Uxbridge School Facilities Maintenance Plan

FY07 – FY11

The Uxbridge Public Schools realizes that an essential component of an effective school program is a well-conceived school facilities maintenance plan. A properly implemented plan provides school administrators comfort and confidence when contemplating the future of their campuses. A comprehensive facility maintenance program is a school district's foremost tool for protecting its investment in school facilities.

The objective of the Uxbridge School Facilities Maintenance Plan is to provide a clean, orderly, safe, cost-effective, and instructionally supportive school environment that contributes to the school district's mission of educating our children to meet the intellectual, physical, and emotional demands of the 21st century.

The success of the Uxbridge School Facilities Maintenance Plan is contingent on...

Administrators who:

- recognize that facility maintenance contributes to the physical and financial well-being of the organization
- understand that school facility maintenance affects building appearance, equipment operation, student and staff health, and student learning
- appreciate that facility maintenance requires funding
- acknowledge that strategic planning for facilities maintenance is a team effort that requires input and expertise from a wide range of stakeholders
- coordinate facility maintenance activities throughout the organization
- demand appropriate implementation and evaluation of facilities maintenance plans

Facilities staff who:

- understand a wide range of facilities operations and issues
- receive training to improve their knowledge and skills related to facilities maintenance
- educate school and district administrators about facility operations
- teach other staff how they can help with facilities maintenance
- cooperate effectively with policy-makers and budgetary decision-makers
- appreciate that facility maintenance decision-making is influenced by instructional needs

Teachers who:

- recognize that facilities maintenance supports student learning
- educate students about how to treat school facilities appropriately
- communicate their expectations for facilities as they relate to enhancing student learning
- treat facilities with respect

Students who:

- see school facilities as their learning environment
- treat facilities with respect

Parents and community members who:

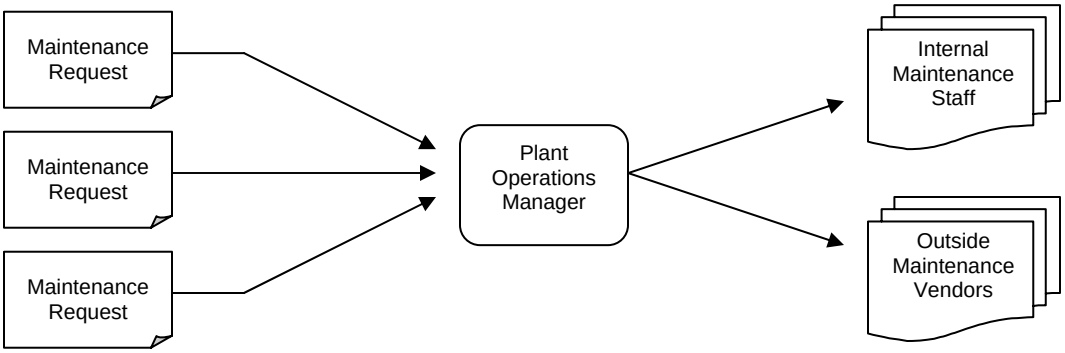
- recognize that school facilities are the training grounds for future citizens and leaders
- respect decision-making regarding school facility use and maintenance
- contribute to school facility maintenance decision-making as requested
- consent to the financial obligations associated with good school facility maintenance

MAINTENANCE WORK ORDER MANAGEMENT

In July 2006, the Uxbridge Public Schools deployed SchoolDude.com's online application, *Maintenance Direct*, as the district's maintenance work order managements system with the following objectives:

- improve productivity efficiency by reducing data entry and phone work requests
- improve support by automating communications and feedback with originators
- automated report generation
- target goal: 1-hour per student reduction per year in maintenance man-hours

Work Order Process Flow



DISTRICT MAINTENANCE PROVIDERS

Maintenance services for the Uxbridge Public School District Facilities are provided by district employed staff for minor and/or utility maintenance and outside maintenance vendors for standard maintenance services.

The Uxbridge Public Schools currently employee the following Plant Operations Staff:

- Plant Operations Manager
- Thirteen (13) Custodians
- One (1) Utility Maintenance Custodian – minor maintenance

For reactive / emergency maintenance, the district employs the services of multiple outside maintenance vendors with varied expertise.

