NPC Code 2020 "Published"	Current 2015 Code	Recommendations, Interpretations & Rationale
Major Changes - Seismic design - Piping and tubing materials - Nominal Pipe Size (NPS) - Asbestos based materials - Water Temperature Control - Protection from Contamination - Protection from Backflow - Non-Potable Water Systems - Non-Potable Rainwater Harvesting Systems		
Division A – Part 1- Compliance	**Division A – Part 1- Compliance**	
1.4.1.2 Defined Terms	**1.4.1.2 Defined Terms**	
Nominal pipe size (NPS) means the nominal diameter by which a pipe, fitting, *trap* or other similar item is commercially designated. *Sanitary drainage pipe* means a pipe in a *sanitary drainage system.* *Stack* means a vertical *sanitary drainage pipe* that passes through one or more *storeys,* and includes any *offset* that is part of the *stack.*	**New**	Introducing the abbreviation, NPS in lieu of the defined term "size" facilitates use and enforcement of the NPC. Note: Due to the amount of "editorial" changes related to NPS not all the Code Clause or Tables are tracked within this document.
1.4.2. Symbols and other Abbreviations	**1.4.2. Symbols and other Abbreviations**	
1.4.2.1 Symbols and other Abbreviations PE-RT Polyethylene of raised temperature	**Revised**	
Division B – Part 2 – Plumbing Systems	**Division B – Part 2 – Plumbing Systems**	
2.1.2 Service Connections	**2.1.2 Service Connections**	

2.1.2.1. Sanitary Drainage Systems 1) Except ~~as provided in Subsection 2.7.4.~~, ~~every~~ where supplying systems that are covered in Section 2.7.,*sanitary drainage system*s shall be connected to a public *sanitary sewer*, a public *combined sewer* or a *private sewage disposal system*. 2) A *combined building drain* shall not be installed. (See Note A-2.1.2.1.(2).)	**Revised** 1) Except as provided in Subsection 2.7.4., by, every *sanitary drainage system* shall be connected to a public *sanitary sewer*, a public *combined sewer* or a *private sewage disposal system*. 2) A *combined building drain* shall not be installed. (See Note A-2.1.2.1.(2).)	The exceptions listed in Articles 2.1.2.1. 2.1.2.2. and 2.1.2.3. of Subsection 2.1.2., reference "Section 2.7.", continues to allow sanitary drainage systems, storm drainage systems, and water distribution system to be diverted.
2.1.2.2. Storm Drainage Systems 1) Except as provided in Subsection 2.7.4., ~~every~~ *storm drainage system*s shall be connected to a public *storm sewer*, a public *combined sewer* or a designated *storm water* disposal location.	**Revised** 1) Except as provided in Subsection 2.7.4., every *storm drainage system* shall be connected to a public *storm sewer*, a public *combined sewer* or a designated *storm water* disposal location.	Editorial Justification / Rational same as 2.1.2.1
2.1.2.3. Water Distribution Systems 1) Except as provided in Subsection 2.7.4., ~~every~~ *water distribution system*s shall be connected to a public water main or a *potable private water supply system*.	**Revised** 1) Except as provided in Subsection 2.7.4., every *water distribution system* shall be connected to a public water main or a *potable private water supply system*.	Editorial Justification / Rational same as 2.1.2.1
2.1.4. Seismic Design	**New**	
2.1.4.1 Seismic Restraints and Design **1)** *Plumbing systems* in *buildings* constructed in accordance with Part 3 of Division B of the NBC shall be designed and installed to accommodate the seismic forces addressed in Subsection 4.1.8. of Division B of the NBC. (See Note A-2.1.4.1.(1).) **Note A-2.1.4.1. Seismic Restraints and Design.** Sentence 2.1.4.1.(1) aims to help ensure that plumbing systems will remain in place for a sufficient amount of time during an earthquake to allow for the safe evacuation of the building.	**New**	This change is a reminder to designers that the requirements of the NBC part 4 related to seismic forces apply to plumbing systems. Requiring seismic bracing of the plumbing systems will help reduce the likelihood of elements of the plumbing system falling on building occupants during seismic events.
2.2.2 Fixtures	**2.2.2 Fixtures**	
2.2.2.2 Conformance to Standards **1)** Except as provided in Article 2.2.2.3., i) personal hygiene devices for water closets shall conform to ASME A112.4.2/CSA B45.16, "Personal hygiene devices for water closets."	**Revised/New**	ASME/CSA standard for the performance of personal hygiene devices. The standard addressed safety considerations, the contamination of the building's potable water system, and testing the devices for adequate performance. a) to h) are unchanged
2.2.5 Non-Metallic Pipe and Fittings	**2.2.5 Non-Metallic Pipe and Fittings**	

<table>
<tr>
<td>2.2.5.1. Fibrocement Pipe and Fittings

1) Fibrocement pipe and fittings for use in a drain, waste, and vent system shall conform to CAN/CSA-B127.3, “Fibrocement rain, waste, and vent pipe and pipe fittings.”</td>
<td><u>Deleted</u>

<s>2.2.5.1 Asbestos Cement Pipe and Fittings</s>
<s>1) Asbestos-cement pipe and its fittings for use in a drain, waste or vent system shall conform to CSA/CSA-B127.1, Asbestos-Cement Drain, Waste and Vent Pipe Fittings.</s>

<s>2) Asbestos-cement water pipe and fittings shall not be used above ground</s></td>
<td>This new standard provides an acceptable solution by defining the minimum level of performance that fibrocement pipe and fittings should achieve.

Removing Asbestos based materials harmonizes the NBC.</td>
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<tr>
<td>Table A-2.2.5., 2.2.6. and 2.2.7.
Summary of Pipe and Fitting Applications
Forming Part of Note A-2.2.5., 2.2.6. and 2.2.7.
<table>
<tr><th rowspan="4">Types of Piping and Fittings</th><th rowspan="4">Standard References</th><th rowspan="4">NPC References</th><th colspan="10">Use of Piping and Fittings (1)</th></tr>
<tr><th colspan="3">Drainage System</th><th colspan="2">Venting System</th><th colspan="5">Potable Water System</th></tr>
<tr><th rowspan="2">Above-ground inside building</th><th rowspan="2">Under-ground under building</th><th rowspan="2">Building sewer</th><th rowspan="2">Above-ground</th><th rowspan="2">Under-ground</th><th colspan="2">Above-ground</th><th colspan="3">Underground</th></tr>
<tr><th>Cold</th><th>Hot</th><th>Under building</th><th colspan="2">Outside building</th></tr>
<tr><td>Fibrocement DWV pipe</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Type 1, Class 3000, and Type 2, Class 4000</td><td>CAN/CSA-B127.3-18</td><td>2.2.5.1.(1)</td><td>P</td><td>P</td><td>P</td><td>P</td><td>P</td><td>N</td><td>N</td><td>N</td><td colspan="2">N</td></tr>
</table></td>
<td><u>Deleted from Table 2.2.5, 2.2.6. and 2.2.7</u>
<table>
<tr><th rowspan="4">Types of Piping and Fittings</th><th rowspan="4">Standard References</th><th rowspan="4">NPC References</th><th colspan="10">Use of Piping and Fittings (1)</th></tr>
<tr><th colspan="3">Drainage System</th><th colspan="2">Venting System</th><th colspan="4">Potable Water System</th></tr>
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<tr><th>Cold</th><th>Hot</th><th>Under building</th><th>Outside building</th></tr>
<tr><td><s>Asbestos-cement DWV pipe</s></td><td rowspan="2"><s>CAN/CSA-B127.1</s></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td><s>Type I Class 3 000, sizes 8 in. to 24 in.</s></td><td><s>2.2.5.1.(1)</s></td><td><s>P</s></td><td><s>P</s></td><td><s>P</s></td><td><s>P</s></td><td><s>P</s></td><td><s>N</s></td><td><s>N</s></td><td><s>N</s></td><td><s>N</s></td></tr>
<tr><td><s>Type II Class 4 000, sizes 3 in. to 24 in.</s></td><td><s>2.2.5.1.(1)</s></td><td><s>P</s></td><td><s>P</s></td><td><s>P</s></td><td><s>P</s></td><td><s>P</s></td><td><s>N</s></td><td><s>N</s></td><td><s>N</s></td><td><s>N</s></td></tr>
</table></td>
<td>Removes references to asbestos drains materials as acceptable solutions in the NPC because of the potential risk to the health and safety of building occupants.

There exists other options for drain and vent materials in the National Plumbing Code (NPC).

Removing the option of using asbestos-based materials will harmonize the NPC requirements with current provincial and territorial practices regulating asbestos-based materials.</td>
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<td>2.2.5.6 Crosslinked Polyethylene Pipe and Fittings

1) Crosslinked polyethylene pipe and <s>its associated</s>manufacturer-approved fittings used in hot and cold potable water systems shall conform to CAN/CSA-B137.5, "Crosslinked polyethylene (PEX) tubing systems for pressure applications". (See Note A-2.2.5.6.(1).)</td>
<td><u>Revised</u>

1) Crosslinked polyethylene pipe and its associated fittings used in hot and cold potable water systems shall conform to CAN/CSA-B137.5, "Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications". (See Note A-2.2.5.6.(1).)</td>
<td>Expands the requirements by referring to the manufacturer for the appropriate approved fitting(s) to be installed with PEX tubing.</td>
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<tr>
<td>2.2.5.15 Polyethylene of Raised Temperature Tube and Fittings

1) Polyethylene of Raised Temperature (PE-RT) tube and manufacturer-approved fittings used in hot and cold potable water systems shall conform to CSA B137.18, "Polyethylene of Raised Temperature (PE-RT) Tubing for Pressure Applications" (See Note A-2.2.5.15.(1).)
2) The use of PE-RT pipe and fittings shall conform to Table 2.2.5.15.</td>
<td>New</td>
<td>PE-RT piping is currently being installed in Canada. However, the National Plumbing Code (NPC) did not specifically list PE-RT as an acceptable plumbing material.</td>
</tr>
<tr>
<td>Table 2.2.5.15
Polyethylene of Raised Temperature
Forming part of Sentence 2.2.5.15.(2)
<table>
<tr><th rowspan="3">Types of Piping and Fittings</th><th colspan="9">Use of Piping and Fittings</th></tr>
<tr><th colspan="3">Drainage System</th><th colspan="2">Venting System</th><th colspan="4">Potable Water System</th></tr>
<tr><th>Above-ground inside building</th><th>Under-ground Under building</th><th>Building sewer</th><th>Above-ground</th><th>Under-ground</th><th>Cold</th><th>Hot</th><th>Under Building</th><th>Outside Building</th></tr>
<tr><td>PE-RT</td><td>N</td><td>N</td><td>N</td><td>N</td><td>N</td><td>P</td><td>P</td><td>P</td><td>P</td></tr>
<tr><td colspan="10">P = Permitted N = Not Permitted</td></tr>
</table>
</td>
<td>New</td>
<td>The format of these requirements is in-line with the recently added stainless steel and copper requirements.

