



MAINTENANCE WORK ORDERS

By

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Lecture 1 Contents

Introduction

Cycle of a typical maintenance activity.

Work Reception

Work Order Request



Introduction

1/2

- **The identification of maintenance work does not, on the surface, appear to be a difficult task .**
- **Input can come from several sources including both the facility users and the maintenance staff. Simple user needs generate requests for repairs.**
- **Normal degradation of materials and equipment leads to replacement. Routine cleaning is necessary.**
- **The grass grows and must be mowed. If the maintenance staff were to simply attend to those obvious maintenance tasks, a sufficient workload would appear to keep that staff busy.**

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Introduction

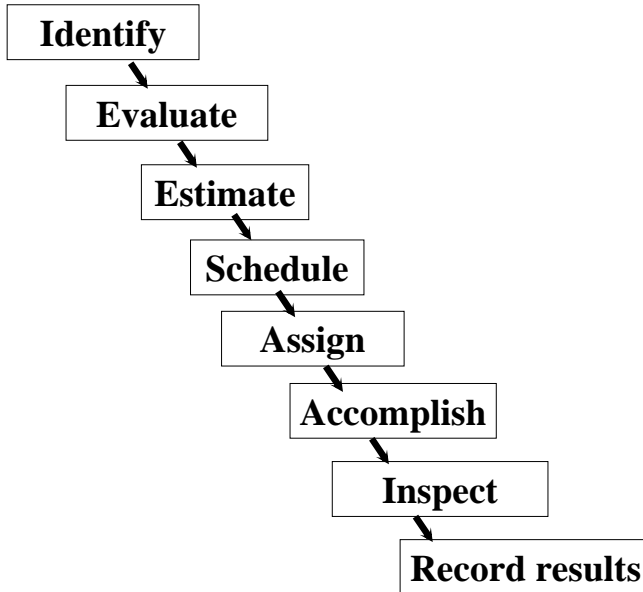
2/2

- **However, the timely identification of the tasks necessary to allow continuous facility operation is an important factor in running a cost effective, efficient maintenance program. the cycle of a typical maintenance activity is shown in figure 2-2.**
- **Maintenance work falls into two basic categories, planned and unplanned maintenance.**
- **Planning work in advance allows the maintenance manager the ability to control maintenance rather than having maintenance control him.**

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Cycle of a typical maintenance activity 1/1



Work Reception 1/3

- Every maintenance organization, regardless of its size, should have a formal method for facility users to request maintenance assistance.
- In an apartment building, the tenants usually contact the “maintenance man” for help. In a motel or hotel, the users are guests who call the front desk for assistance.
- In larger facilities, the users might know the name of the primary maintenance worker and will call that person with problems.
- For a large facility, the person designated to receive these requests is known as the work receptionist or trouble desk. The phone number for this individual must be readily available to all personnel.



Work Reception

2/3

- The work receptionist is a critical link in the overall maintenance organization, as this position is the funnel through which all requests should pass.
- The work reception should possess the following capabilities and personal traits:
 - An understanding of the facility layout,
 - An understanding of the facility’s operational staffing,
 - A basic understanding of typical maintenance problems,
 - Patience to deal with frustrated facility users,
 - Dedication to immediately record problems,
 - Sufficient judgment to discern routine from emergency repairs,
 - A helpful pleasant nature and an assuring phone presence, and
 - Genuine sympathy to the requesting party’s problems.

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Work Reception

3/3

- This list should be considered when evaluating applicants for the work receptionist position.
- The facility user who reports must feel that:
 - The problem has been acknowledged,
 - The work receptionist understands the scope of the problem,
 - That the problem was worth reporting, and
 - That help is likely to be forthcoming.
- The maintenance manager should ensure that the work receptionist regularly leaves callers with this impression.
- When requests yield no response, the frequency of such requests falls off.
- Therefore, the second key function of the receptionist is to convey the stated problem to the maintenance control branch with sufficient information to allow for proper maintenance response. This is done in the form of a formal work order.

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Work Order Request

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The work order request or the work request is the vehicle by which work is formally identified and conveyed to the maintenance worker who eventually performs the desired repairs.

