



Vel Tech
 Rangarajan Dr. Sagunthala
 R&D Institute of Science and Technology
 (Deemed to be University Estd. u/s 3 of UGC Act, 1956)

WATER CONSCIOUS BUILDING STANDARDS

Vel Tech Deemed to be University is committed to ensuring that water is used most judiciously and reused to the maximum extent possible. Construction materials used in the project are also environmentally friendly. More than 70% of the campus acreage is planned as a green area filled with local varieties of trees, plants, shrubs and water bodies.

We also adopt the following practices across our campus:

S. No	Facility	Indian Standard	International Standard
1.	Water is supplied 24 hours a day without interruption for drinking and other purposes. This prevents improper storage by residents in anticipation of water shortage	IS 2065: 1983 (Second Revision) – Code of practice for water supply in buildings (Second Revision)	International Plumbing Code (2018) – Section 601
2.	We adopt self-curing construction techniques to reduce evaporation and water usage during building construction phases	IS: 10262-2009	
3.	We have rainwater harvesting facilities for every building at the university and hostels	IS 15797 (2008) Rooftop rainwater harvesting – Guidelines	International Plumbing Code (2018) – Section 606

S. No	Facility	Indian Standard	International Standard
4.	We ensure water pressure is optimal in pipelines to reduce water loss using pressure-reducing valves.	IS 9739 (1981): pressure reducing valves for domestic water supply systems	International Plumbing Code (2018) – Section 604
5.	We have an active plumbing team for routine maintenance and to correct leakages We use aerators pressure reducing nozzles at taps to minimise water loss We have proximity sensor-based taps in our wash areas to prevent unnecessary water loss	SP 35 (1987): Handbook on Water Supply and Drainage (with Special Emphasis on Plumbing)	International Plumbing Code (2018) – Section 312
6.	We use ASTM and C-PVC pipes for reduced leakages	IS 15778 (2007): Chlorinated polyvinyl chloride (CPVC) pipes for potable hot and cold water distribution supplies	International Plumbing Code (2018) – Section 402
7.	We use modern dual syphon flush tanks at toilets for judicious water usage. We have separate urinals and flush toilets for boys to save water on unnecessary flushing.	IS 774 (2004): Flushing Cistern for Water Closets and Urinals (Other Than Plastic Cisterns)	International Plumbing Code (2018) – Section 402
8.	We use rainwater and recycled water for construction purposes		EPA/625/R-04/108 Guidelines for Water Reuse

Building Standards to minimize water use (AY 2021-22)

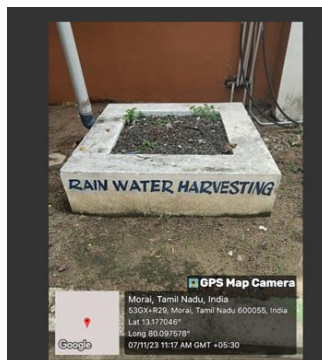
Around 40% of India's water resources come from groundwater. A recent report from NITI Aayog has stated that 21 major cities in India are expected to run out of groundwater by 2021. The 'Composite Water Management Index' is India's first extensive collection of data on water throughout the nation. The CWMI report has stated that the water demand will exceed its supply by 2050. There is an urgent need to preserve and use water wisely. Water preservation is the need of the hour. There has already been an implementation towards creating innovative ways to preserve water. Here are a few methods to reduce water usage within the Vel Tech campus.

Method to Reduce Water Usage in Building

Rainwater Harvesting

The filtered water is automatically recharging the groundwater. Due to the groundwater recharge facilities in Vel Tech University Campus, it does not have water problems during the summer season either. From this, it may be concluded that the groundwater is supplied to Vel Tech University premises throughout the year for various purposes. Rooftop rainwater harvesting is achieved across the Vel Tech Institutions and Hostels. The harvested rainwater at the Vel Tech Institutions and Hostels is about 2.7 lakh litres annually. The below Figure shows the Rainwater Collection System, including the collection chamber and soak pit at Block B6.

Rainwater Collection System at Block B6



Collection Chamber and Soak Pit

The below Figure shows the Rainwater Collection System, including the collection chamber and soak pit at Block 24.



Rainwater Collection System at Block 24

Collection Chamber and Soak Pit



Rainwater Harvesting is a method that can be quite easily implemented. In times of such water scarcity, it is a very effective method. The method is simple; rainfall is collected and stored for future use. Rainwater harvesting can aid in replenishing groundwater resources, which also affects the climatic conditions in areas with water scarcity. Most importantly, it makes water available in such regions. Rainwater Harvesting has been in practice for a very long time in most parts of rural India. This water conservation method can be implemented anywhere in buildings, individual houses, apartments, parks, etc

Water Metering



Water metering measures the amount of water used in residential and commercial buildings. The volume of water used is calculated and charged according to the water price. The water is supplied from a public water supply system. Initiatives were taken in the city of Hyderabad to install digital water meters that access real-time water usage data. This will help to identify the potential of water efficiency and reduce consumer usage and costs.



