

Enhanced Design Standards of Aboveground Drainage System

Taking into account the findings of a consultancy study, the Buildings Department has completed a comprehensive review of the Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations (Drainage Regulations) with a view to, among others, enhancing the planning and design of drainage works. Whilst the legislative exercise to amend the Drainage Regulations is being actively pursued, it is high time to promulgate the enhanced design standards of floor drain, anti-syphonage pipe, branch discharge pipe, ventilating pipe and rain water pipe of the aboveground drainage system in a Practice Note for Authorized Persons (APs), Registered Structural Engineers and Registered Geotechnical engineers (PNAP).

2. By virtue of section 28(1) of the Buildings Ordinance, I shall require the aboveground drainage system to comply with the following:

Floor drain

- (a) To prevent loss of water seal through evaporation for the trap of a floor drain¹ of a kitchen in a domestic unit, a toilet or a pantry, used water from a lavatory basin, a bath or a shower bath should be diverted to replenish the water seal of the floor drain without causing backflow;

Anti-syphonage pipe

- (b) Adequate cross-ventilation should be provided to the drainage stack via connections with a main anti-syphonage pipe. Such connections should be provided as follows:
 - (i) The connecting pipes should be sloping upwards at an angle not greater than 67.5° from the drainage stack (Figure 1 of Appendix A) with internal diameter not less than the main anti-syphonage pipe;
 - (ii) Connections should be provided at intervals not more than 5 storeys for a building more than 5 storeys and not more than 20 storeys², and at intervals not

/more ...

¹ The floor drain should be provided with a suitable trap complying with regulation 25 of the Drainage Regulations.

² Irrespective of the number of storeys that the drainage stack serves. For drainage stacks solely serving podiums or basements, the connections should be provided at intervals with regard to the number of storeys of the podiums or basements.

more than three storeys for a building over 20 storeys², starting from the lowest storey with branch discharge pipe connected to the drainage stack (Figures 2 and 3 of Appendix A); and

- (iii) A connection should be provided at a point below the lowest branch discharge pipe and above the bend of an offset³ of the drainage stack (Figure 4 of Appendix A). No such connection is required between offsets which no branch discharge pipes are connected with.

Branch discharge pipe

- (c) No drainage pipe connection is permitted within a restricted zone at every offset. The restricted zone is up to 600 mm above the bend of the offset⁴ for a building not more than 5 storeys and 1 000 mm above the bend for a building over 5 storeys; and within 2 500 mm away from the bend horizontally (Figure 4 of Appendix A);
- (d) At the floor where the drainage stack of a building more than 3 storeys and not more than 20 storeys⁵ discharges to a manhole, sanitary fitments, if any, on that floor should not be connected to the drainage stack and separate pipework should be provided for such sanitary fitments for discharging directly to a manhole (Figure 5 of Appendix A);
- (e) At the floor where the drainage stack of a building over 20 storeys⁵ discharges to a manhole, the sanitary fitments, if any, on that floor and the floor above should not be connected to the drainage stack and separate pipework should be provided for such sanitary fitments for discharging directly to a manhole (Figure 6 of Appendix A); and

Ventilating pipe

- (f) The open end of every ventilating pipe for any drain or sewer on the roof should be not less than 3 m from a common boundary with an adjacent site, and any window, opening or fresh air intake of a building (Figure 7 of Appendix A).

/Implementation ...

³ An offset occurs when a drainage stack changes direction from vertical to horizontal. It also occurs when the drainage stack discharges into a manhole. This requirement is not applicable to the separate pipework discharging directly to a manhole as required under paragraph 2(d) or (e) below.

⁴ Measured from the invert of the tail of the bend.

⁵ Irrespective of the number of storeys that the drainage stack serves. For drainage stacks solely serving podiums or basements, the number of storeys should be based on the number of storeys of the podiums or basements.

Implementation

3. New drainage plans or major revision of drainage plans for development projects and alteration and addition works submitted to the Building Authority for approval after 31 August 2021 should comply with this practice note. For development projects with consent to the commencement of superstructure works granted after 31 August 2021, the requirements in paragraph 2(b), (c) and (f) above should be complied with and corresponding amended drainage plans should be timely submitted. Alternatively, deferred submission for such minor amendments may be made in accordance with paragraphs 22 to 24 of PNAP ADM-19. For other development projects and alteration and addition works, APs should consider exploring the possibility to incorporate requirements in paragraph 2 above. For the avoidance of doubt, this practice note is applicable to the erection and alteration of any aboveground drainage system to be commenced under the Minor Works Control System after 31 August 2021.

