Maintenance Strategy – Plumbing Systems

This category covers a broad range of a buildings plumbing systems and sub systems. It is important for facility managers and staff to be aware of the systems assets and maintenance required to effectively maintain the systems functionality and reliability through preventive maintenance requirements. Qualified in-house maintenance combined with certified vendor staff may be necessary to manage systems safely and effectively. Consult manufacturer recommendations on building plumbing system maintenance requirements.

A smooth operating, efficient plumbing system enables building owners to have clean, fresh water as close as your faucet and warm water to keep your buildings clean and properly sanitized. Properly functioning plumbing systems have other benefits as well. Access to clean water is essential to good health, hygiene, well-being and maintenance of exterior landscaping systems. Taking care of the wide range of a properties plumbing systems is essential to keeping clean water flowing and flushing waste. Most occupants don't think about plumbing problems until they arise. But at that point there could be a larger problem and ultimately a larger repair bill. Through a quality preventive maintenance program this can all be avoided. Maintenance on plumbing systems is something facility managers should do on a regular basis to catch small problems before they escalate into larger issues. Being aware of water issues can also help conserve water and save on utility bills.

Not only can faulty plumbing issues cause more expensive issues later, they can waste money in the short-term. In the back ground problems are also steadily becoming worse as time progresses. A small leak wastes a lot of water and can deteriorate valves. Drip by drip, it adds up over time. Let's put it in perspective. It takes 4,000 drips to waster one liter of water. One drip per minute from just one building faucet adds up to about 1,440 drips per day which is equivalent to 34 gallons annually.

Maintaining a building's plumbing system means checking for small leaks periodically. Performing seasonal plumbing maintenance can also catch problems and create opportunities to make small adjustments and repairs before they become larger ones. Seasonal plumbing maintenance is critical to manage this important but hidden system elements.

Some general plumbing systems maintenance staff should be aware of include: General hallway water fountains, backflow preventer assemblies, water heaters, water softening systems, toilets and sinks, dishwashing machines, Washers, boiler systems swamp cooling systems, cooling towers, building fire sprinkler systems, grounds sprinkler systems. Several of these systems require advanced preventive maintenance requirements to maintain the warranties, and provide for reliable working systems.

Building owners and operators are tasked with protecting the assets. That means maintaining the entire building which includes the plumbing systems running unseen in the background that occupants rely on every day. The condition of shut off valves should also be taken into consideration for proper operation. Any rusted or corroded shut-off valves should be considered for repair and replacement if necessary.

Plumbing leaks not only affect pipes and water pressure, but they can also cause damage to other building systems. Leaks that go undetected under a sink or in a wall can lead to wood or wall rot, mold growth and potential pipe corrosion. Repairing the long-term damage caused by a small leak is costly and grow to larger more expensive issues of unchecked.

Frozen or burst pipes can lead to flooding and costly repairs. Water absorbed by carpeting and surrounding walls must be remediated and the area must be dried out quickly to prevent mold and mildew from taking over. This can also effect the ability for the schools to operate as scheduled causing school adjustments and unnecessary cancellations.

The best way to avoid plumbing problems, keep energy costs down and conserve water for future generations is to make sure the many facets of a building's plumbing system is working properly through a quality preventive maintenance program. If a problem occurs, maintenance staff need to deal with it immediately.

Creating simple daily checks, weekly/monthly inspections and seasonal plumbing maintenance strategies can save on energy costs, conserve water and keep your buildings plumbing system running properly.

Daily Maintenance Tips - Daily maintenance includes preventing clogs, which are one of the most common plumbing issues building managers face.

A clogged line can shorten the lifespan of waste pipes by adding extra pressure and added stress. Even a slow drain can cause problems, so it's best to get a clog cleared before it becomes a complete blockage. Plumbing systems get used constantly day in and day out. Creating simple plumbing maintenance tips to keep your water moving through your pipes and waste exiting buildings will help maintain this hidden assets proper functioning. Bathroom and kitchen systems are the two areas that supply the most water and are at the highest risk of developing plumbing issues.

