

# Facilities Maintenance Standards

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## Purpose

The purpose of these standards is to outline the minimum requirements for maintaining state owned facilities and infrastructures in a manner that will maximize the usefulness and cost effectiveness of these facilities in enhancing the quality of life of Utah state employees, citizens, and visitors. Additional work may be required to satisfy code or judicial requirements.

All agencies and institutions shall comply and will be audited against these standards by the Utah State Building Board. Exempt agencies are to review their maintenance programs against these standards and to report the degree of compliance of each of their complexes to the legislature through the Utah State Building Board.

## 1.0 Documentation

### 1.1 Architectural and Mechanical

1.1.1 At least one copy of the Operations and Maintenance Manuals shall be maintained at the facility or complex.

1.1.2 At least one copy of the architectural, mechanical, and electrical as built drawings shall be maintained at the facility or complex.

1.1.3 A mechanism shall be provided whereby as built drawings are promptly updated upon changes in the structural, mechanical, electrical, or plumbing systems.

1.1.4 As built drawings shall be reviewed periodically to assure that they reflect the current building or infrastructure configuration to be maintained at the facility or complex.

1.1.5 Reserve copies of all building documentation shall be archived in an appropriate and separate location from the facility.

## 2.0 Equipment Data Base and Tagging

2.1 An appropriate equipment numbering system shall be utilized and metal, plastic tags or labels placed on all building equipment and electrical panels.

2.2 All equipment name plate data shall be collected, documented, and filed in a computerized data base/computerized maintenance management system (CMMS).

## 3.0 Corrective Maintenance

3.1 A work request system shall be defined and made available to the user of the facility/infrastructure so that maintenance problems can be reported and logged promptly by the maintenance department. A log of all requests shall be maintained indicating the date of the request and the date of completion.

3.2 A work order system shall be established to govern the procedures for corrective maintenance work. The work order system shall capture maintenance time, costs, nature of repair, and shall provide a basis for identifying maintenance backlog on the facility/infrastructure.

3.3 Maintenance backlogs on the facility/infrastructure shall be regularly reviewed and older requests processed so that no request goes unheeded and all requests are acted upon in a timely manner.

3.4 A priority system for corrective maintenance shall be established so that maintenance work is accomplished in an orderly and systematic manner. The facility user shall be made aware of the priority of requested maintenance and the time expected to accomplish the correction. If the stated goal cannot be met, the user shall be informed of the new goal for completing the request.

3.5 The agency and institution shall report to the Utah State Building Board Director a current and accurate operations and maintenance costs tracked to the individual building level for any facility measuring 3,000 GSF or greater. For locations consisting of multiple facilities that individually do not meet the minimum GSF requirement shall be required to report operations and maintenance costs at the campus/complex level. Reporting for Individual building O&M cost shall be reported no later than December 31, of each year.

3.6 All operations and maintenance expenditure reports for both direct and indirect cost shall contain current and accurate costs including but not limited to: Utilities (, Electrical, Gas/Fuel, and Water in certain cases Steam, High Temp Water, Chilled Water and Sewer may need reporting), Labor, Materials, Custodial, Landscape & Grounds services, Insurance, travel, leasing and rent.

#### **4.0 Preventive Maintenance**

4.1 State facilities managers shall automate preventive maintenance scheduling and equipment data bases.

4.2 All equipment (e.g. chillers, boilers, air handlers and associated controls, air compressors, restroom exhaust fans, domestic hot water circulating pumps, automatic door operators, temperature control devices, etc.) shall be on a computer based preventive maintenance schedule the frequency of preventive maintenance procedures shall be determined by manufacturer's recommendations and local craft expertise and site specific conditions.

4.3 A filter maintenance schedule shall be established for HVAC filters and a record of filter changes maintained.

4.4 Preventive maintenance work orders shall be issued for both contract and in house preventive maintenance and the completion of the prescribed maintenance requirements documented.

4.5 Emergency generators shall be test run at least monthly. If test runs are not automatic, records of these test runs shall be maintained at the site. At least yearly, the transfer from outside power to emergency power shall be scheduled and successfully performed.

## **5.0 Boilers**

### **5.1 Steam Boilers**

5.1.1 Steam boilers shall be checked daily when operational or on a automated system that tracks them.

5.1.2 Low water cut off devices shall be checked for actual boiler shut down at the beginning of the heating season and at least quarterly thereafter by duplicating an actual low-water condition.

