

Proposed Change 2130

Code Reference(s):	NPC25 Div.B 2.4.2.1.(2) (first printing)
Subject:	Drainage Systems
Title:	Device Connections to Sanitary Drainage Systems
Description:	This proposed change clarifies the termination requirements for the connection of certain devices to the sanitary drainage system by explicitly requiring air breaks for indirect drainage in order to prevent backflow and protect potable water.
Related Code Change Request(s):	CCR 1821

This change could potentially affect the following topic areas:

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| ☐ Division A | ☒ Division B |
| ☐ Division C | ☒ Design and Construction |
| ☒ Building operations | ☒ Housing |
| ☒ Small Buildings | ☒ Large Buildings |
| ☐ Fire Protection | ☒ Occupant safety in use |
| ☐ Accessibility | ☐ Structural Requirements |
| ☐ Building Envelope | ☐ Energy Efficiency |
| ☐ Heating, Ventilating and Air Conditioning | ☒ Plumbing |
| | ☐ Construction and Demolition Sites |

Problem

Sentence 2.4.2.1.(2) of the National Plumbing Code of Canada (NPC) requires certain plumbing devices to be indirectly connected to a drainage system; however, it does not clearly specify that this indirect connection must form an air break. As a result, the intended level of separation between the device and the drainage system may be unclear or the requirement may be applied inconsistently.

Article 2.3.3.11. establishes the requirements for an air break used for indirect connections to a drainage system. However, Sentence 2.4.2.1.(2) does not explicitly reference this Article, which may lead to uncertainty regarding the applicable requirements for the installation of different devices.

Without a clear reference to Article 2.3.3.11. in Sentence 2.4.2.1.(2), Code users could misinterpret the air break requirement or enforcement agencies could inconsistently

enforce the requirement. As a result, installations of certain plumbing devices might not meet the intended air break configuration. This ambiguity might increase the risk of improper installation and compromise the effectiveness of the indirect connection to prevent backflow and protect potable water systems.

Justification

The NPC requires an indirect connection for plumbing devices connected to a drainage system where there is a risk of backflow that could result in contamination of the potable water system. Indirect connections are an established method of cross-connection control and are widely used to protect public health by preventing backflow under both normal and abnormal operating conditions.

This proposed change clarifies the existing requirement by explicitly referencing the air break as an acceptable form of indirect connection within Sentence 2.4.2.1.(2). The clarification improves consistency in Code interpretation and enforcement by clearly identifying a commonly accepted method of achieving separation between the potable water system and drainage systems where backflow risk is present. As the Code already requires indirect connection, and indirect connection inherently involves separation from the drainage system, this proposed change is primarily a clarification of intent rather than the introduction of a new technical requirement.

This proposed change would explicitly require these plumbing devices to be indirectly connected to a drainage system through an air break in accordance with Article 2.3.3.11. This clarification is expected to support consistent design, installation and enforcement practices while helping to ensure that the intended level of protection from backflow and of the potable water system is maintained.

By clearly referencing the applicable Article, the proposed change would also reduce the potential for misinterpretation or non-compliant installations. The clarification may also reduce the potential for inconsistent enforcement or unnecessary retrofits, resulting in indirect cost savings while maintaining the intended level of public health protection.

PROPOSED CHANGE

[2.4.2.1.] 2.4.2.1. Connections to Sanitary Drainage Systems

[1] 2) Except as provided in Sentences 2.4.2.3.(2) and (3), the following devices shall be *indirectly connected to a drainage system* to form an air break in accordance with Article 2.3.3.11.:

- [a] a) a device for the display, storage, preparation or processing of food or drink,
- [b] b) a sterilizer,
- [c] c) a device that uses water as a cooling or heating medium,

- [d] d) a water-operated device,
 - [e] e) a water treatment device,
 - [f] f) a drain or overflow from a *water system* or heating system,
 - [g] g) a device that produces *clear-water waste* as condensate, and
 - [h] h) a device that produces condensate from a combustion process.
- (See Note A-2.4.2.1.(1)(a)(ii) and (2).)

Impact analysis

In many cases, hangers or supports are already required by the NPC, or would otherwise be provided, for the installation of approved methods of achieving an indirect connection; therefore, no significant additional cost impacts are anticipated with this proposed change.

The explicit requirement for an air break does not normally require additional hangers or structural supports. An air break is typically provided where an indirect waste pipe discharges into a waste receptor. In common configurations, the piping is already required to be installed with support; support for vertical and horizontal piping is covered in Articles 2.3.4.4. and 2.3.4.5. Small-diameter tubing (e.g., condensate drains or water treatment discharge lines) and equipment tailpieces are lightweight and are normally clipped or supported as standard installation practice.

Limited costs may be incurred in some installations where additional hangers or supports are required to maintain the required separation for an air break. These costs would generally be installation-specific and are expected to be limited to situations where existing support arrangements are insufficient.

For example, perforated galvanized metallic hanger strap typically costs approximately \$10 to \$25 per 7.6 m (25 ft.) roll. Where one additional support uses approximately 300 mm (1 ft.) of strap, the material cost would be approximately \$0.40 to \$1.00 per support. Small diameter clevis hangers or pipe rings generally range from about \$3 to \$10 per unit, depending on size and load rating. Where more substantial supports such as trapeze hangers or bracket assemblies are required, material costs typically range from \$15 to \$40 per support, depending on the configuration and hardware used. Labour to install an additional hanger for substantial support may range from approximately \$20 to \$60, depending on site conditions and accessibility.

These estimated costs are based on typical pricing from various online suppliers and retailers in Canada. These figures are intended to provide a general indication of potential incremental material and labour costs and may vary depending on supplier, location, quantity, site conditions and specific product selection.

This proposed change would have a cost impact for few residential and typical commercial buildings, as indirect connections are already commonly installed in these buildings in a manner consistent with the formation of an air break. Larger facilities

with numerous indirectly connected plumbing devices (e.g., commercial kitchens, laboratories and healthcare facilities) may be affected more; however, only a subset of the installations in those facilities would be expected to require additional hangers solely as a result of this proposed change.

Enforcement implications

This proposed change is expected to require limited additional enforcement resources.

Who is affected

This proposed code change could affect a broad range of stakeholders involved in the design, specification, manufacture, approval, construction and operation of drainage systems, including but not limited to designers, specifiers, manufacturers, building owners, contractors and building officials.

OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISIONS

N/A