These applications are supported in the CSA B 137.18 standard.</td>
</tr>
</table>

Table A-2.2.5., 2.2.6. and 2.2.7.
Summary of Pipe and Fitting Applications
Forming Part of Note A-2.2.5., 2.2.6. and 2.2.7.

Types of Piping and Fittings	Standard References	NPC References	Use of Piping and Fittings								
			Drainage System			Venting System		Potable Water System			
			Above-ground inside building	Under-ground Under building	Building sewer	Above-ground	Under-ground	Cold	Hot	Under Building	Outside Building
PVC fittings, Schedule 40	ASTM D 2466	2.2.5.7.(2)	N	N	N	N	N	P(4)(5)	N	N	N
PVC fittings, Schedule 80	ASTM D 2467	2.2.5.7.(2)	N	N	N	N	N	P(4)(5)	P(4)(5)	P	P
PE-RT	CSA B137.18	2.2.5.15	N	N	N	N	N	P(4)(5)	P(4)(5)	P	P

(4) Combustible piping in non-combustible construction is subject to the requirements of Sentence 3.1.5.19.(1) of Division B of the NBC.

(5) Combustible piping that penetrates a fire separation is subject to the requirements in Articles 3.1.9.1., 9.10.9.6. and 9.10.9.7. of Division B of the NBC.

Revised

Table A-2.2.5., 2.2.6. and 2.2.7.
Summary of Pipe and Fitting Applications
Forming Part of Note A-2.2.5., 2.2.6. and 2.2.7.

Types of Piping and Fittings	Standard References	NPC References	Use of Piping and Fittings								
			Drainage System			Venting System		Potable Water System			
			Above-ground inside building	Under-ground Under building	Building sewer	Above-ground	Under-ground	Cold	Hot	Under Building	Outside Building
PVC fittings, Schedule 40	ASTM D 2466	2.2.5.7.(2)	N	N	N	N	N	P(4)(5)	N	N	N
PVC fittings, Schedule	ASTM D 2467	2.2.5.7.(2)	N	N	N	N	N	P(4)(5)	P(4)(5)	P	P

(4) Combustible piping in non-combustible construction is subject to the requirements of Sentence 3.1.5.19.(1) of Division B of the NBC.

(5) Combustible piping that penetrates a fire separation is subject to the requirements in Articles 3.1.9.1., 9.10.9.6. and 9.10.9.7. of Division B of the NBC.

Amended Table added listing acceptable applications for PE-RT. The format of these requirements was chosen to be in-line with the recently added stainless steel and copper requirements.

These applications are dictated by the CSA B137.18 standard.

Note A-2.2.5.15.(1) Polyethylene of Raised Temperature Tube.
It should be noted that CSA B137.18, "Polyethylene of Raised Temperature (PE-RT) Tubing for Pressure Applications" contains special installation requirements that should be followed.

New

Note added to ensure that PE-RT piping is appropriately installed.

The CSA B137.18 standard includes a number of tests and requirements and helps ensure that the pipe and fittings used will
1. be safe for potable water applications
2. be able to withstand operating pressure in potable water systems.

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2.2.5.16 Cellular Core PVC Pipe and Fittings

1) Cellular core PVC pipe shall
a) conform to ASTM F3128-19, “Standard Specification for Poly(Vinyl Chloride) (PVC) Schedule 40 Drain, Waste, and Vent Pipe with a Cellular Core,” and
b) be light grey, as specified in CAN/CSA-B181.2, “Polyvinylchloride (PVC) and chlorinated polyvinylchloride (CPVC) drain, waste, and vent pipe and pipe fittings.”
2) Fittings and solvent cements for cellular core PVC pipe shall conform to CSA B181.2, “Polyvinylchloride (PVC) and chlorinated polyvinylchloride (CPVC) drain, waste, and vent pipe and pipe fittings.”
3) Cellular core PVC pipe shall only be used in residential *buildings* containing 1 or 2 *dwelling units* and row houses that do not exceed 3 *storeys* in height.

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New

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Provides an option for DWV plastic pipe.

As cellular core PVC pipe is a product that is entirely new to the Canadian market, it has been limited to residential installations.

This limitation will give designers and installers the opportunity to determine the most appropriate applications for this piping material.

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Table A-2.2.5., 2.2.6. and 2.2.7.
Summary of Pipe and Fitting Applications
Forming Part of Note A-2.2.5., 2.2.6. and 2.2.7.

Types of Piping and Fittings	Standard References	NPC References	Use of Piping and Fittings (1)								
			Drainage System			Venting System		Potable Water System			
			Above-ground inside building	Under-ground under building	Building sewer	Above-ground	Under-ground	Above-ground		Underground	
								Cold	Hot	Under building	Outside building
Solder-joint water fittings	ASME B16.18	2.2.7.6.	N	N	N	P	P	P	P	P	P
	ASME B16.22										
Lead waste pipe	—	2.2.7.8.	P (4) (5)	P	N	P (4) (5)	P	N	N	N	N
Cellular core PVC pipe (12)	ASTM 3128	2.2.5.14	P	P	N	P	P	N	N	N	N
N = Not permitted P = Permitted											

Notes to Table A-2.2.5., 2.2.6. and 2.2.7.:
12) Permitted only in residential building

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Revised

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Table update to reflect the addition of cellular core PVC pipe

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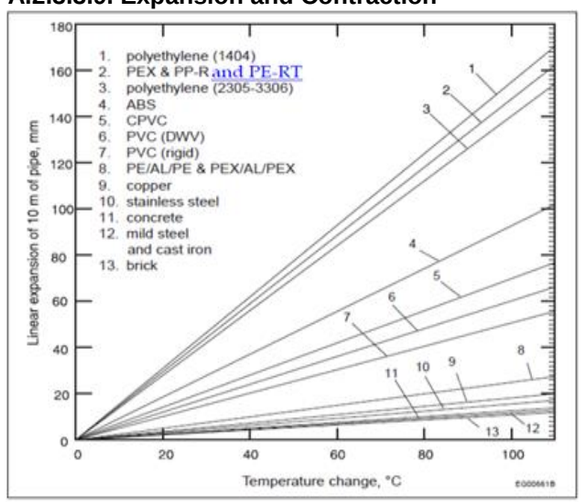
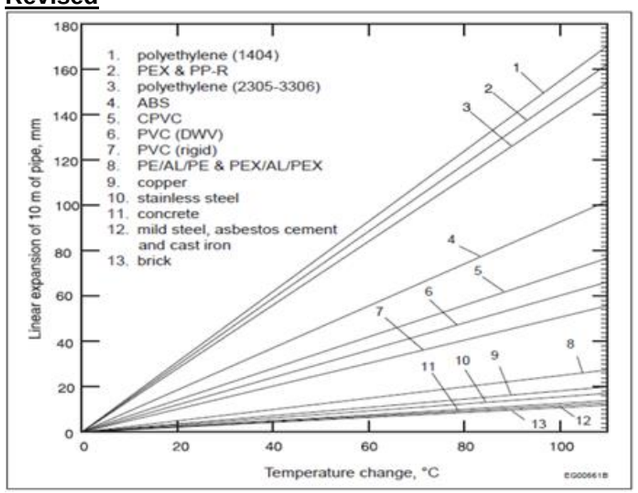
~~**2.2.6.3. Cast-Iron Fittings for Asbestos-Cement Drainage Pipe**~~ ~~1) Cast-iron fittings designed for use with asbestos-cement pipe for drainage purposes shall conform to the applicable requirements of~~ ~~a) CAN/CSA-B127.1, "Asbestos Cement Drain, Waste and Vent Pipe and Pipe Fittings", or~~ ~~b) CSA B127.2-M, "Components for Use in Asbestos Cement Building Sewer Systems".~~	**Deleted** **2.2.6.3. Cast-Iron Fittings for Asbestos-Cement Drainage Pipe** 1) Cast-iron fittings designed for use with asbestos-cement pipe for drainage purposes shall conform to the applicable requirements of a) CAN/CSA-B127.1, "Asbestos Cement Drain, Waste and Vent Pipe and Pipe Fittings", or b) CSA B127.2-M, "Components for Use in Asbestos Cement Building Sewer Systems".	Removing Asbestos based materials harmonizes the NBC.
2.2.7.4 Copper Tube 3) Copper tube shall not be used for the *fixture drain* or the portion of the *vent pipe* below the *flood level rim* of ~~manually flushing or waterless~~ a urinal~~s~~.	**Revised** 3) Copper tube shall not be used for the *fixture drain* or the portion of the *vent pipe* below the *flood level rim* of manually flushing or waterless urinals.	This change extends the prohibition on the use of copper tube to all urinals, including those with automatic flush valves.
2.2.10. Miscellaneous Materials	**2.2.10. Miscellaneous Materials**	
2.2.10.6 Valves, and Supply and Waste Fittings (7) Manually operated valves of *NPS* 4 or less for use in *plumbing systems* shall conform to ASME A112.4.14/CSA B125.14, “Manually Operated Valves for Use in Plumbing Systems.” (See Note A-2.2.10.6.(7).)	**Revised/ New** **2.2.10.6 Supply and Waste Fittings**	Harmonize with North America preventing non-conforming products into the Canadian market. Provides performance requirements for and addresses public safety related to lead in these valves. 1) to 6) are unchanged
Note A-2.2.10.6.(7) Manually Operated Valves. Manually operated valves are also known in the industry as supply line stops.	**New**	
2.2.10.7 Water Temperature Control **(See Note A-2.2.10.7.)** 1) Except as provided in Sentences (2) and (3), ~~valves supplying fixed-location~~water supplied to shower heads or bathtubs shall be ~~individual pressure-balanced or thermostatic-mixing~~ controlled by an automatic compensating valve~~s~~ conforming to a) ASME A112.18.1/CSA B125.1, "Plumbing Supply Fittings," or b) ASSE 1016/ ASME A112.1016/CSAB125.16, “Performance Requirements for Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations.” 2) ~~Individual pressure-balanced or thermostatic-mixing valves shall not be required for shower heads having a single tempered water supply that is~~	**Revised** 1) Except as provided in Sentences (2), valves supplying fixed-location shower heads shall be individual pressure-balanced or thermostatic-mixing valves conforming to ASME A112.18.1/CSA B125.1, "Plumbing Supply Fittings". 2) Individual pressure-balanced or thermostatic-mixing valves shall not be required for shower heads having a single tempered water supply that is	Revising Article 2.2.10.7. Addresses valves supplying all types of shower heads, as well as bathtubs, will provide the ability to control the temperature of water discharging from these fixtures. This change reduces risk of scalding due to exposure to excessively high water temperatures and the risk of thermal shock due to unexpected variations in water temperature.

