

Asset Preservation System

Purpose

The purpose of the procedure is to provide guidelines for maintaining Valley School District buildings.

Scope

This procedure applies to all staff members responsible for the operation and maintenance of school facilities.

Procedure

1. Introduction

1.1. Infrastructure Maintenance

1.1.1. In contrast to operational maintenance, infrastructure maintenance is in large part planned maintenance that is focused on the fundamental systems that make up a facility. It is based on the preventative and predictive building system maintenance required to maximize the useful life of building systems (i.e. HVAC, Roof, Electrical, etc.). Infrastructure maintenance also includes scheduled inspections and services; and system component repairs and replacements.

1.1.2. Over the course of a building's lifecycle, annual operational maintenance cost are relatively stable while the annual cost of infrastructure maintenance varies widely depending on where individual systems are in their life cycle.

1.2. Operational Maintenance

1.2.1. Operational maintenance includes the work of custodial, grounds, and maintenance professionals who respond to emergent and routine maintenance needs.

1.2.2. Custodial duties include cleaning, sanitizing, and trash removal; in addition to non-cleaning services. Some of the common non-cleaning services are; opening the school (which includes checking for vandalism); addressing safety and maintenance concerns; inspecting playgrounds and fields; attending to miscellaneous teacher/site-manager requests; activity set-ups; repairing furniture and equipment; ordering and delivering supplies; and putting up the Flag and physical education equipment.

1.2.3. Grounds workers are responsible for maintaining all site or campus property. Common grounds maintenance activities include but are not limited to mowing, trimming, weeding, snow removal, debris cleanup, and irrigation repairs.

- 1.2.4. Operational maintenance activities are those that routinely occur but cannot always be planned for. These activities include responding to calls for emergency repairs, patching holes, replacing ballasts, repairing fixtures, fixing locks, replacing broken windows, etc.

1.3. Goals

- 1.3.1. The Asset Preservation System (APS) is intended to extend facility life and maximize state capital construction funding and was not designed to reflect regular operational maintenance such as changing furnace filters, repairing light fixtures, repairing holes in walls, stripping and waxing floors or the hundreds of other operational maintenance tasks that occur in a school district on a daily basis. Although operational maintenance is complimentary to overall building condition, it is not the focus of the APS.
- 1.3.2. The primary goal of the APS is to maintain school facilities at such a level as to insure that the optimal education process can continue to take place over the expected life of the facility. The system is also in place to safeguard the public investment of tax dollars in funding school facilities by maintaining them in such a way as to extend their life.

2. EXTERIOR BUILDING CONDITION

2.1. Foundation/ Structure

This system includes slab concrete floors, concrete stem and foundation walls, CMU foundation walls on footings, columns, pier footings, concrete beams and other foundational support structures. This also includes soils or surfaces upon which structural members rest.

2.1.1. Cracks and Separation

- (a) Check that there are no cracks or separations in the walls if the structure is new.
- (b) Check that the observed cracks or separations are no more than hairline if the structure is used and is less than 10 years old.
- (c) Check that the observed wall cracks or separations are no more than 1/8" wide if the structure is more than 10 years old.
 - *If the vertical expansion joints show sign of failing as described, check the structure for settling, or seal shrinkage and make the appropriate repairs.*
- (d) Check that vertical expansion joints in brick are uniform in width.
- (e) Check vertical expansion for seal integrity
 - *If the vertical expansion joints show sign of failing as described, check the structure for settling, or seal shrinkage and make the appropriate repairs*

2.1.2. Drainage

- (a) Check that water does not pool near the foundation after a heavy rain.
 - *If it does, bring in fill and re-grade or add an underground drainage system with area drains.*
- (b) Check that the grade slopes away from the foundation at least 1 inch vertical per foot horizontally for the first 5 feet all around the perimeter (may be less where paving occurs).
 - *If necessary, revise the grade with sandy clay (not sand alone) fill or add underground drainage.*
- (c) Check that where paving occurs near the structure, that it positively drains away from the foundation.
 - *If not, add underground drainage with area drains or re-pave.*
- (d) Check that downspouts and gutters are clean and water from downspouts is directed away from the foundation
- (e) Check that gutters and downspouts exist, are clean with no blockages and are tied directly into an underground drainage system.
 - *If downspouts or the drainage system is blocked determine where the blockage occurs (use underground camera if necessary) and use 'snake' or 'jetter' to open the blockage.*
 - *If not connected to an underground system, have aboveground extensions (e.g. flexible plastic pipe or long concrete splash block) to carry the water at least five to ten feet away from the building before it is allowed to run onto the soil. (Does not apply if the soil is known to be predominately non-expansive.)*
- (f) Clean catch basins, storm drain inlets, and other conveyance structures in high pollutant load areas just before the wet season.
 - *Schedule to do this annually in August or September.*
- (g) Keep accurate records of the number of catch basins cleaned and the amount of waste collected
 - *This will allow you to determine if landscaping is contributing to the blockage. Trimming or removal of some landscaping may be necessary.*

2.1.3. Vegetation

- (a) Check that there is no broadleaf tree (e.g., oak, ash, maple, alder, poplar, etc.) closer to the foundation than a distance equal to the height of the tree, even if the tree is on an adjacent property. (Does not apply if the soil is known to be predominately non-expansive.)

