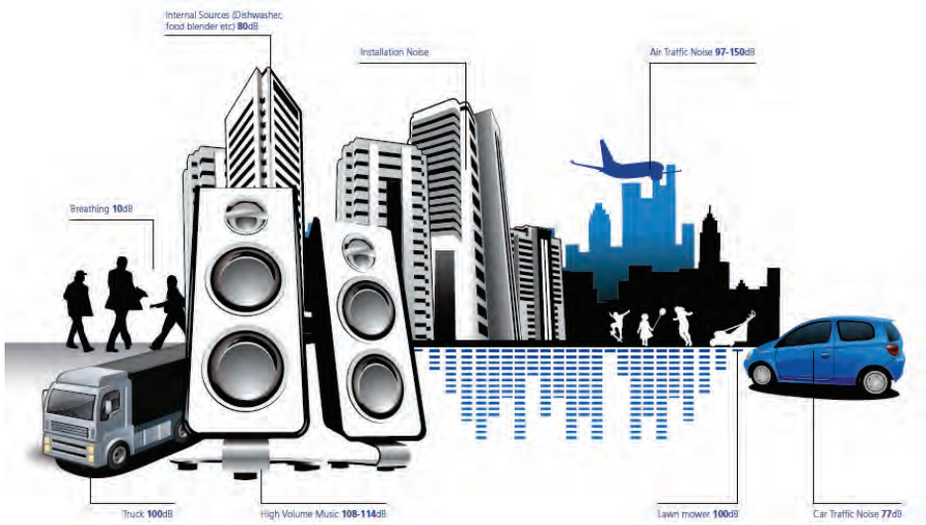
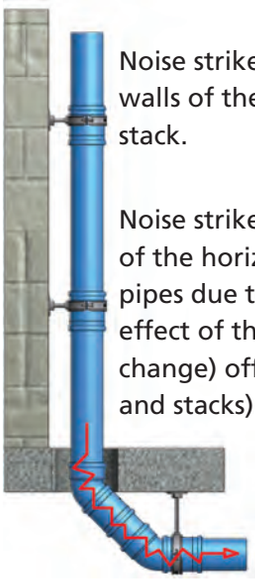
TERRAIN

Technical Bulletin No.5 (2012)

Terrain Acoustic Drainage Systems

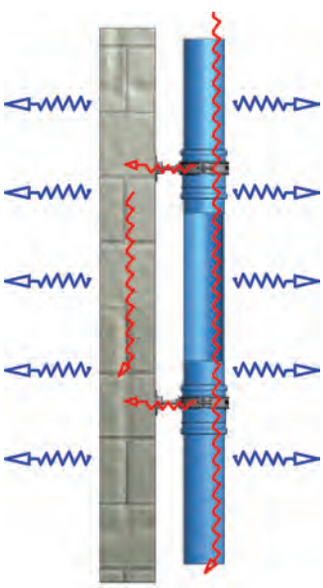


In daily life we are surrounded by noise including those generated by the movement of fluids in drainage systems. Noise in drainage systems can be either solid bourne or air bourne as detailed in the images below:



Noise strikes the walls of the vertical stack.

Noise strikes the walls of the horizontal pipes due to the effect of the direction change) offsets base and stacks).



Air bourne noise is generated by the movement of the liquid in the pipe which is then propagated by the air.

Solid bourne noise is the vibration propagated from the pipe into solid objects which then transfers the vibration into the air as sound.

KEY

Solid Bourne Noise

Air Bourne Noise

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As with other noises those created in a drainage system are subject to regulation and control. This technical bulletin will detail the regulation, how due consideration to design can help to reduce noise in a drainage system, and how the use of the Terrain dB12 and Silere Acoustic Drainage systems can further reduce noise from stacks.

Building regulations Part E stipulate the requirements of noise reduction in a drainage system, as detailed opposite.

Due consideration to the design and installation of a drainage stack can significantly improve the acoustic performance of the system. Detailed below are design options for improving acoustic performance where the stack incorporates bends (IMAGE 1), is bracketed (IMAGE 2) and penetrates a floor (IMAGE 3):

Building Regulations Part E states:

Junctions with floor penetrations (excluding gas pipes)

3.41 Pipes and ducts that penetrate a floor separating habitable rooms in different flats should be enclosed for their full height in each flat. **See diagram 1-3**

3.42 The enclosure should be constructed of material having a mass per unit area of at least 15kg/m2. Either line the enclosure or wrap the duct or pipe within the enclosure with 25mm un-faced mineral fibre.

3.43 Penetrations through a separating floor by ducts and pipe should have fire protection to satisfy Building Regulations Part B – Fire Safety. Fire stopping should be flexible and prevent rigid contact between the pipe and floor.