Work order requests are received in both oral and written form. If written, a specific published form should be used.

If the work order request is submitted to the work receptionist, the same form should be fully completed by the work receptionist and passed along to the appropriate party.

The work order request form should provide proper space for the reporting party to provide the information which is generated from:

- What?
- Where?
- Who?
- When?



Work Order Request

2/4

What?

- ✓ What is the exact problem.
- ✓ The work receptionist should be persistent determining and defining the true problem in addition to accepting suggested solutions.

Where?

- ✓ Where: The location of the problem must be defined.
- ✓ Depending on the size of the facility, this may include the building name, floor, room number, or other necessary information to enable the maintenance worker to locate the problem.

Who?

- ✓ Who: The name of the person making the request or the person to contact (if different).
- ✓ Also, a phone number where they may be reached. This is used by the maintenance staff if further information is required, by the maintenance worker when making the repairs, and for obtaining a signature approving the work when completed.
- ✓ In addition to the name of the individual, the title of the organizational element to which the requesting party belongs should be noted.
- ✓ If the requested work is conducted on a reimbursable basis, the approving official and proper accounting data should be given to authorize and apply the charges for the work.



Work Order Request

3/4

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When?

When: The date that the request is made should be entered and the time desired for completion. Also, any peculiar scheduling limitations which should guide the time of execution of the project should be spelled out.

Figure: (1) is a suggested work order request form for use in requesting maintenance services. The form is utilized by the facility user in requesting the work.

The work order request is normally filled out first by the initiator of the request. The work receptionist fills out work orders for those requests made over the phone. If the maintenance records to be kept manually, several copies of the work request form needed to track project through to completion.

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Work Order Request

4/4

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Request for Maintenance services

Work order # -----

Description of Requested Services

Desired completion date _____

Work location: building _____ Room _____

Requested by _____ Department _____ Phone _____ Date Submitted _____

For Reimbursable work only

Authorizing Official

Account to be charged _____

Below portion need to be completed by maintenance staff

Figure 1 the work order request
Another Example Our university

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Lecture 2 Contents

The purpose of work order

Designing a work order

The performance of the work order

The work order system

The priorities of the work order

Types of work order



The purpose of work order

1/1

- The work order constitutes the link between the equipment or the facility in need of service and the organization as a whole and in particular the departments involved in providing the service, i.e. maintenance stores and accounting.

- The work order is the prime document used by the maintenance management to manage maintenance tasks.

- The importance of work order in maintenance is similar to the importance of working drawing and specification in construction.

- The purpose of a “work order” a “work ticket” or a “repair order” is to implement the work to be done and to record the relevant details as they occur.

- The basis purposes of the work order system are as follows:

- To provide a means screening and authorizing work.
- To provide cost data segregated in a logical manner.
- To provide feedback information on repetitive failures for analysis purposes.
- To provide a tool to facilitate planning and scheduling of maintenance work.
- To facilitate control of productivity.



Designing a work order

1/1

- **A work order is used to satisfy the following four purposes:**
 1. To serve as a notice that the periodic operation is to be performed.
 2. To provide authorization for the expenditure of labor and materials in performance of the work.
 3. To furnish a document for recording that the operation was performed.
 4. To provide a document for the written feedback of other information such as materials used other work which was or may be required. etc.

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The performance of the work order

1/1

- **Work order appears in many shapes and variations ranging from simple 3 inch by 5 inch memos to elaborate forms with tear-off tags or fold-outs. Some may be simple to fill in some may be complicated forms with much of the details pre-printed still others may be on computer.**
- **None of these versions should depart from the original purpose of linking the phases from the origin request to the final interpretation of assembled data.**
- **There are many advantages in having written work orders. Companies which argue against them for the sake of expediency and economy tend to forget that on jobs costing between and \$15 and \$50 the additional cost of time spent on filling in the form is negligible.**
- **In return the requester is able to specify the details of the request unambiguously so it is hoped and often in less time that oral explanations would take.**

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The work order system

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- A maintenance work order system or procedure involves how and by whom the work order be initiated (opened), followed, utilized, inspected, and analyzed in any maintenance department.
- In summary, a maintenance work order procedure explains the steps of how the work order be managed in the maintenance department.

