Structural Elements

Plumbing systems in a building generally consist of five major parts including the water supply, water storage, fixtures, waste collection, and the septic system (Ogunbiyi, 2010). Because much of the plumbing is hidden behind walls and under floor slabs, maintenance must be proactive to identify leaks before they cause severe damage to the building compound (Ogunbiyi, 2010). Timely maintenance is essential because minor defects can develop into serious failures or sudden collapses that are much more expensive to rectify than early repairs (Kusi, 2017). Effective maintenance begins at the design stage by ensuring that critical elements are accessible for inspection and that building managers have a comprehensive maintenance manual (Sofi et al., 2016).

Maintenance Program

To maintain the water supply and storage, everyone in the building should be familiar with the location of the main shut off valve to stop the flow of water quickly during a pipe rupture (Ogunbiyi, 2010). Building owners should look for visible symptoms of failure such as brownish water or grit, which suggests rusty pipes or dirty tanks, and a sudden rise in water consumption, which often indicates a leak (Kusi, 2017). Water storage tanks must be inspected every year and cleaned if necessary to prevent the growth of algae or the accumulation of dirt (Ogunbiyi, 2010). It is also important to ensure that water tank covers are present and in good condition to prevent rainwater from seeping into the supply (Kusi, 2017).

Mechanical components such as water pumps require regular checks for noisy operation or unusual vibrations (Kusi, 2017). If a pump is generating irritating noise, it should be isolated from the building structure using springs, rubber isolators, or rubber sleeves where pipes penetrate walls (Kusi, 2017). For fixtures like toilets and sinks, a simple check involves ensuring the unit does not rock when used; if it does, it must be tightened to prevent gravity based leaks that eventually cause wood rot (Ogunbiyi, 2010). Waste collection lines should be kept clear of blockages from paper or other objects using a special auger or snake (Ogunbiyi, 2010). Finally, the septic system requires annual checks for odors or leaking inlet pipes, and the entire tank should be flushed out every four years to maintain its function (Ogunbiyi, 2010).

Maintenance Schedule

Task	Interval
Look under sinks and lavatories for moisture or leaks	Regularly
Monitor water meters for sudden rises in consumption	Regularly
Check pumps for excessive noise or vibration	Regularly
Test and reset circuit breakers for pumping systems	Every 6 to 12 months
Inspect and clean underground or elevated storage tanks	Annually
Verify that storage tank access covers fit properly	Annually
Inspect septic tanks for odors or leaking inlet pipes	Annually
Check septic tank access covers for security	Annually
Clean and flush out the septic tank system	Every 4 years

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