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RAIN WATER HARVESTING - NEED OF THE HOUR!

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RAIN WATER HARVESTING - NEED OF THE HOUR!

COVER STORY

Praful Naik

**Water Water Everywhere...
Alas! But not where needed
most!**

Isn't it surprising that even with 71 % of hydrosphere on earth, mankind is struggling for supply of potable water, water for irrigation and industries? This, in spite of all the scientific inventions and research being carried out in the world. The only source of water - 'rain' - is affected by climate change across the globe. In India, hot, dry Rajasthan is receiving more rain

than states like Orissa. Cherapunji - once known for heavy rainfall, is struggling to live up to its name as the wettest place in the country. Refer to the table given below: it shows the average rain fall in Rajasthan and Assam. From 2010, Rajasthan has been receiving more rain than average, while on the other hand in Assam, it has been reducing annually.

Year	Normal Rain Fall in Rajasthan	Rajasthan %	Change	Assam
2000	531	382.4	- 28 %	2595
2001	531	520.6	- 2 %	2665
2002	531	233.9	- 56 %	2705
2003	539.8	560.3	+ 4 %	2680
2004	539.8	493.5	- 9 %	2640
2005	539.8	526.7	- 2 %	2069
2006	539.8	670.3	- 24 %	2254
2007	539.8	504.3	- 7 %	2377
2008	539.8	549.9	+ 2 %	2448
2009	539.8	378.8	- 30 %	2183
2010	533.9	606.3	+ 14 %	2230
2011	530.1	736.6	+ 39 %	2195
2012	530.1	617.9	+ 17 %	2210
2013	530.1	691.23	+ 30 %	2160

Average Rain Fall from 2000 to 2013 in Rajasthan and Assam (Figures shown are approximate)

India, with its geographical diversity, is facing a serious problem of water supply. This is especially true in metropolitan cities like Mumbai, Delhi and Bengaluru where the crisis is becoming acute with each monsoon. These cities lack open

spaces where new artificial lakes could be developed. One can create new lakes at the outskirts of a city, but such projects would take a lot of time, high cost and involve huge logistic problems. Today, every city wants to be the second 'Shanghai' and in

the process of urbanization leave no open green spaces or soft soil intact. Even the ground is paved with concrete - especially in residential complexes, where huge concrete podiums and parking lots are being constructed. As a result, there is no seepage of rain water during monsoon. This further affects the level of ground water. In India, the average percolation of total rain fall in ground is only 13 %. One research project suggests that to keep the balance of recharge water, the minimum percolation should be 31 % of total rain fall. In many cities of India the average rain water percolation is only three percent of the total rain fall. This is truly a red alert and we need to take some serious action so that the maximum amount of rain water is allowed to percolate into the ground.