Example 1:

The request originates by telephone memorandum, or a personal visit to the operating unit.

- 1) A work order clerk prepares the work orders and, if more than one craft is involved, the suborders. Copy is retained by the work order clerk in a open work order file. The clerk enters standardized times on the work orders.
- 1) The craft foreman places copies 2 and 3 in his backlog file, which he uses to make job assignment's. The worker performs the necessary work and notes the time on copy of the work order.etc



The work order system

2/5

Example 2:

THE UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE
POLICIES AND PROCEDURES MANUAL

No. 15

Date 11-13-00

Page 1 of 3

Approved APF

Subject: Maintenance and Operation of Physical Plant Department Request for Services

("Work Order")

GENERAL

Of the many functions for which the Physical Plant Department is responsible, the most important one continues to be the maintenance of a physical environment which is conducive to the learning process. Because of greatly increased demands for a variety of services from UNCA departments, and in view of the very limited number of service personnel available to perform such services, it is requested that campus departments use the following procedures for submitting requests for services. The cooperation of the entire university is needed for the Physical Plant to provide services as efficiently as possible.



The work order system

Example 2: (Continue)

THE UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE
POLICIES AND PROCEDURES MANUAL

No. 15

Date 11-13-00

Page 1 of 3

Approved APF

Subject: Maintenance and Operation of Physical Plant Department Request for Services
("Work Order")

PROCEDURES

Emergencies. The Physical Plant should be informed *immediately* by telephone or personal contact of all emergency situations on campus. On weekends, contact the Public Safety Office. All campus emergencies reported verbally should be followed up with a confirming written work request. Emergencies for which such immediate follow-up is needed would include, for example, a broken water line, a severe roof leak, no electricity, no water, or broken windows or doors.

Normal requests for operational services. Normal routine requests for services should be submitted, at least five [5] working days before service is needed, to the Physical Plant on the campus work order (*Request for Services*) form, which is available from Central Stores. A number will be assigned to the work order, and the work will be scheduled as soon as is practical. Campus personnel are requested **not** to contact maintenance personnel directly with requests for assistance; work assignments for service personnel are scheduled by their supervisors as *Requests for Services* are received, on a first-come, first serve basis. All requests should be as complete as possible: the originator should fill in his/her name, the name of a contact person, if different from the originator (should Physical Plant personnel have questions or need clarifications), the department name, the building and location where services are required, as well as any diagrams for setups (placement of furniture, etc., as appropriate), and a time or date when setups may be removed. All such requests must carry department head's approval. For normal operational requests, such as moving furniture from one place to another, setups, etc., no charge is made by the



The work order system

Example 2: (Continue)

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Physical Plant Department. Where something is requested which is not available on campus (e.g., picnic tables and benches), the requester will be contacted and alternative solutions proposed.

Special Activities. When planning a special activity, please prepare work orders requesting setups from the labor crew or extra housekeeping attention *10 days in advance on a Request for Services*. Due to competing events, these crews often have difficulties in meeting all campus needs. Where such special events require Physical Plant employees to be on hand at times other than regular working hours (e.g., for a housekeeping team to work on Sunday), the Physical Plant may charge departments for this assistance.

Note: When relocating fixed assets from one campus location to another, an *Equipment Transfer Form*, signed by the appropriate vice chancellor, must accompany the work order. Items which are being advertised as surplus will in no circumstances be removed and stored in the Physical Plant; they should be retained in your department until they are disposed of through the surplus process. The Purchasing Department is the coordinating department for state surplus materials.