SCHOOL BUILDINGS & FACILITIES

The Uxbridge Public Schools currently operates the following buildings:

Earl D. Taft Elementary School

Grades 1-4
Located at 16 Granite Street, Uxbridge, MA

Construction History:

- One Story Brick Construction – Built in 1954
- First Addition - 1989
- Second Addition - 1998

Facility Information:

- 40 Total Classrooms
- 1 Library (3,519 ft^2)
- 1 Gymnasium (2,146 ft^2)
- 1 Cafeteria (3,848 ft^2)

Whitin Middle School

Grades 5-8
Located at 120 Granite Street, Uxbridge, MA

Construction History:

- Two Story Brick Construction - Built in 1960
- Land donated to the Town of Uxbridge by James Whitin
- First Addition - 1989
- Second Addition – 1998

Facility Information:

- 40 Total Classrooms
- 1 Library (1,881 ft^2)
- 1 Gymnasium (4,980 ft^2)
- 1 Cafeteria (2,898 ft^2)

Uxbridge High School

Grades 9-12
Located at 62 Capron Street, Uxbridge, MA

Construction History:

- Two Story Brick Construction - Built in 1937
- First Addition - 1967
- Second Addition - 1989
- Third Addition - 1998

Facility Information:

- 42 Total Classrooms
- 1 Library (3,000 ft^2)
- 1 Gymnasium (6,853 ft^2)
- 1 Cafeteria (2,499 ft^2)
- 1 Auditorium (4,560 ft^2)

The Early Learning Center

Grades Pre-K & Kindergarten
Located at 11 Church Street, Linwood (North Uxbridge), MA
Facility leased from Good Shepherd Church

Construction History:

- Two Story Wood Frame Construction - Built in 1921

Facility Information:

- 6 Total Classrooms
- No Library, Gymnasium, or Cafeteria facilities available

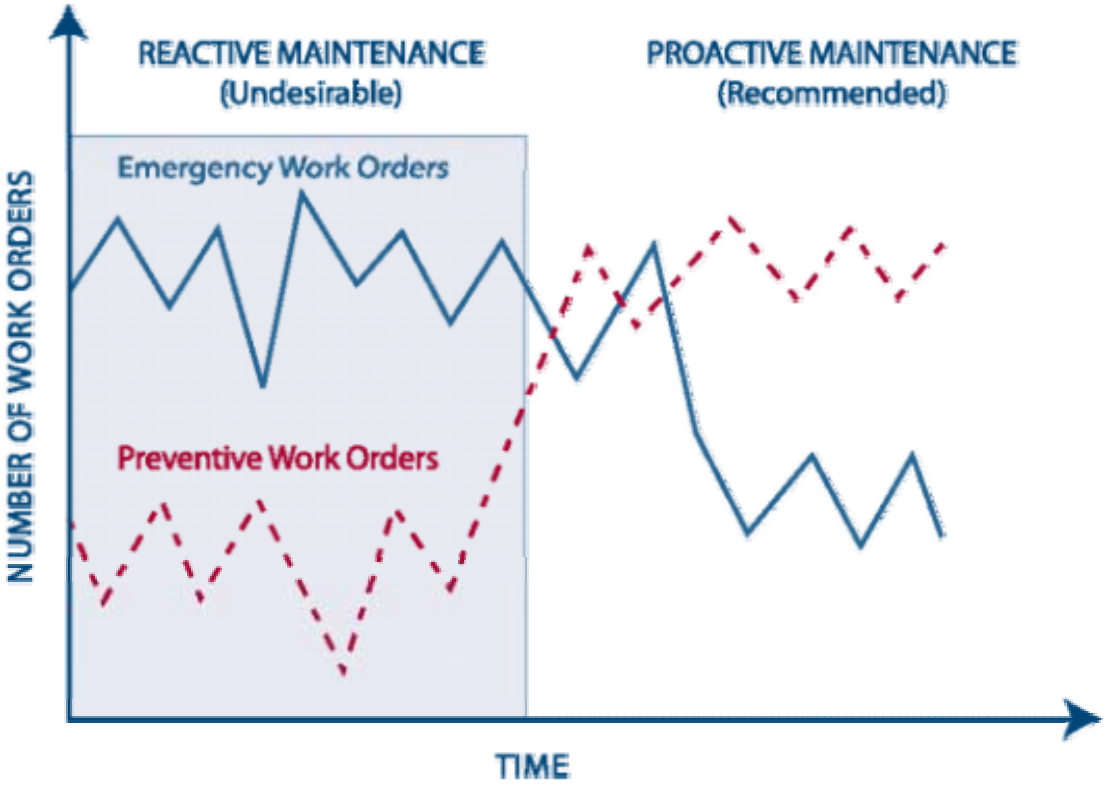
MAINTENANCE PROJECTS PLAN

Uxbridge Public School District projects can be categorized in the following areas:

- Reactive / Emergency Maintenance Projects
- Routine Maintenance Projects
- Preventative Maintenance Programs
- Capital Projects and Equipment Replacement Programs

A Focus on Preventive Maintenance

In order to reduce reactive / emergency type maintenance and associated inefficiencies, impact on student learning, safety, and high costs, the Uxbridge School Facilities Maintenance Plan will focus on creating and implementing detailed preventative maintenance programs.



A good maintenance program is built on a foundation of preventive maintenance. It begins with an audit of the buildings, grounds, and equipment. Once facilities data have been assembled, structural items and pieces of equipment can be selected for preventive maintenance.

Facility / Equipment Audit

To assist in the formulation of the preventative maintenance program, a detailed equipment audit will be completed in FY07. A facility audit (or inventory) is a comprehensive review of a facility's assets. Facility audits are a standard method for establishing baseline information about the components, policies, and procedures of a new or existing facility. An audit is a way of determining the "status" of the facility at a given time-that is, it provides a snapshot of how the various systems and components are operating. A primary objective of a facility audit is to measure the value of an aging asset relative to the cost of replacing that asset. Thus, facilities audits are a tool for projecting future maintenance costs.

The facility / equipment audit will include data on all facilities, infrastructure, grounds, maintenance staff (e.g., specialized training courses attended), and equipment (including boilers, HVAC systems), floor finishes, plumbing fixtures, electrical distribution systems, heating and air conditioning controls, roof types, flooring, furniture, lighting, ceilings, fire alarms, doors and hardware, windows, applicable technology, parking lots, athletic fields/structures, playground equipment and landscaping, and the building envelope. Other issues considered during an audit include accessibility (does a facility meet the requirements of the Americans with Disabilities Act, or ADA?), clean air, asbestos, fire, occupant safety, energy efficiency, susceptibility to vandalism, and instructional efficiency (e.g., alignment with state and local classroom standards).

The facility / equipment audit will include the following data collection:

- Inventory item (brand name, model numbers, serial numbers, etc.)
- quantity and product size(e.g., size 4 or "medium")
- location
- age
- condition
- working as purchased/designed?
- working as it should be?
- working as it needs to be to meet the needs of the users?
- repair history
- specialized upkeep requirements (e.g., oil and filter types)
- evidence of future needs
- recommended service
- estimated remaining useful life

Data collected will be entered in the PMDirect component of the district’s automated work order processing system.

Reactive / Emergency Maintenance Projects

Reactive or Emergency Maintenance Projects will continue. Although “breakdown” maintenance is necessary, the objective of the Uxbridge School Facilities Maintenance Plan will focus on Preventative Maintenance Programs in an effort to reduce such reactive or emergency type projects translating to an organized reduction in maintenance expenses.

Routine Maintenance Projects

The Uxbridge School Facilities Maintenance Plan calls for routine maintenance projects as necessary (i.e. Pencil Sharpener replaced when it fails).

Preventative Maintenance Programs

Based on the FY07 equipment audit, the structures, equipment, and systems identified for preventive maintenance programs, individual detailed plans including frequency and type of inspections will be developed and implemented and use the following guidelines.

Maintenance and Operations

Boilers - Boilers, which can be used to generate hot water for domestic use (e.g., kitchens, showers, and bathrooms) or for heating buildings, will be included in the preventive maintenance program.

Electrical Systems - Electrical equipment must be maintained like any other piece of equipment, whether it is a distribution pole with transformers or a breaker box for controlling a classroom's electrical power. Professional engineers and electricians should help to determine preventive maintenance tasks and schedules for electrical components. Thermographic scanning, which identifies overheating in connections, motors, bearings, and other electrical switchgear, can be an important tool for determining the condition of electrical gear (the principle behind the test is that a loose connection, bad bearing, or bad breaker bars will produce more heat than a proper connection). Another new technology, motor current analysis, checks the line current going to a motor and can be used to identify unacceptably high resistance and other defective parts in a motor before it fails. With the widespread use of computers, the proper maintenance of electrical systems is more important than ever in 21st-century schools. Reliance upon extension cords and an excessive number of power poles is an indication that permanent upgrades to the electrical system are needed. Upgrading existing electrical systems in older buildings may be necessary.