Water-efficient taps

- 1) Taps with low water flow rates are usually designed to support minimum water wastage.
- 2) Taps with infrared sensors can sense a presence and automatically turn on or off based on its usage.

These taps are primarily seen in most public places, including malls, theatres, airports, etc.

Pressure reducing valves



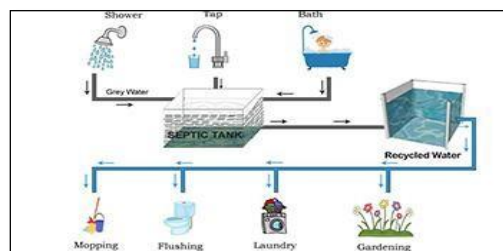
A pressure-reducing valve can control the pressure in a hydraulic system and save a lot of water from being wasted. These valves ensure a pre-set level of water that is to be used. In this way, downstream components used in the water system last longer and reduce water consumption. This is a very fitting solution for industrial, residential, commercial and institutional buildings.

Water-saving showerheads



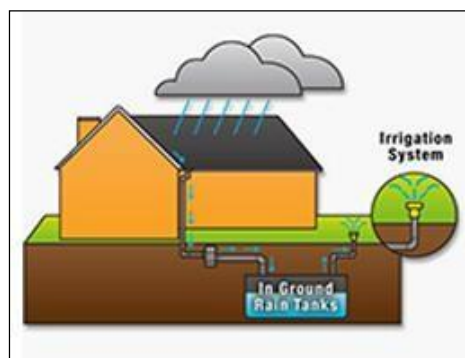
An average bath lasts around 10- 15 minutes and uses up almost 80 litres of water, whereas a 5-minute shower at a rate of 10 litres per minute will use only 50 litres. Since there is a huge difference between 50 and 80 litres of water, Water-saving showerheads are installed in Hostels. They control the water flow rate and the spray pattern during a shower; this makes a considerable difference and directly affects the water consumption levels of a building since showering is a necessity of life.

Greywater Recycling System



Greywater recycling is a simple, safe and sustainable water-preserving system. It can help reduce household water usage by almost 50% and indirectly save your water bills. Greywater recycling is a method of saving water in which wastewater is collected from kitchen sinks, washing machines and showers. It is then recycled for usage in toilets, watering plants, etc. Unlike rainwater harvesting, which relies on rainwater, greywater is surplus in quantity and available daily. Environmental engineers have demonstrated that this recycling system has reduced almost 70% of domestic water consumption in residential areas.

Smart irrigation systems



Water used for irrigation alone counts for at least 75% of water consumption in India. Much of this water is wasted during flood irrigation. Even gardens and lawns need to be watered regularly to sustain it. Technology has allowed us to invent efficient irrigation systems with controllers that reduce water consumption. They can be used to avoid excess watering of plants and to track temperature and precipitation over properties. Drip irrigation is also a method that can send water directly to plants through pipes buried under the surface.

Water-efficient toilets



The concept behind water-saving toilets is to increase the velocity of flushing water instead of increasing the amount of water used to flush out waste. Discussing these innovative ways to conserve water is one thing, but implementing them is the first step we can take towards reducing our water footprint in the environment. The water crisis is inevitable, and people should start acting now to be able to tackle this challenge in the future.

An Illustration for Water Consumption and Management

Designed Average Flow	22 m ³ /h
The proposed capacity of Sewage Treatment Plant	430 m ³ /day
Operation Hours	21 h
Number of Students in Prince Hostel	2360
Number of Supporting Staff	160
The water supplied is designed for	2650 people
Water required per head as per Water supply norms, Government of India	135 LPD (2350) and 25 LPD (150)

Total water required for students and staff	317.25 + 3.25 KLD
Water required for the kitchen	150 KLD
Water supplied for both students, staff and kitchen	600 KLD (approx.)
Total wastewater generated from the Hostel	575 KLD
Number of wastewater treatment plants	2 (400 KLD capacity)
Number of rooms	88
Number of flush tanks in each room	2
Total number of flush tank	196
The capacity of the flush tank	5 litres
Total quantity of flushing water	980 litres (approx. 1000 litres)
Number of times flushing	8 times a day
Total quantity of flushing water	8000 litres per day
Total quantity of flushing water supplied	20000 litres per day