5.1.3 Boiler relief valves shall be tested for proper operation at least annually.

5.1.4 A record of these tests shall be maintained near the location of the boiler.

5.1.5 A daily log of the operating parameters shall be maintained on boilers when they are operational to include pressures, temperatures, water levels, condition of makeup and boiler feed water, and name of individual checking parameters.\

### **5.2 Hot Water And Steam Boilers**

5.2.1 All boilers shall receive inspections and certification as required from an authorized state agent or insurance inspector. The certificate of compliance shall be maintained at the boiler.

5.2.2 Monthly tests of boiler water pH and Total Dissolved Solids shall constitute the basis upon which to add water treatment chemicals. A log of these tests shall be maintained in the boiler room.

## **6.0 Life Safety**

6.1 All elevators shall receive regular inspections and maintenance by certified elevator maintenance contractors. Records of such maintenance shall be maintained at the site. Telephones within elevators shall be checked monthly for proper operation.

6.1.1 All elevators shall have current Permits to Operate posted near the elevator equipment as required by the Utah State Labor Commission.

### **6.2 Fire Protection Equipment**

6.2.1 Detection and notification systems (e.g. control panel, smoke detection devices, heat sensing devices, strobe alarm lights, audible alarm indicating devices, phone line communication module, etc.) shall be inspected annually and tested for operation at least semi-annually by a properly certified technician. A record of these inspections shall be maintained and FACP needs to be properly tagged as required by the Utah State Fire Marshal.

6.2.2 Halon/Ansulor pre-action systems shall be inspected and tested by a certified inspector semi-annually to assure their readiness in the event of a fire. Testing and inspection of these systems shall be documented.

6.2.3 Fire extinguishers shall be inspected monthly and tagged annually by a certified inspector and all tags should be properly and legibly completed

6.2.4 Automatic fire sprinkler systems, standpipes and fire pumps shall be inspected annually by a certified technician. Tags should be properly and completely filled out including the type of inspection, month and year those inspections were performed, the person who performed the inspection, and the person performing the inspections certificate of registration number.

6.3 Uninterruptible power supply systems for data processing centers shall be inspected and tested appropriately to assure their readiness in the event of external power interruptions. Maintenance on these systems shall be documented.

6.4 Emergency directional and exit devices (e.g. exit signs, emergency lights, ADA assist equipment, alarm communicators, etc.) shall be inspected at least quarterly for proper operation.

## **7.0 Air Conditioning and Refrigerated Equipment**

### **7.1 Chillers**

7.1.1 A daily log or computerized log of important data (e.g. chilled water supply and return temperature, condenser water supply and return temperature, current draw, outside air temperature, oil level and pressure, etc.) should be kept, and the information trended to identify changes in the system operation; the causes should then be determined and corrected to prevent possible system damage.

7.1.2 The systems shall be leak checked on a quarterly basis during the operating season and once during the winter.

7.1.3 A factory trained technician should perform a service inspection annually to include an oil analysis. Any abnormal results should be discussed with the chiller manufacturer to determine a proper course of action.

7.1.4 Chillers shall not be permitted to leak in excess of 15% of their total charge annually. Losses exceeding this amount are in violation of the law and may result in costly fines.

7.1.4.1 Should refrigerant need to be added to a system, the amount of refrigerant added should be carefully documented and record the cause of the loss and type of work done to repair it.

7.1.5 An adequate supply of refrigerant for the uninterrupted operation of existing CFC chillers shall be maintained until the chiller is converted or replaced. Examples of CFCs are R11, R12, R113, R502, etc..

7.1.6 Maintenance personnel who perform work other than daily logs and visual inspections on CFC chillers or refrigeration equipment containing CFCs or HCFCs must by law have an EPA certification matching the type of equipment being worked on.

7.1.7 The condition of refrigerant cooling water systems such as cooling towers shall be checked visually at least weekly for algae growth and scaling and appropriate treatment administered.

### **7.2 Roof Top and Package Units**

7.2.1 Annually check and clean as needed the condenser coil and evaporator coil.

7.2.2 The following preventive maintenance items should be completed annually: tighten belts, oil motors, leak check, clean evaporator pans and drains.

7.2.3 Quarterly check filters and replace where necessary.

### 7.3 Small Refrigerated Equipment

7.3.1 Annually clean condenser coil.

7.3.2 Annually oil the condenser fan motor and visually inspect the equipment and make necessary repairs as needed.

## 8.0 Plumbing

8.1 All Backflow Prevention Devices shall be tested by a certified technician at least annually and proper documentation shall be filed with the appropriate agency. Proper documentation shall be kept on site and readily available.