Fire Alarms - Fire drills should be held on a regular basis both to test fire alarms and practice occupant response to fire emergencies. During school breaks when buildings are not occupied, detailed inspections of all fire alarms will be performed. This includes testing all pull stations, smoke detectors, and heat detectors located in building ductwork.

Floor Coverings - Selecting appropriate floor coverings for a school is an important issue that planners must address during renovation and new construction. Often lunchrooms, main halls, and secondary halls are covered in terrazzo, vinyl composition tile (VCT), or quarry tile. These coverings have hard surfaces that are easily cleaned and do not collect dirt. In classrooms where noise control is important, carpets with an impermeable backing, which prevents the passage of water or dirt and are easily cleaned, may be used. Carpets can also be purchased with adhesives already attached to the backing, which helps to ensure complete adhesion without the emission of volatile organic compounds (VOCs). Periodic cleaning of both carpets and rugs is necessary to minimize the likelihood of dirt and other contaminants causing indoor air quality problems. Ceramic floor tile is an excellent surface material for bathrooms or other areas with high exposure to water. Good specifications for a high-performance, soft-surface floor covering include:

- nylon type 6.6
- face weight no greater than 20 ounces
- 100 stitches per square inch

- vinyl pre-coated as primary backing
- close-cell vinyl cushion
- permanently fused to tufting blanket
- no moisture penetration after 10,000 impacts
- no backing or seam degradation after 50,000 cycles from Phillips Chair Caster Test
- factory-applied non-wet, low-VOC adhesive with no off-gassing (required)
- permanent chemically welded seams

Although carpets help to protect floors, they are difficult to keep clean. They collect dirt and pesticides, and incubate fungi and bacteria when moisture gets trapped. Adhesive backing can also give off harmful fumes. (Some new school buildings are being constructed without carpets to alleviate these health concerns.) Since the district has carpeted floors, provisions must be made for proper cleaning. A hot-water extractor will be available at each school and used weekly to remove stains and dirt. Carpets will be steam-cleaned annually with a professional-quality steam cleaner that generates water at least 140°F and an extraction capability of 60 pounds per square inch. Note, however, that carpets must be dried within 24 hours of wet-cleaning to prevent mold from growing.

Gym Floors - Gym floors are generally constructed with vinyl composition tile (VCT), one of several grades of maple flooring, sheet rubber, or other synthetic materials. Regardless, all floor types must be kept clean and properly maintained. VCT floors must be periodically stripped and re-waxed to ensure a safe surface. Wood floors require annual screening and resealing with a water-based sealant. They should also be sanded, re-marked, and resealed in their entirety every 10 years. Synthetic floors (including sheet rubber but excluding asbestos tile) require monthly cleaning and scrubbing with buffers.

Heating, Ventilation, and Air Conditioning (HVAC) Systems - All schools require HVAC systems to control indoor climate if they are to provide an environment that is conducive to learning. In fact, oftentimes a district's ability to convene classes depends on acceptable climate control. If the air conditioning is broken on a 90ºF day or the heating system is malfunctioning on a 30ºF day, the learning environment is adversely impacted. HVAC components must be maintained on a timely and routine basis. This preventive maintenance will ensure reliability, reduce operating costs, and increase the life expectancy of the equipment.

Two effective ways to improve HVAC performance are through air balancing and water balancing. Air balancing ensures that the desired amount of air reaches each space in the building, as specified in the mechanical plans. Water balancing ensures that the flow of water from the chiller and boiler is in accordance with the mechanical plans. Water balancing is normally performed before air balancing. Balancing is usually conducted upon installation of new equipment and at 5- to 8-year intervals. Balancing should also be conducted when building space is substantially modified or room use is changed dramatically.

Hot Water Heaters - Hot water heaters in schools range in size and preventive maintenance programs must be established for each hot water heater. At a minimum, maintenance will include inspection for failing safety devices and leaks (especially if fired by natural gas).

Kitchens - Kitchens present special problems for school districts: not only must equipment be maintained properly to ensure reliability, but 1) a high state of cleanliness must be maintained in all food preparation areas; 2) the use of certain cleaning agents may be discouraged in food preparation areas; and 3) ovens and stoves pose special fire safety concerns. Floor surfaces are

also of particular concern in kitchens since they must be easy to clean yet slip-resistant. Recommended floor surfaces for kitchens include terrazzo, vinyl composition tile (VCT), quarry tile, and sealed concrete. Kitchen equipment is a prime candidate will be included in a preventive maintenance program.

