

# CONSTRUCTION SAFETY MANAGEMENT ROLE OF VARIOUS PARTIES

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## INTRODUCTION

It is possible to prevent accidents in the construction industry by adopting adequate safety measures both at the stage of planning as well as execution. Accidents can be attributed to inefficient working, negligence and poor construction management policies. Lack of adequate control by various law enforcement agencies is also a major cause for accidents in this industry.

There is a general feeling in our country that any expense incurred on providing proper safety is a burden on the contractor. As a part of the general practice adopted by the contractors in this country, the factor of safety is totally ignored because this involves expenditure. Human life is not held very important, by and large, in our country and this is reflected fully in the construction sector. The major point which can swing the balance to make safety the motto is the provision of having an item as "Safety" in the Bill of Quantities attached with all tenders. In case the tender documents contain the item of safety as a separate identifiable and priced item, the contractors will be too happy to provide adequate safety measures knowing fully well that this will be compensated monetarily for providing the safety requirements at the work site. This however, does not mean that there is no awakening on this issue in the construction industry. But unfortunately, the safety measures adopted by the construction industry are far below the minimum requirements. Each human life is precious and steps should be taken by all concerned to have proper safety measures so that accidents can be avoided. It does not ensure or insulate the project from any accident by merely providing safety measures but it can reduce and minimise the accidents to a great extent. It should be useful to spell out the role of various parties to construction in ensuring safety of persons and structures.

## DESIGNERS

At the planning stage, the architects, engineers and designers, while designing, should give due consideration to the safety of the workers who will be subsequently employed in the erection of such structures. They should exercise proper care and not include anything in the design which would require the use of

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dangerous structural procedures and undue hazards. These could perhaps be avoided by proper modifications in the design. The structural designer and architect should take into account the safety problems associated with the subsequent maintenance of structures where, according to them, special hazards are involved. Special care should be taken at the time of designing the structure, particularly in the case of tall buildings, to cater for the cleaning of the windows on the outside.

### EMPLOYER

The employers should provide and maintain buildings, plant, equipment and work passages and should organise the work in such a manner that workers are protected against risks of accidents. While buying machinery, he should ensure that the specifications of equipment, etc. conform to the various safety regulations.

The employer should ensure that proper supervision is provided to workers to perform their work under the best conditions of safety. In case there is a group of persons doing a particular item of job, they should be supervised by a competent person who knows the safety requirement. They should not engage workers who have physical defects or mental disorders such as deafness, giddiness, bad sight, etc. There are some persons who get giddiness at greater heights. They should not be employed on tall structures.

Proper instructions should be given to all workers about the safety requirements. Instructions and notices for safety regulations should be displayed at prominent places on work sites. The language in which these notices are written should be the one known to most of the workers. He should ensure that regular safety inspections are carried out by a competent person at suitable intervals.

Buildings, equipment and work places in which a dangerous defect has been detected should not be allowed to be used till such defects are rectified. The employer should establish a proper system of signalling for any danger. He should see to it that the employees are familiar with the signals and that each signal should have just one meaning. He should ensure that signals are given by competent persons. The signallers should not be assigned any other duty when they are signalling. They should not be under the influence of liquor or any other toxic substances. The signalling equipment should be efficient, properly installed, regularly tested and should be kept in proper working order.

### WORKERS

All workers should do everything within their power to maintain their own safety and the safety of their co-workers. At the start of the job, the workers should inspect their work places and the equipment to be used by them and report any dangerous defect to their supervisor or any other competent person. They should use all safeguards and safety devices made available for their safety and not interfere with equipment for which they have not been duly authorised to operate or use.

Workers should not be allowed to sleep or rest in dangerous places such as scaffolding, running machine or vehicle, heavy equipment or near fires and dangerous substances. They should not indulge in careless practices or actions

which can endanger the lives of others. Workers should use protective equipment for their safety and make themselves conversant with safety instructions.

## MANUFACTURER/DEALER

The manufacturers and dealers of equipment should ensure that the machines, vehicles and other equipment used in the construction industry complies with the safety laws and regulations, and that these machines are as safe as possible. In case of toxic, corrosive explosives, flammable liquids and other dangerous items, the manufacturers should ensure that these are sent to the user with adequate instructions.

## SITE SAFETY MANAGEMENT

### *Work Places and Equipment*

- (i) Adequate and safe means of entry and egress should be provided in all work places and they should be maintained in a safe condition.
- (ii) Practical measures should be taken to prevent steam, smoke, and flames from obscuring the work place where any person is employed.
- (iii) Adequate, suitable and artificial lighting should be provided where natural light is not adequate to prevent danger.
- (iv) Suitable provision for circulation of fresh air including forced ventilation should be provided in enclosed places.
- (v) Loose materials which are not required for use should not be placed or left, as they cause obstruction in the place of work.
- (vi) All projected nails should be removed or bent to prevent injury.
- (vii) Care should be taken that equipment, cuttings and small projections are not left lying about as persons can fall and suffer accidents. Scrap, wastes and rubbish should not be allowed to accumulate at the site.
- (viii) Work places and passageways that become slippery because of oil or other causes should be properly cleaned and covered with materials like saw dust, sand, etc.
- (ix) Suitable and sufficient fire extinguishing equipment and adequate water supply at ample pressure should be provided at places where workers are employed to take care of any fire outbreak.
- (x) Some of the workers should be trained to handle the fire extinguishers and fire fighting equipment. Some workers should be available during all working periods.
- (xi) The fire extinguishing equipment should be inspected regularly and the access to the places where the fire extinguishing equipment is installed should be free at all times.

