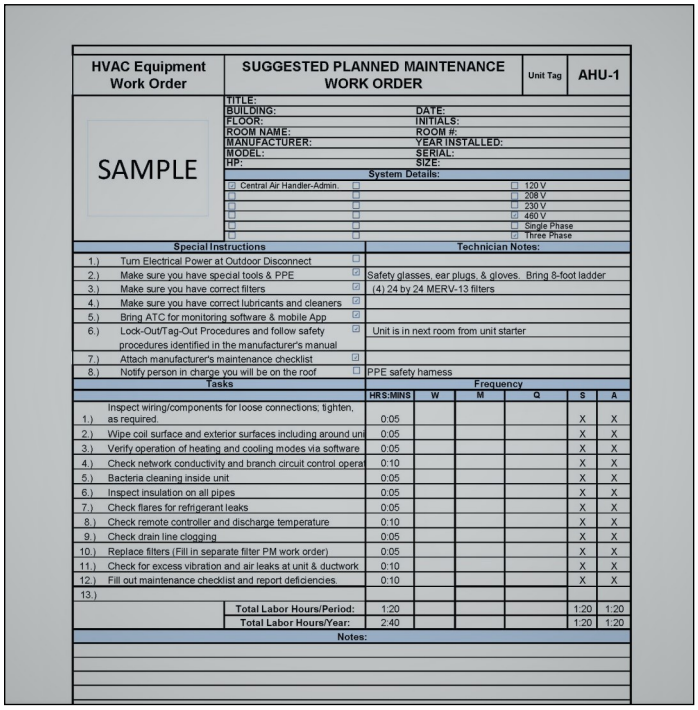
FOCUS on FACILITIES
Diocese of Cleveland Facilities Services Corporation

What a Preventive Maintenance Work Order Includes

This month we are going to discuss preventive maintenance work orders or to be correct, discuss "planned maintenance" (PM) work orders since equipment breakdowns cannot be 100% prevented. All equipment fails in time.

All the buildings that make up the Cleveland Diocese contain mechanical and electrical equipment necessary for these buildings to operate, illuminate, heat, cool, ventilate, and provide water to their occupants. This equipment needs to be routinely cleaned and serviced so that each piece of equipment functions as intended. An example of this is the heating, ventilating, and air-conditioning (HVAC) equipment. The building manager, maintenance person, and/or HVAC service technician assigned to maintain this equipment must complete standardized planned maintenance tasks. It could be seasonal start up of the heating equipment or cooling equipment or it may be routine filter replacement.

It is these tasks that find themselves listed on a piece of paper or on an electronic document on one's mobile device reminding the maintenance person what needs to be done. This paper or electronic document is called a PM work order and every piece of HVAC equipment should have a work order assigned to it. In the "real world" not all HVAC equipment have work orders created and filed in a folder or stored in a computerized maintenance management software (CMMS) system. For our discussion we will assume this database is stored in the building manager's CMMS system where each piece of equipment will be programmed to notify the CMMS operator that it's



HVAC Equipment Work Order	SUGGESTED PLANNED MAINTENANCE WORK ORDER	Unit Tag	AHU-1

SAMPLE

TITLE:
BUILDING: DATE:
FLOOR: INITIALS:
ROOM NAME: ROOM #:
MANUFACTURER: YEAR INSTALLED:
MODEL: SERIAL:
HP: SIZE:

System Details:

- ☑ Central Air Handler-Admin.
- ☐ 120 V
- ☐ 208 V
- ☐ 230 V
- ☑ 460 V
- ☐ Single Phase
- ☑ Three Phase

Special Instructions		Technician Notes:
1.) Turn Electrical Power at Outdoor Disconnect	☐	
2.) Make sure you have special tools & PPE	☑	Safety glasses, ear plugs, & gloves. Bring 8-foot ladder
3.) Make sure you have correct filters	☑	(4) 24 by 24 MERV-13 filters
4.) Make sure you have correct lubricants and cleaners	☑	
5.) Bring ATC for monitoring software & mobile App	☑	
6.) Lock-Out/Tag-Out Procedures and follow safety procedures identified in the manufacturer's manual	☑	Unit is in next room from unit starter
7.) Attach manufacturer's maintenance checklist	☑	
8.) Notify person in charge you will be on the roof	☐	PPE safety harness