- *If long existing trees are closer than nominal, consider trimming back the tree to inhibit root growth or consult an arborist. Keep a close eye on the foundation in these areas.*
- (b) Check that there is no conifer tree (e.g., pine) closer to the foundation than a distance equal to the radius of its canopy, even if the tree is on an adjacent property. (Does not apply if the soil is known to be predominately non-expansive.)
 - *If long existing trees are closer than nominal, consider trimming back the tree to inhibit root growth or consult an arborist. Keep a close eye on the foundation in these areas*
- (c) Check that there are no trees of any kind and no large shrubs growing next to the foundation. (Does not apply if the soil is known to be predominately non-expansive.)
 - *Remove, if possible.*
- (d) Check that the automatic sprinkler system (if applicable) is properly functioning.
 - *Change settings as required to keep watering uniform but to a minimum (as needed to support the vegetation), particularly around the foundation. Set the cycle times to purposely water trees away from the structure in an effort to establish their roots away from the foundation. Irrigations should be installed and adjusted as to not spray on buildings.*
- (e) Check for vegetation in front of fresh air intakes.
 - *If found remove vegetation.*

2.1.4. Water Leaks

- (a) Check that swimming pools, ponds, and fountains hold water without leaking.
 - *If it is discovered that you are losing water, check for leakage on supply and return lines. If no leakage is found the pond, etc., may need to be drained to find the leak.*
- (b) Check that there are no leaks near the foundation, such as a faucet drip or a condensate drip from an air conditioning unit.
 - *If found, repair as needed.*

2.2. Exterior Walls

This system includes all types of exterior wall systems from the foundation to the roofline. Exterior wall are made of wood, vinyl, aluminum, and composite lap siding; wood or composite panels; stucco or stucco like materials (EIFS, DRIVIT

systems); paints, sealants and stains; fired brick and CMU's; flashings and caulking; and several other material types.

2.2.1. Masonry

- (a) Check bricks, blocks and mortar for cracks and loose joints.
 - *Re-point joints and seal cracks.*
- (b) Check for efflorescence seeping from walls.
 - *Check for areas where water might be entering into the masonry and seal any areas found. Clean efflorescence areas and re-seal or re-paint*
- (c) Check the condition of caulking where the masonry meets other materials.
 - *Repair caulking if necessary*
- (d) Vandalism
 - *Keep a record of the last anti-graffiti application if used. Make sure that it is kept up to date.*
 - *Remove any vandalism as soon as possible after it occurs (one hour response time recommended).*

2.2.2. Siding

- (a) Check siding for loose or missing pieces, lifting or warping, and popped nails.
 - *Re-attach where necessary.*
- (b) Check painted surfaces for paint failure (peeling, chipping, blistering, chalking), water damage, or mildew.
 - *Thoroughly clean and prepare affected areas, and repaint with anti-mildew additive if necessary.*
- (c) Check the condition of caulking where two different materials meet, such as where wood siding joining the foundation wall, at inside corners and where window and door trim meets the siding.
 - *Repair caulking if necessary*

2.2.3. Toweled on Surfacing

- (a) Check for damaged corners or for areas that have been damaged due to heavy blows.
 - *Thoroughly clean and prepare affected areas, and repair surface with the appropriate materials.*

- (b) Check surfaces for material failure (peeling, chipping, blistering, chalking, panel warping or separation from structure), water damage, or mildew.
 - *Determine the reason for structure failure and make subsurface repairs. Repair the surface with the appropriate materials..*
- (c) Check the condition of caulking
 - *Repair caulking if necessary*

2.3. **Roofs**

This system includes all types of roofing materials as well as the roof superstructure and the water drainage system associated with the runoff from the foundation to the roofline. Exterior walls are made of wood, vinyl, aluminum, and composite lap siding, wood or composite panels, stucco or stucco like materials, paints, sealants and stains, fired brick and CMU's, flashings and caulking, and several other material types.

NOTE: Repair roof leaks as soon as possible to prevent deterioration of the building and damage to the contents. If leaks occur, damaged materials such as drywall, ceiling tiles, insulation, and carpet shall be cleaned, repaired, and/or replaced to prevent the possibility of mold and other indoor air problems.

