interface surface. Perforated pipe can be located anywhere within the trench envelope, but shall have minimum bedding and cover thicknesses of at least 150 mm of aggregate material.

Lengths, widths, and depths of the trench are based on the storage volume required to detain the design storm frequency runoff volume. This design procedure is similar to that described for soakaways in Clause a, above. The effective depth of the trench Soakaway (H) is extended from the ground level to the bottom of the trench.

Storage volumes consist of the void space in the aggregate backfill and the perforated pipe. Aggregate void percentages must be determined by testing, although it typically ranges from 30 percent to 40 percent, depending on the size and gradation of the material.

Infiltration interface areas shall also be checked to ensure the total infiltration flow can sufficiently drain away the detained runoff within 24-hours after the storm.

Trench-type soakaways shall have at least two inspection and cleanout ports connected to the perforated pipe, one at each end of a straight trench, no more than 75 m apart. This consists of a catch pit, inlet, or manhole structure with a solid lid.

The free volume in granular fill surrounding pipes in a rectangular trench is based on a percentage of 30% void space of the granular fill material and can be calculated as in below formulas:

$$\textbf{Free Volume in granular fill} = \%_{free\,V} * \left(WH - \frac{\pi(OD)^2}{4}\right) * L$$

i. Where:

% free V = 30% void space of the granular fill material
W= Trench Width [m]
H = Trench Height [m]
0D = Outer pipe diameter [m]
L = Pipe length [m]

$$\textbf{Volume within pipes} = \left(\frac{\pi(ID)^2}{4}\right) * L$$

Where

ID = Inner pipe diameter [m]
L = pipe length [m]

Combining both equations, the Soakaway storage volume, S, is expressed as:

$$S = \left[\%_{free\,V} * \left(WH - \frac{\pi(OD)^2}{4}\right) + \frac{\pi(ID)^2}{4}\right] * L$$