

# **WAYNE COMMUNITY COLLEGE**

## **MAINTENANCE PROGRAM**

**SEPTEMBER 2003**

## **WAYNE COMMUNITY COLLEGE MAINTENANCE PROGRAM**

The Wayne Community College (WCC) Maintenance Program encompasses procedures for scheduled preventive and corrective maintenance of college equipment and facilities. Preventive maintenance will be an integral step in validating the college's cost for maintenance operations. The goal of WCC's maintenance program is to ensure the reliable operation of its physical resources, which will ultimately support an atmosphere for effective learning, and to meet institution's stated purpose, programs, and activities.

Preventive maintenance will be performed at regularly scheduled intervals through the automated work order system or manual tracking records. The work order system will provide a record of documentation for completed preventive maintenance actions. Regularly scheduled preventive maintenance activities are established from manufactures recommendations, industry standards, historical trends, safety requirements and operational experience. Preventive maintenance actions include but are not limited to inspections, servicing, adjustments, component replacement, and both major and minor repairs. Due to special equipment and certification requirements some equipment or facility preventive maintenance actions will be handled under service contracts.

WCC's maintenance program includes the following functional areas: facility maintenance, grounds maintenance, vehicle maintenance and housekeeping.

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## **FACILITY PREVENTIVE MAINTENANCE PROGRAM**

Facility preventive maintenance incorporates a multi-support effort and cost effective means to enhance operational requirements and prolong service life of college buildings, integral systems and equipment. All facility preventive maintenance actions are either tracked manually, scheduled by a service contract vendor, or scheduled through an automated work order system. Facility and equipment preventive maintenance actions will be coordinated as much as possible with school schedules to minimize operational interruptions, however, critical preventive maintenance actions will not be delayed that may cause system and equipment failures or unsafe conditions. Specific PM procedures are contained in appropriate maintenance manuals, manufacturer directives, or service checklist.

**Physical Plant Preventive Maintenance Requirements:**

Cooling Towers  
Cooling Tower Bleed System Filter Screens  
Cooling Tower Condenser and Chilled Water Pumps  
Main Hot Water Pumps  
Hot Water Expansion Tanks  
Emergency Generators  
Air Compressor Tanks  
Air Handling Units  
Building Hot Water Pumps and Chilled Water Pumps  
Domestic Hot Water Circulating Pumps  
Variable Air Valves (VAV)  
Domestic Drinking Water Coolers  
Exterior Water Fountain  
Building Doors and Locks

**Physical Plant Preventive Maintenance Requirements covered by Service Contracts:**

Bucket Lift  
Chillers  
Cooling Tower Chemical Treatment  
HVAC Automated Control System  
Boilers  
Elevators  
12KVA Distribution, Switchgear, & Transformers  
Grease Exhaust Hood (Quarterly)  
Grease Trap (Quarterly)  
Exterminating Service  
HVAC Heat Pumps & 5 Ton A/C Units  
Fire Sprinkler System

## **Cooling Tower PM**

Interval: 180 Days

Drain water and clean interior cells and fills

Lubricate motor, shaft, and bearings

Inspect belt for serviceability

Inspect tower welds, bolts, and panels for cracks, sealants, and tubes

Inspect fan blades for security and serviceability

Inspect heater elements for serviceability

Inspect electrical disconnect starters for serviceability

Inspect water level float system for serviceability

## **Cooler Tower Bleed System Filter Screens**

Interval: Weekly

Clean and inspect filter screens

Clean and inspect filter bowls for serviceability

Inspect automatic controller for operation

Inspect for leaks, valve operation and pump operation

Note:

Cooling tower chemical and control system is maintained by a service contract

## **Cooling Tower Condenser and Chilled Water Pumps**

Interval: 90 Days

Lubricate motors

Inspect drive coupling for serviceability

Inspect shaft seals, impellers, drains and connections for evidence of leaks

Inspect electrical disconnect for serviceability

Inspect mounting hardware for security

Inspect for proper manual handle valve position

Inspect pressure gages (if applicable) for flow indication and serviceability

## **Main Boiler Hot Water Pumps**

Interval: 90 Days

Lubricate motors

Inspect drive coupling for serviceability

Inspect shaft seals, impellers, drains and connections for evidence of leaks

Inspect electrical disconnect for serviceability

Inspect mounting hardware for security

Inspect for proper manual handle valve position

Inspect pressure gages (if applicable) for flow indication and serviceability

## **Hot Water Expansion Tanks**

### Interval: Monthly

Inspect expansion tank capacity  
Inspect for proper valve position  
Inspect for visible leaks