2.3.1. **Inspection and Repair of Roofs**

- (a) Fall restraint systems inspected annually, and used during inspections.
 - *Install new system if none is present.*
- (b) Roofing shall be inspected biannually (spring and fall).
 - *Use or create a check list and establish specific dates for the inspections (i.e. Third week of September . . .)*
- (c) Inspect penetrations including, but not limited to, flue stacks, chimneys, HVAC roof curbs and duct work, gas lines, electrical conduit, and roof drains shall be checked for watertight seal.
 - *Reseal any damaged areas*
- (d) Inspect for ponding of water on flat roof areas.
 - *Make repairs to the roof that will allow the water to run to gutters, drains, or scuppers to prevent future deterioration of roof surfaces and possible problems with indoor air quality.*
- (e) Check gutters, drains and downspouts for debris and leaking joints.
 - *Remove debris and reseal cracked joints.*
- (f) Perform indoor air quality inspections

- *Log the results and compare with local or national standards.*
- (g) Inspect for missing or damaged roof vents.
 - *Replace where needed.*

2.3.2. Flat Roofs/Membrane

- (a) Check that there are no cracks or separations in the coverings.
 - *Reseal if cracks or separations are found. Cracks, broken bubbles, separations need to be sealed immediately using manufacturers recommended sealants.*

2.3.3. Composition Shingle

- (a) Check for roof warping.
 - *If found, check from the attic (where accessible) to see if there are broken or rotted rafters or if the sheathing has pulled away from the rafter. Make repair as needed. Replace failed sheathing as necessary.*
- (b) Check shingles for granular loss, buckling or curling, missing tabs or ridge caps.
 - *If damage is severe or extensive, replace the affected shingles.*
- (c) Remove heavy moss build up.
 - *Remove moss by pressure washing or an approved moss killer.*

2.3.4. Metal

Inspect for:

- (a) Deterioration or corrosion of horizontal panel seams, vertical panel seams, panel fasteners and perimeter and penetration flashings.
- (b) Loose, missing or dried sealant
- (c) Panel termination at the eaves, ridges and valleys to ensure closure strips are in place.
- (d) Buckling or standing water at the laps of the panels.
- (e) Check metal roofs for screws, fasteners, and panels that may have worked loose due to the expansion and contraction of the roof.
 - *Tighten screws, refasten panels and flashing and reseal where necessary using only sealant recommended by the manufacturer.*

2.4. Windows/Doors

This system includes all types of exterior doors. Exterior doors are solid core and normally clad with wood, vinyl, or steel. Windows are normally made of aluminum,

steel, or vinyl with thermo, gas charged glazing. There are places where metal roll up doors are also used.

- (a) Check the condition of caulking where siding or other wall material meets the window casing.
 - *Repair as needed.*
- (b) Check the windows for cracked or broken glass, loose putty around the panes, holes in screens, and evidence of moisture between panes.
 - *Repair broken panes, replace cracked putty with glazing compound, and replace windows where the gas charge has been compromised.*
- (c) Check that window close and seal properly.
 - *Adjust where possible or add weather stripping.*
- (d) Check curtain wall systems for proper drainage
 - *Make repairs where needed.*
- (e) Make sure that all doors work properly i.e., do not stick, are not warped and swing freely without binding.
 - *Trim doors or shim jambs where possible to improve fit. Severely warped doors should be replaced.*
- (f) Examine all door lock hardware work easily.
 - *Lubricate keyways and latch sets annually.*
- (g) Check weather stripping and thresholds on doors for damage and tightness of fit.
 - *Repair or replace as needed.*
- (h) Check door closers for proper operation and hydraulic fluid leaks.
 - *Replace badly leaking closers.*
 - *Adjust swing speed, back check, and latch rate annually.*

2.5. **Trim**

This system includes trim around windows and doors, fascia, corners, where exterior materials change from one area to another and other places where trim would be needed. The trim could be made of wood, aluminum, steel, vinyl or other materials. It also could be painted or unpainted.

- (a) Examine all trim for tightness of fit, damage, or decay.
 - *Repair or replace as needed.*

- (b) Check the condition of caulking where trim materials meet the siding at inside and outside corners, windows and doors, soffits and foundations.
 - *Re-caulk where needed.*
- (c) Verify all trim is securely attached.
 - *Reattach or replace as needed.*
- (d) Check all trim for sufficient covering of paint.
 - *Touch up or re-paint as needed.*
- (e) Check for signs of water intrusion through trim areas.
 - *Add flashing or caulk as necessary.*

3. Interior Building Conditions

3.1. Floors

This system includes all types of flooring systems, including concrete slabs, T&G car decking, and post and beam with subflooring. It also includes the finished surfaces such as VCT, sheet vinyl, carpet, wood, etc.

3.1.1. General

- (a) Inspect for settling, warping
- (b) Check for noise when walking on floors, squeaks and creaks
- (c) Check for low and high spots

3.1.2. Slab Flooring

- (a) Walk the interior and verify pad is level. Check that there are no uncomfortable floor slopes, easily noticed by walking each room
 - *If you suspect it to be out of level during a walk through, use a 4' to 6' level, or laser level to check for slope. If out of level search for the reason why. Re-engineering may be needed.*
- (b) Look for moisture seeping up through concrete pad: discoloration, blistering of the flooring, swelling and lifting of the flooring.
 - *Check for the source of the moisture and effect repairs.*
- (c) Keep floors well sealed.
 - *Repair floor cracks, joints, and scaling, chipping or flaking.*

3.1.3. Carpet

- (a) Check for wear, stains, fraying, delamination, odors.