Kitchens/Cafeterias - Kitchen drains often clog due to debris or wastes going down the sink that shouldn't. Improper use of the garbage disposal is another common reason for clogged kitchen drains. Some Never and Always common sense methods to prevent clogged drains include:

- Never put grease or oils down the sink. This includes cooking oils and fats, such as butter, that can congeal in the pipes, blocking water flow.
- Always turn your water and disposal on before adding food.
- Never put fibrous or stringy food wastes down the disposal. These include banana peels, celery, potato peels, and other foods that are difficult to grind up.
- Always allow the cold water to run for at least 15 seconds after using the disposal. This ensures food wastes are flushed down the main line.
- Run dishwashers at night to conserve hot water and maintain good water pressure throughout the day.

Restrooms/Shower Areas - Restrooms are another high use area where drains often become clogged. Staff can reduce clogs and even prevent them by following this plumbing maintenance checklist:

- Keep shower and sink drains flowing freely by reducing the use of bath oils and installing screens over drains to prevent hair, trash and other debris from going down the drains.
- Avoid toilet clogs by not using it as a trash can. Ideally, only human waste and toilet paper should be flushed. While tampons and some wipes are labeled as flushable, it is better to avoid this practice. Provide effective trash/recycle bins to accommodate other waste products.
- Avoid using harsh chemical clog removal products that can cause more harm than good. These products can corrode pipes over time.
- Provide instructions and signage to inform occupants of proper disposal of items.

Think of all the products used to wash, moisturize and condition. They are often oily or greasy in order to provide moisture for skin and hair. Once they make their way down drain lines, however, they can cling to pipes, attract other debris and cause blockages.

Weekly Maintenance - Checking pipes once a week is a best practice for maintenance teams. This is an effective way to prevent small problems from becoming larger, costly ones. Weekly plumbing maintenance includes the following:

- Check for leaks. Look under the sinks for signs of moisture, such as puddles of water, water marks, a musty smell and possible mold growth. Encourage custodial teams to report any issues and follow up.
- Test all sink and shower drains for speed or drainage annually. If bubbles appear while water drains, it could be a sign of a slow drain.

- Check water faucet handles and valves for proper operation - water should not be coming out of the handles or valves.

Over time, small leaks can accumulate and waste a tremendous amount of water in a building. Some of the most common places where leaks occur in plumbing systems include:

- Pipe valves and fittings
- Faucets and handles
- Worn toilet flappers and water inlets
- Dripping shower heads
- Loose pipe fittings

Most small leaks are easily repaired by making small adjustments. Usually, they don't cost much, but they do prevent costly water bills overtime.

Seasonal Maintenance - The change of seasons can affect a buildings plumbing performance. For each season, create and implement steps to find small issues before they grow to larger ones.

Fall Maintenance: During fall, leaves and temperatures begin to drop, providing a subtle reminder that winter is just around the corner. This is the time to review and prepare building pipes for the cold winter days ahead.

Outdoors Spigots - Outdoor spigots and water hoses used during spring and summer should be prepared for hibernation. Follow this outdoor fall plumbing maintenance checklist to properly prepare for the cold days ahead:

- Disconnect water hoses from the outdoor spigot. If left connected, the hose can freeze, expand and cause connected indoor pipes to burst.
- Shut off the water valves for outdoor spigots, and drain water from outdoor water lines.
- Check outdoor faucets for drips and leaks. Call a plumber to make any necessary repairs before winter arrives.
- Cover all outdoor spigots using a Styrofoam insulation cover.
- Insulate pipes in unheated areas of the buildings, such as the garage areas and crawl spaces. Use heat tape around pipes that are prone to freezing.

Water Heaters - Water heaters work harder to keep water hot in colder months. To help it work more effectively and efficiently, follow these simple water heater maintenance tips. Note: Consult manufacturer recommendations for additional information on seasonal maintenance:

- Maintain water heater temperature settings at 120° Fahrenheit for optimal performance.
- Flush out water heaters to remove sediment which can cause corrosion, reduces efficiency, and shortens a water heater's life span.
- Test the water heater's pressure release valve by lifting the lever and allowing it to snap back. If working properly, the valve should allow a burst of hot water into the drain pipe. **Caution**: Do not conduct this test on units that are five years old or older — consult a plumber in order to prevent causing a leak.
- Maintain clear and unobstructed access to water heaters and surrounding inlets and outlets.