### Interval: 180 Days

Stop Boiler operations  
Drain expansion tanks  
Restart boiler operations

## **Emergency Generator PM**

### Interval: Weekly

Visually inspect unit for any damage or broken parts

Visually inspect unit for fluid leaks

Operate unit for 30 minutes and monitor gages, alarms, and switchgear for proper operation

### Interval: Monthly

Inspect unit for proper fluid levels

Inspect battery serviceability

### Interval: Annual

Change oil and filter

Replace battery

Test anti-freeze

Inspect belts for serviceability

Replace fuel filter

Check proper operation of switchgear for building power supply

Replace air filter

## **Air Compressor PM**

### Interval: Weekly

Drain water from supply tanks  
Visually inspect unit for any damage  
Drain dryer collection bowls  
Inspect gages for proper indication

### Interval: Monthly

Inspect belts  
Inspect oil level  
Inspect automatic drains (if applicable)  
Inspect floor drain for blockage

### Interval: Annual

Change oil  
Change air filters  
Inspect belts for serviceability  
Inspect electrical disconnect system  
Inspect pressure regulator for serviceability  
Inspect unit for mounting security  
Clean and service air dryer unit

## **Air Handling Units PM**

### Interval: Monthly

Visually inspect unit for any damage  
Visually inspect condensation drains for proper flow

### Interval: 90 Days

Replace filters  
Lubricate unit motors, pulleys, shafts, and bearings  
Inspect belts for serviceability  
Inspect electrical disconnect system serviceability  
Inspect unit bolts, welds, panels for cracks, and insulation (if applicable)  
Inspect dampers and actuators for proper operation  
Inspect duct smoke detectors for serviceability  
Inspect pneumatic lines and gages for serviceability and operation  
Inspect safety guards on motors, belts, and electrical devices  
Clean mechanical room floor

### Interval: Annual

Clean condensation drain pans  
Clean coils  
Check mechanical room heater units for serviceability

## **Building Hot and Chilled Water Pumps**

Interval: 90 Days

Lubricate motors

Inspect drive coupling for serviceability

Inspect shaft seals, impellers, drains and connections for evidence of leaks

Inspect electrical disconnect for serviceability and proper control switch position

Inspect mounting hardware for security

Inspect for proper manual handle valve position

Inspect pressure gages (if applicable) for flow indication and serviceability

Inspect insulation (if applicable) for serviceability

## **Domestic Hot Water Circulating Pumps PM**

Interval: 180 Days

Service bearing oil receptacle  
Inspect for damage and operation  
Check motor and pump alignment  
Inspect drive coupling for serviceability  
Inspect for loose bolts and support hangers

## **Variable Air Valves PM**

Interval: 90 Days

Replace filters

Visually inspect for air and water leaks

Visually inspect digital or pneumatic controls for damage and operation

Visually inspect actuators for damage and operation

Visually inspect attaching ducts for serviceability

## **Domestic Drinking Water Coolers PM**

Interval: 180 Days

Chemically treat drains

Inspect unit for loose hardware

Inspect unit for damage and compressor operation

Interval: Annual

Clean coils

## **Exterior Water Fountain PM**

Interval: Monthly

Chemically treat water  
Inspect water supply float operation  
Remove any large debris or trash from water  
Visually check for pump operation  
Visually inspect for brick or concrete cracks

Interval: 180 Days

Drain, clean, fill, and chemically treat fountain

## **Building Doors and Locks PM**

Interval: Annual

Visually inspect and operationally check locks, hinges, glass, actuators, automatic openers, and handles for serviceability