4. In respect of proposed alteration and addition works and minor works involving (i) the installation/erection of a new floor drain (of a kitchen in a domestic unit, a toilet or a pantry), a drainage stack, an offset of an existing drainage stack, a drainage pipe connection to the drainage stack, a sanitary fitment at the lowest or second lowest floor of the drainage stack, or a ventilating pipe; or (ii) alteration of an existing ventilating pipe at the roof, the respective requirements in paragraph 2 above are applicable. Examples of alteration and addition works and minor works that should comply with the respective requirements in paragraph 2 above are listed in Appendix B.

5. To enhance the environmental hygiene at the roof of a building for occupants' enjoyment, in addition to the requirements in paragraph 2(f) above, APs are advised to consider carrying up ventilation pipes to a height of not less than 3 m above the accessible roofs.

6. In order to obviate the need for frequent maintenance such as removing debris and vegetation to avoid blockage in a hopper head, APs should consider not to provide hopper heads in the aboveground drainage system of their development projects.

7. According to the updated design practice of the Drainage Services Department and to cater for anticipated increase in rainfall intensity, APs are advised to follow the guidelines below if rain water pipes with internal diameter not more than 100 mm are used:

Internal diameter of pipe	Maximum horizontal roofed-over surface to be served
40 mm	9 m ²
65 mm	33 m ²
80 mm	58 m ²
100 mm	106 m ²

8. When undertaking drainage repair works and comprehensive maintenance works in an existing building, APs should advise their clients to consider incorporating the requirements and recommendations in this practice note, including if applicable, replacing the open system with hopper heads to a closed system with the provision of suitable traps in accordance with regulations 12(2), 12(3) and 25 of the Drainage Regulations.

(YU Po-mei, Clarice)
Building Authority

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BD GP/BREG/SF/7
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Figure 1: Connection between drainage stack and main anti-syphonage pipe