Tasks	HRS:MINS	W	M	Q	S	A
1.) Inspect wiring/components for loose connections; tighten, as required.	0:05				X	X
2.) Wipe coil surface and exterior surfaces including around uni	0:05				X	X
3.) Verify operation of heating and cooling modes via software	0:05				X	X
4.) Check network conductivity and branch circuit control operat	0:10				X	X
5.) Bacteria cleaning inside unit	0:05				X	X
6.) Inspect insulation on all pipes	0:05				X	X
7.) Check flares for refrigerant leaks	0:05				X	X
8.) Check remote controller and discharge temperature	0:10				X	X
9.) Check drain line clogging	0:05				X	X
10.) Replace filters (Fill in separate filter PM work order)	0:05				X	X
11.) Check for excess vibration and air leaks at unit & ductwork	0:10				X	X
12.) Fill out maintenance checklist and report deficiencies.	0:10				X	X
13.)						
Total Labor Hours/Period:	1:20				1:20	1:20
Total Labor Hours/Year:	2:40				1:20	1:20

Notes:

time for a PM work order to be initiated and given to a maintenance person to perform the work listed on this document.

An example of a PM work order is shown here and we will go down this checklist to discuss the tasks at hand beginning with information the facility management group will fill out relative to building, floor, room location, etc. Other pertinent information is the equipment manufacturer, year installed, model number, etc.

Click here for a sample Work Order

Next on the checklist is important technician "things-to-do" beginning with personal safety; proper lock out tag out of the unit and also at the motor starter before anything is done to service

this unit. Also, a safety requirement is the use of personal protection equipment (PPE) such as safety glasses. The technician should have a list of special tools needed noted on this work order or on a second sheet that may also include a copy of the equipment manufacturer's own maintenance checklist and trouble-shooting checklist. This second sheet would have already been inputted into the CMMS program as an attachment to this specific work order.

The filter task should also be printed out on its own PM work order because this specific central air-handling unit is scheduled to be maintained twice a year while the filters in this unit may be replaced quarterly or based on a computerized magnehelic gauge alarm (refer to this past June issue of Focus On Facilities, "More Pollen = More Air Filter Changes.")

On this checklist things-to-do is a task for the technician to notify the management leader that he or she will be going on the roof should someone be looking for the technician. It is also important that the technician bring along required personal protection equipment (PPE) such as safety glasses, earplugs, and safety gloves. Other PPE requirements may be added based on the situation.

Next comes the actual maintenance requirements, and the same PM work order breaks out these tasks in 5-minute increments to budget how much time it should take to perform the work. This gives the technician a guide to how long this PM work order assignment will take. What usually needs to be added to each PM work order is feedback from the technician to increase task-time e.g., air-handling unit is approximately 8-feet above the floor adding a difficulty factor to each task as the technician moves the ladder around to complete the requirement e.g., survey the unit for air leaks.

Another reason for estimating time to perform each work order is that the facility manager can have a report produced and an annual maintenance budget based on the number of PM work orders, the number of work order frequency e.g., quarterly, annually, etc. For the same PM work order in this discussion the reader will note that the estimated time to complete the work order is 1-hour and 20-minutes performed twice a year, equates to 2-hours and 40-minutes. Going through all the PM work orders in the CMMS system and inventorying the hours and minutes and the frequency of each work order, the manager can come up with the estimated number of PM work order time required throughout the year. With this information in-hand, the results may equate to 25% of a technician's time during the year will be assigned to planned maintenance. This time and the materials required to completing the work e.g., filter replacements will assist the manager in establishing the annual operation and maintenance budget.

Just like one's automobile needing an oil change every 4 to 5,000 miles, and the ancillary tasks such as checking the tire air pressure, filling the windshield cleaner, etc. building mechanical and electrical equipment require the same routine maintenance during the year and this is what a PM work order can look like.

The Diocese of Cleveland Facilities Services Corporation has much experience managing work orders. For assistance evaluating or establishing a preventative maintenance program at your facility, please contact a member of DCFSC today.

For more information:
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