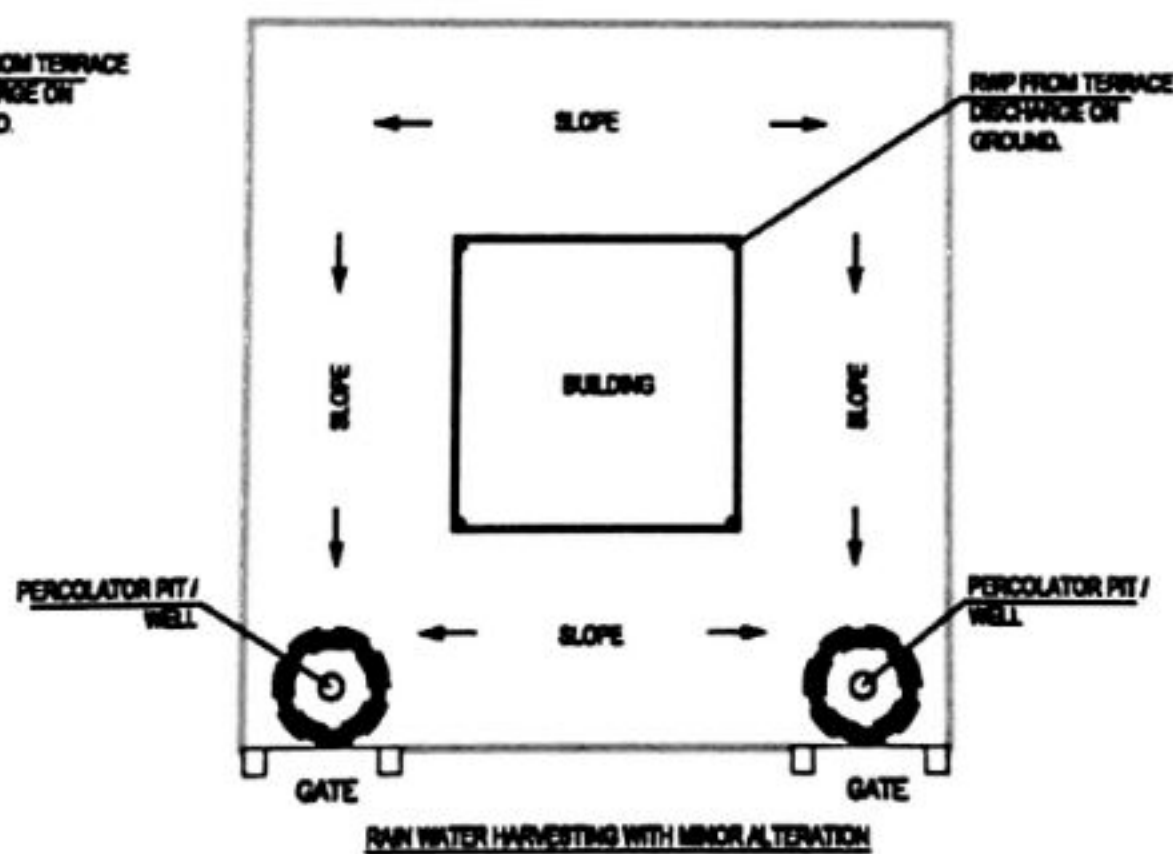
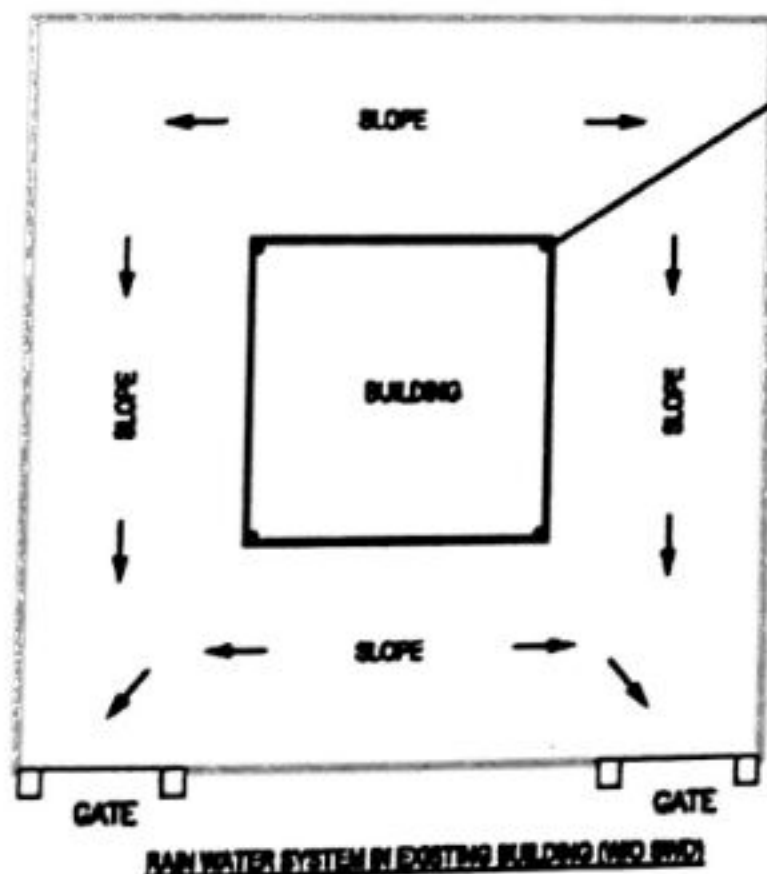
Is There Any Solution?

