

# Drainage Solutions for Tall Buildings

Issue 2 – P.A.P.A. and Pleura Valves

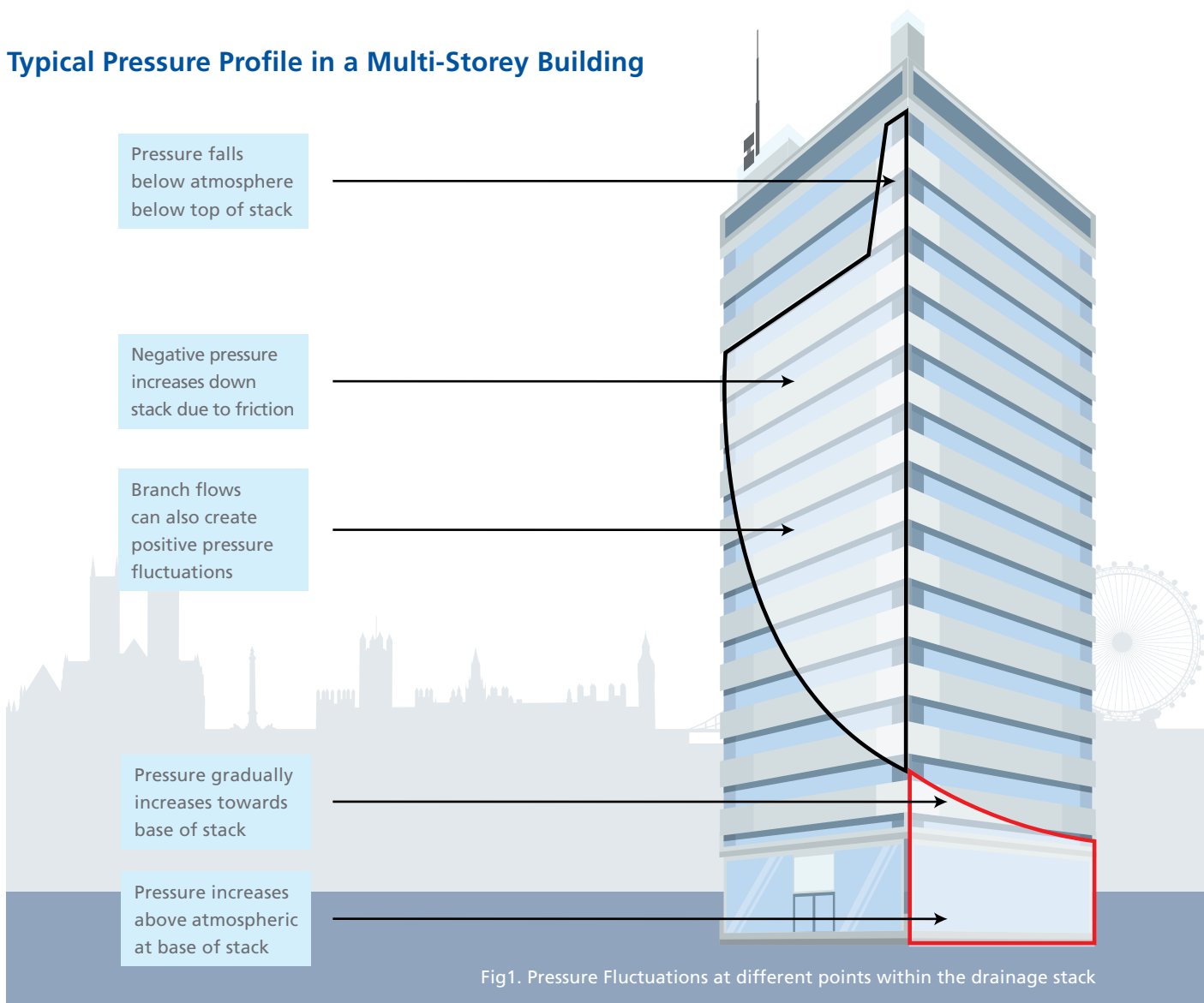
2016

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When people are asked what a drainage system does, the majority would say it takes solid and liquid waste away from a building, although this is true, a high priority is to prevent foul smells and foul water from propagating within the building. All that protects building occupants from this scenario is a seal of water within appliance traps, generally 50mm or 75mm in depth.

This seal can come under attack from the air flows caused by the movement of water and solids within the drainage system. Negative pressures can siphon water traps empty and positive pressures can blow foul air and water through water seals. It is therefore a key consideration of the designer to protect this trapped water seal.

## Typical Pressure Profile in a Multi-Storey Building



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Typically, in high rise buildings a secondary vent is used to mitigate the effect that fluctuations of air can cause to water trap seals. However it has been proven that a secondary vent can be slow to react to these fluctuations causing trap seals to be siphoned, blown out or in extreme cases completely evacuated.

The Terrain P.A.P.A. and Pleura system is an engineered approach to replace the secondary vent within a Terrain drainage system. The Pleura valves quickly respond to any negative pressures, allowing air to enter the system at the point of need, protecting traps from being evacuated under siphon.

The P.A.P.A. valve activates under positive pressure conditions and attenuates the pressure wave thus allowing the system to return to balance without the positive pressure wave acting on the trap seals.



The P.A.P.A. valve has received both BBA and LABC approval.

To test this concept, we created the tallest drainage test known using the National Lift Tower in Northampton and have had a number of visitors view our system.

By removing the need for a secondary vent and installing the Terrain P.A.P.A. and Pleura system, the additional benefits of reduced materials and fire protection are realised but the main benefit is the building occupier who does not have to worry about foul air or water entering the building – a key public health principle.



P.A.P.A. Valve



Pleura 50



Pleura 100



P.A.P.A. system testing at the National Lift Tower



### Contact Us

to find out how we can further help with your tall building project.

Look out for our next Technical Bulletin on Terrain Revit families