This technical note has been issued to clarify the requirements when installing sanitary systems with elevated pipework using drainage principles. AS/NZS 3500.2003, Part 2 Sanitary plumbing and drainage. Clause 9.12 specifically relates to the installation of above-ground pipework and connection of fixtures using drainage principles as listed in Section 3.

**Installation**

Sanitary plumbing systems using drainage principles, as the name suggests, uses drainage principle rules in an elevated position and relies on larger pipe sizes used in drainage design to prevent siphonic action and the resulting loss of fixture trap seals. These principles are found in AS/NZS 3500.2:2003 Clause 3.10 and Table 3.6 where the following basic unvented principles apply:

- Ten metres (10m) maximum in length.
- Two (2) water closet pans (maximum).
- Thirty (30) fixture unit maximum loading.

If any of the three (3) points above are exceeded, additional venting is required.

Other requirements for elevated drainage pipework (EDP) include no connections shall be made into the vertical pipework, unless it is the top floor connection or a vented sanitary stack, see AS/NZS 3500.2:2003 Clause 9.12.4. This means that all junctions shall be installed to the graded pipework. Connection of pipes using equal 45° junctions may be installed on grade, connection of pipes using unequal or sweep junctions shall be made as per AS/NZS 3500.2:2003 Clause 6.5.2.4 and Clause 6.5.2.5 (see Illustrations 5, 6 and 7 on page 5).

Upstream vents shall be connected downstream of any fixture or drainage trap or at the vent extension of a sanitary stack as per AS/NZS 3500.2:2003 Clause 3.9.2.

**Multi storey buildings**

EDP in multi storey buildings may serve a maximum of four floor levels and top floor of a building. EDP branches serving fixtures on the first four floors shall only connect to the graded sections of pipework. Only vented stacks are permitted to connect to vertical sections of pipework. The branch on the top floor may either connect as a stack branch or as an EDP connection using the applicable methods of connection in AS/NZS 3500.2:2003.

**Restricted zones in EDP**

Unless any vertical pipe extends through more than one floor level it is not considered a stack therefore restricted zones for the connection of branches in EDP are as follows: (see Illustrations 1 and 4).

- No connections shall be made in the graded sections of the elevated drainage within 500mm downstream of the upper bend.
- No connections shall be made in the graded sections of the elevated drainage within 450mm upstream of the lower bend.
- Where a sanitary stack is required to connect to a vertical section of the elevated drainage pipework, the connection shall not be within 600mm of the upper or lower bend.

**Connections near base of stacks**

Connections near base of stacks shall be in accordance with AS/NZS 3500.2:2003 Clause 6.7 and Figure 6.4.
Illustration 1. Maximum allowable height using elevated drainage principles
Typical double storey Class 1 buildings

When using EDP on a typical double storey Class 1 building (house) branches may connect to the vertical pipework because it is simply the top floor storey configuration as shown in AS/NZS 3500.2:2003 Figure 9.2. This is permitted because there are no other floors above that will place adverse hydraulic pressure to the top floor fixtures.

Illustration 2. *Typical double storey (top floor) house using elevated drainage principles*

Illustration 3. *Alternative venting using elevated drainage principles*

Illustrations 2 and 3 above show alternative vent locations depending on the configuration of the graded branch. The position of the vent may be varied for aesthetic reasons or building design requirements.

An upstream vent will be required on the graded branch where one of the three (3) conditions listed above are exceeded. Where one of the three (3) conditions listed above are exceeded there is no requirement to have an additional vent off the top of the EDP riser as it has only been moved upstream.
Illustration 4. Additional branches on the top floor using elevated drainage principles

NOTE: See below the definition of a Class 1 building from the National Construction Code

Class 1: one or more buildings which in association constitute—

(a) **Class 1a** — a single dwelling being—
   (i) a detached house; or
   (ii) one of a group of two or more attached dwellings, each being a building, separated by a fire-resisting wall, including a row house, terrace house, town house or villa unit.

The minimum size of a drain is DN 65 – therefore a DN 65 bend shall always be used (vents included) – reduction in the vertical above the DN 65 bend to a DN 50 or DN 40 waste pipe and fixture trap is permitted.

As per drainage rules there shall be no connections of DN 40 and DN 50 discharge pipes to graded branches. Fixtures may be connected in DN 40 and DN 50 via floor waste gullies with a minimum DN 65 discharge pipe in accordance with AS/NZS 3500.2:2003 Clause 4.6.7.

Use of eccentric taper fittings (Level invert tappers) on grade shall be soffit to soffit as per AS/NZS 3500.2:2003 Clause 3.3.5 and Figure 3.1.
The three Illustrations below show the correct methods of connection of pipes using equal 45° junctions on grade and when using unequal or sweep junctions.

**Illustration 5.** Connection of a branch using an unequal junction

**Illustration 6.** Connection of a branch using a eccentric taper fitting (LIT)

**Illustration 7.** Connection of a branch using a sweep junction

**Photo** Branches using unequal junctions rolled to produce the minimum 10mm requirement

---

**Notes**

The technical note series is issued by the Plumbers Licensing Board to assist the plumbing industry to comply with the Plumbers Licensing and Plumbing Standards Regulations 2000 applicable to plumbing work in Western Australia.

Each technical note is to be read in conjunction with Part 6 of the Regulations that currently adopt the Plumbing and Drainage Standard AS/NZS 3500:2003 but modified in certain matters to suit the State’s building approach and other local conditions.

**Feedback**

The Plumbers Licensing Board welcomes your feedback. If you have any questions on this technical note or any suggestions on any areas of plumbing work that the technical notes should cover, please contact the Board’s Senior Technical Officer on (08) 6251 1377.

**Copies**

Technical notes are published at www.commerce.wa.gov.au/buildingcommission. Printed copies may be made available on request by telephone (08) 6251 1377 or email plumbedu@commerce.wa.gov.au

**Disclaimer**

The material published by the Department of Commerce (Plumbers Licensing Board) is provided voluntarily as a service to the plumbing industry. The information and advice provided is made available in good faith and is derived from sources believed to be reliable and accurate at the time of publication. The information is provided solely on the basis that readers will be responsible for making their own assessment of the matters discussed therein and are advised to verify all relevant representations, statements and information. Changes in circumstances after a document has been published may impact on the accuracy of the information. No assurance is given as to the accuracy of any information or advice contained after publication. This publication may be reproduced or copied without charge for research and educational purposes with due acknowledgement of the source.

© November 2014 Department of Commerce