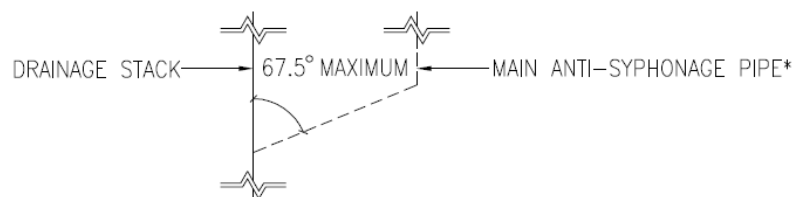
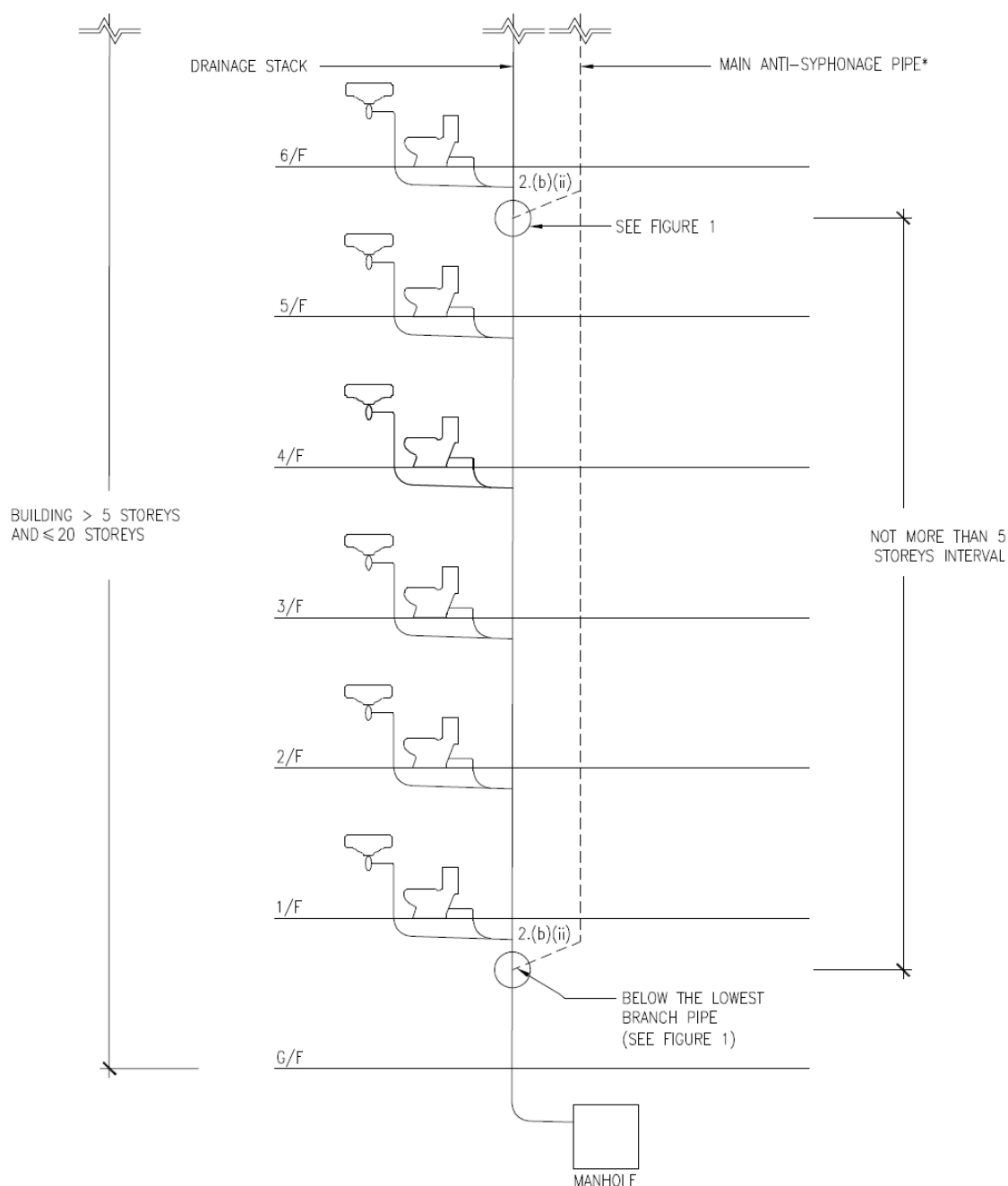
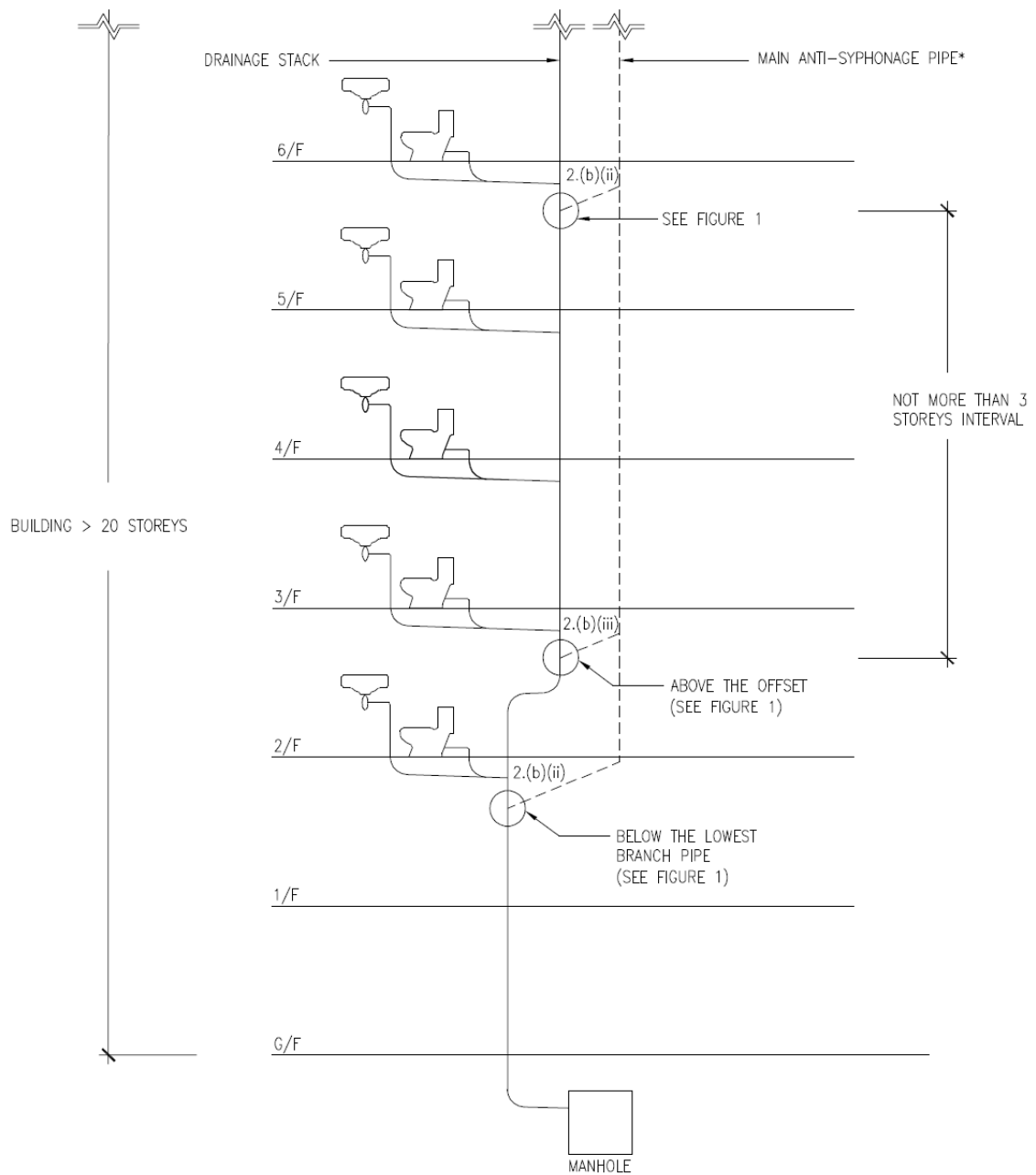


