

**Marathwada Shikshan Prasarak Mandal's
DEOGIRI COLLEGE, AURANGABAD**



REPORT ON RAIN WATER HARVESTING

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RAIN WATER HARVESTING

Geology of the area:

The basaltic lava flow belonging to the Deccan trap is the only major geological formation occurring in Aurangabad. Deccan basaltic flows mainly compact amygdaloidal basalt flows occurs mainly in college campus and the upper layer consists of vesicular and amygdaloidal Zeolitic basalt while the bottom layer consists of massive basalt. The lava flows are individually different in their ability to receive as well as hold water in storage and to transmit it. The difference in the productivity of groundwater in various flows arises as a result of their inherent physical properties such as porosity, permeability & transmissivity. The groundwater occurs under water table condition and is mainly controlled by the extent of its secondary porosity i.e. thickness of weathered rock and spacing of joint and fractures.

In college campus the central part is unsuitable for groundwater artificial recharge due to its hard and compact nature. The NW corner and SE corner of college campus are suitable zone for recharge due to passing of dykes from SE corner and highly weathered sheet jointed basalt in NW corner of campus. Hence dug well in NW corner of college campus is the most suitable site for artificial recharge in which all surface and roof water of campus is successfully recharged by using filtered bed.

The area in which Aurangabad is situated suffers from drought conditions frequently. As this region comes under shadow zone, it faces the problems of low rainfall. Its average rainfall is only 700mm. The frequent conditions of scarcity of water compels for best management of available water. As a result, Rain Water Harvesting unit is established in the college. The Rainwater Harvesting & Water Management program in Deogiri College Campus is one of the ideal projects of Rainwater Harvesting in this region.

Methodology:

Deogiri College having total 12.5 hectares i. e. 550000 sq. feet of land area; hence if there is average rainfall of 600mm, the total amount of harvested rainwater in groundwater is 33 million liter. In campus, we have divided rainwater harvesting scheme into two divisions. In first method roof water is collected through in horizontal pipes & all the pipes are connected to a large pipe (10 inch) that carries water directly to dug well. Second method of harvesting is surface rainwater recharge. For this purpose we have divided total campus area into three parts depending upon slope of surface. According to this method, three recharge pits are constructed having size of 15x15x10 feet. They are filled with boulder at the bottom, metal up to 3 feet above and then large size of sand 3 feet making a filter bed. First pit is constructed near Dug well in NW corner of campus in which surface water of Senior College Campus, Biotech Campus, Ladies Hostel & parking area is accumulated through subsurface drainage line. Second filter bed is constructed in south part of campus near Junior College gate. There is a bore well taken & around which filter bed of size 15x15x10 feet is constructed in which all Junior College surface area water is directed to. Third filter bed is made in SE corner of campus behind engineering workshop where water from the Engineering College is accumulated.

This is one of the best & idea Rainwater Harvesting plan in our region. Large no. of farmer, people, school boys & researcher also visit the college to see this plan. Due to this harvesting during drought year 2013, the two electric pumps of 7.5 HP & 5 HP were continuously yielding water from dug well in summer when maximum dug wells in the region become dry.

Rain water harvesting project resulted in saving of 33 million liters of water per year. A project of recycling water with capacity of 20,000 thousand liter water through artificial recharge of dug well and bore wells.