- *For wear areas see if it is possible to change the traffic pattern. Effect repairs to carpet as soon as they are discovered as this will keep them from expanding.*
 - (b) Look for color loss, rippling, pilling, soiling.
 - *This may be a manufacturer's warranty claim depending on the age of the carpet. Check warranty.*
 - (c) Check for seam separation.
 - *This also could be an installation warranty item. Check warranty. Make repairs as soon as possible to prevent the spread of the damage.*
- 3.1.4. Vinyl**
- (a) Look for discoloration from mold and mildew and asphalt tracking.
 - (b) This might indicate that there is moisture penetrating from under the flooring. Make every effort to find the source to prevent the mold from spreading. These areas will need to be replaced.
 - (c) Check for stains or scuffing.
 - (d) Scuffs and stains are very difficult to remove from vinyl flooring. Replacement may be necessary if the damage is too extensive.
 - (e) Verify no seam separation, buckling, cuts, gouges or indentations
 - (f) This also could be an installation warranty item. Check warranty. Make repairs as soon as possible to prevent the spread of the damage.
- 3.1.5. Laminate**
- (a) Look for buckling, cupping or seam swelling or gaps
 - (b) Check for discoloration, peaked seams, cuts and gouges, fading , loss of gloss, indentations, scratches, stains and burns.
 - *Moisture and wear patterns are the most common sources of floor covering problems. Where problems occur make every effort to find the source. Make repairs as soon as possible to prevent the spread of the damage. Replacement may be necessary if the damage is too extensive.*
- 3.1.6. V.C.T. and Vinyl Tile**
- (a) Inspect for gaps, buckling and discoloration.
 - *See maintenance action suggestions for Vinyl and Laminate.*
- 3.1.7. Ceramic/Porcelain Tile**
- (a) Inspect for slippage.

- *Many ceramic floor tiles are designed to be slip resistant. Waxing over them can negate this design feature. If wax is used over ceramic tile it is suggested that a slip resistant wax or finish be used.*
- (b) Check for chipping, splitting, crazing, porosity, cracked grout and porous surface. Check for ceramic tile adhesive failure
 - *Clear loose pieces from affect areas a reinstall with the appropriate adhesives and then re-grout. Apply silicone grout sealer to dried grout. Remove any silicone residue from tile surfaces.*

3.1.8. Gym Floors – Wood

- (a) Inspect floor for tightening, cupping, broken, shrinkage.
 - *Moisture is the main cause of infrastructure damage to gym wood floors. It can be very costly. Check for sources of moisture on a regular basis.*
 - *Remove debris from expansion voids to allow the floor to expand and contract.*
- (b) Verify HVAC settings.
 - *Set to maintain a consistent temperature and relative a humidity between 35 and 50*
- (c) Verify walk off mats are in place at all outside entrances.
 - *Industry standards say that it takes about 16 feet of matting to remove most of the soil brought in from the outside.*
- (d) Look for scratches and other damage to surface.
 - *Do not allow the use of chairs, tables or other equipment of the floor without a protective covering for the floor.*
- (e) Verify floor has sufficient sealant.
 - *Floor should be screened and re-sealed annually and resurfaced every ten years.*

3.2. Interior Walls

This system includes all types of interior walls including painted GWB, brick or painted CMU, vinyl covered GWB, a variety of wainscoting and other interior wall surfaces.

3.2.1. Brick or Masonry

- (a) Check for sheer cracks, chipping or flaking paint, settling or separations, loosened or missing mortar, water penetration, bulging or out of plumb.

- *Cracks or chipped masonry may be difficult to repair. Mortar can be re-pointed. If the wall is severely out of plumb or cracked replacement should be explored.*

3.2.2. GWB and Paint

- (a) Check for sheer cracks, nail or screw popping, holes, chipping or flaking paint, settling or separations, water penetration, bulging or out of plumb.

- *Repair as needed and repaint.*

3.2.3. GWB w/Coverings

- (a) Check for sheer cracks, nail or screw popping, holes, cut or peeling materials, settling or separations, water penetration, bulging or out of plumb.

- *Vinyl covering will need to be repaired or replaced depending upon the severity of the damage.*

3.2.4. CAB

AHERA guidelines

- (a) Check and report any damage immediately. Also look for chipping or flaking paint, settling or separations, water penetration, bulging or out of plumb.

- *CAB should be removed from circulation spaces if possible. It can be managed in place but care must be taken whenever work is done around CAB and damaged CAB should be treated as a Hazmat incident.*

3.2.5. Wainscoting

- (a) Check for separation from GWB, nail or screw popping, water penetration, bulging or out of plumb.

- *Repair as needed and repaint.*

3.2.6. Chair Rails

Check for separation from GWB, nail or screw popping, chipping or flaking paint.