The easiest, achievable and practical solution is rain water harvesting. It is a welcome move that all Government Authorities have made rain water harvesting mandatory for all new proposed construction. But, what about the existing buildings? Is rain water harvesting easily implementable in such buildings?

Probable Solutions

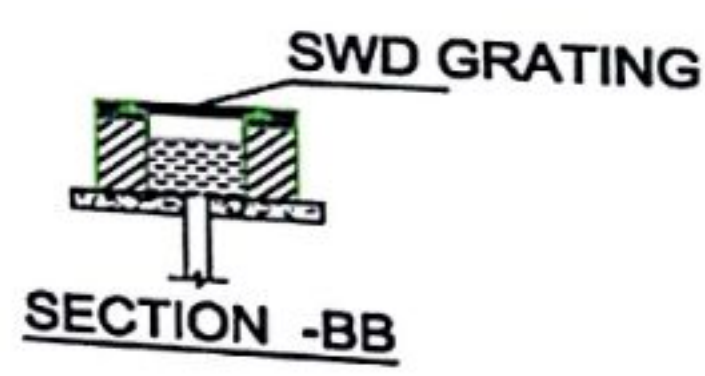
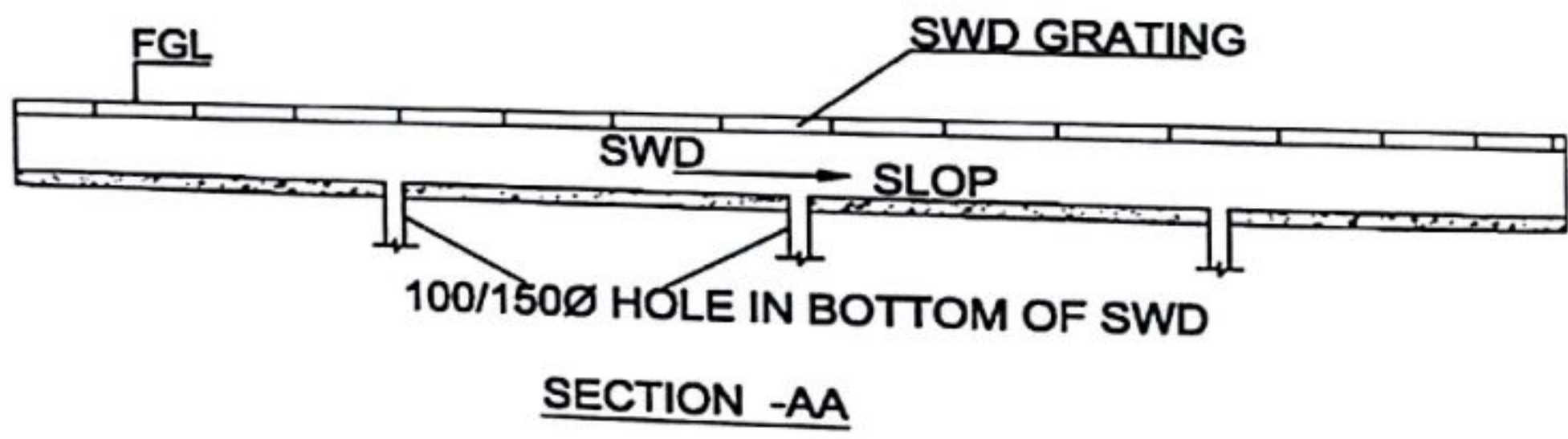
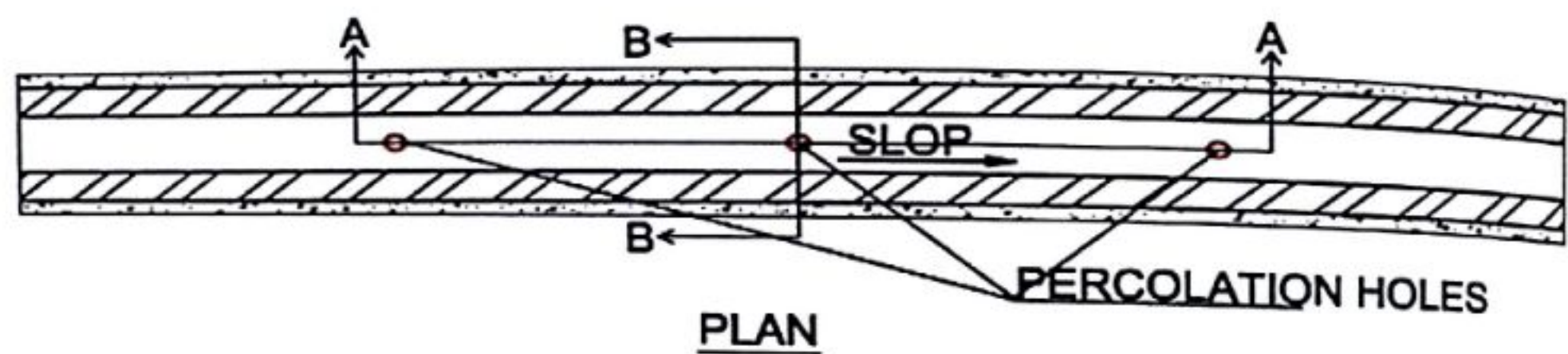
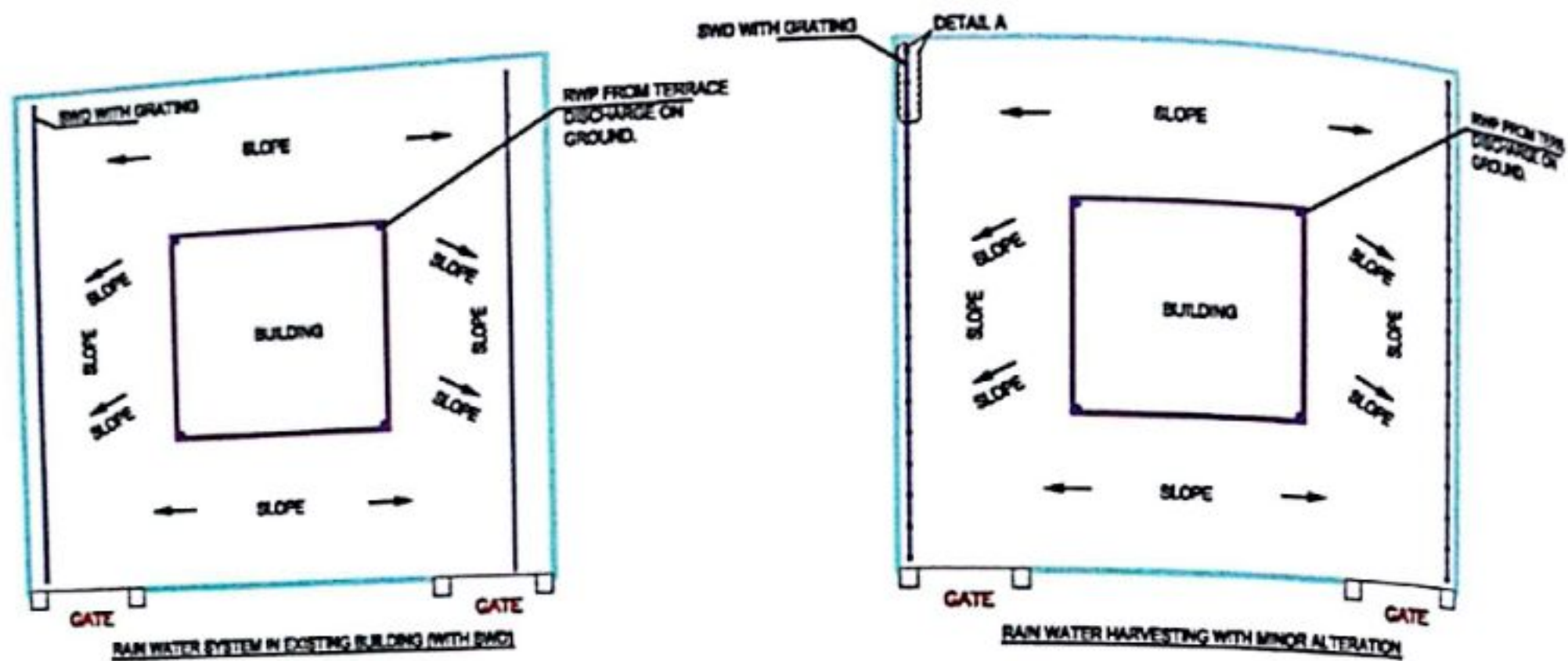
Simple Technique: The water from terrace is conveyed down through PVC Asbestos Cement / CI pipes and allowed to discharge freely at ground level. This water, along with direct rainfall flows by gravity towards the main road or into the main Storm Water Drain.