The work order system

4/5

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Example 2: (Continue)
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Date 11-13-00
Page 2 of 3
Approved APF (Continue)

Renovation or small construction projects. Any *Requests for Services* for renovation or small construction projects must include the appropriate account number for charges accruing to this work order, as well as the signatures of both the appropriate vice chancellor and the Vice Chancellor for Financial Affairs. When such a request is received at the Physical Plant, the University Architect, and/or appropriate Facilities Management personnel, will meet with the originator of the *Request for Services*, to evaluate the request. Shortly thereafter (normally, within one week of the preliminary meeting), a cost estimate for the project will be sent to the originator. This estimate will ordinarily include information as to whether the project is one that can be completed by Facilities Management personnel (and if so, approximately how long before it could be done). If it is determined that the project should be bid out to a local contractor, the originator will be so advised at this time. From this point, the Physical Plant work order project controller will act as a liaison with the originator of the work request. The controller will see that the original drawings for the project are approved by the originator of the request, and will keep the originator informed at all stages of the progress of the project.
On completion of a departmental renovation or small construction project, the actual cost of materials and labor will be computed and charged to the account number indicated via the campus FRS accounting system. Copies of all work requests and work orders are kept on file in the Physical Plant Department. Any request to modify the building interiors or to place exterior structures on campus must be processed



The work order system

5/5

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Example 2: (Continue)
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according to UNCA Policy 33.
PHYSICAL PLANT CHARGES FOR SERVICES
General building preventative maintenance and repairs are an operating expense of the Physical Plant and, therefore, are not normally charged to academic departments. (Departments will be charged for out-of-cycle maintenance requests such as painting). All benefiting departments, including auxiliary services, will be charged by the Physical Plant through the campus FRS accounting system for materials and labor used on all renovation or small construction projects, as well as for departmental supplies obtained from the Physical Plant Department. The Physical Plant Department does not charge UNCA departments for labor for the routine and normal movement of materials on campus. Charges will, however, be passed on to departments when contracted labor or equipment is used to accomplish the moving requirements. Further, when special activities involving non-UNCA agencies or activities are scheduled on campus, these activities are billed for labor and materials.

Example 3
http://www.umdj.edu/oppmweb/Policies/HTML/FacilityServ/00-01-70-60_00.html

Example 4
<http://www.resortdata.com/RDPWin/NewModules/WorkOrders/WorkOrders.htm#Work%20Order%20Flow%20of%20Events>
<http://www.cogz.com/work.htm>



The priorities of the work order

1/2

- Necessary to any maintenance system is a priority sequence. The following is a suggested system: details of its operation would vary from building to building.
- The originator of the work order assigns a “date needed” to each work request; a coordinator or scheduler assigns priority.
- Priorities and any imperative starting or completion dates determine when work will be done.
- In some instances, priorities are determined by the importance of a job. In other instances priorities show only when the job can be done.
- Possible priority definitions are:



The priorities of the work order

2/2

Number	Name	Criterion	Action
1-	Emergency	Production will be stopped unless repaired immediately. Extremely hazardous condition exists. Equipment will be damaged unless repaired immediately.	Repair immediately. paper work to follow.
2-	Urgent	A serious safety hazard exists and must be repaired before the end of the week and on the next shift, if possible. Production will be stopped unless repaired before next week.	Interrupt weekly schedule and place on next available daily schedule.
3-	Normal	A defective condition has been identified. This condition will most likely not stop production, cause damage, or injure someone if corrected during the next week to four weeks.	Interrupt monthly schedule and place on next available weekly schedule.
4-	Programmed	Predetermined repetitive repairs, period inspections, major maintenance repairs and construction will normally have this priority.	Place on next available monthly schedule.
5-	Fill in	Work assigned this priority has little or no time requirement.	Complete as time permits.



Types of work order

1/2

- **Blanket work orders**

Blanket work orders are used for two purposes:

- 1) On routine repetitive small jobs, when the cost of processing an individual work order may exceed the cost of the job.
- 2) When a job is a fixed routine, such as a janitor's job. In this case, the janitor does the same thing every day. His job is repetitive and pre-planned.

- **Special work orders**

A special work order is written for all other individual jobs. Implied in the writing of a special work order is the fact that the particular individual job is important enough to warrant separate individual approval and reporting of all pertinent facts about the job.(1)

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Types of work order

2/2

- **The PM work order**

It must be admitted that the introduction of a PM program will require considerably more paperwork than does the emergency and normal work order system. By its very nature, the PM program is guided by accumulated data on the equipment it is to monitor.