- *Repair as needed and repaint.*

3.2.7. General

Check that door stops are in place and functioning. Look for signs of overheating around switches, receptacles, and lights. Check for signs of settling around doors.

3.3. Ceilings

3.3.1. This system includes all types of interior ceiling including open ceilings, painted GWB, acoustical tiles over GWB, and suspended acoustical ceilings.

- (a) Periodically check for water stains, discoloration around light fixtures, soft spots, sags, and peeling paint.
 - *Discoloration in ceilings may be caused from a variety of problems including roof leaks, plumbing leaks, and fixtures that are getting too hot. Investigate to determine the cause and then affect repairs.*
- (b) Periodically check suspended T-bar grids for bent or sagging sections.
 - *Repair or replace*
- (c) Periodically check panels in suspended T-bar grids are set well in place to reduce falling during seismic event.
- (d) Provide access hatch in large hard-lid ceilings large enough for appropriate access and/or per building code.
- (e) Monitor escutcheons around sprinkler heads, diffusers, light fixtures and other ceiling-mounted equipment are secure and sealed.
 - *Check that wires or chains are attached to light fixture to prevent falling in the event of an earthquake*

3.4. Fixed Equipment

Fixed equipment could include a wide variety of non-structural items such as window coverings, kitchen equipment, cabinetry, kilns, bleachers, basketball backboards, operable walls, etc.

- *It is suggested that a list of such equipment be identified for each facility and routinely inspected for damage and proper operation, preferably according to manufacturer recommendations.*

4. MECHANICAL SYSTEMS CONDITIONS

4.1. Electrical

This system includes all types of electrical equipment and systems such as light fixtures, panels, transformers, conduits, switch gear, and conduit and wiring.

4.1.1. Inspection and Repair of Electrical Systems

- (a) Electrical systems shall be inspected and repaired by trained personnel only.
 - *A licensed electrician may be preferred but a general maintenance professional with background and experience in electrical systems can take care of the majority of electrical problems.*
- (b) Main transformers, switchgear, and breaker panels shall be inspected for loose connections at breakers and main lugs,
 - *Be sure to wear the proper equipment, using insulated tools, fiberglass ladders, and use lock out / tag out procedures..*
- (c) Verify panels are correctly labeled.
 - *This can most easily be accomplished by two workers using radios.*
- (d) Panels shall be accessible and kept clear of materials and supplies at all times. Covers shall be in place.
 - *Marking with paint, the areas in front of panels is an effective method to help in keeping people from storing things too close to panels.*
- (e) Panel rooms may be required to be locked to prevent unauthorized persons from having access to equipment.
 - *They should also be kept clear of stored materials*
- (f) Surge and lightning protection devices should be used for all electronic equipment.
- (g) Flammable materials must be stored away from all equipment.
 - *They should be kept in flameproof cabinets that are labeled as such.*
- (h) Suggest accompanying fire marshal's representative during their periodic walk-through inspections.
- (i) Check that outlets are not overloaded. Remove any non-rated, non-surge protected extension cords.
 - *Extension cords should not be in use permanently.*

4.2. Plumbing

This system includes all types of plumbing systems such as piping and insulation, toilets, urinals, sinks, strainers, floor drains, trap primers, flush valves, circ pumps and faucets.

4.2.1. General

- (a) Plumbing within all facilities shall be inspected periodically for leaks and proper operation.
- (b) Areas to inspect will include, but are not limited to, piping and insulation, toilets, urinals, sinks, strainers, floor drains, trap primers, flush valves, and faucets.
- (c) Certified personnel must inspect back flow prevention devices annually

4.2.2. Inspection and Repair of Plumbing

- (a) For sensor-activation units, periodically check battery power.
 - *Develop a chart that tracks the life of the batteries and then schedule replacement times.*
- (b) Check annually for leaks or damage due to frozen pipes.
 - *For piping lines with heat trace, periodically check functionality.*
 - *For un-insulated pipes in outdoor areas without heat trace, regularly inspect portions above ground for freeze/thaw expansion damage.*
- (c) Inspect/replace any water filters regularly.
 - *Schedule per manufacturer's recommendations.*

4.2.3. Fixtures

- (a) Check fixtures for bluish or rust colored stains.
 - *If found, this is an indication that the water contains ingredients that is breaking down the piping or the fixtures.*
- (b) Check for cracks or broken fixtures.
 - *Repair before they become a major problem.*
- (c) Check under cabinets for leaks in supply lines.
 - *A sheet of newsprint paper placed in the cabinet under the pipes at the beginning of summer can help in detecting slow leaks.*
- (d) Check for pitting in chrome and for faucets, flushometers, etc that won't shut off.
 - *Preventative inspection or replacement scheduling can help keep fixtures in optimal condition and extend the life of the fixtures. Repair or replace as needed.*

4.2.4. Supply

- (a) Check fixtures for bluish or rust colored stains.