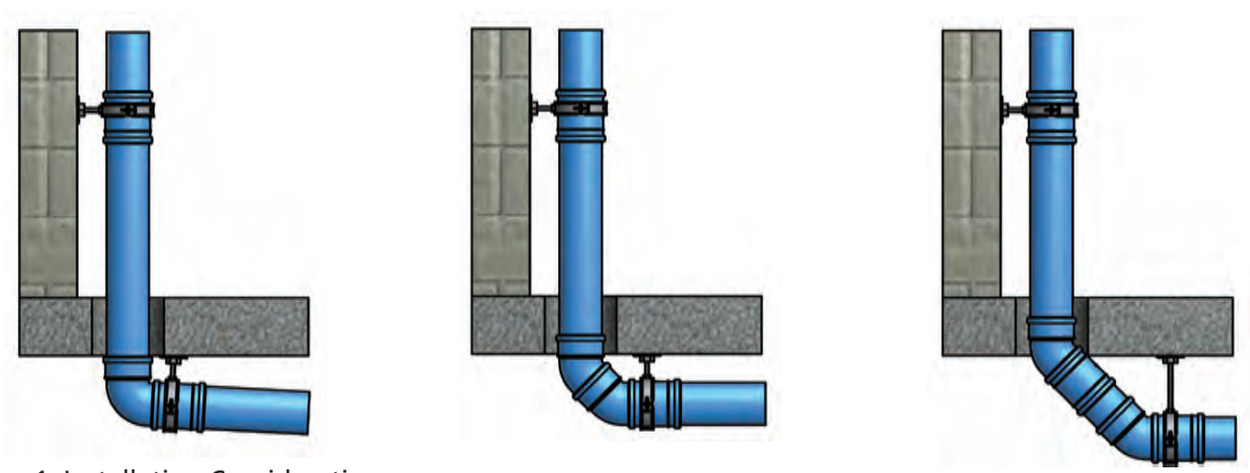

Image 1: Installation Considerations

Solution A - Bend 90°

This type of installation is not recommended because:

- It allows for pressure to build up in the stack
- There is a high risk of back siphonage
- There is a significant increase of the sound system

Solution B - 2 Bends 45°

This is a good solution because:

- It allows for the control of pressure in the system
- The noise level in the system will be low

Solution C - 2 Bends 45°

This is a the best system because:

- It allows for the greatest control of pressure in the system
- The noise level is the lowest of all solutions

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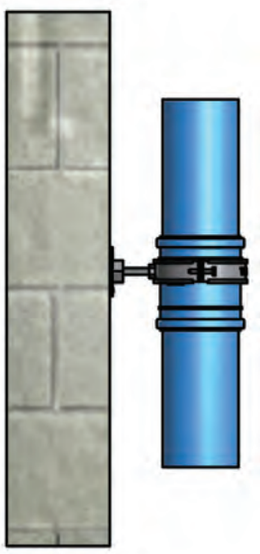
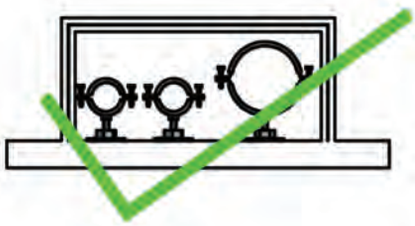
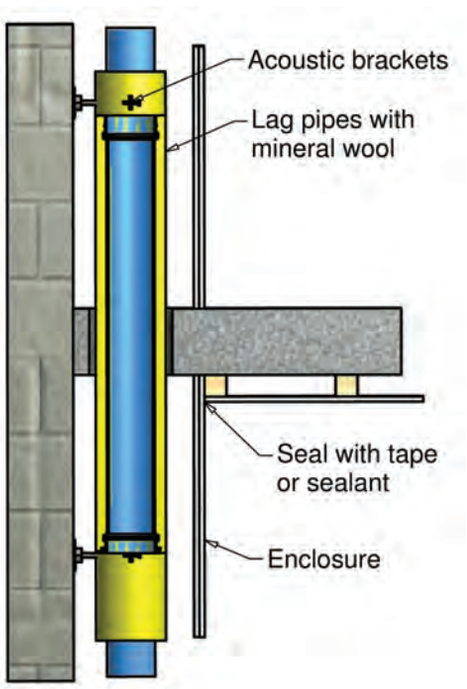




In order not to jeopardise the acoustic properties of Silere & dB12 it is recommended to use pipe clips with anti-vibration rubber collars.

When fixing pipes into a duct they must be bracketed to the solid wall for the lowest solid borne noise transmission.