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Lecture 3 Contents

The information (Input data) to fill work order form

Steps in filling out the work order

The assessment of maintenance work order forms in Saudi Arabia

Designing an Effective Maintenance Work Order Form

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The information (Input data) to fill work order form. 1/3

The basic information should be given in the work order form

1. Number and date of issue.
 2. Codes to indicate location and other classification categories into which costs are required to be analyzed.
 3. Priority for none schedule work.
- ◆ The priority will depend on the effect of the state of disrepair on the user of the building and in particular on safety and health considerations. It is difficult to make fine distinctions. But in practice three categories should be sufficient:

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The information (Input data) to fill work order form.

2/3

- Priority I
Emergency work to be carried out on the same day.
- Priority II
Urgent work which while not constituting an immediate danger should be carried out within a week of notification.
- Priority III
Normal work which would account for the major part of the budget allowance for contingency maintenance and may be programmed on the same basis as the scheduled work.
- 4. Description of work.
 - ♦ As the work orders are the main source of information on costs for subsequent estimates the descriptions should be standardized. i.e. identical description should be used for repetitive jobs.
 - ♦ Usually the descriptions are too vague to identify precisely the work content.



The information (Input data) to fill work order form.

3/3

- ♦ The presumption being that the details will be transmitted verbally on site. This not only leads to delays on site. But also renders the work order virtually useless for estimating purposes.
- 5. Estimated labor hours.
 - ♦ The estimated labor content expressed in man hours or man days should be entered in the work order or. Where a bonus scheme is in operation, the target time should be entered.
 - ♦ Quite apart from the control value of comparing actual against estimated times, it focuses attention on the job method and the need for proper programming.
- 6. Materials.
 - ♦ The quantities of each material should be state sufficient detail for stores requisitioning or purchase.
- 7. Actual labor hours.
 - ♦ The actual labor hours worked on job are required for cost control and bouncing. However they will form the basis for future estimates.



Steps in filling out the work order

1/3

The work order is filled out in three steps. These are:

- 1) **Opening the work order (Identify stage)**
 - **Certain preliminary information is put in the work order when its first opened (the request stage). This includes the following information:**
 - **Work order number**
 - **Machine number**
 - **Work requested**
 - **Requesting cost center**
 - **Performing cost center**
 - **Requester's name**
 - **Requester's date**
 - **Priority**
 - **Job title**

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Steps in filling out the work order

2/3

- 2) **Planning and Estimating Information (Evaluate, Estimate, schedule, Assign stages)**
 - **The work order is then sent to the planning and estimating group who adds the following information:**
 - **Estimated crew size and hours**
 - **Estimated material cost**
 - **Estimated labor cost**
 - **Estimated total cost**
 - **Approved to proceed by:**
 - **In certain cases the planning and estimating stage may include engineering and drawings in which case the following is added to the work order as a supplementary package:**
 - **Drawings**
 - **Bill of material**
 - **Lists of tools and equipment**
 - **Outage approval Electric circuit assignment, etc**

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Steps in filling out the work order

3/3

3) Work Order Completion stage (Accomplish, Inspect, and Record stages)

When the work order is completed, the following information is added:

- o Work performed
- o Job title (update)
- o Failure code
- o Failed component name
- o Actual material cost
- o Actual labor crew size and hours
- o Actual labor cost
- o Actual total cost
- o Completion approved by:
- o Completion date
- o Work type code

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The assessment of maintenance work order forms in Saudi Arabia

1/2

•Forms of building maintenance work order in Eastern province

A survey study of work order forms used in the eastern province zone especially in Dhahran, AL-Khobar, and Dammam was carried out. The selection included the major companies in those cities, in addition to the medium and minor companies. The surveyed facilities involved residential camps, office building, Educational building, hotels, hospital, private houses, etc. These facilities are as follows:

- 1.ARAMCO.(DHAHRAN)
- 2.KING FAHD UNIVERSITY PETROLEUM AND MINERALS (KFUPM).
- 3.SAMAREC.(DHAHRAN)
- 4.MINISTRY OF DEFENSE.
- 5.KING FAHD HOSPITAL.
- 6.AL-GOSAIBI.
- 7.GULF MERIDIEN.
- 8.DHAHRAN INTERNATIONAL HOTEL.
- 9.SCECO.

