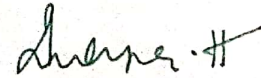


Technology applied to building standards to minimize water use

In M S Ramaiah College of Arts, Science and Commerce, conventional building construction involves both substructure and superstructure, with new technologies like the precast method being used for the superstructure. Construction is a resource-intensive process, utilizing materials, sand, and water, making water resource management crucial, especially in India, where groundwater resources are rapidly depleting. Our college is focused on innovating construction technologies to optimize water usage during the construction phase. A study by the United Nations Environment Program has shown that the building industry consumes 30% of global fresh water and generates 30% of the world's effluents over its entire lifecycle. Judicious use of materials can minimize groundwater usage, as it's estimated that 350 liters of water are needed to construct just 1 meter of wall. Due to rapid urbanization, water tables are depleting, resulting in a greater need for piped water. This highlights the importance of adopting sustainable practices in construction to save water for future generations. To reduce water consumption during wall construction, we focus on minimizing water usage for activities like pre-wetting bricks, mixing mortar, washing masonry tools, and curing walls. Curing alone consumes up to 60% of the water, while mortar mixing uses around 20%. By adopting innovative building technologies, such as Wienerberger's Porotherm Dryfix system, we significantly reduce water consumption. This dry mortar system eliminates the need for wet mortar and drastically cuts water requirements in wall construction, including partition and external walls. Additionally, the system removes the need for curing, leading to substantial water savings. The Porotherm Dryfix system also provides several advantages: Single-component, easy to transport and use, Faster construction compared to traditional methods, Stronger adhesive bond between bricks, Clean and dry construction site, eliminating debris disposal, Enhanced thermal protection by removing thermal bridges, Time-saving, allowing plastering to begin the day after wall construction and Mason-friendly, easy to assemble and apply. In the substructure, we use conventional methods for earthwork, soil treatment, and foundation construction. Water is required for soil treatment, concrete and mortar preparation, and curing. However, treated water from our sewage treatment plant (STP) is used for these processes. For the superstructure, we use the precast method, where structural elements like columns, beams, walls, and slabs are fabricated at ground level and lifted into position. This method avoids the use of water for mortar mixing and curing, as pre-stressed slabs eliminate the need for curing for 28 days, contributing to significant water conservation across the construction process.



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