Image 2: Bracketing Considerations

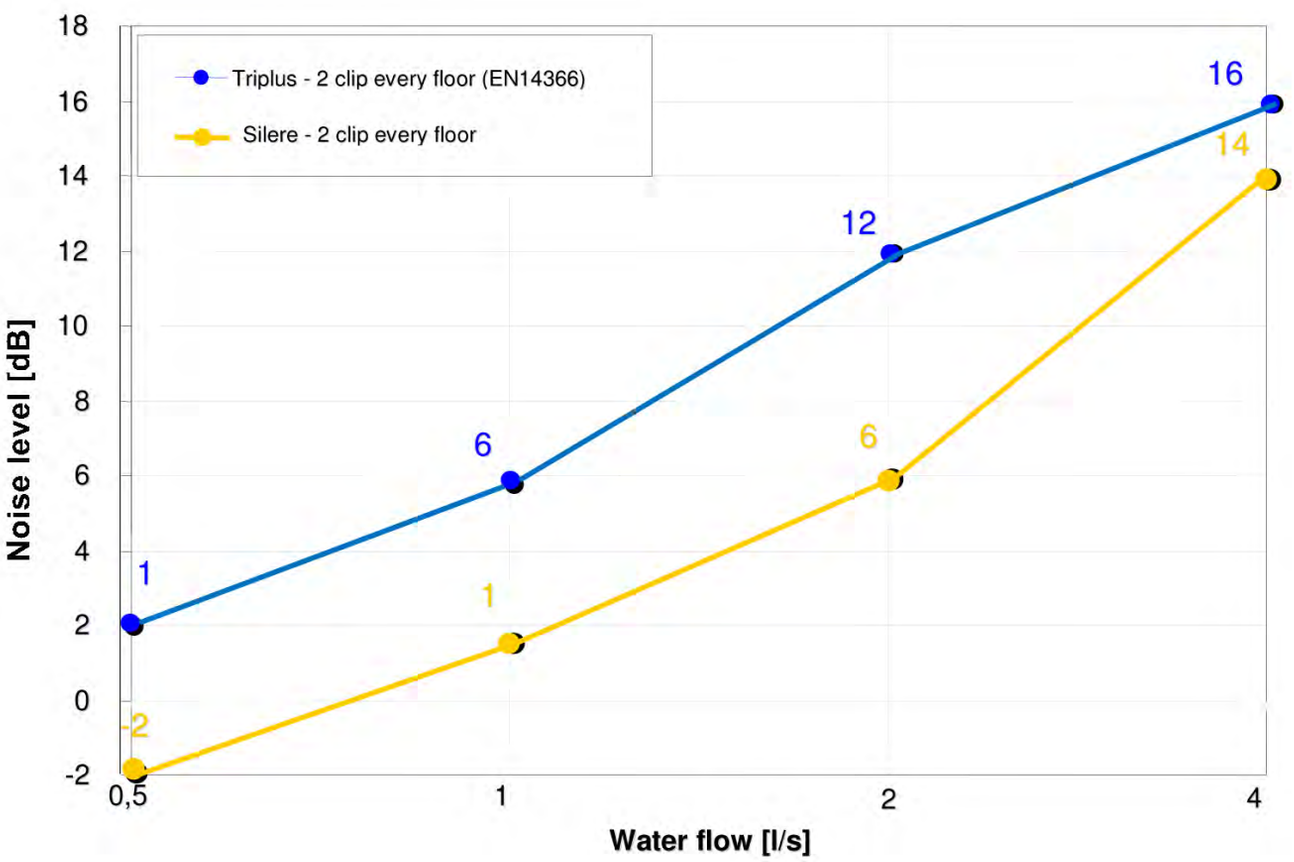


dB12 is a push fit system 10mm expansion gap should be allowed for on each connection.

Image 3: Enclosure Considerations

The Terrain db12 and Silere Acoustic Drainage systems offer a number of performance enhancements compared to other drainage products. Both systems will reduce the noise transmitted in any part of a building, the table below details the improved acoustic performance of Terrain dB12 and Silere versus other systems:

The Terrain db12 and Silere Acoustic Drainage systems offer a number of performance enhancements compared to other drainage products. Both systems will reduce the noise transmitted in any part of a building, the graph below illustrates the acoustic performance of both the Terrain dB12 and Silere systems.



Additionally both Terrain dB12 and Silere are light and easy to install, require no specialist tooling for installation, are compatible with other Terrain drainage systems, have high chemical resistance and pre-fabricated stacks are easily manufactured to customer specifications reducing installation time on site.

For further information on the Terrain dB12 and Silere systems please contact the Technical Department on 01622 795200.

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