Painting - Painting will be done on a regular schedule that is published well in advance of work dates to minimize inconvenience to building occupants. Painting needs will be determined largely by the type of surface, the type of paint applied previously, and surface use (e.g., a window pane may be expected to receive less wear than a chair rail). A wall constructed of concrete masonry units (CMU) and painted with a two-part epoxy can last 8 or 10 years whereas drywall will require painting every 5 or 6 years. Bathrooms, special education areas, and other high-traffic areas will require painting on a more frequent schedule. A durable, cleanable (i.e., able to be cleaned by the custodial staff with their standard tools), paint from a major manufacturer should be used for indoor areas. Water-based latex paints will be used as they are low in volatile organic compounds (VOCs) and do not produce noticeable odors. Surfaces must be properly prepared for painting, which may require the use of a primer to cover stains and discolored patches.

Plumbing - Like other major building components, plumbing will be included in the preventive maintenance program. Sprinkler systems, water fountains, sump pumps, lift pumps, steam traps, expansion joints, and drains are likely targets for preventive maintenance. Standing water must be avoided at all costs since it damages building materials and can lead to mold concerns that affect indoor air quality.

Public Address Systems and Intercoms - These communications tools are vital to the management of school buildings and, in an emergency, the safety of building occupants. Public address (PA) systems must be connected to the emergency power system to ensure uninterrupted communications in the event of a power failure. Public address systems and intercoms will be tested on a daily basis during the broadcast of a school's morning announcements. If broadcast systems fail to perform properly, they must be repaired immediately.

Roof Repairs - Roofs will be included in a preventive maintenance program and inspected on a regular schedule. The key to maintaining good roofs is the timely removal of water from the surface and substructure of the roof. Thus, all leaks and damaged tiles must be repaired as soon as possible to prevent water damage and mold growth. On composition built-up roofs, hot tar is the only appropriate repair method. Single-ply and modified roofs should be repaired in accordance with the manufacturer's instructions. Staff should read carefully all warranties issued with new roofs to ensure that required maintenance is conducted according to specification so as to avoid invalidating the warranty protections. For example, failing to inspect or repair a roof on an annual basis (and document such efforts) may be considered justification for a manufacturer invalidating a warranty.

The Plant Operations Manager must verify the annual assessment of each roof within the district, recording the date of installation, type of roof, type and thickness of insulation, type of drainage, and type and frequency of repair work. Detailed drawings or photographs that show the location of repairs should be maintained, as should contact information for the installing contractor. This information is extremely important in the event of a major roofing problem or an insurance or warranty claim.

Capital Projects and Equipment Replacement Programs

The Uxbridge School Facilities Maintenance Plan currently includes the following capital projects and equipment replacement programs. The plan also calls for annual updates to include the status of existing projects along with additional projects and programs.

New Building Construction	Construction of new High School Facility
Roof Replacement Program	Create a 20 Year Roof Replacement Program calling for regularly scheduled roof section replacement (example: 20,000 ft^2 every 2 years)
Additional Parking Facilities at Whitin Middle School	Add additional parking facilities to provide adequate public safety to this facility.
Additional Parking Facilities at Uxbridge High School	Increase parking facilities in the rear of the building
Emergency Generators	All schools Emergency Generators connected to all boilers & compressors.
Pneumatic Control Replacement	Investigate the replacement of existing Johnson pneumatic control panels with mechanical controls or direct digital controls.
Sidewalk Replacement	High School replace damaged walkways that are uneven and holds water
Exterior Door Replacement	Replace a number of exterior doors that are constantly repaired.
Exterior Window Replacement	Replacement of windows to more energy efficient units
Energy Efficiency Upgrades or Green School Program Initiatives	Investigate expansion of Green School model to existing facilities i.e.; site sensitive, energy efficient, water efficient, healthier indoor environment.
Carpet Replacement Program	Create & Implement 10-12 year annual carpet replacement program
Faucet Replacement Program	Create & Implement 8-10 year annual faucet replacement program
Parking Lot Seal Coat	All parking lots seal coat
Taft Cafeteria Entrance Remodel	Taft school cafeteria entrance redesign to have second set of doors for security & loss of heat in the winter.
Existing Building Remodels	Upon completion of new school construction and depending on approved education facility use, may require applicable remodeling/reconstruction at existing facilities