Figure 2: Ventilation of drainage stack for a building more than 5 storeys and not more than 20 storeys



* Figures 1 and 2 are for illustration of the connections between the main anti-syphonage pipe and the drainage stack for soil and/or waste water only without showing details such as anti-syphonic valves and branch anti-syphonage pipes.

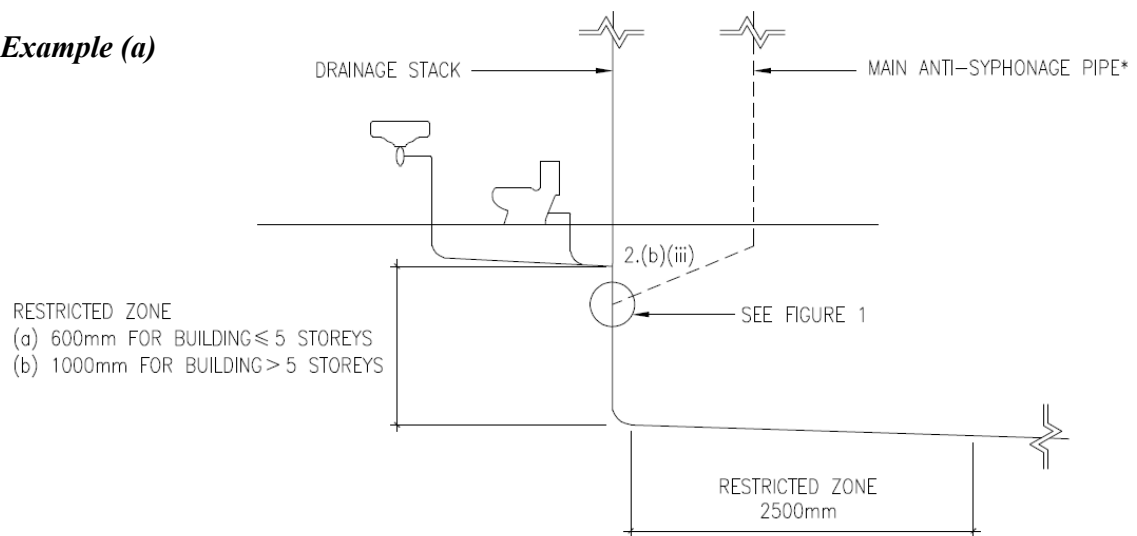
Figure 3: Ventilation of drainage stack for a building more than 20 storeys