~~controlled by an automatic compensating valve conforming to CSA B125.3, "Plumbing Fittings".~~ The requirement in Sentence (1) is permitted to be waived where hot water supplied only to bathtubs is controlled by a) an automatic compensating valve conforming to CSA B125.3, "Plumbing fittings," or b) a temperature-limiting device conforming to ASSE 1070/ASME A112.1070/CSA B125.70, “Performance requirements for water temperature limiting devices.” 3) ~~Mixing valves that supply shower heads shall be of the pressure-balanced, thermostatic, or combination pressure-balanced/thermostatic type capable of~~ The requirement in Sentence (1) is permitted to be waived where the water is supplied by a single tempered water line controlled by an automatic compensating valve conforming to CSA B125.3, “Plumbing fittings.” ~~a) maintaining a water outlet temperature that does not exceed 49°C, and~~ ~~b) limiting thermal shock.~~ 4) Except as provided in Sentence (5), the temperature of water discharging from a shower head or into a bathtub shall not exceed 49°C. 5) In health care facilities and seniors’ residences, the temperature of water discharging from a shower head or into a bathtub shall a) not exceed 43°C, and b) be adjusted at the shower or bathtub controls.	controlled by an automatic compensating valve conforming to CSA B125.3, "Plumbing Fittings". 3) Mixing valves that supply shower heads shall be of the pressure-balanced, thermostatic, or combination pressure-balanced/thermostatic type capable of a) maintaining a water outlet temperature that does not exceed 49°C, and b) limiting thermal shock. 4) The temperature of water discharging from a shower head or into a bathtub shall not exceed 49°C.	Requiring that automatic compensating valves and temperature-limiting devices conform to a standard ensures their satisfactory performance and safety: • The automatic compensating valves conforming to ASME A112.18.1/CSA B125.1, "Plumbing Supply Fittings," ASSE 1016/ ASME A112.1016/CSA B125.16, "Performance requirements for automatic compensating valves for individual showers and tub/shower combination," or CSA B125.3, "Plumbing Fittings," referred to in Sentences 2.2.10.7.(1) to (3)-2020 provide a means of automatically maintaining the selected water temperature to reduce the risk of scalding and thermal shock. • Introducing a reference to ASSE 1070/ASME A112.1070/CSA B125.70, "Performance Requirements for Water Temperature Limiting Devices," in Sentence 2.2.10.7.(2)-2020, provides performance requirements for temperature-limiting devices. Temperature-limiting devices conforming to this standard limit the water temperature to reduce the risk of scalding.
Note A-2.2.10.7. Hot Water Temperature. Hot water delivered at 60°C, a typical thermostat setting for storage-type service water heaters, will severely burn human skin in 1 to 5 s~~econds~~. Consequently, Article 2.2.10.7. sets an upper limit on the temperature of water discharging from shower heads and into bathtubs. The water temperature is maintained at or below this limit through the installation and adjustment of automatic compensating valves or temperature-limiting devices.	**Revised** Hot water delivered at 60°C will severely burn human skin in 1 to 5 seconds. At 49°C, the time for a scald burn to occur is 10 minutes. Children, the elderly and persons with disabilities are particularly at risk of scald burns. Compliance with Article 2.2.10.7. will reduce the risk of scalding in showers and bathtubs, and reduce the risk of thermal shock from wall-mounted shower heads.	The skin of elderly people is thinner and less vascularized than that of adults. For elderly people, a water temperature of 49°C poses a significant risk of scalding. The proposed maximum water temperature of 43°C will provide more suitable protection for elderly people because scald burns only occur after a number of hours of exposure to water at this temperature. This change extends the scope of Article 2.2.10.7. to minimize the risk of scalding

Compliance with the Article reduces the risk of scalding in showers and bathtubs, which could result in severe burns, and the risk of thermal shock in showers, which could lead to falls. Children, older adults and people with disabilities are particularly at risk of scalding because they are not always able to remove themselves quickly from a shower or bathtub if the water becomes too hot. At a water temperature of 49°C, the time for a ~~full thickness~~scald burn to occur on an adult is nearly 10 min~~utes.~~, whereas the time for a scald burn to occur on an older adult is only 2 min because their skin is thinner and less vascularized. At a water temperature of 43°C, scald burns occur only after several hours of exposure. Therefore, setting 43°C as the maximum temperature for water discharging from shower heads and into bathtubs provides suitable protection from scald burns in health care facilities and seniors' residences. ~~Children, the elderly and persons with disabilities are particularly at risk of scald burns. Compliance with Article 2.2.10.7. will reduce the risk of scalding in showers and bathtubs, and reduce the risk of thermal shock from wall-mounted shower heads.~~ ~~These requirements apply to all occupancies, not just residential occupancies.~~ Although the ~~water outlet~~ temperature ~~at~~of water discharging into other fixtures, such as lavatories, sinks, laundry trays ~~or~~and bidets, is not addressed by Article 2.2.10.7., ~~but~~ a ~~scald~~ risk of scalding may nonetheless exist at such fixtures ~~nonetheless~~. It should be noted that pressure-balanced valves are sensitive to seasonal changes in the temperature of the cold water supply and may require adjustments throughout the year to avoid exceeding the maximum water temperature prescribed in Article 2.2.10.7.	These requirements apply to all occupancies, not just residential occupancies. The water outlet temperature at other fixtures, such as lavatories, sinks, laundry trays or bidets, is not addressed by Article 2.2.10.7., but a scald risk may exist at such fixtures nonetheless.	caused by exposure to water discharging into bathtubs and from all types of shower heads. Isolating the water supplied to bathtubs and shower heads from the rest of the plumbing system through the use of automatic compensating valves or temperature-limiting devices will ensure that a consistent water temperature is maintained. The use of automatic compensating valves, in particular, will reduce the risk of scalding and thermal shock and provide increased protection to the user.
2.2.10.8. Direct Flush Valves 1) Direct flush valves shall e) conform to ASSE 1037/ASME A112.1037/CSA B125.37. "Performance Requirements for Pressurized Flushing Devices for Plumbing Fixtures."	**Revised/New**	NPC now provides performance requirements for direct flush valves, which are used to flush water closets and urinals. a) to d) are unchanged

2.2.10.10. Back-Siphonage Preventers and Backflow Preventers 1) Except as provided in Sentence (2), *back-siphonage preventers* and *backflow preventers* shall conform to: j) CSA-B64.4.1, "Reduced pressure principle backflow preventers for fire protection systems (RPF)," k) CSA B64.5, "Double check valve (DCVA) backflow preventers," l) CSA B64.5.1, "Double check valve backflow preventers for fire protection systems (DCVAF)," m) CSA B64.6, "Dual Check Valve (DuC) Backflow Preventers," n) CSA B64.6.1 "Dual check valve backflow preventers for fire protection systems (DuCF)," o) CSA B64.7, "Laboratory faucet vacuum breakers (LFVB)," ~~or~~ p) CSA B64.8, "Dual check valve backflow preventers with intermediate vent (DuCV)," or q) CSA B64.9, "Single check valve backflow preventers for fire protection systems (SCVAF)."	**Revised/New** 1) Except as provided in Sentence (2), *back-siphonage preventers* and *backflow preventers* shall conform to: j) CSA B64.5, "Double Check Valve (DCVA) Backflow Preventers," k) CSA B64.6, "Dual Check Valve (DuC) Backflow Preventers," l) CSA B64.7, "Laboratory Faucet Vacuum Breakers (LFVB)," or m) CSA B64.8, "Dual Check Valve Backflow Preventers with Intermediate Vent (DuCV)."	Absent from this list are "F-type" backflow devices which the NPC currently references for the performance of backflow from fire protection systems under Article 2.6.2.4. This omission could lead to confusion as the list of standards for back-siphonage and backflow preventers is incomplete. The change adds four standards for the performance of "F-type" backflow and back-siphonage prevention devices. a) to h) are unchanged
2.2.10.10 Back-Siphonage Preventers and Backflow Preventers 2) *Back-siphonage preventers* for tank-type water closets (anti-siphon fill valves) shall conform to ~~CSA B125.3, "Plumbing Fittings".~~ ASSE 1002/ASME A112.1002/CSA B125.12, "Anti-siphon fill valves for water closet tanks."	**Revised** 2) Back-siphonage preventers for tank-type water closets (anti-siphon fill valves) shall conform to CSA B125.3, "Plumbing Fittings".	Provides stakeholders with performance requirements for back-siphonage preventers for water closet tanks, as these requirements were removed from CSA B125.3-18, "Plumbing Fittings."
2.2.10.18 Flexible Water Connectors 1) Flexible water connectors exposed to continuous pressure shall conform to ASME A112.18.6/CSA B125.6, "Flexible water connectors."	**New**	Provides stakeholders with performance requirements for flexible water connectors.
2.3.3. Joints and Connections	**2.3.3. Joints and Connections**	
2.3.3.4. Unions and Slip Joints 1) Except as provided in Sentence 2.4.6.3.(6),~~R~~running thread and packing nut connections and unions with a gasket seal shall not be used downstream of a *trap weir* in a *drainage system* or in a *venting system*.	**Revised** **1)** Running thread and packing nut connections and unions with a gasket seal shall not be used downstream of a *trap weir* in a *drainage system* or in a *venting system.*	Provides an exemption to Sentence 2.3.3.4.(1), by allowing the use of union joints under Sentence 2.4.6.3.(6). for pumped sumps.

