1. Preliminarily locate soakaways as to probable areas where suitably permeable soils exist with sufficient clearance of minimum 1.0 meter above the highest fluctuated groundwater table along period covers all range of seasons and tidal cycles in accordance to the geotechnical report. Further, define required runoff collection point locations, such as at low points in the cross sections and profiles, where sufficient utility and structure clearances exist to construct the Soakaway system. Where these conditions occur for larger areas of pavement, such as long lengths of roadway, establish trial Soakaway locations by providing a Soakaway for approximately each 500 m^2 of catchment area.
2. Perform field permeability testing for each Soakaway site. Where the soil types and groundwater conditions are consistent for large areas, testing may be reduced to two or three representative sites.
3. Determine the catchment area and calculate the volume of runoff for the design return period storm using either the NRCS depth of runoff equation or the modified rational equation (refer to Equation A-4.2 and Equation A-4.5, for additional information).
4. The effective storage depth is from the invert level of inlet connection (about 1.00 meter below ground level) to the Soakaway chamber bottom level.
5. Size the Soakaway such that the internal storage volume is the same as the design runoff volume, using the following formulas:
6.

$$V_{Soakaway} = V_R - V_I$$

Equation A-4.3: Required Soakaway structure storage volume

$$\boldsymbol{V_{Soakaway} = V_{Structure} + vV_{Media}}$$

Equation A-4.4: Total available Soakaway storage volume

- $V_{Soakaway}$ = total internal structure storage volume (m^3).
- V_R = volume of runoff for design storm (m^3).
- V_I = volume of infiltrated water during storm period (m^3). This can be calculated using the below formula:

$$VI = a_{50} * P * D$$

- $V_{Structure}$ = internal volume of the Soakaway storage structure, such as a concrete structure, pipe, or plastic box (m^3).
- V_{Media} = volume of the aggregate surround material (bedding and surround aggregate for the Soakaway structure) (m^3).
- v = void ratio of storage media percentage in decimal form. Determine void ratio, such as for aggregate used in Soakaway and infiltration trenches, by laboratory testing. The free volume in granular fill surrounding pipes in rectangular trench is based on percentage (30-40%) void space of the granular material.
- a_{50}= Internal surface area of Soakaway to 50% effective depth. This excludes the base area which is assumed to clog with fine particles and become ineffective in the long term