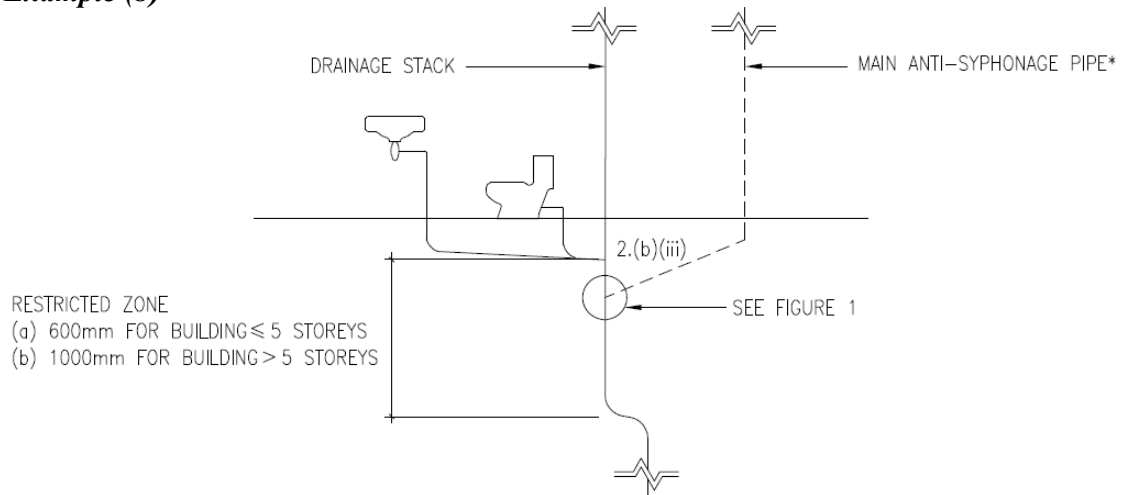
* For illustration of the connections between the main anti-syphonage pipe and the drainage stack for soil and/or waste water only without showing details such as anti-syphonic valves and branch anti-syphonage pipes.

Figure 4: Ventilation and restricted zones for an offset of a drainage stack

Example (a)