2.3.3.8 Connection of Floor or Wall Outlet Fixtures (5) Water-closet bowls shall be securely attached to the floor flange, floor or wall carrier.	**Revised/Relocated from 2.3.4.1.** **2.3.3.8 Connection of Floor Outlet Fixtures** **2)** Floor-mounted and wall-mounted water-closet bowls shall be securely attached to the floor or wall by means of a flange and shall be stable.	Clarify that water closets can be attached to either the floor or floor flange as indicated in Clauses 2.2.10.2.(1)(a) and (c) and that wall-mounted water closets have different attachment requirements than floor-mounted ones. 1), 2), 3), 4), 6), 7) are unchanged. Relocated from 2.3.4.1 and reworded.
A.2.3.3.9. Expansion and Contraction  Figure A-2.3.3.9. Linear Expansion	**Revised**  Figure A-2.3.3.9. Linear Expansion	Notes, material listing acceptable applications and thermal expansion properties of acceptable plumbing materials was expanded to include PE-RT. Removes asbestos cement.
2.3.4 Support of Piping	**2.3.4 Support of Piping**	
2.3.4.1 Capability of Support ~~2) Floor-mounted and wall-mounted water-closet bowls shall be securely attached to the floor or wall by means of a flange and shall be stable.~~	**Revised** **2.3.4.1 Capability of Support** **2)** Floor-mounted and wall-mounted water-closet bowls shall be securely attached to the floor or wall by means of a flange and shall be stable.	NPC Sentence 2.3.4.1.(2), which addresses the support of outlet fixtures, was incorrectly located in Subsection 2.3.4., which addresses the support of piping.

<table>
<tr><td></td><td></td><td>Relocated to 2.3.3.8.(5) and reworded</td></tr>
<tr><td>2.3.4.5. Support for Horizontal Spacing
4) Where PEX, PE-RT, PP-R, PE/AL/PE or PEX/AL/PEX plastic pipe is installed, hangers shall not compress, cut or abrade the pipe.</td><td><u>Revised</u>
4) Where PEX, PP-R, PE/AL/PE or PEX/AL/PEX plastic pipe is installed, hangers shall not compress, cut or abrade the pipe.</td><td>Adds new reference to PE-RT</td></tr>
<tr><td>Table 2.3.4.5
Support for Nominally Horizontal Piping
Forming Part of Sentence 2.3.4.5.(2)
<table><tr><th>Piping Material</th><th>Maximum Horizontal Spacing of Supports, m</th><th>Additional Support Conditions</th></tr><tr><td>Cast-iron pipe with mechanical joints that is ≤ 300 mm long between adjacent fittings</td><td>1</td><td>None</td></tr><tr><td><s>Asbestos-cement pipe</s></td><td><s>2 (1)</s></td><td><s>None</s></td></tr><tr><td><s>Asbestos-cement pipe that is ≤ 300 mm long between adjacent fittings</s></td><td><s>1</s></td><td><s>None</s></td></tr></table><s>Note to Table 2.3.4.5</s>
<s>(1) as an alternative, asbestos-cement pipe, which is typically manufactured in 4 m lengths, may have 2 supports per length of pipe.</s></td><td><u>Deleted</u></td><td>Removes references to asbestos drain materials as an acceptable solutions in the NPC because of the potential risk to the health and safety of building occupants.

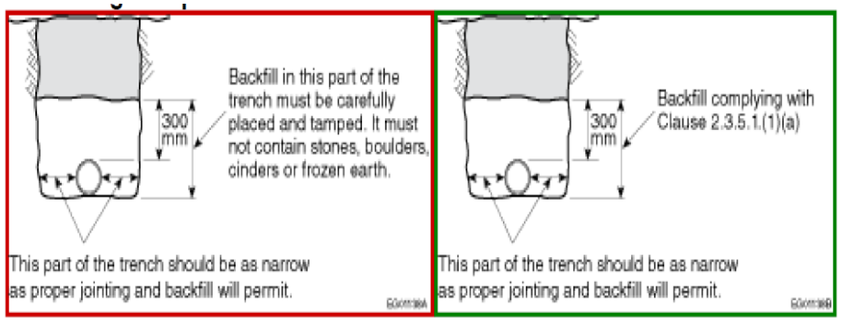
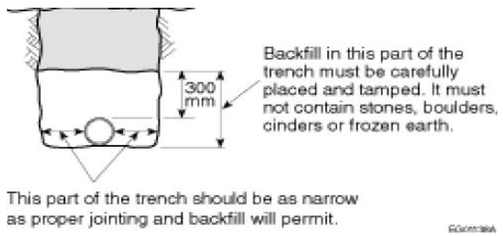
This material was formerly used in plumbing systems in drainpipes and fittings. Many jurisdictions have asbestos-related regulations in place to properly handle asbestos-based materials when asbestos is suspected to be present during renovation and alteration of existing buildings.

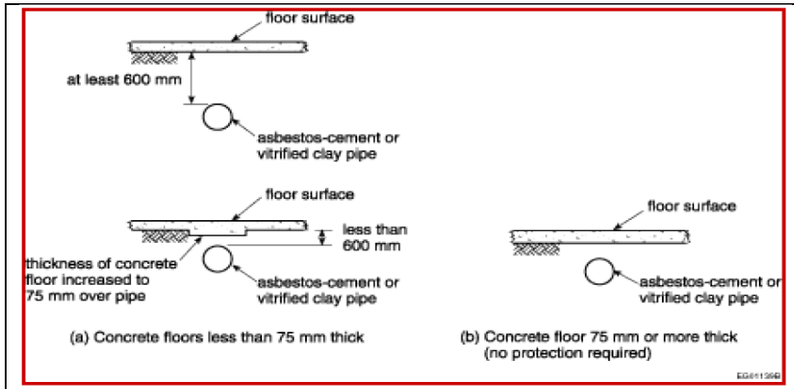
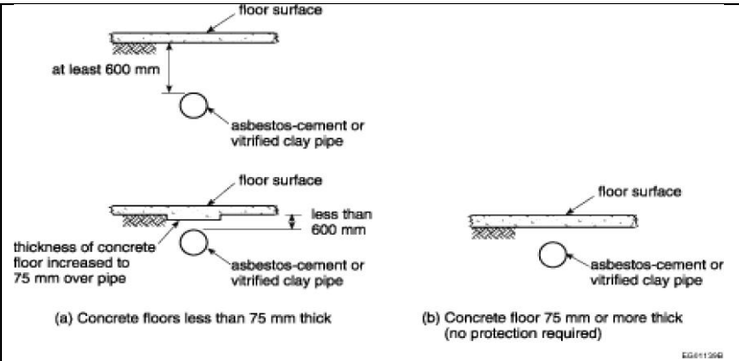
Removing the option of using Asbestos-based materials will harmonize the NPC requirements with current provincial and territorial practices regulating asbestos-based materials.</td></tr>
<tr><td>Table 2.3.4.5
Support for Nominally Horizontal Piping
Forming Part of Sentence 2.3.4.5.(2)
<table><tr><th>Piping Material</th><th>Maximum Horizontal Spacing of Supports, m</th><th>Additional Support Conditions</th></tr><tr><td><u>PE-RT</u></td><td><u>0.8</u></td><td><u>None</u></td></tr></table></td><td><u>Revised</u></td><td>PE-RT added to Table 2.3.4.5.