The comparison among the difference input data found in the selected maintenance work order forms of the above companies resulted in the following:

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The assessment of maintenance work order forms in Saudi Arabia 2/2

1- Common input data among the forms

The items in the following list appear on work order forms for all the surveyed companies

- | | |
|---------------------------|----------------------|
| 1. Requester (originator) | 2. Date requested |
| 3. Date needed | 4. Work order number |
| 5. Location | 6. Approved by |
| 7. Action taken | 8. Date completion |
| 9. Time spent | |

2 – Different inputs in the forms are shown in the following table :



ITEMS	Maintenance company								
	1	2	3	4	5	6	7	8	9
10 Background information of maintenance.									
A. Type.	N	N	N	Y	N	N	N	N	N
B. Code No.	N	N	N	Y	N	N	N	N	N
C. Breakdown time.	N	N	N	Y	N	N	N	N	N
D. Type of last maintenance. And date.	N	N	N	Y	N	N	N	N	N
11 Special type of work									
•A/C	N	N	Y	N	N	N	N	N	N
•Electrical	N	N	Y	N	N	N	N	N	N
•Plumbing	N	N	Y	N	N	N	N	N	N
•Carpentry	N	N	Y	N	N	N	N	N	N
•Mechanical	N	N	Y	N	N	N	N	N	N
•Other.	N	N	Y	N	N	N	N	N	N
12 Priority classification	Y								
•Emergency		N	Y	N	Y	N	N	N	N
•Urgent		N	Y	N	N	Y	N	N	N
•Normal		N	Y	N	Y	N	N	N	N
•PM		N	N	N	Y	N	N	N	N
13 Target or estimate of:									
•Crew size	Y	N	N	N	Y	N	N	N	N
•No. of persons per job	Y	N	N	N	Y	N	N	N	N
•Hours per week	Y	N	N	N	Y	N	N	N	N
•Total man hours	Y	N	N	N	Y	Y	Y	Y	N
•Shop work	Y	N	N	N	Y	N	N	N	N
•Equipment services	Y	N	N	N	Y	N	N	N	N

ITEMS	Maintenance company								
	1	2	3	4	5	6	7	8	9
14 Materials and spare parts									
– The stores issue slip (attached)	N	N	N	Y	N	N	N	N	N
– Materials requested	Y	N	N	N	Y	Y	N	N	Y
– No. off	Y	N	N	N	N	Y	N	N	Y
– Description	Y	N	N	N	N	Y	N	N	Y
– Cost	Y	N	N	N	N	Y	N	N	N
– Available	N	N	N	N	N	Y	N	N	N
– Orders	N	N	N	N	N	Y	N	N	N
15 Actual amount of:									
•Crew size	Y	N	N	N	Y	N	N	N	N
•No. of persons per job	Y	N	N	N	Y	N	N	N	N
•Hours per week	Y	N	N	N	Y	N	N	N	N
•Total man hours	Y	N	N	N	Y	Y	Y	Y	N
•Shop work	Y	N	N	N	Y	N	N	N	N
•Equipment services	Y	N	N	N	Y	N	N	N	N
16 Job description									
– Short description	Y	Y	Y	Y	Y	Y	Y	Y	Y
–Work to be preformed	Y	N	N	N	N	Y	N	N	N
–Cause	N	N	N	N	N	Y	N	N	N
–Job step description	Y	N	N	N	N	N	N	N	N
17 Benefiting account (charge number)	Y	N	N	N	Y	Y	N	N	N

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Designing an Effective Maintenance Work Order Form

It can be concluded that all the above items (1- 17) be used as a frame work (check list) to design a maintenance work order.

Also this check list can be used to exam the exiting maintenance work order in any maintenance department and to make sure whether it is an effective one or not.

It will help In revising the exiting one for more effective work order.

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Thank You