8.2 Cross-connection control shall be provided on any water operated equipment or mechanism using water treating chemicals or substances that may cause pollution or contamination of domestic water supply.

8.3 Any water system containing storage water heating equipment shall be provided with an approved, UL listed, adequately sized combination temperature and pressure relief valve, and must also be seismically strapped

8.4 Pressure vessels must be tested annually or as required and all certificates must be kept current and available on site.

## 9.0 Electrical Systems

9.1 All electrical panels shall have a thermal-scan test performed bi-annually on all components to identify hot spots or abnormal temperatures. The results of the test shall be documented.

9.2 A clearance of three feet, or as required by NEC shall be maintained around all electrical panels and electrical rooms shall not be used for general storage.

9.3 Every electrical panel shall be properly labeled identifying the following: panel identifier, area being serviced by each individual breaker, equipment being serviced by each breaker or disconnect.

9.4 All pull boxes, junction boxes, electrical termination boxes shall have proper covers in place and panels accessible to persons other than maintenance personnel shall remain locked to guard against vandalism or personal injury.

9.5 Only qualified electrical personnel shall be permitted to work on electrical equipment.

## 10.0 Facility Inspections

10.1 The facility shall periodically receive a detailed and comprehensive maintenance audit. The audit shall include HVAC filter condition, mechanical room cleanliness and condition, corrective and preventive maintenance programs, facility condition, ADA compliance, level of performance of the janitorial service, condition of the grounds, and a customer survey to determine the level of user satisfaction with the facility and the facility management and maintenance services.

10.2 A copy of the above audit shall be maintained at the facility.

10.3 Each year a Facility Risk Management Inspection shall be conducted, documented, and filed with the Risk Management Section of the Department of Administrative Services.

10.4 Actions necessary to bring the facility into compliance with Risk Management Standards shall be completed within two months following the above Risk Management Inspection for routine maintenance items. Items requiring capital expenditures shall be budgeted and accomplished as funds can be obtained.

10.5 Every five years the facility shall be inspected and evaluated by an Architect/Engineer (A/E), qualified third party or qualified in-house personnel to determine structural and infrastructural maintenance and preventive maintenance needs.

10.5.1 The structural inspection and evaluation may include interior and exterior painting, foundations, walls, carpeting, windows, roofs, doors, ADA and OSHA compliance, brick work, landscaping, sidewalks, structural integrity, and exterior surface cleanliness.

10.5.2 The mechanical and electrical evaluation shall include the HVAC systems, plumbing systems, security, fire prevention and warning systems, and electrical distribution systems.

10.6 The above inspection shall be documented and shall serve as a basis for budgeting for needed capital improvements.

10.7 Intrusion alarm systems that communicate via phone line shall be tested monthly to assure proper operation.

10.8 Periodic inspections of facilities may be requested of local fire departments and the identified deficiencies promptly corrected. These inspections and corrections shall be documented and kept on file at the facility.

## **11.0 Indoor Air Quality and Energy Management**

11.1 Indoor air quality shall be maintained within pertinent ASHRAE, OSHA, and State of Utah guidelines.

11.2 All individual building utility costs (gas, electric, water, etc.) at facilities meeting the criteria listed in section 3.5 of the Facility Maintenance Standards shall be metered and reported back to the Building Board Director annually by December 31, of each year and made available at the facility so that energy usage can be accurately determined and optimized.

11.3 Based on the ongoing analysis of energy usage, appropriate energy conservation measures shall be budgeted for, implemented, and the resulting energy savings documented.

## **12.0 The following documents shall be on hand at the facility (where applicable) in an up-to-date condition:**

12.1 A Hazardous Materials Management Plan

12.2 An Asbestos Control and Management Plan

12.3 A Laboratory Hygiene Plan

12.4 A Lockout/Tag out Procedure for Performing Maintenance on Building Equipment

12.5 A Blood Born Pathogen Program

12.6 An Emergency Management Plan to include emergency evacuation and disaster recovery.

12.7 A Respirator Program

12.8 A Hearing Conservation Program

12.9 A Permit Confined Space Entry Program

12.10 A Lead Exposure Program

12.11 A Trenching Standard

### **13. 0 Available DFCM Maintenance Management Services**

DFCM can provide certain maintenance management, energy management, and preventive maintenance services to agencies at cost. The following services are available:

- maintenance management consulting
- maintenance audits of facilities
- energy management audits and energy management consulting
- development of the documents listed in 12.0 above.