This value is referenced in the installation instructions within CSA B137.18.</td></tr>
<tr><td>2.3.5.1. <s>Backfilling</s><u>Protection</u> of Pip<s>e Trench</s>
1) <s>Where piping is installed u</s>Underground<s>, the backfill</s> <u>piping</u> shall be <u>protected</u></td><td><u>Revised</u>

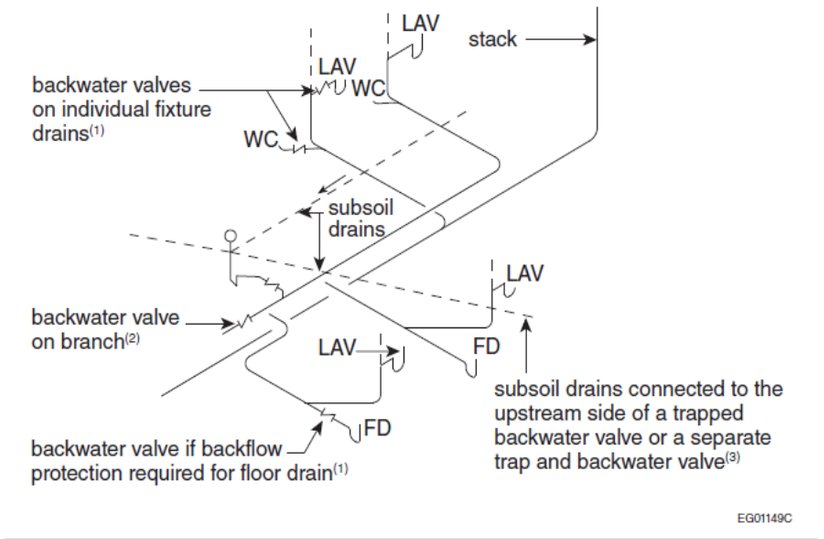
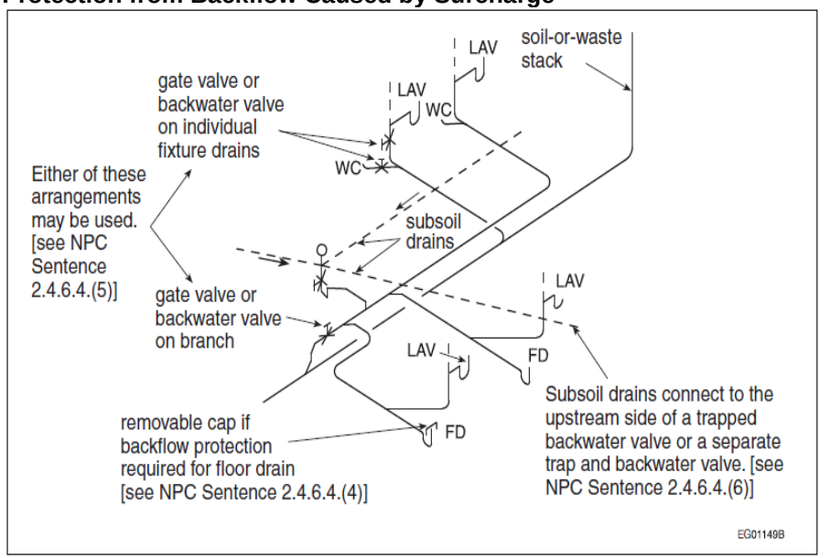
1) Where piping is installed underground, the backfill shall be</td><td>Clarifies that when concrete is above a pipe, backfill is not required.

Provides more installation options.</td></tr>
</table>

a) in the absence of the pipe manufacturer's instructions for backfill, by backfill that is (see Note A-2.3.5.1.(1)) i) ~~carefully~~ placed and ~~tamped~~compacted to a height of 300 mm over the top of the pipe, and ii) free of stones, boulders, cinders and frozen earth or other material capable of damaging the piping, or. ~~(See Note A-2.3.5.1.(1).)~~ b) by concrete that is at least 75 mm thick and a least 200 mm wider than the pipe.	a) carefully placed and tamped to a height of 300 mm over the top of the pipe, and b) free of stones, boulders, cinders and frozen earth. (See Note A-2.3.5.1.(1).)	This change reflects current practice.
Note A-2.3.5.1.(1)(a) Backfilling of Pipe Trench. Stronger pipes may be required in deep fill or under driveways, parking lots, etc., and compaction for the full depth of the trench may be necessary.	**Revised** **Note A-2.3.5.1.(1) Backfilling of Pipe Trench.** Stronger pipes may be required in deep fill or under driveways, parking lots, etc., and compaction for the full depth of the trench may be necessary.	Editorial Note in reference to 2.3.5.1.(1)(a) Backfilling of Pipe Trench
Figure A-2.3.5.1.(1)(a) 	**Revised** 	Editorial Figure in reference to 2.3.5.1.(1)(a) Backfilling of Pipe Trench
~~**2.3.5.2 Protection of Non Metallic Pipe**~~ ~~1) Where asbestos-cement drainage pipe or vitrified clay is located less than 600 mm below a basement floor and the floor is constructed of other than 75 mm or more of concrete, the pipe shall be protected by a 75 mm layer of concrete installed above the pipe (See Note A-2.3.5.2.(1).)~~ ~~**Note A-2.3.5.2.(1) Protection of Underground Non-Metallic Pipes. Figure A-2.3.5.2(1)**~~	**Deleted**	Clarify that when there is concrete above a pipe, backfill is not required. Provides more installation options. The change reflects current and proven practice. Asbestos is no longer an acceptable plumbing material
	Deleted	Clarify that when there is concrete above a pipe, backfill is not required. Provide more installation options. The change reflects current and proven practice.

		Asbestos is no longer an acceptable plumbing material
2.3.6 Testing of Drainage or Venting Systems	**2.3.6 Testing of Drainage or Venting Systems**	
2.3.6.5 Air Pressure Tests 1) Air pressure tests shall be conducted in accordance with the manufacturer's instructions for each piping material, and a) air shall be forced into the system until a pressure of 35 kPa is created, and b) this pressure shall be maintained for at least 15 min without a drop in pressure. (See Note A-2.3.6.5.(1).)	**Revised**	
A-2.3.6.5.(1) Air Pressure Tests. The addition of a non-toxic indicating substance, such as an aerosol, fluorescent dye, smoke or an odorant, to an air pressure test may help in identifying the location of a leak. However, the additive must be compatible with the piping material being tested: the intent is to identify the leak without affecting the outcome of the test or the integrity of the plumbing system.	**New**	
2.4 Drainage Systems	**2.4 Drainage Systems**	
2.4.6 Arrangement of Drainage Piping		
2.4.6.3 Sumps or Tanks **(See Note A-2.4.6.3.)** 3) Where the sump or tank receives subsurface water from a *subsoil drainage pipe*, it shall be provided with a water- and air-tight cover.	**New**	The principal method of preventing the ingress of soil gases into a building is to seal the interface between the soil and the occupied space. Harmonize with the NBC and to ensure that acceptable indoor air quality is maintained. 1), 2), 4), 5), 6), 7), 8) are unchanged

2.4.6.4 Protection from Backflow ~~3~~1) Except as provided in Sentences (~~5~~2) and (~~6~~3), where a *building drain* or a *branch* may be subject to *backflow*, ~~a gate valve or~~ a *backwater valve* shall be installed on every *fixture drain* connected to them when the *fixture* is located below the level of the adjoining street. ~~5~~2) Where more than one *fixture* is located on a *storey* and all are connected to the same *branch*, the ~~gate valve or~~ *backwater valve* is permitted to be installed on the *branch*. ~~6~~3) A *subsoil drainage pipe* that drains into a *sanitary drainage system* that is subject to surcharge shall be connected in such a manner that *sewage* cannot back up into the *subsoil drainage pipe*. (See Note A-2.4.6.4.(~~6~~3).) ~~1~~4) Except as permitted in Sentence (~~2~~5), a *backwater valve* or a gate valve that would prevent the free circulation of air shall not be installed in a *building drain* or in a *building sewer*. ~~(See Note A-2.4.6.4.(1).)~~ ~~4) Where the *fixture* is a floor drain, a removable screw cap is permitted to be installed on the upstream side of the *trap*.~~ ~~2~~5) A *backwater valve* is permitted to be installed in a *building drain* provided that a) it is a "*normally open*" design conforming to i) CSA B70, "Cast Iron Soil Pipe, Fittings, and Means of Joining," ii) CAN/CSA-B181.1, "Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings," iii) CAN/CSA-B181.2, "Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings," or iv) CAN/CSA-B182.1, "Plastic Drain and Sewer Pipe and Pipe Fittings," and b) it does not serve more than one *dwelling unit*.	**Revised** 1) Except as permitted in Sentence (2), a *backwater valve* or a gate valve that would prevent the free circulation of air shall not be installed in a *building drain* or in a *building sewer*. (See Note A-2.4.6.4.(1).) 2) A *backwater valve* is permitted to be installed in a *building drain* provided that a) it is a "normally open" design conforming to i) CSA B70, "Cast Iron Soil Pipe, Fittings, and Means of Joining," ii) CAN/CSA-B181.1, "Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings," iii) CAN/CSA-B181.2, "Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings," or iv) CAN/CSA-B182.1, "Plastic Drain and Sewer Pipe and Pipe Fittings," and b) it does not serve more than one *dwelling unit*. 3) Except as provided in Sentences (5) and (6), where a *building drain* or a *branch* may be subject to *backflow*, a gate valve or a *backwater valve* shall be installed on every *fixture drain* connected to them when the *fixture* is located below the level of the adjoining street. 4) Where the *fixture* is a floor drain, a removable screw cap is permitted to be installed on the upstream side of the *trap*. 5) Where more than one *fixture* is located on a *storey* and all are connected to the same *branch*, the gate valve or *backwater valve* is permitted to be installed on the *branch*. 6) A *subsoil drainage pipe* that drains into a *sanitary drainage system* that is subject to surcharge shall be connected in such a manner that *sewage* cannot back up into the *subsoil drainage pipe*. (See Note A-2.4.6.4.(6).)	Failure to manually close a gate valve or screw in a cap onto a floor drain in a backflow situation in basements would likely result in significant water damage. This change removes gate valves and screw caps as options for preventing sewage and storm water from backing up into basements and, thereby, reduces the likelihood of unsanitary conditions and harm to persons. Editorial changes renumbered the order.
~~**Note A-2.4.6.4.(1) Backwater Valve or Gate Valve.**~~ ~~The installation of a backwater valve or a gate valve in a building drain or in a building sewer may have proven acceptable on the basis of past performance in some localities, and their acceptance under this Code may be warranted.~~	**Deleted** **Note A-2.4.6.4.(1) Backwater Valve or Gate Valve.** The installation of a backwater valve or a gate valve in a building drain or in a building sewer may have proven acceptable on the basis of past performance in some localities, and their acceptance under this Code may be warranted.	Note was deleted in Clause 2.4.6.4. 1)

Figure A-2.4.6.4.(6) **Protection from Backflow Caused by Surcharge**  	**Revised** **Figure A-2.4.6.4.(6)** **Protection from Backflow Caused by Surcharge**  	Deleted a removable screw cap and a gate valve from Figure A-2.4.6.4.(6)
2.4.7 Cleanouts	**2.4.7 Cleanouts**	
2.4.7.4 Location of Cleanouts **5)** *Cleanouts* serving *fixture*~~s~~ *drains* in health care facilities, mortuaries, laboratories and similar *occupancies*, where contamination by ~~body fluids~~ hazardous waste is likely, shall be located a minimum of 150 mm above the *flood level rim* of the *fixture*. (See Note A-2.4.4.4.(1))	**Revised** **5)** *Cleanouts* serving *fixtures* in health care facilities, mortuaries, laboratories and similar *occupancies*, where contamination by body fluids is likely, shall be located a minimum of 150 mm above the *flood level rim* of the *fixture*.	Broadens the requirements to include any potentially hazardous substance that may flow into a drain in a laboratory, mortuary or other similar occupancy. The term “bodily fluids” was found to be too restrictive and was removed since this would be covered under the broader term “hazardous waste”. The reference to Note A-2.4.4.4.(1) is intended to clarify the use of the term “hazardous waste”. The addition of the word “drains” limit the application of the requirements to the drain of a fixture receiving hazardous waste.

