



OVERVIEW OF MAINTENANCE

Why Maintain Buildings

- Buildings not maintained will cease to fulfill their intended functions. Wear and tear set in immediately after buildings are constructed. Individual components eventually fail, in turn causing damage to other components; for example, internal water damage due to a leak in a roof. Failing components have to be repaired or a building's ability to protect against foul weather, to keep safe equipment and furniture, etc. will eventually be lost.
- Regular maintenance, attending to defects while they are still minor, is the most cost-effective strategy for providing well functioning buildings and will reduce operating costs.

Why Maintain Buildings

- Buildings not maintained have a limited life span. Maintenance can prolong their useful life almost indefinitely. Replacement will be required less often, resources will be conserved and the environment protected. Still, buildings might need to be replaced for reasons such as obsolescence, changes in space requirements, etc.
- A poorly maintained building is usually a poor working environment likely to reduce the staffs job motivation. Maintenance helps to create conditions that are not uncomfortable or directly harmful to staff, other users and equipment- essential for an efficient and satisfying working environment. And, it will boost an institution's public image.

Awareness, Attitudes and Regulations

Awareness and Attitudes

- Poor maintenance is usually a result of lack of consciousness and knowledge among one or more of the parties operating institutional buildings.
- Decision makers and planners often do not pay much attention to building management. This may be because they are not fully aware of the financial implications of taking poor care of the institutional buildings they have been appointed to manage, among many other tasks.
- Maintenance can be made more cost-effective with decentralised organizations. Non-maintenance staff and other users can help with the simpler tasks and allow skilled staff to concentrate on duties requiring their skills.

Awareness, Attitudes and Regulations

Awareness and Attitudes

- Institutional staff, and members of the public using the institution, often think that maintenance is none of their business and that they cannot do anything even if it were a concern of theirs. This attitude often originates from the fact that institutions are owned by the government or another distant and diffuse body to whom they have no personal relation. Such attitudes make it easy not to exercise the kind of care people take of their own homes and possessions, and sometimes lead to direct abuse of and vandalism to institutional buildings and property.
- If users can be made to perceive themselves as co-owners of their institutions, the user-induced deterioration can be substantially reduced. Further gains can be had from users actively participating in the upkeep of their institutions.

Awareness, Attitudes and Regulations

Legislation and Regulations

- National legislation or institutional regulations at times direct that a particular technical ministry or department should manage all construction-related work. Appointed organizations are not always organized and equipped to fulfil all the maintenance needs of their clients.

What is Maintenance

Building maintenance can be defined as: work done to keep an existing building in, or restore it to, a condition where it can perform its intended functions. It can be divided into:

- Preventive maintenance -carried out to a predetermined plan to reduce the risk of failure. It can be done as:
 - Scheduled maintenance, preventive maintenance done at regular intervals.
 - Condition-based maintenance, preventive maintenance done when deemed necessary through regular inspections of the building.
- Corrective maintenance, carried out after failure has occurred.
- Emergency maintenance, necessary immediately to avoid serious consequences.

Causes of Deterioration

- Buildings deteriorate from the moment they are constructed because of exposure to a variety of natural forces and wear and tear by the users.
- Water from leaks and floods is a major cause of deterioration and rapid wear and tear. Many items can be badly damaged immediately on contact with water, such as soft-boards, polished wooden surfaces, electrical apparatus. Other components absorb water and form ideal breeding grounds for micro-organisms - mould and rot - which will damage the host as they thrive. Some materials, such as low-quality concrete and mortar, get soft on contact with water and deteriorate rapidly.

Causes of Deterioration

- Solar radiation and wind, particularly in a tropical climate, rapidly break down paint, bitumen and plastic components and cause unprotected timber to dry out and crack.
- Insects such as termites and wood-borers feed on dead plant material and can cause severe damage to items such as wooden structures, doors, ceiling boards and furniture. In some areas pests such as rats and bats cause damage.
- Normal activities such as foot traffic, opening and closing of doors and windows, use of electric and sanitary installations will gradually wear out surfaces, locks, switches, water-taps, flushing mechanisms, etc.

Causes of Deterioration

- Excessive scrubbing, use of large quantities of water or inappropriate abrasives or solvents can cause serious deterioration in a short time. Still, if carried out regularly and systematically with appropriate methods, basic cleaning of the building and its surroundings will substantially *reduce* wear and tear, and at a very low cost.
- Improper use or direct vandalism by staff or the public may cause instant destruction of just about any part of a building, but windows, locks and technical installations are particularly vulnerable.

Assessment of Deterioration

- The condition of any building is in constant change. The ravages of rain, wind and sun; the wear and tear caused by users, all have their impacts. Operators with large stocks of uniform buildings in one climatic zone and with an equal user load could probably predict actual deterioration by statistical methods, if historical maintenance records are available.
- In practice few operators can develop satisfactory formulas for predicting the deterioration, and appraisals of conditions have to be made through on-site inspections.

Managing Maintenance

Inventory of Building Stock

- Maintenance managers need to have good knowledge of the buildings, site installations and land making up their building stock. They need basic data on matters such as location, size, age, construction materials, etc. If not existing, such an inventory should be established as a matter of priority.
- Routines should also be established continuously to update and supplement these data whenever buildings or site installations are altered because of repair or construction work.

Managing Maintenance

Monitoring of Condition

- The monitoring of buildings' condition through on-site inspections is a time-consuming activity and therefore, the inspections should be carefully planned, to avoid any waste of time and money. *Inspection time schedules* which show when individual institutions will be inspected should be prepared and distributed to concerned parties, so that the inspector gets full access to all parts of the institution.
- Inspections have to be carried out early enough to allow time for the analysis and the completion of all other planning work *before* the beginning of the new maintenance period.

Managing Maintenance

Monitoring of Condition

- It is an advantage to have one - or a few, well coordinated - inspectors to do inspections in an area or region, to make sure that the same standards are applied when assessing the seriousness of defects in different buildings.
- When inspecting a building, the *condition of components should be classified systematically. A coding system should be devised and used* to classify the condition of all components
- When assessing the condition of a particular component, not only that component should be considered, but also the other components that could be damaged as a result of the first one not being attended to.

Managing Maintenance

Prioritization of Work

- A *list of priorities*, adapted to local conditions and reflecting the preferences of involved parties should be drawn up.
- Managers might be interested mainly in long-term ability to operate while institution users are more interested in appearance and comfort. If funds are limited, such interests might conflict, but efforts must be made to establish priorities acceptable to all involved.