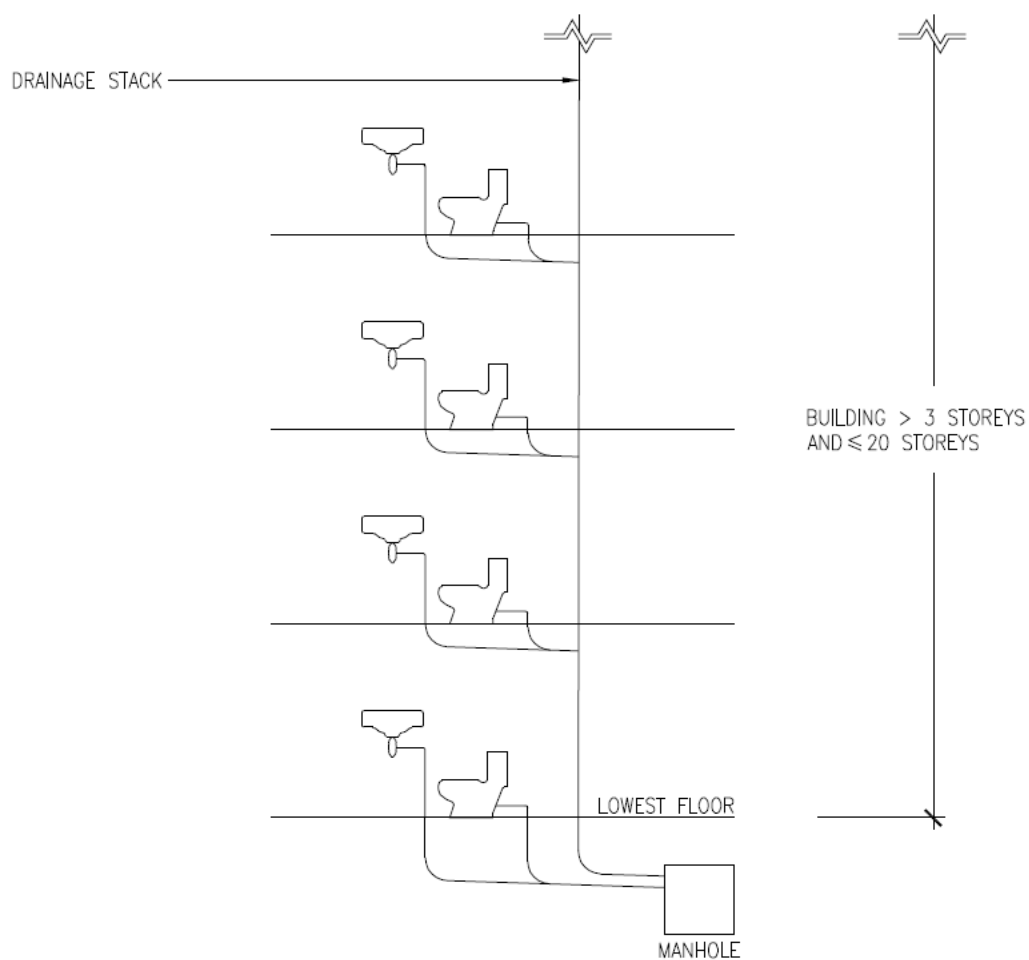


Example (b)



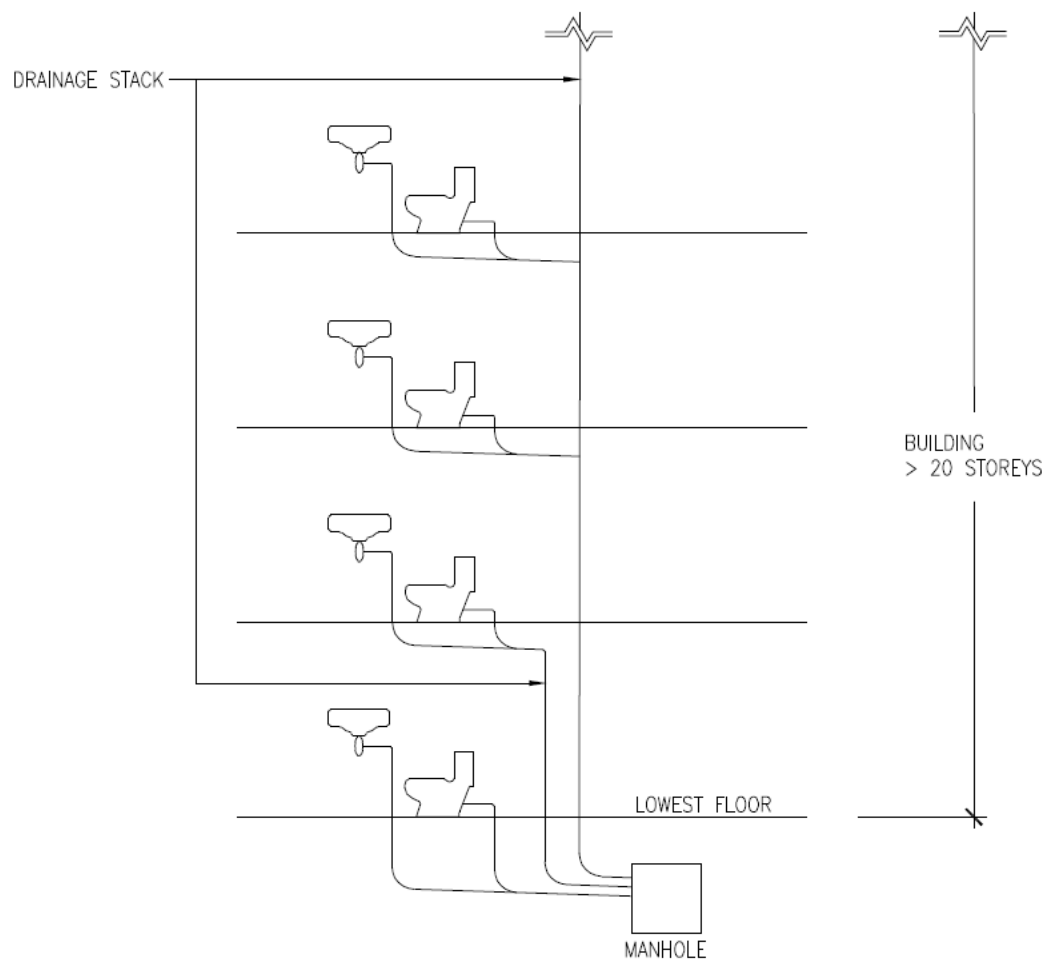
* For illustration of the connections between the main anti-syphonage pipe and the drainage stack for soil and/or waste water only without showing other details such as anti-syphonic valves and branch anti-syphonage pipes.