Lubricate as required

Clean thresholds and jams of foreign objects

## **SERVICE CONTRACTS FOR MAINTENANCE**

1. Water treatment for chillers (Brady Services)
2. Elevator service contract (Thyssen Krupp Elevator)
3. Fire Extinguisher Service contract (Quality Fire Extinguisher)
4. HVAC Controls Contract (Invensys)
5. Garbage & Recycling Paper Contract (Waste Industries)
6. Exterminating Service Contract (Griffin Exterminating)
7. Chiller PM Service contract (Brady Services)
8. Automotive Solvent Waste Disposal service contract
10. Kitchen Grease Trap service contract (Hydro)
11. Medical Waste Disposal service contract (BFI & Waste Ind)
12. Electrical 12 kV Distribution Sys service contract) CPL
13. LC bldg Plant service contract (Longs Plant Farm)
14. Quarterly/Annual Fire Sprinkler Inspections (Precision Sprinkler)
15. Both boilers PM service contract (Brady Services)
16. Hocutt 60 Ton Unit AM service contract (Brady Services)

## **GROUNDS PREVENTIVE MAINTENANCE**

Grounds preventive maintenance initiatives are implemented to ensure the continued upkeep, health, and sanitation of the college landscape and hardscape areas, equipment serviceability, and associated support systems are maintained to prolong life cycles and beautification of the campus. Grounds maintenance actions are scheduled to coincide with seasonal climate requirements and operational needs. It should be recognized that seasonal climate conditions might dictate that preventive maintenance schedules be adjusted. Grounds preventive maintenance actions are either tracked manually or documented through an automated work order system. Specific procedures are contained in maintenance documents or manufactures recommendation.

## **Landscape and Landscape Preventive Maintenance Requirements**

### **Fertilizer Application:**

Annual applications are planned for April, July, and October  
Fertilizer is applied to all seeded areas  
Correct nutrient portions are applied for type of grass treated and soil condition

### **Pesticide Application:**

Bi-annual applications are made to control detrimental insects  
Spot and follow-up applications are made on trouble or infested areas

### **Herbicide Application:**

Pre-emerge applications are done spring (Mar/Apr) and winter (Nov/Dec) to control seasonal weeds  
Monthly applications are done on areas to control weeds/broad leaves that appear during normal growing periods

### **Fungicide Application:**

Specific plant beds, grass, and trees are treated in spring at first sign of green up  
Periodic treatment is made on areas when required by weather conditions (temperature, rain, or drought)  
Annual normal treatments are made campus wide during March to May time frame

### **Aeration:**

Bi-annual procedure is accomplished in conjunction with fertilizer applications  
Hard compacted areas are done on an as needed basis

### **Plant Beds:**

Annually plant beds are treated with herbicides  
Annually mulch is replaced around plant beds in winter (Dec/Jan)  
Plant beds are edged monthly  
Weekly plant beds are hand weeded

### **Pruning of Trees and Shrubs:**

Annual tree inspections are made in August or September to determine pruning requirements with actual procedure being accomplished in Feb  
Pruning of shrubs is accomplished in March, July, and Oct

Seeding:

Winter rye overseeding in selected areas is accomplished in Oct  
Bermuda seeding is accomplished in April only in required areas

Sports Fields and Courts:

Ball field grass areas are treated chemically on the same schedule as campus  
Tennis courts are inspected annually for surface deterioration

Parking Lots:

Asphalt areas are inspected annually in Jan for surface deterioration and striping requirements  
Asphalt areas are resealed and re-striped on a rotational schedule (approximately 3 to 5 years)  
Parking lots are cleaned, edged, and islands maintained during scheduled school breaks

## **Equipment Preventive Maintenance Requirements**

### **Riding Mowers:**

Before daily use a servicing and safety inspection is completed

Every 100 hours of operation the oil/air/gas filter is changed

Every 60 days the equipment is greased, battery and belts inspected, tires and tire pressures checked, and general inspection for loose, broken, and worn hardware

### **Weed Trimmers, Chain Saws, Gas Hedge Trimmers, Push Mowers, and Gas Edger**

Before daily use a servicing and safety inspection is completed

Every 120 days, if appropriate, equipment is greased, oil/air/gas filters changed, blades/chains sharpened, pull chords inspected, tires checked, and general inspection for loose, broken, or worn hardware