Gutter Maintenance - Clean debris from building gutters and drain systems. Gutters must remain free of debris so that water can drain easily as it freezes and thaws throughout the fall and winter.

Winter Maintenance: Frozen pipes are one of the biggest concerns for building maintenance during the winter season. When water inside pipes freezes, it expands, causing pipes to burst under the pressure. A main goal in winter is preventing pipes from freezing. Follow these winter plumbing maintenance tips to avoid frozen pipes:

- Insulate both warm and cold water pipes, especially those located in areas vulnerable to freezing such exterior mechanical rooms, crawl spaces or basements.
- Eliminate building drafts. Check areas near waters supplies, such as in kitchens and bathrooms, exterior mechanical rooms etc. that house pipes which may be at risk for freezing.

Indoor pipes prone to freezing, or located in extremely cold weather areas need additional precautionary steps to reduce the risk of freezing.

- Maintain effective unoccupied building heating levels allowing warm air to circulate to keep pipes warm.
- Ensure the building envelope is effectively sealed (doors/window seals). Repair damaged seals to support the districts energy management plan.

Ensure the buildings heating system is working properly. An unmaintained heating system can fail when temperatures are freezing. Maintain proper building heating set points at unoccupied times to prevent pipes from freezing.

Maintenance staff should know where critical main and secondary shutoff valves are located for water (and other utilities). If you don't know where the shutoff valves are located, create a school by school map of all shut-off valves and post them in effective areas and pertinent staff for reference in the event an emergency occurs.

Spring Maintenance: Weather warms in spring, making building operators anxious to start spring cleaning, inside and outside.

Indoors - Drains are the key to effective indoor spring plumbing maintenance. Maintenance staff need to check all drains and make sure they are working properly.

- Check for slow leaks around buildings. You can do this by taking a water meter reading and avoid using your water for a couple of hours. After two hours, if the reading changes, you have a leak. Also monitor water utility bill usage over time to check for anomalies in water use.
- Check all pipes for signs of leaks, such as puddles or watermarks.
- Check drains that are not used often by pouring a gallon of water down them to fill the trap and prevent odors from entering buildings. Any drains that are slow should be snaked.
- Check water-using appliances — such as washing machines, dish washers, water softening, swamp coolers, and other systems — for cracked, bulging or otherwise worn hoses. Replace any worn hoses to prevent future leaks.
- Inspect toilet bowls and tanks for leaks. Add a few drops of food coloring to the toilet tank. If you notice color in the toilet bowl within 30 minutes, a leak may be present.

Taking these small steps each spring can help save money on water usage and prevent problems down the road. Replacing worn hoses on systems is a simple task and won't cost a lot of money. Checking for leaks doesn't take up much time, but saves plenty of time, money and headaches later on.

Outdoors - As temperatures warm in spring, birds build nests in various places, increasing the risk of floods when the snow thaws. This is the ideal time to perform some important outdoor plumbing maintenance.

- Clear gutters and downspouts of any bird nests, leaves or other debris that may accumulated.
- Check for bird nests built in plumbing vents.
- Turn on outdoor spigots to make sure they do not leak. If leaks or drips are detected, coordinate repairs right away.

Summer Maintenance: Summer is the ideal time to have septic system inspected. The ground temperatures are warm, making plumbing tasks easier. A clog in a main sewer line or a sewer back up can be a serious problem. Water

from heavy storms can seep into cracks in sewer system causing backups. These can be prevented by implementing a regular plumbing maintenance program.

As warm weather approaches, outdoor grounds sprinkler systems will need routine maintenance to ensure systems are working optimally.

- Consider a septic system inspection
- Consider a septic system pump when needed — the right time for pumping can be determined during an inspection
- Monitor for potential tree root damage
- Track issues and times between them
- Consider having trees with problem roots removed to avoid future plumbing problems
- Conduct summer sprinkler system maintenance to ensure they work properly

Lawn and other grounds irrigation systems should be checked for signs of damage and leakage prior to using. Check water hoses for damage prior to using them. During winter hoses may crack or dry rot, leaving them vulnerable to leaks. Consider replacing if damaged beyond repair. Replace seals as necessary. The buildings plumbing system not only supplies water for inside tasks, but also provides water for outdoor tasks. Consider outdoor activities and water usage when conserving water and cutting energy costs.