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- (xii) There should be no smoking and any open flame or incandescent material close to the flammable or combustible materials.
- (xiii) Places of fire risks should be regularly inspected, like electrical installations and conductors, stores of flammable liquids, welding appliances and areas near the heating appliances.
- (xiv) In case of tall buildings and other buildings under construction, overhead screens of adequate strength and dimensions should be provided so that the workers are prevented from being struck by falling objects.
- (xv) No material from the heights should be thrown up or down.
- (xvi) Wherever necessary, guys, stays or supports should be used to prevent collapse of structures or parts of structures that are being erected, maintained, repaired or demolished.

### *Structures and Equipment*

- (i) The structures for construction i.e. scaffolding, gangways, towers and equipment including lifting appliances and other machines should (i) be of sound material and quality, (ii) be free from potent defect and (iii) be properly constructed. These structures and equipment should be strong enough to withstand the loads and stresses which they have to bear.
- (ii) The individual members of the structures should not be weakened by cracks, rust or corruptions and should be given a protective coating. These structures and equipments should be inspected at regular intervals by authorised workers before they are put to use.
- (iii) Structure and equipments should be maintained in a safe condition continuously. Any dangerous structures should not be used till the defects are properly rectified.

### *Scaffolding*

- (i) Care should be taken to provide suitable and sufficient scaffolds for works which can be done safely at height by means of a ledger or otherwise.
- (ii) All scaffolds should be designed with a safety factor of at least 4 times their maximum rate. The poles and other scaffolds should be rigidly connected to the building at suitable distances horizontally and vertically. The structures and appliances used as support for working platforms should be of sound construction, having a firm footing, adequately braced and studded to make it stable.
- (iii) The scaffolds should be inspected by a competent person regularly. If a lifting appliance or any part of an item is lying on the scaffolding, adequate measures should be taken to prevent persons on the scaffolds from being struck by the appliances or any part of it.
- (iv) No sudden shock should be transmitted to the scaffolds while transferring heavy loads.

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- (v) The equilibrium of the scaffolds should not be disturbed by putting undistributed loads on the scaffolds.
- (vi) The scaffolds should not be unnecessarily overloaded.
- (vii) The scaffolds should not be used for storage of materials but should only be used for keeping materials.
- (viii) Workers should not be employed on difficult site scaffolds during times of high winds.

### *Working Platforms*

- (i) All scaffolds on which workers are employed should be provided with a sufficient number of working platforms.
- (ii) No working platform should be used until necessary safe-guards are properly fixed and checked.
- (iii) Poles and scaffolds which are tied to the building should be braced tightly from top to bottom over the whole length and the bracings should be securely tightened to every ledger and at the crossing points.
- (iv) Tubular metal scaffolds, if used, should be made with galvanised steel tubing with adequate strength to hold a sufficient load.
- (v) Provision of minimum safety factor of 4 should be maintained.
- (vi) All vertical and horizontal parts of such scaffolds should be securely fastened.
- (vii) To prevent any danger, the tubular scaffolds should be braced both lengthwise and crosswise. All uprights should always be maintained in a vertical position.
- (viii) In case of tall buildings or other tall structures, safety belts should be provided.
- (ix) Care should be taken that all electrical wires and cables are properly insulated and are not naked or close to the working platforms, scaffolds, etc.
- (x) The safety belts should be attached by either a line of high grade manila or equivalent material to the anchor.
- (xi) All metal parts of safety belts of life line should be of forged steel or equivalent.
- (xii) Places of heights from where workers cannot be protected from falling should be protected by catch nets. These catch nets should be made of good quality fibre, wire or woven fabric and these should be attached to adequate anchorages.

## SAFETY ORGANISATION

There should be a proper safety organisation at the site of work where 25 or more workers are regularly employed. It should be under the charge of a safety

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officer. Safety committees consisting of the representatives of employer and employees should be established on all projects. Copies of all representations made by the safety committees should be sent out to the management for their information. The safety committees should meet at regular intervals. The employers should give reasonable encouragement and facilities to the safety committees and should help them regarding all matters concerning safety. Suggestions from the workers should also be invited in case they have any problems regarding safety.

### CONCLUSION

In conclusion, it may be stated that safety, above all, is an attitude. And safety attitudes should begin to develop early at the young age. In the engineering colleges, polytechnics, industrial training institutions and other places where engineers and other category of staff are trained, there should be a full course on safety. The skilled and unskilled workers should be apprised fully of all safety procedures. It is the duty of the client also, in addition to the contractors, to ensure that safety regulations are followed rigidly.