The introduction of Rain Water Harvesting in existing buildings appears to be a challenge. But in fact, it is very simple - believe me, it is really simple! Just trap the rain water and allow it to percolate into the ground before it flows to the nearest road. Now, how can this be achieved? It is a very simple task if minor modifications are made. Provide a Percolation Pit or Percolation Well of about 2.40 meter diameter before discharge of rain water from the building compound on to the main road. Provide a soft bottom in the pit / well. Also, provide honeycomb masonry for the side walls so that water can efficiently percolate from the bottom as well as from the sides. Provide gratings on this pit / well so that it will act as a catch basin and water is allowed to percolate before it over flows into the main SWD.



If, the existing premises have open storm water drain with gratings, then drill holes of 100 mm or 150 mm diameter at the bottom of the Storm Water Drain. This will allow water to percolate into the soft soil while flowing through the SWD. These are the easiest ways to introduce Rain Water Harvesting in existing premises with minimum expense. This will not only allow percolation of rain water into the ground but

also reduce the amount of water overflow into the Municipal drain. Thus it would reduce the load on Municipal storm water drains which are currently overloaded. Hence it will minimize the possibility of flooding in the area in case of heavy rains. It will also help to increase the ground water level, which at present is going lower and lower.



In coastal cities like Mumbai, water is being sucked out from ground in large quantities; hence, sea water is penetrating into the land. One of my projects at Varsova Andheri (a suburb of Mumbai) has a private bungalow almost touching the Arabian Sea. The

property has an open well within its limits. This well was supplying good quality water for last 60-70 years and the water was used for washing and bathing purpose. But, from November 2015, this well water has become salty and cannot be used for any

purpose. The reason is that ground water is being sucked out from bore wells or open wells and due to capillary action, salty sea water is penetrating into the land. This can be minimized by allowing more rain water to percolate into the ground.

One of the major issues is that why should existing building spend any money for RWH? RWH may not directly benefit the owner of the building or property. But it would definitely benefit societies residing in the vicinity. Here, local authority can play a vital role. Local Municipal authority can give benefit in Municipal, local taxes or property taxes to the society or premises which has implemented such Rain Water Harvesting System. Thus the owner would benefit and more owners would be tempted to implement RWH schemes on their premises.

In another project (a farm house in Gujarat), we have drilled 100 mm diameter holes in SWD at three meter intervals. The bore well of the farm house which was earlier supplying water for six to eight months in a year is now supplying water for the entire year - this after three years of implementing this system. The hardness of water has also reduced by 25 % to 30 % in the last three years.

I suggest to all to make such simple changes in their existing storm water drain system and request local authorities to introduce some schemes to subsidize the taxes so that owners will get encouraged into implementing such systems on their properties.



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