### **Vacuums and Blowers**

Before daily use a servicing and safety inspection is completed

Every 90 days equipment is greased; oil/air/gas filters changed, tires checked, and general inspection for loose, broken, and worn hardware

### **Tractors**

Before daily use a servicing and safety inspection is completed

Every 200 hours of operation, equipment is greased, oil/air/gas filters changed, tires checked hydraulic system checked, hoses and belts inspected, battery inspected, fluid levels, and generally inspected for loose, broken, and worn hardware

### **Utility Vehicles (Toro, Cushman, Hahn)**

Before daily use a servicing and safety inspection is completed

Every 120 days equipment is greased, oil/air filters changed, tires checked, hydraulic system checked, hoses/belts inspected, battery inspected, fluid levels, and general inspection for loose, broken, and worn hardware.

### **Tiller/Snow blower**

Before use a servicing and safety inspection is completed

Annually, the equipment is greased, oil/air/gas filters changed, tires checked, hoses/belts inspected, fluid levels, and general inspection for loose, broken, and worn hardware

### Mowing Decks (Batwing/Bush Hog)

Before use a servicing and safety inspection is completed  
Every 20 hours of operation, equipment is greased, fluid levels and blade condition checked, hoses/belts inspected, tires checked, and general inspection for loose, broken, and worn hardware

### Spray Tank Apparatus and Fertilizer Spreader

Before use a servicing and safety inspection is completed  
Every 180 days, equipment is greased, hoses/nozzles inspected, mechanical gears/shafts inspected, and general inspection for loose, broken, and worn hardware

### Irrigation Systems

Monthly inspect sprinkler heads for serviceability  
Monthly inspect controller for system operation  
Semi-annually activate or deactivate underground pipe systems

## **VEHICLE PREVENTIVE MAINTENANCE**

Vehicle preventive maintenance is a very cost effective means to prolong the life and serviceability of all college owned vehicles. An aggressive vehicle preventive maintenance program ensures vehicles are in a safe and road worthy mechanical condition to support college operational needs. Vehicle preventive maintenance actions are either tracked manually or documented through an automated work order system.

## Vehicle PM

### Interval: Specific Mileage Requirements

#### 3000 Miles

- Change oil and filter
- Lubricate chassis and drive axles

#### 6000 Miles

- Rotate tires
- Inspect brakes for serviceability

#### 30,000 Miles

- Replace air filters
- Replace fuel filters

#### 50,000 Miles

- Service automatic transmission
- Inspect accessory drive belt

#### 100,000 Miles

- Drain and flush engine coolant system
- Replace engine spark plugs

Note: During all scheduled preventive maintenance actions the vehicle will be visually inspected for unsafe conditions.

### Interval: Monthly

- Check tire pressure and inspect tires for unusual wear and damage
- Inspect battery for serviceability
- Inspect and service all fluid levels
- Inspect lights for serviceability
- Wash and vacuum vehicle

### Interval: Annual

NC State Safety Inspection

## **HOUSEKEEPING PREVENTIVE MAINTENANCE**

Adherence to high standards of housekeeping practices ensure the campus facilities are maintained in serviceable condition and subsequently prolong the life of expensive items such as tile floors, wall coverings, paint, carpet, and capital equipment. The housekeeping department employs both day and night shift personnel, and temporary contract housekeepers, which are assigned and responsible for certain buildings or areas.

Daily housekeeping requirements are designed to maintain facilities at a required standard to support college and community events and activities. Housekeepers perform daily routine required housekeeping tasks on a non-interference basis. Housekeepers are responsible for performing user maintenance on all assigned equipment and are to report unserviceable equipment to facility maintenance for repairs.

Due to the length of time required to perform preventive maintenance tasks, some tasks are deferred until school operations present opportunities for housekeeping to have unrestricted access to required areas. Certain buildings encompass unique programs, which require daily-specialized cleaning techniques, which may eliminate the need for some preventive maintenance requirements.