<table>
<tr><td></td><td></td><td>1), 2), 3), 4) are unchanged.</td></tr>
<tr><td>

Table 2.4.9.3 (Continued)

Fixture	Min. Size *Fixture Outlet Pipe*, NPS ~~inches~~	Hydraulic Load, *fixture units*
Shower drain Total volume of discharge from all shower heads and body sprays:		
(a) ≤ 9.5 LPM ~~from 1 head~~	$1^{1/2}$	$1^{1/2}$
(b) 9.5 LPM to 20 LPM ~~from 2 or 3 heads~~	2	3
(c) ≥ 20 LPM ~~from 4 to 6 heads~~	3	6

3) Where clothes washers do not drain to a laundry tray, the *trap* inlet shall be not less than *NPS 2* and be fitted with a vertical standpipe that is not less than 600 mm long measured from the *trap weir* and terminates above the *flood level rim* of the clothes washer. (See Note A-2.4.9.3.(3).)

</td><td>

Revised

Table 2.4.9.3 (Continued)

Fixture	Min. Size *Fixture Outlet Pipe*, inches	Hydraulic Load, *fixture units*
Shower drain		
(a) from 1 head	$1^{1/2}$	$1^{1/2}$
(b) from 2 or 3 heads	2	3
(c) from 4 to 6 heads	3	6

3) Where clothes washers do not drain to a laundry tray, the *trap* inlet shall be fitted with a vertical standpipe that is not less than 600 mm long measured from the *trap weir* and terminates above the *flood level rim* of the clothes washer. (See Note A-2.4.9.3.(3).)

</td><td></td></tr>
<tr><td>

Table 2.4.10.2.
Permitted Hydraulic Load from a Fixture Based on Size of Trap
Forming Part of Sentence [2.4.10.2.] 2.4.10.2([2])

Nominal Pipe Size of *trap*, ~~inches~~ *NPS*	Hydraulic Load, *fixture units*
~~2½~~	~~4~~

</td><td>

Revised/Deleted

</td><td>Pipe size 2 ½ NPS is not available on the market and has been deleted.

Includes Table 2.4.10.6.- A, B, and C</td></tr>
<tr><td>

2.5.5 Miscellaneous Vent Pipes

</td><td>

2.5.5 Miscellaneous Vent Pipes

</td><td></td></tr>
<tr><td>

2.5.5.3 Venting of Drain Piping and ~~Dilution~~ Tanks for Corrosive Waste
1) *Venting systems* for drain piping, neutralizing tanks, or dilution tanks conveying corrosive waste shall extend independently and terminate ~~in outside~~outdoors~~air~~. (See Article 2.5.7.7. for sizing of these vents).

</td><td>

Revised

1) *Venting systems* for drain piping or dilution tanks conveying corrosive waste shall extend independently and terminate in outside air. (See Article 2.5.7.7. for sizing of these vents).

</td><td>To limit issues with corrosion, neutralizing tanks should have independent vents.

The word “Dilution” was removed from the title to include both “neutralization tanks” and “dilution tanks”.</td></tr>
</table>

		Adds "neutralizing tanks" for the venting of corrosive waste. The wording was changed from “in outside air” to “to outdoor air” to be consistent with current terminology in the National Building Code.
2.5.7. Minimum Size of Vent Pipes	**2.5.7. Minimum Size of Vent Pipes**	
2.5.7.7 Vents for Sewage Sumps, Neutralizing and Dilution Tanks and Macerating Toilet Systems **1)** Except as provided in Sentences (2) and (3), the minimum nominal pipe *size* of the *vent pipe* for a *sewage* sump or neutralizing or dilution tank shall be one *NPS* ~~*size*~~ smaller than the *NPS* ~~*size*~~ of the largest *branch* or *fixture drain* draining to the sump. **2)** The nominal pipe *size* of every *vent pipe* for a *sewage* sump or neutralizing or dilution tank shall be not less than *NPS* 2 ~~inches~~, but need not be greater than *NPS* 4 ~~inches~~. **3)** The nominal pipe *size* of a *vent pipe* for a macerating toilet system with a sump shall be not less than *NPS* 1½ ~~inches~~.	**Revised** **1)** Except as provided in Sentences (2) and (3), the minimum *size* of the *vent pipe* for a *sewage* sump or dilution tank shall be one *size* smaller than the *size* of the largest *branch* or *fixture drain* draining to the sump. **2)** The *size* of every *vent pipe* for a *sewage* sump or dilution tank shall be not less than 2 inches, but need not be greater than 4 inches. **3)** The *size* of a *vent pipe* for a macerating toilet system with a sump shall be not less than 1½ inches.	Since vent pipes for neutralizing tanks should be the same size as the vent pipe for a dilution tank, the proposed change add "neutralization tanks" to the requirements for the sizing of vents for dilution tanks under article 2.5.7.7. In addition, the change clarifies the intent of the sentence. It is common industry practice to refer to pipe dimensions using nominal pipe size (NPS). Introducing the abbreviation, NPS in lieu of the defined term “size” facilitates use and enforcement of the NPC.
2.6.2 Protection from Contamination	**2.6.2 Protection from Contamination**	
2.6.2.1. Connection of Systems 1) Except as provided in Sentence (2), 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) A water treatment device or apparatus shall not be installed unless it can be demonstrated that the device or apparatus will not introduce substances into the system that may endanger health. 3) *Backflow preventers* shall be selected and installed in conformance with CSA B64.10, “Selection and Installation of Backflow Preventers.” ~~(See Note A-2.6.2.1.(3).)~~	**Revised/Deleted** 1) Except as provided in Sentence (2), 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) A water treatment device or apparatus shall not be installed unless it can be demonstrated that the device or apparatus will not introduce substances into the system that may endanger health. 3) *Backflow preventers* shall be selected and installed in conformance with CSA B64.10, “Selection and Installation of Backflow Preventers.” (See Note A-2.6.2.1.(3).)	The previous Note A-2.6.2.1.(3) pertained to the installation, field testing and maintenance of backflow preventers, however, maintenance is outside the scope of the NPC.

~~**A-2.6.2.1.(3)Backflow Preventers.** CSA B64.10.1, "Maintenance and Field Testing of Backflow Preventers," is considered to represent good practice as regards procedures for the maintenance and field testing of backflow preventers.~~	**A-2.6.2.1.(3)Backflow Preventers.** CSA B64.10.1, "Maintenance and Field Testing of Backflow Preventers," is considered to represent good practice as regards procedures for the maintenance and field testing of backflow preventers.	Notes are intended to give background information relating to the associated Code requirements. Note A-2.6.2.1.(3) does not provide background information relating to Sentence 2.6.2.1.(3).
2.6.2 Protection from Contamination	**2.6.2 Protection from Contamination**	
2.6.2.4 Backflow from Fire protection Systems 2) Except as required by 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 Clauses (a) to (~~f~~g) as applicable: a) *residential partial flow-through fire sprinkler/standpipe 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 i) CSA-B64.6, "Dual check valve (DuC) backflow preventers,,"" or ii) CSA B64.1, "Dual check valve backflow preventers for fire protection systems (DuCF)," b) provided that the systems do not use antifreeze or other additives of any kind and that all pipes and fittings are constructed of *potable water system* materials, *Class 1 fire sprinkler/standpipe systems* shall be protected by a single ~~*check valve backflow preventer*~~ or a dual *check valve backflow preventer* conforming to ~~provided that the systems do not use antifreeze or other additives of any kind and that all pipes and fittings are constructed of *potable water system* materials~~, i) CSA-B64.6, "Dual check valve type DuC) backflow preventers," or ii) CSA-B64.9, "Single check valve backflow preventers for fire protection systems (SCVAF)," c) provided that the systems do not use antifreeze or other additives of any kind, *Class1 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 ~~provided that the systems do not use antifreeze or other additives of any kind,~~	**Revised** 2) Except as required by 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 Clauses (a) to (f): a) *residential partial flow-through fire sprinkler/standpipe 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 CSA B64.6.1, "Dual Check Valve Backflow Preventers for Fire Protection Systems (DuCF)," b) Class 1 fire sprinkler/standpipe systems shall be protected by a single check valve backflow preventer conforming to 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 that 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 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,	The NPC currently requires that "F-type" backflow preventers be installed in fire protection systems, as the only compliance option. Since these devices are not currently being manufactured, the current NPC requirements cannot be applied. The NPC requires that "F-Type" backflow preventers be used, yet these units are no longer commercially available. The proposed change provides alternative standards for the protection of backflow from fire suppression systems, other than "F-Type" backflow devices, which are no longer commercially available. Although the removal of the related requirements for "F-type" backflow preventers reflects current practice; doing so may limit future and current installation options. The removal of F-type backflow preventers would not be in line with CSA standards as these units remain in the currently referenced version of B64.