- *This is likely to indicate problems with the supply lines or fixtures. Periodically check water for lead, copper, and coli forms.*
- (b) Take note of the inside of supply lines when changing fixtures.
 - *Build up on the inside of line could indicate problems with water quality.*
- (c) Check that HW supply lines are insulated.
 - *This will help with energy efficiency. Add insulation where needed.*
- (d) Listen for signs of ‘water hammer’.
 - *If severe, water hammer can cause leakage long term. ‘Suppression’ piping can be added if necessary.*
- (e) Check circulation pump lubrication and couplers.
 - *Schedule at least 4 times a year*
- (f) Check backflow prevention valves.
 - *Schedule annually.*
- (g) Check water heaters for proper temperatures, that TP valves are working properly, and that gas heaters are properly vented. Check for leaks or rust at the base of heaters.
 - *Test TP valves 3 to 4 times a year and flush tank annually.*
- (h) Check to make sure that fixture shutoffs function properly.
 - *When opening shutoffs, open all the way and then close 1/8th of a turn to keep the valve from ‘freezing up’.*
- (i) Make sure that main water shutoffs are properly marked and documented.
 - *Mark on floor plan*

4.2.5. Waste

- (a) Check P-traps, wax rings, pumps, etc. for leakage.
 - *A sheet of newsprint paper placed in the cabinet under the pipes at the beginning of summer can help in detecting slow leaks.*
- (b) Identify and document the location of cleanouts.
 - *Mark on floor plan*
- (c) Check waste lines that travel a long distance for sagging or lack of slope.

- *Install strapping or bracing to insure that slopes are maintained and sags are taken out of the line. Failure to do this may cause blockages due to solids settling in the low areas.*

4.2.6. Vents

- (a) Check roof vents annually to see that they are not plugged or broken off.
 - *Schedule on PM Chart*
- (b) Check to see that they are not close to intake fans.
 - *Extend higher to a level that is higher than the intake.*

4.2.7. Sewer

- (a) Check septic system annually or as required by local jurisdictions and document when tanks are pumped.
 - *Schedule to do this before school starts each year*
- (b) Check for signs of settling in drain fields.
 - *If this is an old system, this could mean that you have a water leak that has gotten into the drain field. Check water usage for spike in flow. If newly installed, it might be natural compaction due to settling and fill should be added to level ground.*
- (c) Install irrigation meters to avoid sewer charges.
 - *Sewer charges are often tied to potable water usage which would include irrigation systems. Separating irrigation onto its own meter will keep the water being used for irrigation from be counted in the sewer water calculations.*

4.2.8. Kitchens

- (a) Check dishwasher water temperature to insure 180 degree final rinse temperature.
 - *This is the temperature required by most health departments for the rinse cycle. This is usually accomplished through a water heater booster. If temperatures are not being reached, the booster may be defective.*
- (b) Check grease traps.
 - *Check twice a year to begin with to see how much accumulates and then schedule periodic cleaning as needed.*

4.2.9. Heating

This system includes all types of heating systems, such as gas and electric boilers and furnaces, heat pumps, fan coil units, unit ventilators, pneumatic controls and DDC, etc.

4.2.10. General

Inspection, cleaning, servicing and repair of heating, ventilation and air-conditioning systems.

- (a) Heating, ventilation, and air-conditioning systems shall be inspected, cleaned, and serviced by properly trained personnel.
- (b) Filters shall be replaced or cleaned per IAW manufacturer's recommendations. The type of filter product being used and the condition and location of the area being heated or cooled shall determine scheduled filter replacement. Filter placement shall assure filtration of all system air.
- (c) Heating boiler systems are regulated by state and local laws and shall only be operated and maintained by licensed and trained personnel.

4.2.11. Ventilation and Exhaust

- (a) Systems should be inspected annually to verify proper operation.
 - *Lubricate motors and bearings where applicable.*
 - *Adjust all drive belts and pulleys.*
 - *Inspect fan blades for damage.*
 - *Check units during operation for vibration and noise.*
 - *Secure all vents, grilles, and diffusers to avoid vibration noise.*
- (b) Monitor that thermostats are being used properly.
 - *Don't allow students or teachers to turn them all the way up or down.*
- (c) Ensure proper balancing
 - *Discourage the propping open of interior and exterior doors,*
 - *Close doors & windows during extreme temperatures (unless there is no air conditioning).*

4.3. Boiler Maintenance

4.3.1. Steam Boiler

- (a) Visually inspect to insure all equipment is operating and that safety systems are in place.

