

# Module-V

Building Maintenance and Safety Measures: Purpose, need, importance, methods, Causes and types of defects in buildings, Preparation of report on maintenance work, Remedial measures and execution procedure of any one type of building maintenance work, Importance of various Laws / Norms / Regulations / Acts for safety, Precautions and precautionary Measures, Post-accident procedures.

## BUILDING MAINTENANCE AND SAFETY MEASURES

Building maintenance is work undertaken to keep, restore or improve every part of a building, its services to a currently acceptable standard and to sustain the utility and value of the facility. Depending on its design, quality of materials and workmanship, function and location, buildings deteriorate at different rates and require different level of attention.

Maintenance is the process of ensuring that buildings and other assets retain a good appearance and operate at optimum efficiency. Inadequate maintenance can result in decay, degradation and reduced performance and can affect health and threaten the safety of users, occupants and others in the vicinity.

### Need

- (i) To preserve machinery, building and services, in good operating condition.
- (ii) To restore it back to its original standards, and
- (iii) To improve the facilities depending upon the development that is taking place in the building engineering.

All the buildings deteriorate from the time they are completed. The rate of deterioration depends on a number of factors. Not all the factors can be controlled by the occupants of the building.

During the design and construction stages, the following points shall be kept in mind:

- (i) Right choice of building materials.
- (ii) Selection of suitable construction techniques.
- (iii) Adequate specifications for construction and installation work.
- (iv) Effective supervision throughout construction and rectification of defects prior to final certification.
- (v) Provision of adequate space for landscaping with proper design.

Depending upon the nature of the work, immediately after the date of completion, building shall be maintained for initial period of 3 to 6 months as there can be some troubles in any new construction. If these are taken care of, the maintenance pressure will be reduced.

When there is any inherent defect both in design and construction the maintenance cost raises disproportionately to a higher level and the anticipated life of building is reduced.

Maintenance of building aims at effective and economic method of keeping the building and services fully utilizable. It involves numerous skills as influenced by occupancy and the performance level expected of a building.

Planning of works to be carried out to keep the building in a good condition calls for high skills. Feedback from maintenance should also be a continuous process to improve upon the design and construction stages.

## Cause and type of building defects

Building defect is one of the major components of building problems that significantly needed attention.

When a building fails to function as it should, we must immediately seek for the determination. Is the problem taking place as the result of the worker's failure to assemble it properly? Is it involving the nature of it? Is the proper maintenance of the building not been performed as it should have been? The answers often depend upon a number of factors: the age of the affected building components, the exact nature of the problem, the presence or absence of human error, or some combination of all those three.

The defect can be divided into two categories,

### a) Structural defect

Structural defect means any defect in a structural element of a building that is attributable to defective design, defective or faulty workmanship or defective material and sometimes any combination of these.

Building structure includes earth retaining walls, columns, beams and flat slabs. Structural defect can be categorized as cracks in foundations (Substructure), cracks in floor or slabs (superstructure), and cracks in walls (superstructure).

Most of the structural problem can be avoided by implying the exact and detail of the design and planning. Structural defects in a building can occur over time due to deterioration, wear and tear, overloading, and poor maintenance.

They must be repaired to maintain the building's structure and to prevent any further failures. Regular inspection is the key to protecting the 'health' of a building's structure. Structural defect that always occurs are steel corrosion, cracks, and deflection.

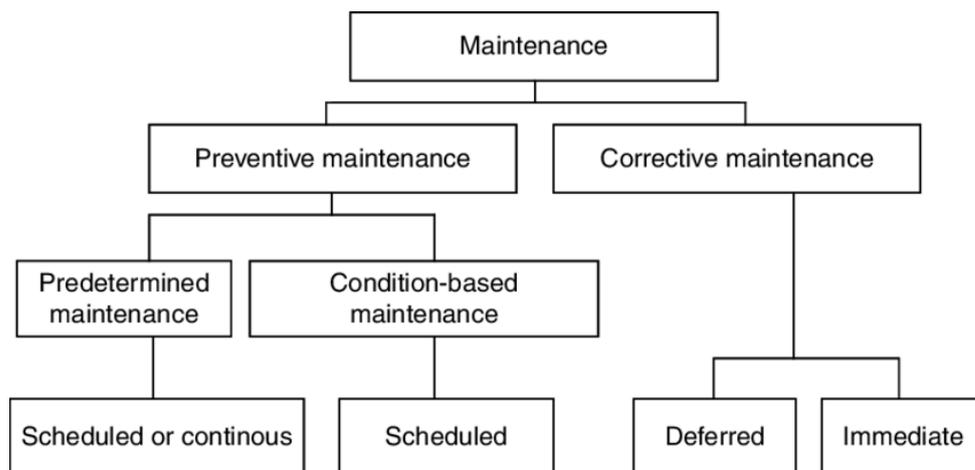
### b) Non-structural defect

A non-structural defect in a residential building is described as a defect in a non-structural element of the building as a result of defective residential building work. A non-structural defect includes defect in brick work, dampness in old structures and defects in plaster works.

Structural maintenance restores the structural life of the building thereby protecting the asset. The use of the building, mechanical impact, fire and exposure to atmosphere increase wear and tear and heightened the need to treatment at suitable intervals.