i) CSA-B64.5, "Double check valve type (DCVA), backflow preventers," or ii) CSA-B64.5.1, "Double check valve backflow preventers for fire protection systems (DCVAF)," d) *Class 1*, *Class 2* and *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 i) CSA-B64.4, "Reduced pressure principle (RP) backflow preventers," or ii) 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 Clauses (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 i) CSA-B64.4, "Reduced pressure principle (RP) backflow preventers," or ii) 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 i) CSA-B64.5, "Double check valve (DCVA) backflow preventers," or ii) CSA B64.5.1, "Double check valve backflow preventers for fire protection systems (DCVAF),"or ~~ii~~g) Where a potentially severe health hazard may be caused by *backflow*, *Class 6 fire sprinkler/standpipe systems* shall be protected by a reduced pressure principle *backflow preventer* conforming to i) CSA-B64.4, "Reduced pressure principle (RP) backflow preventer," or ii) CSA B64.4.1, "Reduced pressure principle backflow preventers for fire protection systems (RPF) (See Note A-2.6.2.4.(2).)	d) Class 1, Class 2 and 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 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 Clauses (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 CSA B64.4.1, "Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)," or f) *Class 6 fire sprinkler/standpipe systems* shall be protected i) by a double *check valve backflow preventer* conforming to CSA B64.5.1, "Double Check Valve Backflow Preventers for Fire Protection Systems (DCVAF)," or ii) where a potentially severe health hazard may be caused by *backflow*, by a reduced pressure principle *backflow preventer* conforming to CSA B64.4.1, "Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)."	In addition, since these devices may be manufactured in the future, they will remain in the NPC. As a result F-Type backflow preventers remain in the NPC as a compliance option. 1), 3), 4) are unchanged
2.6.2.5 Separation of Water Supply Systems	**Revised**	There will be instances where private or non-potable water supply systems could be

1) ~~No~~ Where a *private water supply system* or a non-*potable water system* ~~shall be~~ is ~~interconnected with~~ supplied by a public water supply system, the public water supply system shall be protected in accordance with Article 2.6.2.1.	1) No *private water supply system* shall be interconnected with a public water supply system.	interconnected with public water supply systems. As such, there is a need to permit the interconnection of such water supply systems in some instances.
2.6.3.4 Size **1)** Water service pipes shall be sized according to the peak demand flow but shall not be less than *NPS* ¾ ~~inch size~~. **2)** Except as provided in Sentence (3), the *nominal pipe* size of a supply pipe that serves a *fixture* shall conform to Table 2.6.3.2.-A. **3)** For *fixtures* listed in Table 2.6.3.2.-A that are permitted to have an *NPS* 3/8 supply pipe ~~3/8 inch in size~~, a connector not more than 750 mm long and not less than *NPS* 1/4 ~~6.3 mm~~ ~~inside diameter~~ may be used to supply water to a *fixture.* **4)** No *water system* between the point of connection with the *water service pipe* or the water meter and the first ~~*branch*~~ water distribution pipe that supplies a water heater that serves more than *fixture* shall be sized less than *NPS* ¾ ~~inch~~.	**Revised** **1)** Water service pipes shall be sized according to the peak demand flow but shall not be less than ¾ inch size. **2)** Except as provided in Sentence (3), the size of a supply pipe that serves a fixture shall conform to Table 2.6.3.2.-A. **3)** For *fixtures* listed in Table 2.6.3.2.-A that are permitted to have a supply pipe 3/8 inch in size, a connector not more than 750 mm long and not less than 6.3 mm inside diameter may be used to supply water to a *fixture.* **4)** No *water system* between the point of connection with the *water service pipe* or the water meter and the first *branch* that supplies a water heater that serves more than *fixture* shall be sized less than ¾ inch.	It is common industry practice to refer to pipe dimensions using nominal pipe size (NPS). Introducing the abbreviation, NPS in lieu of the defined term “size” facilitates use and enforcement of the NPC. 4) Corrects the inappropriate usage to the term “Branch” by replacing the term with “water distribution pipe” is better suited to Sentence 2.6.3.4.(4) since it would pertain to potable water systems. 5) was unchanged

2.7 Non-Potable Water Systems	**2.7 Non-Potable Water Systems**	These changes address the directive or the Canadian Commission's on building and fire Codes (CCBFC) to develop Code requirements that address the new water-use efficiency objective. Under the previous requirements in Subsection 2.7.1., non-potable rainwater harvesting systems could not be installed. The previous requirements, which address non-potable water systems in general, lack clarity and are incongruent with the requirements for non-potable rainwater harvesting systems proposed for introduction to Section 2.7 (PCF 945). These changes clarify the requirements for non-potable water systems and enables the use of reused water systems, such as rainwater harvesting systems. As such, no increase in cost is anticipated as a result of this change.
2.7.1 ~~Connection~~ Non-Potable Water Systems	**Revised** **Connection**	
2.7.1.1 ~~Not Permitted~~ General **(See Note A-2.7.1.1.)** **1)** Non-*potable water systems* shall be designed, fabricated and installed in accordance with this Subsection and good engineering practice (See Note A-2.7.1.1.(1).). **2)** Except as provided in Sentence (3) and Subsection 2.7.2., non-*potable water systems* shall only be used to supply water closets, urinals, *trap* seal primers, and *directly connected* underground irrigation systems that only dispense water below the surface of the ground. **3)** Non-*potable water systems* shall not be used to supply *fixtures* in health care	**Revised** **Not Permitted** **1)** A non-*potable water system* shall not be connected to a *potable water system.*	Ensures system will be safely connected to non-potable water systems in accordance with Article 2.6.2.1, ensures systems be designed, fabricated and installed in accoradance with "good engineering practice.) Aligns with previous codes requirements maximum static pressure at fixtures to prevent performance losses, fixture ruptures, and high-velocity discharge from fixtures, which may cause harm to persons.

facilities. **4)** ~~A~~ Where a non-*potable water system* ~~shall not be~~ is ~~connected to~~supplied by a *potable water system*, the *potable water system* shall be protected in accordance with Article 2.6.2.1. **5** Where the static pressure at any *fixture* in a non-*potable water system* may exceed 550 kPa, a pressure-reducing valve shall be installed to limit the maximum static pressure at the *fixture* to 550 kPa.**)**		
2.7.1.2.~~2.7.2.1.~~ Identification and Markings ~~Required~~ **1)** Non-*potable* water piping and outlets shall be identified ~~by markings that are permanent, distinct and easily recognized.~~ and marked in accordance with CAN/CSA B128.1, "Design and Installation of Non-Potable Water Systems."	**Revised** **Markings Required** **1)** Non-potable water piping shall be identified by marking that are permanent distinct and easily recognized.	The reference to this standard for the identification and markings of non-potable water piping ensures that such piping is properly labeled so that it will not be consumed at the fixture.
2.7.1.3.~~2.7.3.1~~ Location of Pipes **1)** Non-*potable* water piping shall not be located directly above a) areas where food, drink or products that are intended for human consumption are prepared, handled, dispensed or stored, or ~~is prepared in a food-processing plant,~~ b) ~~above food handling equipment~~ a non-pressurized or pressurized *potable* water tank. ~~b) above a non-pressurized *potable* water tank, or~~ ~~c) above a cover of a pressurized *potable* water tank~~	**Revised** **Pipes** **1)** *Non-potable* water piping shall not be located a) where food is prepared in a food-processing plant, b) above food-handling equipment, c) above a non-pressurized *potable* water tank, or d) above a cover of a pressurized *potable* tank.	Clarified to ensure that non-potable water piping is not located such that a leak in the piping could directly discharge onto an area where food, drink or other products for human consumption are prepared, handled, dispensed or stored.
2.7.1.4.~~2.7.3.2.~~ Location of Outlets **1)** Except as permitted in Subsection 2.7.2 ~~A~~an outlet from a non-*potable water system* shall not be located where it can discharge into ~~a) a sink or lavatory~~ a~~b~~) a *fixture* into which an outlet from a *potable water system* is discharged, or b~~e~~) a *fixture* that is used for the preparation, handling or dispensing of food, drink or products that are intended for human consumption.	**Revised** **Outlets** **1)** An outlet from a non-*potable water system* shall not be located where it can discharge into a) a sink or lavatory b) a *fixture* into which an outlet from a *potable water system* is discharged, or c) a *fixture* that is used for the preparation, handling or dispensing of food, drink or products that are intended for human consumption.	An exception was added to allow the discharge of non-potable water where permitted by the proposed rainwater harvesting system requirements of Subsection 2.7.2.
~~2.7.4 Non-potable Water Systems~~	**Deleted**	
~~2.7.4.1. Non-potable Water System Design~~ **~~(See Note A-2.7.4.1)~~**	**Deleted** **Non-potable Water System Design** **(See Note A-2.7.4.1)**	This Sentence was deleted to expand the application of reused water beyond supplying water closets, urinals, and directly

