3) is now open permitting air to enter air break chamber.

Should the second check valve fail, atmospheric vent port (3) discharges safeguarding the potable water system from contamination.
VENTING SYSTEM
A-7.2.4.4.(1), 7.2.4.5.(1)

SANITARY FITTINGS IN DRAINAGE SYSTEMS

(a) Permitted (ELEVATION VIEW)

(b) Permitted (ELEVATION VIEW)

Table 7.2.4.5.(*) - A Double Waste and Double TY fitting require a minimum 3-inch vertical run with a maximum 2-inch horizontal branch.

(c) Not Permitted (ISOMETRIC VIEW)

see 7.2.4.4 (1) Nominally Horizontal Drainage Piping

A Sanitary Tee fitting, a Double Waste, a Double Long Turn TY or a Double Wye may be used to change the direction of flow in a drainage system from horizontal to vertical, but may not be used to change the direction of flow in a nominally horizontal drainage system.
A-7.4.2.1.(4) **Sud Zones.** Pressure zones created by high sudsing washing machine detergents can produce enough suds to prevent the free flow of atmospheric pressure in the venting system and also causing back pressure in the lower floors of multiple storey buildings. This can be avoided by the use of auxiliary stacks serving the washing machines making an auxiliary horizontal connection downstream of the base of the affected soil or waste stack. The use of check valves and back water valves will prevent a back up, but not alleviate the pressure changes in the venting system. The use of 45° fittings such as WYE’s and Long Turn Sanitary Tees will reduce the formation of suds, but not prevent it.

A-7.4.3.3.(1) **Equipment Restrictions Upstream of Interceptors.** Garbage grinders and Potato Peelers discharge organic solids into the drainage system leaving small deposits the will quickly block or fill the lower area of a grease interceptor. Therefore a food scrap interceptor/collector must be installed upstream of the grease interceptor.

A-7.4.4.2.(1) **Protection for Drainage System.** High temperature discharge from any system whether defined as a plumbing system or not must have its temperature reduced below 75° C so as not to exceed manufacturers' recommendations. The use of a cooling tank such as a blow down tank or blow off tank using a water supply with a proper backflow protection is required. Special care must be given to thermoplastic drainage system due to the manufactures recommendations certified to a maximum temperature of 55° C.

A-7.4.4.3. **Interceptors.** The size of the interceptor required is determined by 7.4.4.3.(8) (see A-47), while the certified capacity of the interceptor is determined by the manufacturer. The sizing of built on site or large interceptors can be found in the *ASPE Data Book*, Volume 4, Chapter 8, "Grease Interceptors".

A-7.4.4.4.(1) **Neutralizing and Dilution of Corrosive, Hazardous or Bio-Hazardous Wastes.** The discharge of chemically corrosive or hazardous wastes into the drainage system must follow good plumbing practice, keeping in mind environmental concerns especially since the sewage treatment process is incapable of removing or diluting such wastes before re-entering the environment. Local municipalities follow strict Environmental guidelines on the chemical discharge in the effluent of the sewage treated.

The collection of bio-hazardous waste as described in the Laboratory Biosafety Guidelines from Health Canada must follow good engineering practice and are beyond the regulations described in this code.
### SIZING GREASE INTERCEPTORS

<table>
<thead>
<tr>
<th>Fixture Volume in Litres</th>
<th>Fixture Volume of Column 1</th>
<th>Fixture Volume of Col. 1 x 10</th>
<th>Fixture Volume of Col. 1 x 100</th>
<th>Fixture Volume of Col. 1 x 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0125</td>
<td>0.125</td>
<td>1.250</td>
<td>12.50</td>
</tr>
<tr>
<td>2</td>
<td>0.0250</td>
<td>0.250</td>
<td>2.500</td>
<td>25.00</td>
</tr>
<tr>
<td>3</td>
<td>0.0375</td>
<td>0.375</td>
<td>3.750</td>
<td>37.50</td>
</tr>
<tr>
<td>4</td>
<td>0.0500</td>
<td>0.500</td>
<td>5.000</td>
<td>50.00</td>
</tr>
<tr>
<td>5</td>
<td>0.0625</td>
<td>0.625</td>
<td>6.250</td>
<td>62.50</td>
</tr>
<tr>
<td>6</td>
<td>0.0750</td>
<td>0.750</td>
<td>7.500</td>
<td>75.00</td>
</tr>
<tr>
<td>7</td>
<td>0.0875</td>
<td>0.875</td>
<td>8.750</td>
<td>87.50</td>
</tr>
<tr>
<td>8</td>
<td>0.1000</td>
<td>1.000</td>
<td>10.00</td>
<td>100.0</td>
</tr>
<tr>
<td>9</td>
<td>0.1125</td>
<td>1.125</td>
<td>11.25</td>
<td>112.5</td>
</tr>
<tr>
<td>10</td>
<td>0.1250</td>
<td>1.250</td>
<td>12.50</td>
<td>125.0</td>
</tr>
</tbody>
</table>

To calculate the flow rate of a grease interceptor, add the total volume of all the fixtures and then add the pumped discharge in litres per second, if any.

For 120 seconds drain down time, divide summarized flow rated by 2 and add pumped discharge in litres per second if any.

**For Example:**

A food prep sink, a double compartment pot sink, a pre-rinse sink and a hand wash basin are used in a commercial kitchen, all requiring to discharge through the grease interceptor (use any one or more figures from the chart above to find the volume of the fixture).

1. **food prep sink** = 80cm x 80cm x 45cm  
   = 288,000cm³ or 288 litres  
   = 2.5 + 1.0 + 0.1 = **3.6 litres per second**

2. **double pot sink** = 200cm x 80cm x 50cm  
   = 800,000cm³ or 800 litres  
   = **10 litres per second**

3. **pre-rinse sink** = 80cm x 80cm x 15cm  
   = 96,000cm³ or 96 litres  
   = 1.125 + 0.075 = **1.2 litres per second**

4. **hand wash** = 30cm x 20cm x 15cm  
   = 9,000cm³ or 9 litres  
   = **0.1125 litres per second**

Therefore the total flow rate is **14.9125 litres per second**

Total flow rate for 120 seconds (2 min) drain down time:  
14.9125/2 = **7.45625 lites per second**