What Are Water Management Systems?

Worksheet

Water management systems are the combined infrastructure and design strategies - supply, distribution, fixtures, wastewater treatment, and stormwater/rainwater systems - used to deliver, use, and recycle water efficiently in a building or site.

Questions

1. What do water management systems in architecture primarily address?

A) Only electrical wiring
B) Supplying, distributing, using, and treating water in a building or site
C) Structural load paths
D) HVAC ductwork sizing

2. A building has 250 occupants using 120 L/person/day. What is the daily demand?

A) 370 L/day
B) 3,000 L/day
C) 30,000 L/day
D) 2,080 L/day

3. What is greywater?

A) Rainwater collected from roofs
B) Lightly used wastewater from sinks/showers reusable after treatment
C) Raw sewage from toilets
D) Drinking water straight from the tap

4. Why is on-site stormwater management important?

A) It increases flooding risk
B) It reduces flooding, runoff pollution, and sewer overload
C) It has no effect on groundwater
D) It only matters in deserts

5. An office building has 150 occupants with a per capita rate of 60 L/day (office use). Find daily water demand.

6. A residential building houses 400 people at 180 L/person/day. Find daily demand in cubic meters.

7. A school with 800 students and staff uses 40 L/person/day. If a rainwater harvesting system supplies 30% of this demand, how much water (L/day) still needs municipal supply?

8. Define: What is a water management system in buildings?

9. Define: What is greywater?

10. Define: What is rainwater harvesting?

Answer Key

1. B) Supplying, distributing, using, and treating water in a building or site - Water management covers the full water cycle within a building/site - supply through wastewater/reuse.

2. C) 30,000 L/day - Qd = N q = 250 120 = 30,000 L/day.

3. B) Lightly used wastewater from sinks/showers reusable after treatment - Greywater is relatively clean wastewater (not toilet waste) that can be reused after basic treatment.

4. B) It reduces flooding, runoff pollution, and sewer overload - Managing stormwater on-site (retention, permeable paving, etc.) reduces flood risk and protects water quality.

5. Qd = N q Qd = 150 60 Qd = 9,000 L/day

6. Qd = N q = 400 180 = 72,000 L/day Convert: 72,000 L 1,000 = 72 m/day

7. Qd = 800 40 = 32,000 L/day Harvested = 32,000 0.30 = 9,600 L/day Remaining from municipal supply = 32,000 9,600 = 22,400 L/day

8. The combined supply, distribution, use, and wastewater/stormwater infrastructure that delivers and recycles water efficiently.

9. Lightly used wastewater from sinks, showers, and laundry - reusable for irrigation or toilet flushing after basic treatment.

10. Collecting and storing rainwater from roofs/surfaces for reuse, reducing demand on municipal supply.