**Principal
Deogiri College,
Aurangabad.**



Fig. 01 Roof Structure of the Deogiri College Campus



Fig. 02 - Recharge Filter bed (15x15x10) near dugwell



Fig 03 - Recharge Pit of 5x5x7 feet near bore well



Fig 04 - Effect of Artificial Recharge in dug well



Fig. 05 - Roof Water Harvesting in College building



Fig. 06 and 07 - Rainwater Conduit Pipelines on College building



Fig. 08 - Rainwater Conduit Pipelines on College building



Fig. 09 and 10 - Rainwater Conduit Pipelines on College building

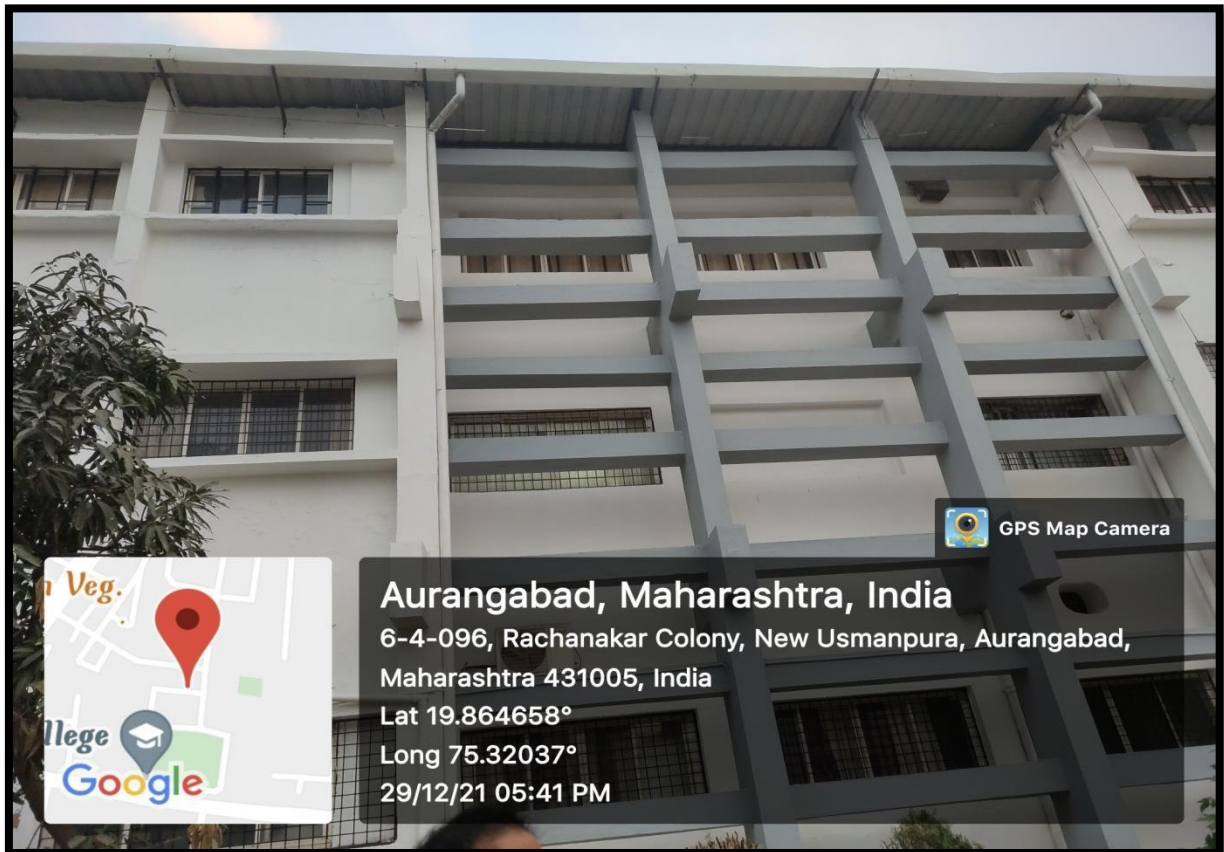


Fig. 11 and 12 - Rainwater Conduit Pipelines on College building

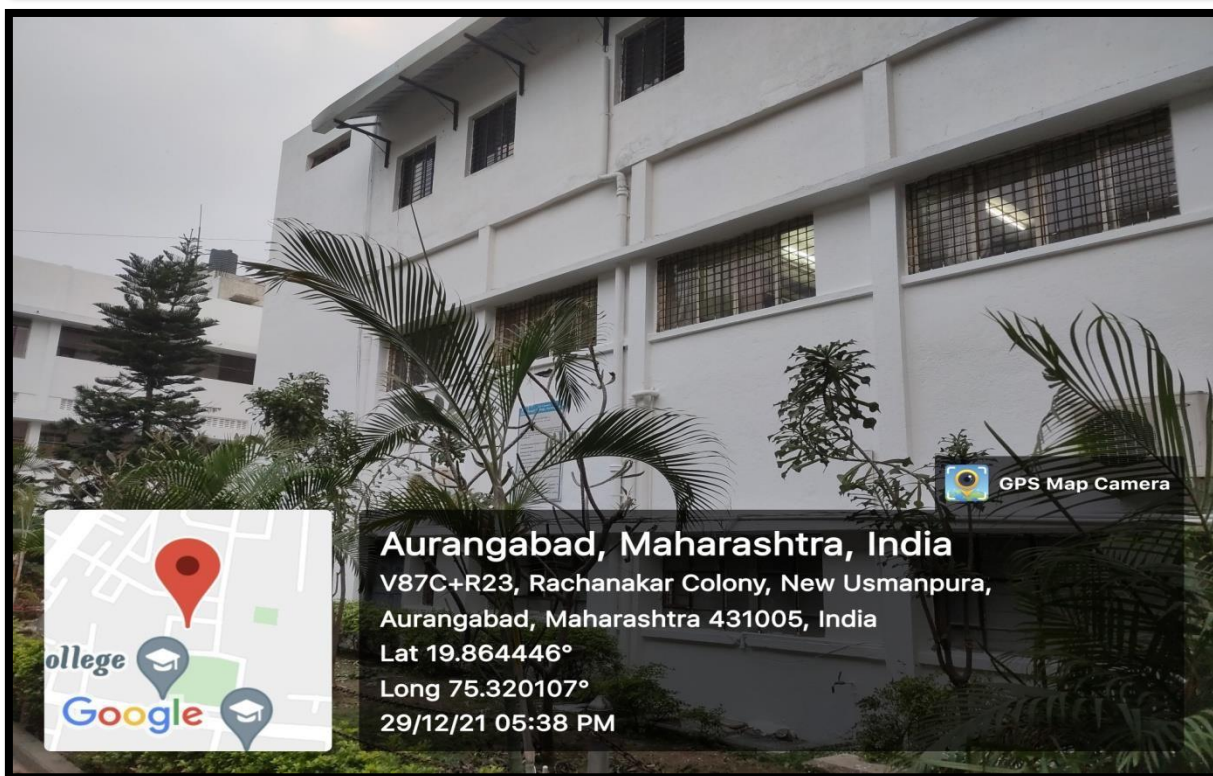
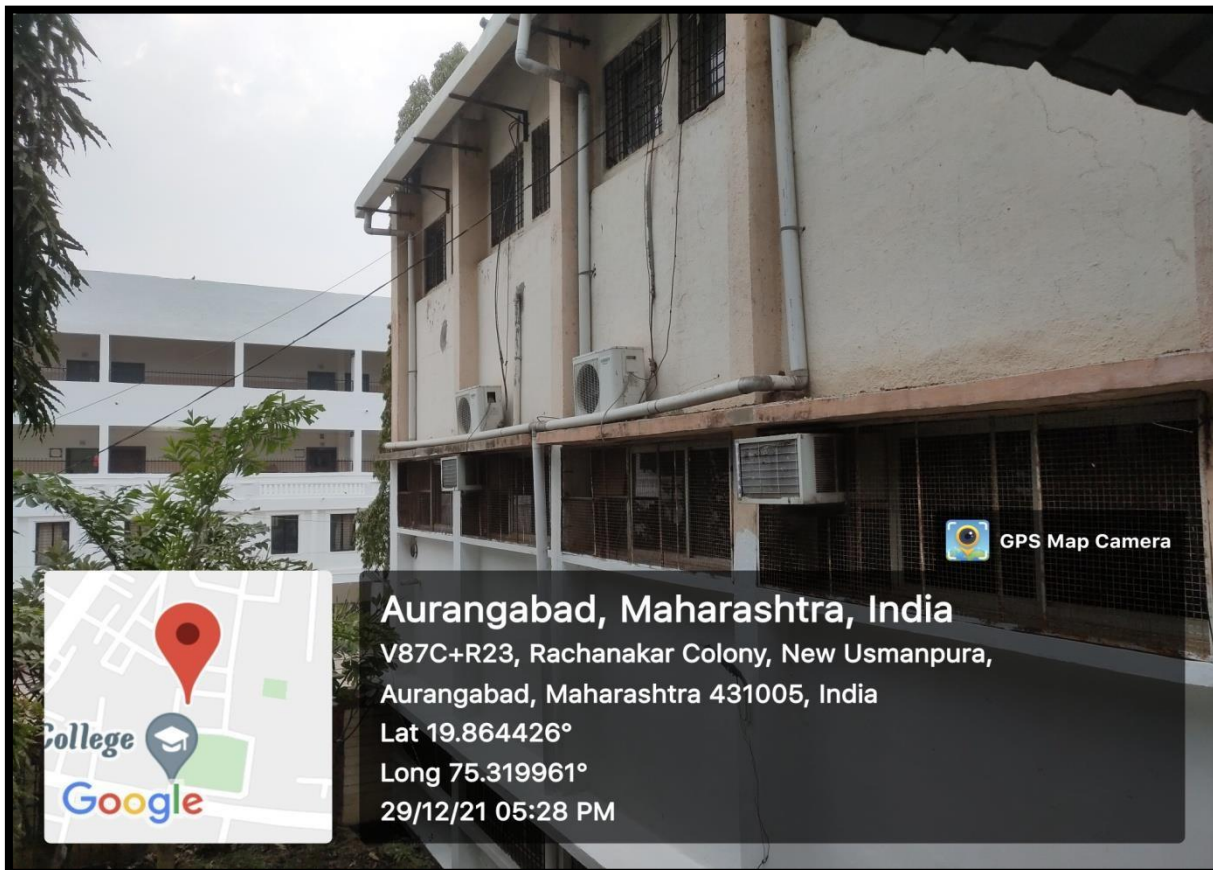


Fig. 13 and 14 - Rainwater Conduit Pipelines on College building



Fig. 15 Prof. Ken Howard and Prof. Masengo Ilunga during Visit to Deogiri College Rainwater Harvesting Unit ,Design by Department of Geology




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