Figure 5: Separate pipework for sanitary fittings for a building more than 3 storeys and not more than 20 storeys



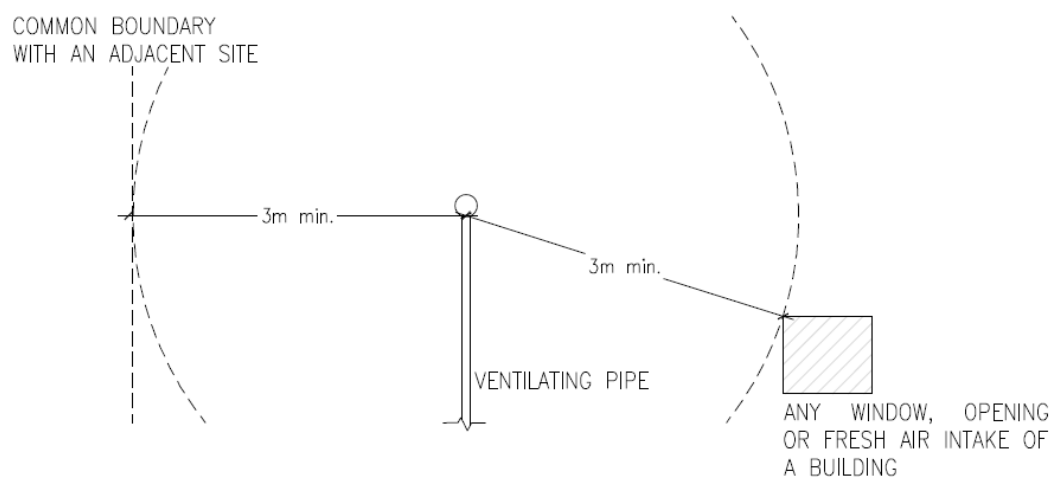
* For illustration of the required separate pipework for discharging soil and/or waste water only without showing details such as anti-syphonic valves and anti-syphonage pipes.

Figure 6: Separate pipework for sanitary fittings for a building more than 20 storeys



- * For illustration of the required separate pipework for discharging soil and/or waste water only without showing details such as anti-syphonic valves and anti-syphonage pipes. The pipework for the lowest floor and the floor above can be combined provided that Drainage Regulations and the relevant requirements in PNAP APP-93 and APP-164 are complied with.

Figure 7: Requirements for open end of a ventilating pipe



(4/2021)

**Application of Enhanced Design Standards
for Alteration and Addition Works and Minor Works**

Examples on the applicable requirements in paragraph 2 of this practice note in respect of drainage works involved in alteration and addition works and minor works:

Requirements	Examples of drainage works involved in alteration and addition works and minor works
Paragraph 2(a)	<ul style="list-style-type: none">● Addition of a new floor drain in a kitchen of a domestic unit, a toilet or a pantry.
Paragraph 2(b)(i) and (ii)	<ul style="list-style-type: none">● Erection of a new drainage stack.
Paragraph 2(b)(i) and (iii)	<ul style="list-style-type: none">● Erection of a new drainage stack, or● Provision of a new offset when altering an existing drainage stack.
Paragraph 2(c)	<ul style="list-style-type: none">● Erection of a new drainage stack,● Provision of a new offset when altering an existing drainage stack, or● Erection of a new drainage pipe connecting to an existing drainage stack.
Paragraph 2(d)	<ul style="list-style-type: none">● Erection of a new drainage stack, or● Installation of a new sanitary fitment at the floor requiring separate pipework for discharging directly to a manhole.
Paragraph 2(e)	<ul style="list-style-type: none">● Erection of a new drainage stack, or● Installation of a new sanitary fitment at the floors requiring separate pipework for discharging directly to a manhole.
Paragraph 2(f)	<ul style="list-style-type: none">● Erection of a new ventilating pipe, or● Alteration, relocation or extension of the portion of an existing ventilating pipe above the roof.