Stormwater disposal to soak pit

Where the collected surface water is to be discharged to a soak pit, the suitability of the natural ground to receive and dispose of the water without causing damage or nuisance to neighbouring property shall be demonstrated to the satisfaction of the territorial authority.

lf required, field testing of soakage can be carried out as follows:

a) Bore test holes of 100mm to 150mm diameter to the depth of the proposed soak pit lf groundwater is encountered in the bore test hole then this depth shall be taken as the depth of the soak pit.

b) Fill the hole with water and maintain full for at least 4 hours (unless the soakage is so great that the hole completely drains in a short time).

c) Fill the hole with water to within 750mm of ground level, and record the drop in water level against time, at intervals of no greater than 30 minutes, until the hole is almost empty, or over 4 hours, whichever is the shortest.

d) Plot the drop in water level against time on a graph, and the soakage rate in mm/hr is determined from the minimum slope of the curve lf there is a marked decrease in soakage rate as the hole becomes nearly empty, the lower rates may be discarded and the value closer to the average can be adopted.

The soak pit shall be designed utilizing soakage and storage in accordance with 9.0.5 and 9.0.6 of Clause E1 of the NZ Building Code to ensure that surface water is discharged without overflowing. The rainfall intensity used in the design of the soak pit shall be that of an event having a duration of '1 hour and a 10% probability of occurring annually Either local rainfall intensity curves produced by the territorial authority or rainfall frequency duration information produced by NIWA shall be used to determine the rainfall intensity.

COMMENT:

This Verification Method does not cover the design of soak pits with overflows discharging to outfalls. Such soak pits are often provided to retain water until peak flows in the outfall have passed and it is normally considered sufficient to design them for an event having a 10 minute duration and a 10% probability of occurring annually.

The soak pit shall comprise either a rock filled hole or a lined chamber both of these options shall be enclosed in filter cloth complying with AS 3706.1 The filter cloth shall have a mass per unit area of 140 gramslm2 and a minimum thickness of 0.45mm.

The volume of storage required in the soak pit is as follows:

Vstor (m3), shall be calculated by Vstor= Rc - Vsoak where Rc = run-off discharged from catchment to soak pit in t hour (m3). Vsoak= volume disposed of by soakage in t hour (m3), and Rc = l0ClAwhere C = run-off coefficient. l= rainfall intensity (mm/hr) based on t hour duration of an event having a 10% probability of occurring annually. A = area (hectares) of the catchment discharging to the soak pit, and Vsoak = AspSr/1000 where Asp - area of the base of the soak pit (m2). Sr = soakage rate (mm/hr) determined from 9.0.2. Generally where the test results show a soakage rate of greater than 500 mm/hour, soakage rather than storage will be the main mechanism to remove the water. This is normally the case in country with loose pumice. Where the soakage rate is significantly less than 500 mm/hour, storage will become the dominant factor. Intermediate soakage rates will require a design utilizing both in the proportions necessary to ensure the water will dissipate before it overflows from the pit. Where the soak pit comprises a rock filled hole then the volume available for storage, Vstor, shall be taken as 0.38 times the volume of the hole.

COMMENT:

Please note that the disposal of storm water on a site will always need to be treated as site specific. For example in a country area were there is no possibility of storm water disposal affecting a neighbouring property then the storm water may be disposed of on the ground as long as it runs away from a building. ln other cases the ground conditions may prevent the required soakage rates being achieved. In this case specific design will be required.

Full details of any storm water disposal system will need to be provided at the time an application is made for a building consent. This is to enable a proper assessment to be made of compliance with the requirements of E'1 of the NZ Building Code.

SIZING OF SOAK HOLES

Generally in loose pumice country the following charts can be used to ascertain the size and number of soak holes required for a particular situation.