- *Pay particular attention to high limit cut offs and water make up switches*
- (b) Check steam pressure under different loads
- (c) Check water levels
- (d) Check gas or oil burner flame
 - *View through the flame viewing window to insure the proper combustion is taking place.*
- (e) Check motor condition temperatures
- (f) Verify the bottom, surface and water column blow downs are occurring and are effective.
 - *Blowing down the boilers regularly helps prevent the buildup of residue which decreases efficiency.*
- (g) Keep daily logs on:
 - *Type and amount of fuel used*
 - *Flue gas temperatures*
 - *Makeup water volume*
 - *Steam pressure, temperature and amount generated*
- (h) Check and clean/replace filters and strainers on a scheduled basis
- (i) Confirm water treatment system is functioning properly
 - *Sample water weekly*
 - *Check relief valves for leaks*
 - *Inspect boiler insulation*

4.3.2. Water Boiler

- (a) Visually inspect to insure all equipment is operating and that safety systems are in place.
 - *Pay particular attention to high limit cut offs and water make up switches*
- (b) Check water levels
- (c) Check gas or oil burner flame
 - *View through the flame viewing window to insure the proper combustion is taking place.*
- (d) Check motor condition temperatures

- (e) Verify the bottom, surface and water column blow downs are occurring and are effective.
 - *Blowing down the boilers regularly helps prevent the buildup of residue which decreases efficiency.*
- (f) Keep daily logs on:
 - *Type and amount of fuel used.*
 - *Flue gas temperatures.*
 - *Makeup water volume.*
- (g) Check and clean/replace filters and strainers on a scheduled basis.
- (h) Confirm water treatment system is functioning properly.
 - *Sample water weekly*
- (i) Check relief valves for leaks
- (j) Inspect boiler insulation

4.3.3. Cooling

This system includes all types of cooling units including chillers, cooling towers, heat pumps, fans, pneumatic controls, DDC, etc.

4.3.4. Cooling Towers

- (a) Cooling tower or fluid cooler systems shall be serviced biannually (spring and fall).
- (b) Inspect: equipment visually and repair as needed.
 - *Motors and bearings and lubricate where applicable.*
 - *Drive belts and pulleys and adjust as necessary.*
 - *Fan blades for debris and damage.*
 - *Make-up water system; adjust as necessary.*
- (c) Clean:
 - *Tank systems to remove scale, dirt, and biological growth.*
 - *Air intake screens and sump strainers.*
 - *All spray nozzles.*
 - *Water treatments shall be performed by trained personnel only.*
 - *Chemicals shall be stored away from all student occupied areas.*

4.3.5. Chillers

- (a) Chilled water systems shall have water, oil, and refrigeration levels checked as recommended by manufacturer.
- (b) Inspect:
 - *Wiring, piping, valves, pumps, chiller, and piping insulation bi-annually.*
 - *Chiller case for rust and condenser tubes for scale annually.*
 - *Belts and couplings.*
- (c) Testing and calibrating chiller controls should be done annually by qualified personnel.
- (d) Provide for draining or means of freeze protection for piping, coils, or other cooling systems that could be subject to low temperatures during periods of inclement weather.

4.3.6. Lighting

This system includes all types of lighting and lighting systems including HPS, MH, fluorescent, incandescent, CFL, emergency, etc.

4.3.7. Inspection, Testing, and Repair of Emergency Lighting and Exit Light Fixtures

- (a) Group re-lamp to reduce lumen depreciation and maintenance costs.
 - *Preferred if funding is advisable*
- (b) Clean fixtures at time of re-lamping, more often in dirty locations.
 - *Schedule re-lamping during summer down time so cleaning of all fixtures can be done at the same time. This will save on labor costs.*
- (c) Write a lighting maintenance policy.
 - *This could be done as part of a preliminary or investment grade energy audit.*
- (d) Design upgrades to incorporate effective maintenance.
- (e) Consult manufacturers as resources.
- (f) Properly dispose of lamps.
 - *Take particular care for mercury vapor, florescent, and CFL's.*

5. SAFETY/BUILDING CODE

Means of Exit – This system includes all types of exterior doors, hardware, corridors, exit lighting, etc.

5.1. Lighting

(a) Ensure that all exit lights and backup lights are working correctly.

- *Schedule and test quarterly.*

(b) Exits and exit access corridors are well lighted.

5.2. Doors

(a) Verify door panic hardware and ADA automatic door openers are functional.

(b) Replace batteries in exit alarm.

(c) Ensure Exit door thresholds are flat (up to 1/2").

(d) Verify door closures are adjusted to ADA specifications.

5.3. Corridors

Ensure all exit paths and areas of refuge are free from obstruction (furniture, trash cans, boxes, etc.) and all door swings have proper ADA clearances.

5.4. **Fire Resistance** – This system includes all means of fire resistance such as sprinkler systems, fire rated doors and walls, insulation, fire extinguishers, etc.

5.5. Fire Sprinkler Systems

(a) Fire sprinkler systems shall be inspected annually and serviced only by a licensed contractor.

5.6. Fire Extinguishers and Kitchen Hood Vent Suppression Systems

(a) Fire extinguishers and kitchen hood vent suppression systems shall be inspected monthly or as required by local jurisdictions and checked annually by a certified inspector.

(b) Extinguishers must have a current year inspection tag fastened to it and must be inspected and recharged or pressure tested, if needed, at least annually. Suggest district personnel accompany the inspector.

- *This can actually be done in house with a certified worker.*

5.7. Fire Alarm System

This system includes all types' fire alarm systems and equipment such as annunciator panels, etc.