~~1) Except as provided in Sentence (2), non-*potable water systems* shall be designed, fabricated and installed in accordance with good engineering practice, such as that described in the ASHRAE Handbooks, ASPE Handbooks and CAN/CSA-B128.1, "Design and Installation of Non-Potable Water Systems".~~ ~~2) Non-*potable water systems* shall only be used to supply water closets, urinals, and *directly connected* underground irrigation systems that only dispense water below the surface of the ground.~~	1) Except as provided in Sentence (2), non-*potable water systems* shall be designed, fabricated and installed in accordance with good engineering practice, such as that described in the ASHRAE Handbooks, ASPE Handbooks and CAN/CSA-B128.1, "Design and Installation of Non-Potable Water Systems". 2) Non-*potable water systems* shall only be used to supply water closets, urinals, and *directly connected* underground irrigation systems that only dispense water below the surface of the ground.	connected underground irrigation systems that only dispense water below the surface of the ground.
~~**Note A-2.7.3.2.(1) Outlets from Non-Potable Water Systems.**~~ ~~The location of outlets from non-potable water systems where they can be discharged into a sink or lavatory, a fixture into which an outlet from a potable water system is discharged, or a fixture that is used for the preparation, handling or dispensing of food, drink or products that are intended for human consumption, may have proven acceptable on the basis of past performance in some localities, and its acceptance under this Code may be warranted.~~	**Deleted** **Note A-2.7.3.2.(1) Outlets from Non-Potable Water Systems.** The location of outlets from non-potable water systems where they can be discharged into a sink or lavatory, a fixture into which an outlet from a potable water system is discharged, or a fixture that is used for the preparation, handling or dispensing of food, drink or products that are intended for human consumption, may have proven acceptable on the basis of past performance in some localities, and its acceptance under this Code may be warranted.	
Note A-2.7.1.1 ~~A-2.7.4.1.~~ **Non-Potable Water System Design.** There is a growing interest in Canada in using available non-potable water supplies in the place of potable ones for selected purposes such as flushing toilets and irrigating lawns and gardens. Article 2.7.1.1. ~~Article 2.7.4.1.~~ applies to non-potable water systems regardless of the origin of the water. The non-potable water must meet applicable water quality standards as determined by an authority having jurisdiction.	**Revised** **Note A-2.7.4.1. Non-potable Water System Design.** There is a growing interest in Canada in using available non-potable water supplies in the place of potable ones for selected purposes such as flushing toilets and irrigating lawns and gardens. Article 2.7.4.1. applies to non-potable water systems regardless of the origin of the water. The non-potable water must meet applicable water quality standards as determined by an authority having jurisdiction.	
Note A-A-2.7.1.1.(2) Good Engineering Practice. Examples of good engineering practice in the design, fabrication and installation of non-potable water systems can be found in the ASHRAE Handbooks, the ASPE Handbooks, and CAN/CSA-B128.1, “Design and Installation of Non-Potable Water Systems”.	**New**	Reorganization of Section 2.7

2.7.2 ~~Identification~~ Non-Potable Rainwater Harvesting Systems	**Revised** **Identification**	The change addresses the directive of the Canadian Commission on Building and Fire Codes (CCBFC), based on policy advice of the Provincial/Territorial Policy Advisory Committee on Codes (PTPACC), to develop Code requirements that address the new water-use efficiency objective. Non-potable rainwater harvesting systems were not previously referenced in the NPC, although they are widely used in Canada. The previous absence of Code requirements for such systems could lead to enforcement issues in jurisdictions where technologies omitted from the Code cannot be installed. In such jurisdictions, the installation of non-potable rainwater harvesting systems would require the use of an alternative solution process requiring third-party validation, which would add significant cost to a construction project. In some instances, the absence of Code requirements can even prevent these systems from being used.
2.7.2.1. ~~Markings Required~~ General 1) For the purposes of this Subsection, rainwater shall mean *storm water* discharged from an above-ground roof surface. (See Note A-2.7.2.1.(1).) 2) For the purposes of this Subsection, a non-*potable* rainwater harvesting system shall mean a storage tank, a pump, pipes, fittings and other plumbing appurtenances used to collect and distribute rainwater, but shall not include a rain barrel not connected to a *plumbing system*. ~~**1)** Non-*potable* water piping shall be identified by marking that are permanent distinct and easily recognized.~~	**Revised** **Markings Required** **1)** Non-potable water piping shall be identified by marking that are permanent distinct and easily recognized.	

2.7.2.2. Permitted Applications 1) Non-*potable* harvesting rainwater systems are only permitted to supply a) water closets and urinals, b) clothes washers, c) floor-mounted service sinks and laundry trays, d) *trap* primers, e) irrigation systems, f) hydronic systems, g) make-up water systems for heat rejection systems, or h) any other application where the harvested rainwater is not expected to be ingested or inhaled. (See Note A-2.7.2.2.(1) and 2.7.2.4.(3) and (4).)	**New**	limits the supply of harvested rainwater to applications and fixtures where food consumption, drinking and food preparation are unlikely. An explanatory Note clarifies that harvested rainwater used in any application should be treated appropriately for its intended use.
2.7.2.3 Roof Design 1) Roof surfaces that supply rainwater to a non-*potable* rainwater harvesting system shall be inaccessible to vehicular and pedestrian traffic (See Note A-2.7.2.3.(1)). 2) Roofing components and conveyance systems in contact with rainwater that is supplied to a non-*potable* rainwater harvesting system shall be constructed of materials that will not introduce substances into the rainwater that could adversely affect its intended end use. (See Note A-2.7.2.3.(2).)	**New**	Introduces requirements for the design of roofs that supply rainwater harvesting systems.

2.7.2.4 Non-Potable Rainwater Harvesting System Design 1) Non-*potable* rainwater harvesting systems and their connections shall be designed, fabricated and installed in accordance with this Subsection and good engineering practice. (See Note A-2.7.2.4.(1).) 2) Non-*potable* rainwater harvesting systems shall not collect water discharged from an evaporative heat rejection system. 3) Non-*potable* rainwater harvesting systems shall be provided with a means to treat the harvested rainwater in such a manner that the quality of the delivered non-*potable* water conforms to appropriate provincial or territorial requirements or, in the absence of such requirements, the systems shall conform to Sentence (4). (See Note A-2.7.2.2.(1) and 2.7.2.4.(3) and (4).) 4) Except as provided in Sentence (3), non-*potable* rainwater harvesting systems shall be provided with a) a water treatment system consisting of i) a debris screen with a mesh size of not more than 6 mm ahead of the storage tank inlet, ii) a first-flush diversion system with a capacity of not less than 0.3 L/m^2 of roof area ahead of the storage tank inlet, iii) a calming inlet or settling chamber ahead of the storage tank inlet, iv) a device to prevent the entrainment of sediment into the pump, and v) where the harvested rainwater is used for an indoor application, a filter with a mesh size of not more than 50 µm ahead of the storage tank inlet, or b) a means to treat the harvested rainwater in such a manner that the delivered non-*potable* water contains not more than the maximum acceptable levels of contaminants stated in CSA B805/ICC 805, "Rainwater Harvesting Systems." (See Note A-2.7.2.2.(1) and 2.7.2.4.(3) and (4).) 5) Where the static pressure at any *fixture* in a non-*potable* rainwater harvesting system may exceed 550 kPa, a pressure-reducing valve shall be installed to limit the maximum static pressure at the *fixture* to 550 kPa. 6) Storage tanks in non-*potable* rainwater harvesting systems shall be designed and installed in accordance with	**New**	Introduces requirements for the design of rainwater harvesting systems. These design requirements are based on scientific evidence and trends in published standards (noting that the stringency of the requirements varied). The design requirements are based on current best practices in the marketplace. Rainwater harvesting systems must be designed to deliver non-potable water that conforms to provincial or territorial requirements. In the absence of such requirements, Sentence 2.7.2.4.(3) directs the user to the requirements of Sentence 2.7.2.4.(4).

a) CAN/CSA B126.0, “General requirements and methods of testing for water cisterns,” and b) CAN/CSA B126.1, “Installation of water cisterns.” 7) Storage tanks in non-*potable* rainwater harvesting systems shall be equipped with an overflow that directs excess rainwater to a) a public *storm sewer*, b) a public combined sewer, c) a *storm water* management system, or d) a designated *storm water* disposal location. 8) Where the storage tank outlet is located below the level of the adjoining street, the storage tank overflow required by Sentence (7) shall a) terminate with an indirect connection that is not located within the *building*, or b) be equipped with a *backwater valve*. 9) Make-up water connections to non-*potable* rainwater harvesting systems shall a) be equipped with a reduced pressure principle *backflow preventer*, or b) have an *air gap*. 10) Where a *fixture* combines non-*potable* water from a non-*potable* rainwater harvesting system and *potable* water at the fixture supply fitting, the *potable water system* shall be protected by a *backflow preventer* as described in Sentence 2.6.2.1.(3).		
Note A-2.7.2.1.(1) Aboveground Roof Surfaces. While it is possible to harvest rainwater from surfaces other than above-ground roofs, such as patios, lawns, gardens, driveways, roadways, parking garages and parking lots, these surfaces may be contaminated with fertilizer, herbicides, fecal matter, garbage, oil or chemicals. The outdoor environment in the local area of the building site, including its immediate surroundings, should be investigated to identify contaminants that could adversely affect the quality of the non-potable water delivered by the rain harvesting system. Contaminants of concern include industrial and urban traffic emissions, and pesticides and other agricultural chemicals. Other factors that can influence the levels of contaminants in the delivered non-potable water include the building’s geometry, and prevailing winds and seasonal activity in the local area. Design features should be incorporated in the	**New**	

rainwater harvesting system to mitigate the risks associated with any identified contaminants of concern.		
Note A-2.7.2.2.(1) and 2.7.2.4.(3) and (4) Treatment for Use. Harvested rainwater used in any permitted application must be treated appropriately for its intended end use.	**New**	
Note A-2.7.2.3.(1) Pedestrian Traffic. The prohibition of pedestrian traffic on roof surfaces stated in Sentence 2.7.2.3.(1) is not intended to include access to roof surfaces by service personnel, such as window washers or HVAC mechanics.	**New**	
Note A-2.7.2.3.(2) Roofing and Conveyance Materials. Water is considered to be the "universal solvent". Accordingly, any roofing components and conveyance systems that supply rainwater to a rainwater harvesting system should be constructed of materials that resist dissolution in water. NSF Pro 151-8-1,"Health Effects from Rainwater Catchment System Components," although directed to potable water systems, is a useful source of information on roofing materials to consider.	**New**	
Note A-2.7.2.4.(1). Good Engineering Practice. Examples of good engineering practice in the design, fabrication and installation of rainwater harvesting systems can be found in • the ASHRAE Handbooks, • the ASPE Handbooks, • ARCSA/ASPE/ANSI 63, "Rainwater Catchment Systems", and • CSA B805/ICC 805, "Rainwater Harvesting Systems.".	**New**	