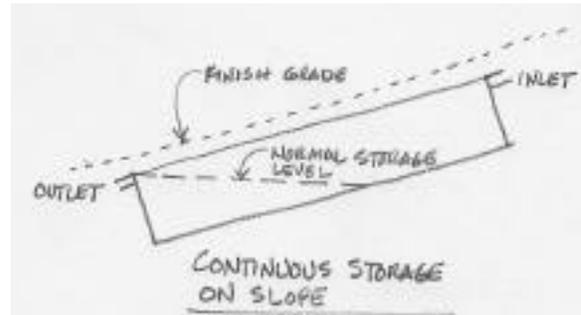


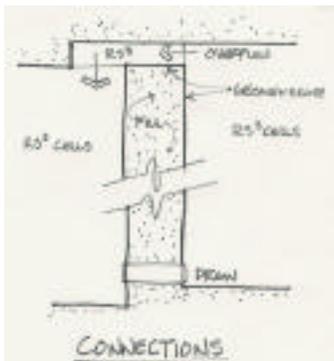
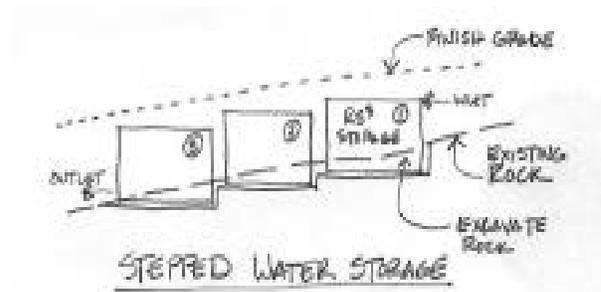
How To Store Temporary Water On A Slope

We have occasionally been asked if Rainstore3 chambers could be used on a slope – especially where rock, or other shallow impediment, lies just below the surface. The answer is yes. This paper shall provide guidelines for meeting such a situation.

If one continuous storage chamber were to be placed on a slope, storage volume would be limited to the depth of storage (from the bottom of the chamber to the overflow inlet) greater than the outlet flow volume, water levels will indeed rise higher than the normal storage level. However, the weight of the additional water will put pressure upon the elements of the lower portion of the chamber and possibly exceed structural integrity of the chamber.

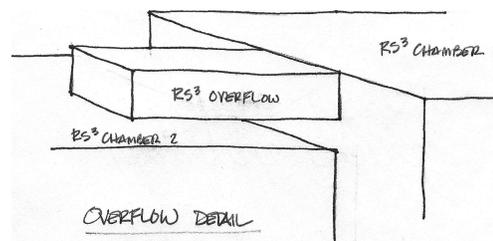


With Rainstore3, several individual storage chambers should be built upon level terraces or steps, so that storage is maximized within each chamber. Each unit will be connected hydraulically with drain outlets at the bottom and overflow outlets at the top of each chamber.

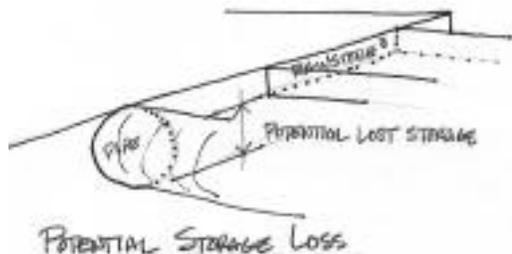


Drains should be sized to meet local criteria to allow drainage of the entire system within time constraints that also provide for design storage volumes for the next storage event (usually within 24 hours). Overflow flow volume between chambers should equal or exceed flow volume of all inlet devices above.

We suggest use of shallow overflow devices constructed with Rainstore3 layers wrapped in a Geomembrane material to provide maximum storage in each chamber, efficient flow movement, and ease of welding the connections to each chamber. They can also be used for all inlet devices, as pipe diameter can reduce storage capacity when attached to the side of a chamber.



Storage is maximized when water can enter each chamber from the top, but this can be a problem if shallow cover over the chamber is required. Check our spreadsheet to match flow capacity between pipe and Rainstore3 layers.



Each chamber will fill completely before the chamber below will fill. Some water will enter each chamber below via the drain connection, but the drain is always much smaller than inlet sources. Because most of the lower chambers are empty as the unit above is filling, water pressure from the upper unit must be contained by fill around each side of the chamber. Make sure the density of the fill material always exceeds 120 pcf. If the distance between chambers is less than four feet (1.25 m), then we recommend use of Rainstore3 stacks to be placed in this space (top to bottom) and filled with sand – this will provide structural columns to resist lateral pressure from water filled chambers.

Fill depths over the completed chambers can be between one and three feet (0.3 to 0.9 m) per our normal guidelines, without restriction as to finish surface loading. Depth can exceed three feet given certain conditions, so please check with our sales staff if necessary.

Remember that chambers can be any width, length and depth to meet any site criteria, including slope conditions. Chambers can be 4 feet or 400 feet apart, and still be connected hydraulically, if desired. This system flexibility allows chamber locations to respond to specific input sources (such as roof outlets), and also enable mixing of discharge options (outlet pipe or exfiltration, or harvest) on the same site.