## Methods of building maintenance

Generally maintenance can be divided into preventive and corrective maintenance. Preventive maintenance is carried out at predetermined intervals (e.g., time-based or use-based) or to other prescribed criteria (e.g., defects and condition) and intended to reduce the likelihood of an item not meeting an acceptable condition. Corrective maintenance is any maintenance activity which is required to correct a failure that has occurred or is in the process of occurring



Common maintenance tasks include:

- Exterior painting and plastering.
- Landscaping and gardening.
- Paving repairs.
- Window and door repairs.
- Debris/rubbish removal and clearance.
- Jet washing with chemical cleaning agents to remove fungal stain or mould.
- Gutter clearance and repair.
- Carpentry.
- Lighting repairs.
- Re-plastering and plaster repairs.
- Rendering.
- Window and door repairs.
- Tiling.
- Carpeting and flooring.
- Plumbing.
- Building services maintenance.
- Repointing.
- Removing paintwork: Can be removed by water washing, steam stripping, application of chemical paint removers, abrasive methods, hot air paint stripper, burning-off method (using a blowtorch).
- Repairing cracking or leaning walls.
- Repairing decayed floorboards.

## **SAFETY MEASURES OF BUILDING**

Safety means achieving proper operating condition prevention of accidents, or mitigation of the consequences of accidents.

A considerable number of personnel get injured every year, seriously or fatally, while engaged in construction work. Problems arise at the construction sites only when the safety measures are by passed. Therefore, it becomes the responsibility of the management to safeguard the safety and welfare of everyone assigned to construction activities.

Effective health and safety management is founded on the provision of a safe and healthy working environment with safe system of work at its core.

The key to success is to ensure that health and safety aspects are carefully planned, organized, monitored, controlled, and reviewed. This chapter deals with the salient features of safety, starting from housekeeping to environment, accidents, and the consequences of accidents.

### **Basic principles on safety**

Individual safety depends on one's attitude and sense of overriding priority attached to safety. One with the proper attitude would always return home safely on completion of a day's work in the same way as one arrived without suffering from injury or health hazard during the course of the day's work.

The management should follow 'cradle to grave' approach on the safety issue by:

- Ensuring that safety is inherent in design the basis of design work is safety first
- Selecting proper people
- Motivating them by imparting training
- Ensuring that no one is overworked

Training is learning that changes attitude. An agency engaged in construction work, therefore, should arrange for comprehensive training.

The various requirements for any successful training are as follows:

Active committee environment must exist where a trained person would be able to apply his acquired knowledge and develop skills through training. Adequate fund and organizational structure to provide opportunity for training Availability of pertinent expertise for imparting training by knowledgeable and experienced trainers

In training the employees, the management imparts knowledge and skill. What the employees gain by training, apart from knowledge and skill, is motivation. They have to be given information and knowledge that accidents are not inevitable but are caused.

They need training to develop skills and recognize the need to comply with and develop safe system of work, and to report unsafe conditions and practices. Their attitude and awareness related to safety needs continual improvement and the social environment of the workplace must foster good safety and health practices.

## **STEPS TO TAKE AFTER A CONSTRUCTION SITE ACCIDENT**

### **1. Get Medical Attention**

When involved in a workplace accident as a construction worker, the first and most important step to take is to ensure your safety and well-being. To do this, calm down and check for any possible injuries and call for help if need be. There's a high chance that you won't be alone so if you're stuck alone in rubble, debris or heavy equipment, try to breathe and call or shout for help. If you can move, be sure to seek medical attention right away, preferably from a well-recognized health institution for proper medical check-up and treatment.

### **2. Let Your Supervisor/Superior Know**

The other important step after a construction accident is to let your superiors at the site know of the accident, preferably in writing within 30 days at most from the time of the injury. While so doing, you'll want to document every important detail about the accident, including where, how, and when it took place. By writing and submitting your notice as soon as possible, you can avoid losing details that could be crucial when seeking compensation and preventing the same from happening to you or other workers in the future.

### **3. Note Any Witnesses**

It might not always be so, but a good number of construction accident cases end up in court. When trying to come to a verdict in your compensation claims case, the judge and the jury will majorly rely on facts and evidence more than logic during the hearing in order to arrive at a decision. Witnesses from the scene will also play a huge role in this. For this reason, it is best to have the names and contact details of co-workers, bystanders, and any other witnesses that were present at the scene at the time of the accident written down in case they're needed at a later date. Many construction accidents end up with lawsuits and legal battles, which brings us to the next important step to take.

## 4. Get Legal Advice/Assistance

More often than not, construction site accidents result in serious injuries to the employee, not to mention the possibility of death. In the case of injuries, the accident could cause the worker's inability to work and bring food to the table for their family. It could result in pain, suffering, frustrations, and financial hardships. Well, Worker's Compensation (which will be discussed later) may help cover your treatment costs and medical bills, as well as pay a part of your salary for a specified amount of time.

With good legal advice (and representation), you can focus more on your well-being and recovery, which is what matters most at this time. Your legal counsel will take you through everything you need to get your claim processed, advise you appropriately on how to pursue it, and probably give you an estimate of the amount of compensation to expect.

## 5. Report and File a Claim to Workers' Compensation

Insurance is a legal requirement for employers, construction companies, and contractors in similar industries. It basically protects the rights of employees, while also protecting employers from liability. To get the much-needed financial relief after being injured on the job, you'll need to report the accident and file your claim to the Workers' Compensation Board. To do so, you'll need to fill the Employee Claim Form and send it to them within 2 years from the time of the accident or from the time you got your medical report. On top of this, you may also have the legal right to sue your contractor, equipment manufacturer or your employer in seeking further compensation on top of your workers' compensation benefits so be sure to ask your personal injury attorney about this.