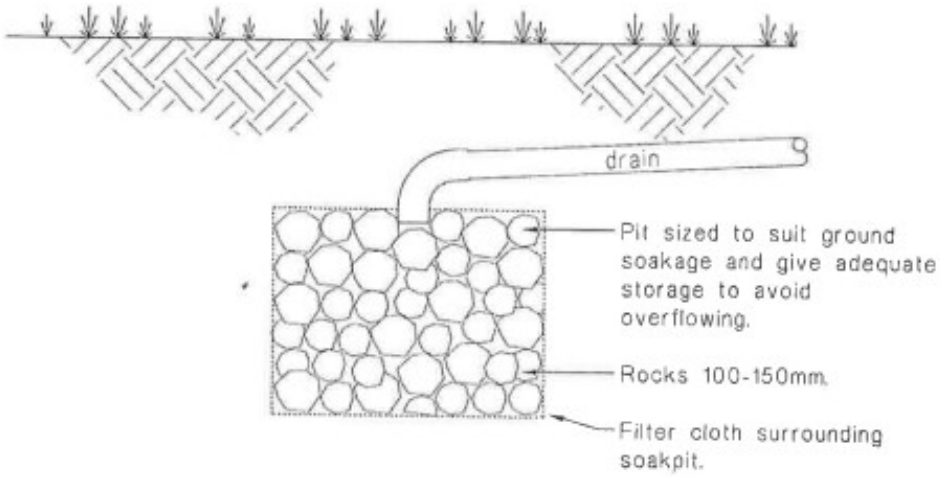
Chamber Soak Pit

Diameter of hole	Depth of hole in metres	Area m^2 of discharge to hole
600mm	One	8.3
	Two	16.7
	Three	25
	Four	33.3
	Five	41.7
	Six	50
900mm	One	18.7
	Two	37.5
	Three	56.3
	Four	75
	Five	93.7
	Six	112.5

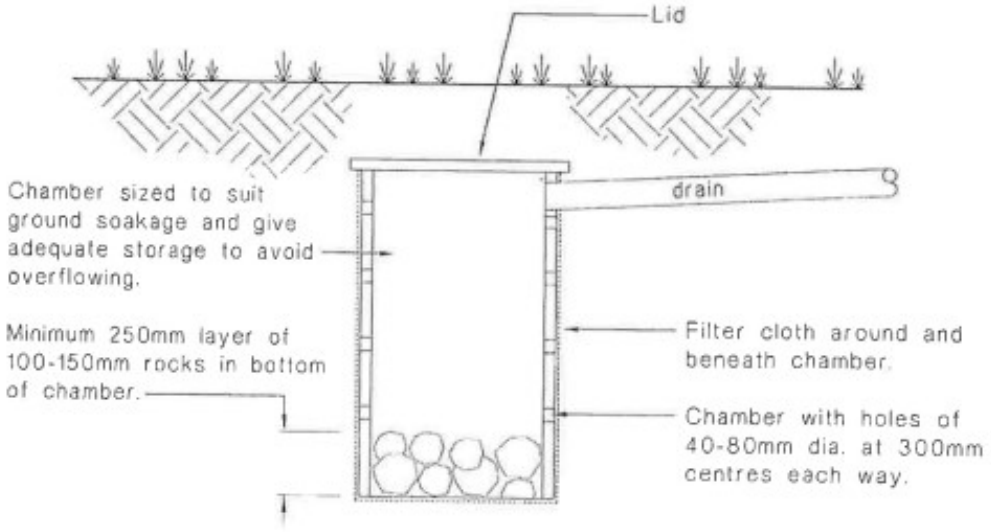
Square Rock Soak Pit

Size of Pit in metres	Area m^2 of discharge to Pit
1 x 1 x 1 depth	11.2
2 x 2 x 1 depth	44.8
3 x 3 x 1 depth	100.8
1 x 1 x 1.5 depth	16.8
2 x 2 x 1.5 depth	67.2
3 x 3 x 1.5 depth	151.2
1 x 1 x 2 depth	22.4
2 x 2 x 2 depth	89.6
3 x 3 x 2 depth	201.6

Construction of Soak Pits.



Rock soak pit



Chamber soak pit

GREAT LAKE TAUPŌ
Taupō District Council

Project description: _____

Location: _____

Building consent number: _____

I hereby certify that the storm water disposal system that has been constructed in accordance with the approved plans for the above building consent and/or the details as shown on the 'as built' plans supplied with this statement.

Signed: _____

Print name: _____

Owner / Builder / Drainlayer
Please delete option that doesn't apply

Date: _____

Attachments: _____
Please specify _____
_____