

SCHEDULED MAINTENANCE – REFRIGERATION & HVAC EQUIPMENT

The Contractor for the school district shall provide a scheduled maintenance program covering all HVAC and refrigeration equipment and associated temperature controls for the following facilities:

- Carrie E. Tompkins Elementary School
- Pierre Van Cortlandt Middle School
- Croton-Harmon High School
- District Office
- Transportation Garage and Office

Major Preventive Maintenance (performed in summer and winter) shall include completed checklists for equipment below (shall be fully completed and signed by technician and custodian for each of the following equipment items):

Unit Ventilators

Roof Top Units

Packaged Terminal Air Conditioners (PTAC)

Air Handler Units (AHU)

Exhaust Fans

Ductless Split Systems

Pumps

Unit Heaters

Power Ventilators

Tube heaters

General Requirements for Major Preventive Maintenance:

- a. Air-cooled condenser coils and the evaporator coils shall be cleaned using a high pressure spray to insure an absolutely clean surface for every row of tubes. The coil sections for the self-contained units shall be mechanically cleaned.
- b. The interior of all equipment shall be thoroughly cleaned. Including drip pans and mechanical cleaning of coils.
- c. Technician must manually trip free stats and observe closure of outside air damper and opening of Hot Water supply valve. Also, technician should turn unit ventilator/Air Handling Unit power off and observe closure of outside air damper and opening of Hot Water supply valve.

- d. Technician should observe connections of all damper linkages. Lubricate as needed.
- e. Verify operation of all fresh air dampers in coordination with Building Maintenance System operation.
- f. Check for leaks on all equipment.
- g. The replaceable filters shall be changed and washable filters cleaned. Filters shall be provided by the Contractor as noted.
- h. Fan and Fan Drives: Check fan, motor bearings, belt condition and tension, check drives and pulleys for tightness and alignment, oil or grease every Major Preventive Maintenance.
- i. Any and all worn belts shall be replaced using manufacturer's recommendations for size and tension. Cost of belts shall be invoiced to the district.
- j. Compressors: Check general operation and condition, oil level, check head pressure and suction pressure. The suction and discharge pressures shall be recorded and compared with the manufacturer's extrapolated values for the outside air and load conditions. Refrigerant shall be added if necessary and the amount documented in the quarterly report. The cost of refrigerant shall be invoice separately.
- k. Strainers: Inspect buckets, drain traps as needed, inspect and clean strainers. Report/replace deteriorated strainers and trap components.
- l. Through the wall A/C Units are not included in major or minor Preventive Maintenances. Packaged Terminal Air Conditioners (PTAC) shall be maintained as part of proposal.
- m. Report/replace deteriorated strainers and trap components.
- n. Variable Frequency Drives (VFD) associated with fans and pumps shall be checked for proper operation.
- o. For each major Preventive Maintenance, the contractor shall include 48 hours of Honeywell Building Maintenance System programming support for the testing of equipment actuators. Additional programming support needed (beyond 48 hours district wide per major Preventive Maintenance) shall be charged at hourly Building Management System programming rate.

Supplemental Preventive Maintenance (performed in Spring and Fall) shall include the following on unit ventilators, rooftop units, air handlers, exhaust fans, ductless splits, pumps, unit heaters, power ventilators and tube heaters (all listed equipment):

General Requirements for supplemental Preventive Maintenance:

- a. Change replaceable filters, clean cleanable filters.
- b. Check operation of fans
- c. Lubricate motors, bearings
- d. Check linkages for proper connections and belts for damage
- e. Check units for leaks
- f. Check units for obvious malfunction

Unit Ventilator / AHU / RTU / PTAC - Major Preventive Maintenance Checklist

Building:		Location/Room #:		Type	
Item		Yes	No	Comments	
Fan operating properly					
Belt condition/tension or drive OK					
Lubricate motor/fan bearings					
Outdoor air damper operational					
Other dampers operational					
Linkages OK					
Interior clean					
Filter replaced (recirculate)					
Filter replaced (O/A)					
Leaks					
HW valve operational					
Heating coil clean					
Freeze-stat operable					
A/C Condensing fan operable					
A/C condensing coil clean					
A/C evaporator coil clean					
A/C evap. pan clean / draining					
RTU HeatEx, safeties, burner OK					
AHU VFD working properly					

	PSI	Temperature	Comments
A/C suction			
A/C discharge			

Crankcase heater amps:	
UV Fan speed selector speed set to:	

	Technician	Head Custodian
Print Name		
Signature		
Date		

Exhaust Fans - Major PM Checklist

Building		Location/Room #:		
Item		Ye s	No	Comments
Fan operating properly				
Belt and/or drive OK				
Lubricate motor/fan bearings				
Fan clean of nests, dirt				

	Technician	Custodian
Print Name		
Signature		
Date		

Ductless Split - Major PM Checklist

Building:		Location/Room #:		Type	
Item	Yes	No	Comments		
Fan operating properly					
Interior clean					
Filter replaced/cleaned					
Leaks					
A/C Condensing fan operable					
A/C condensing coil clean					
A/C evaporator coil clean					
A/C evap. pan clean / draining					

	PSI	Temperature	Comments
A/C suction			
A/C discharge			

	Technician	Custodian
Print Name		
Signature		
Date		

Pumps - Major PM Checklist

Building		Location/Room #:		
Item	Ye s	No	Comments	
Pump operational				
Drive/Coupling OK				
Leaks				
Lubricate motor bearings				
Variable Frequency Drive operating properly				

Pump set in Auto/Off/Hand?	
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	Technician	Custodian
Print Name		
Signature		
Date		

Unit Heater / Power Ventilator / Tube heater - Major PM Checklist

Building:		Location/Room #:		Type	
Item	Yes	No	Comments		
Fan operating properly					
Drive OK					
Lubricate motor/fan bearings					
Interior clean					
Leaks					
HW valve operational					
Heating coil clean					
Freeze stat operable					
Heat Exchanger, safeties, burner OK					

	Technician	Custodian
Print Name		
Signature		
Date		

h. Boiler Room Equipment Start Up and Inspection
(to be completed by November 1st)

Location	Equipment
Croton-Harmon High School	Two (2) Best Boilers One (1) Buderus Boiler
Pierre Van Cortlandt Middle School	Two (2) Weil McLain Boilers One (1) Dedetrich Boiler
Carrie E. Tompkins Elementary School	Three (3) Dedetrich Boilers

- Clean and inspect all safety devices. (Boiler cleaning will be by another Contractor).
- Visually inspect flues and refractory
- Service ignition system
- Pull and clean all boiler room strainers and metering devices.
- Replace fuel oil filters and clean strainers.
- Service oil transfer pump systems. Clean strainers and service oil transfer pumps for oil burners. Inspect buckets, drain traps as needed, inspect and clean strainers.
- Set up and test burner and boilers through full range of operation with electronic combustion analyzer. Contractor must be qualified to work on linkage-less burner controls. Perform combustion fuel gas analysis on burner, make necessary fuel and air adjustments for maximum performance. Complete flue gas testing at low, medium and high firing rates. As appropriate, set up burner for both oil and gas operation. Printout, organize, and label flue gas analysis following final fuel/air adjustment for submission to the district.
- Provide typewritten report summarizing all work and findings.
- Parts required for normal servicing shall be included. Including filters, belts, lubricant.