The following two areas comprise the housekeeping preventive maintenance requirements.

## **Equipment Preventive Maintenance Requirements**

### Vacuums

Before using a servicing and safety inspection is completed

Every 30 days vacuum bearings, belts, hoses, power cords, wheels, handle attachment, and general inspection for loose, broken, and worn hardware is conducted.

### LP Buffers

Before using a servicing and safety inspection is completed

Every 30 days a general inspection is conducted for loose, broken, and worn hardware.

Every 50 hours of operation change oil.

Every 100 hours of operation adjust spark plug and clean spark arrestor.

Every 300 hours of operation replace air and pre-air filters, replace spark plug, and check and adjust idle speed and valve clearance.

### Carpet Shampoo Machine

Before using a servicing and safety inspection is completed

Every week, clean the brush and the pick-up tool and check the power cord.

Every 30 days clean the spray nozzle, lubricate machine, and check vacuum motor airways.

Annually check the vacuum motor brushes.

### Floor Extractor Machine

Before using, a servicing and safety inspection is completed.

Daily clean pads and brushes, clean lint from float shut-off screen, drain and rinse tanks thoroughly, clean squeegee, and recharge batteries if needed.

Weekly flush out tanks and solution lines, check electrolyte level in battery cells, clean battery tops, and check for loose or corroded battery cables.

Monthly lubricate casters, lubricate pivot points, and check machine for water leaks and loose hardware.

Every 250 hours of operation, check drive and brush motors for carbon brush wear, and check vacuum motor for carbon brush wear.

## **Housekeeping Facility Cleaning Preventive Maintenance Requirements**

(These functions are to coincide with scheduled school breaks or area accessibility)

### Interval: Weekly

Clean outside stairwells and colonnades  
Clean elevator floors, walls, and wall protectors (if applicable)

### Interval: Curriculum Term Breaks:

Deep clean classrooms, common areas, and instructor offices (with instructor assistance)  
Move furniture to mop or vacuum entire floor  
Clean all interior windows, windowsills, and blinds  
Polish doors and clean door jams  
Wash and sanitize trash receptacles  
Clean air supply and return vents  
Clean and sanitize restroom tile floors, walls, sinks, and toilets  
Clean or dust student desks  
Clean computer desks (ISS to remove computers)  
Clean light lens

### Interval: 120 Days on Room Rotation Schedule:

Strip and wax tile floors  
Shampoo carpets

## **HOUSEKEEPING DAILY DUTIES**

Mop restrooms and sanitize  
Clean commodes/empty sanitary boxes  
Clean porcelain and stainless steel sinks  
Clean mirrors  
Replenish toilet paper/towels/soap dispensers  
Vacuum carpet/sweep tile floors  
Clean/dust baseboards  
Wash chalkboards  
Clean door windows  
Clean door casings  
Sweep stair casing down  
Remove stains from walls  
Polish desk tops/chairs/tables and other furniture items  
Polish stainless steel cases  
Sweep entrance ways/colonnade/porches/outside stairwells  
Empty and wash trash containers/recycle bins  
Dust file cabinets  
Dust window skills/blinds  
Report to maintenance any repairs needed  
Shampoo carpet as warranted  
Clean janitorial room  
Clean elevators  
Clean water fountains

## Cleaning Requirements for Child Care Center

### Daily

Outside entrances and walkways swept  
Dumpster area picked up and swept  
Outside ash trays emptied and cleaned  
All door casings cleaned  
Clean and polish stainless steel  
Clean all inside windows and sills  
Clean all glass doors  
Clean and polish administrative desks and tables  
Clean all counter tops  
Vacuum all carpeted areas and rugs  
Clean baseboards  
Clean staff and children restrooms  
Clean water fountains inside/outside  
Empty all trash receptacles  
Stock paper towels, toilet paper, and soap dispensers as required  
Sweep/dust mop all tile floors  
Wet mop any required areas  
Dust all fixtures, ledges, and shelves