5.8. Fire Alarms

(a) Fire alarms shall be tested on a monthly basis when performing fire drills within each facility and shall be inspected by a licensed contractor annually.

- *Inspect and clean smoke and heat detectors within the building and duct work to prevent false alarms from occurring.*

(b) Equipment such as pull stations and alarm bells or buzzers shall be checked as well as strobe light indicators where applicable.

- (c) Control panels shall be accessible and clear of materials and supplies but restricted to authorized personnel only.

5.9. Emergency Lighting

This system includes all types emergency lighting and emergency power generation including, battery packs, generators, etc.

5.9.1. Emergency Lighting and Exit Light Fixtures

- (a) Emergency lighting and exit light fixtures shall be inspected and tested each month while performing fire extinguisher inspections. Inspect wiring and batteries for corrosion and leakage.

5.10. Fire Resistance

- (a) Periodically check for breaches in fire-rated construction (walls, ceilings, etc.). Ensure fire-rated doors and windows can close properly.
 - *Schedule a time to do this on an annual basis..*
- (b) Inspect and test overhead roll down fire doors annually for proper operation.
 - *Lubricate and check to make sure fire link is still installed.*

5.11. Columns and Beams

- (a) Check to see that wrapped wood beams and columns are not damaged to the point that would allow fire penetration.
- (b) Repair as needed.
- (c) Check to see that sprayed on fire retardant on steel beams and columns has not been damaged or removed.

5.12. Fire Walls

- (a) Check to insure that there are no holes in fire rated walls that would allow fire penetration.
 - *Repair as needed.*
- (b) Check to insure that any penetrations through fire rated walls have been properly sealed.
 - *Feel to see if there is any movement of air around penetrations. Seal where needed with suitable material.*

5.13. Doors

- (a) Check to insure that no fire rated doors have been replaced with hollow core doors.
 - *A part of annual fire inspection or check with facilities to see if areas have been modernized.*

- (b) Check door closers to see that closing pressures are adequate to fully close doors.
 - *Same as instructions for Exterior doors.*
- (c) Check to see that no door stops are in use to prop doors open.
 - *Remove them if found.*
- (d) Check to insure that fire doors close automatically with the fire alarm.
 - *Check during monthly or quarterly fire drills.*
- (e) Check to insure that fusible links are in place.
- (f) Check for damage to perimeter smoke seals on fire rated doors.
 - *Replace if necessary.*

5.14. Mechanical

- (a) Check duct fusible fire dampers, where feasible, to insure that there are no blockages to restrict closing.
 - *Remove blockage where found.*
- (b) Check to insure that fans shut down when the fire alarm goes off.
 - *Check during fire drill.*
- (c) If required by local jurisdictions flush fire sprinkler systems annually to clean lines and insure proper function in case of a fire.
 - *Be sure to notify fire department before flushing. This flushing will require the re-setting of the flow alarm valve.*
- (d) Check to insure that there are no obstructions to sprinkler heads.
 - *Remove items that may impede the flow of water to the area covered by the head.*

5.15. Ceilings

- (a) Check to insure that all ceiling panels are in place and do not have holes in them.
 - *Replace where necessary.*

5.16. Miscellaneous

- (a) Insure that stage curtains are fire rated.
 - *Check for label on curtains.*
- (b) Check to insure that there are no combustible materials stacked within ten feet of the building and that there are no combustible materials improperly stored within the building.

- *Remove if necessary.*

(c) Insure that flammable materials are kept in fire resistant cabinets.

6. PROVISIONS FOR HANDICAPPED

6.1. ADA Provisions

This system includes any area where ADA compliance is required. Under Title III of the ADA, all "new construction" (construction, modification or alterations) after the effective date of the ADA (approximately July 1992) must be fully compliant with the Americans With Disabilities Act Accessibility Guidelines ("ADAAG")[1] found in the Code of Federal Regulations at 28 C.F.R., Part 36, Appendix "A."

6.2. Title III also has application to "existing facilities". One of the definitions of "discrimination" under Title III of the ADA is a "failure to remove" architectural barriers in existing facilities. See 42 U.S.C. § 12182(b)(2)(A)(iv). This means that even facilities that have not been modified or altered in any way after the ADA was passed still have obligations. The standard is whether "removing barriers" (typically defined as bringing a condition into compliance with the ADAAG) is "readily achievable," defined as "easily accomplished without much difficulty or expense."

6.3. Systems for Disabled, Impaired, or Handicapped Persons

- (a) All related systems or equipment shall be inspected and, where appropriate, tested on a semi-annual basis.
- (b) Automatic doors and vertical conveyance equipment and devices shall be inspected to ensure safe operation and tested at least monthly.
- (c) Restroom accommodations shall be inspected and maintained weekly.
- (d) Required signage shall be maintained in good repair, ramps, walkways, and other means of egress shall be checked for damage and repaired promptly.

Supporting Documentation

Document History

| Action: | Date: |
|---------|-------------------|
| New | February 15, 2011 |
| Revised | |
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