RAMAIAH
College of Arts, Science & Commerce - Autonomous

Technology Applied to Building Standards to Minimize Water Use at M. S. Ramaiah College of Arts, Science and Commerce

Water conservation is an important aspect of sustainable development, especially in the construction industry where large quantities of water are used. M. S. Ramaiah College of Arts, Science and Commerce focuses on adopting modern building technologies and sustainable construction practices to minimize water usage during the construction of campus infrastructure. Since construction activities require significant resources such as materials, sand, and water, efficient water management has become essential, particularly in India where groundwater levels are rapidly declining.

Conventional building construction generally involves two major parts: the **substructure** and the **superstructure**. The substructure includes earthwork, soil treatment, and foundation construction, while the superstructure consists of columns, beams, walls, and slabs. Construction activities normally require large amounts of water for processes such as pre-wetting bricks, mixing mortar, washing masonry tools, and curing walls. Studies by the United Nations Environment Programme indicate that the building industry consumes nearly **30% of the world's fresh water** and produces about **30% of global effluents** throughout its lifecycle. It is estimated that nearly **350 liters of water are required to construct just one meter of a wall**, showing how construction can heavily impact water resources.

To address this challenge, the college has adopted innovative technologies to reduce water consumption during construction. One such approach is the use of the **precast method** in the superstructure. In this method, structural components such as beams, columns, slabs, and walls are manufactured at ground level and then lifted and assembled at the construction site. Since many of these components are pre-stressed and pre-cast, they require minimal or no curing after installation. This significantly reduces water usage compared to traditional construction methods where curing alone can consume up to **60% of the total water used.**

Another innovative technology applied in wall construction is the **Porotherm Dryfix system developed by** Wienerberger. This dry mortar system eliminates the need for traditional wet mortar during brickwork. As a result, activities such as mixing mortar and curing walls are either minimized or completely removed, leading to major water savings. The system also offers several advantages including faster construction, stronger bonding between bricks, cleaner construction sites, and improved thermal insulation by reducing thermal bridges. Additionally, plastering work can begin as early as the next day after wall construction, saving both time and resources.

In the substructure stage, where conventional construction methods are still required, the college reduces freshwater consumption by using **treated water from the Sewage Treatment Plant (STP)** for activities such as soil treatment, mortar preparation, and curing. This practice helps recycle wastewater and prevents the unnecessary use of groundwater for construction activities.

Overall, the integration of advanced technologies such as precast construction methods, dry mortar systems, and the reuse of treated wastewater demonstrates the institution's commitment to sustainable infrastructure development. By adopting these practices, M. S. Ramaiah College of Arts, Science and Commerce effectively minimizes water consumption during construction and contributes to conserving valuable water resources for future generations.

Principal 11/3/26
M.S.Ramaiah College of Arts, Science & Commerce-Autonomous
MSRIT POST, MSR Nagar
Bengaluru - 560 054