### Weekly

Wet mop all tile floors  
Clean light fixtures  
Wipe all walls down

# VACUUM CLEANER SAFETY AND MAINTENANCE INSTRUCTIONS

## **IMPORTANT SAFETY INSTRUCTIONS**

1. Do not leave vacuum appliance when plugged in.
2. Do not use outdoors or on wet surfaces.
3. Do not use vacuum with a damaged cord.
4. Do not pull or carry by cord, use cord as a handle, close a door on cord, or pull cord around sharp edges or corners.
5. Do not run vacuum over cord and keep cord away from heated surfaces.
6. Do not unplug by pulling on cord (grasp the plug, not the cord).
7. Do not use vacuum without dust bag and/or filters in place.
8. Turn off all controls before unplugging.
9. Do not use an extension cord with this vacuum cleaner.
10. Dropping, unreasonable bumping across thresholds and other misuses can result in a damaged unit.
11. This machine is equipped with a cord having an equipment-grounding conductor and grounding plug. Do not remove ground pin; if missing, replace plug before use. Electrical shock or electrocution can result if ground plug is missing.
12. Do not use vacuum to pick up flammable materials (i.e., explosive liquids, burning or hot materials).

## **Machine Maintenance**

1. Inspect bag and/or filters prior to use.
2. Replace bag and/or filters every eight hours of operation.
3. Remove entangled debris from brush, hoses, magnetic bar, wheels prior to use.
4. Inspect vacuum hoses for damage and clogged debris.
5. Inspect power cord and strain relief for damage prior to use.
6. Clean machine housing with an all purpose cleaner and cloth after use.
7. Inspect brush bristles for excessive wear and debris after use.
8. Inspect belts every week for excessive wear.
9. Do not drape cord over handle; store cord around handle hooks properly.
10. Always store vacuum in a dry area in the upright position.

# **POWERBUFF BURNISHING MACHINE SAFETY, OPERATION AND MAINTENANCE INSTRUCTIONS**

## **SAFETY INSTRUCTIONS**

1. Keep hands, feet and any loose items away from all moving parts during operation.
2. Engine exhaust gases contain poisonous carbon monoxide. Run engine with proper ventilation.
3. Do not allow engine to run unattended.
4. Keep engine and hot exhaust directed 3 feet from any building or components when running.
5. The engine has an oil alert buzzer. It will warn you before oil level falls below safe operating level. Stop engine immediately if buzzer goes off and investigate.
6. Make sure the engine is off before you begin any maintenance or repairs.
7. Do not tamper with or alter anything on this equipment. Emission standards could be changed.
8. Let engine and exhaust system cool before touching.
9. Keep cigarettes, sparks and flames away from all fuel related parts.
10. Never store machine with LP tank fuel line connected.

## **MACHINE OPERATION INSTRUCTION**

1. Check oil level prior to each use and maintain to upper level mark on dipstick. Check with machine in level position.
2. Raise buffer pad off the floor during start.
3. Plug starter cord into AC receptacle (engine can also be started with pull cord).
4. Set throttle cable to choke position.
5. Open LP tank valve to the "open" position.
6. Push starter button until engine starts (no longer than 10 seconds).
7. When engine starts, move throttle to slow position.
8. Unplug starter cord and secure it on machine.
9. Never put pad on the floor until ready to use.
10. To turn off machine, turn fuel valve off at the tank and allow engine to run until it runs out of fuel.
11. For emergency shut down, hold down throttle cable to the "stop" position.
12. When changing the pad, always tilt the machine to the right side (on the exhaust side).

## **BURNISHINGMACHINE MAINTENANCE**

1. Daily or before starting engine:
  - a. Check oil (add if necessary).
  - b. Check air filter (replace if necessary).
  - c. Check cooling air filter.
  - d. Check fuel hoses.
  - e. Check belt tension and for loose nuts and bolts.
  - f. Check engine-cooling fins.
2. First month or 5 hours:
  - a. Change engine oil.
3. Every three months or 50 hours:
  - a. Change engine oil.
4. Every six months or 100 hours:
  - a. Check and adjust spark plug.
  - b. Clean spark arrester.
5. Every year or 300 hours:
  - a. Replace air filters and pre-air filters.
  - b. Replace spark plug.
  - c. Check and adjust idle speed and valve clearance.