

saving them from such hazards, Such equipments or means shall be in accordance with the standards as laid down;

- g. Whenever there is a possibility of falling of any martial, equipment or building worker at a construction site relating to a building or other construction work, adequate and suitable safety net shall be provided in accordance with the above stipulation;

2.0 SAFETY IN MATERIAL HANDLING AND WASTE DISPOSAL

2.1. GENERAL PROVISIONS:

- a. All building materials stored in tiers shall be stacked, racked, blocked, interlocked or otherwise secured safely to prevent sliding, falling or collapse and in an orderly manner to avoid obstruction of any passageway at the place of work. Piles of materials shall be stored or stacked in such a manner as to ensure their stability;
- b. Maximum safe load limits of floors within buildings and structures in kg/cm² shall be conspicuously posted in all storage areas, except for floor or slab on gradient. Maximum safe load shall not be exceeded. Material or equipment shall not be stored upon any floor or platform in such quantity as to exceed its safe carrying capacity;
- c. Ailes and passageways shall be kept clear to provide for the free and safe movement of material handling equipment or persons. Such areas shall be kept in good repair;
- d. When a difference in road or working levels exist, means such as ramps, blocking or grading shall be used to ensure the safe movement of vehicles between two levels;
- e. Material stored inside buildings under construction shall not be placed within 2 m of any hoist way or inside floor openings nor within 3.2 m of exterior wall which does not extend above the top of material stored;
- f. Persons employed required to work on stored material in silos, hoppers and similar storage areas shall be equipped with lifelines and safety belts;
- g. Non-compatible materials shall be segregated in storage;
- h. Bagged materials shall be stacked by stepping back the layers and cross-keeping the bags at least every 10 bags high;
- i. Materials shall not be stored on scaffolds or runways in excess of supplies needed for immediate operations;
- j. Bricks stacks shall not be more than 2.2 m in height. When a loose brick stack reaches a height of 1.3 m it shall be tapered back 5 cm in every foot of height above the 1.25 m level;
- k. When masonry blocks are stacked higher than 2 m, the stack shall be tapered back on half block per tier above the 2 m level;
- l. Material or equipment shall not be stored or placed so close to any edge of a floor or platform as to endanger the safety of persons below or working in the vicinity. Where stacking, unshackling, stowing or unstaring of construction material or article, or handling in connection therewith cannot be safely carried out unaided, reasonable measures to guard against accident or dangerous occurrences shall be taken by shoring or otherwise to prevent any danger likely to be caused by such handling;
- m. Stacking of material or article shall be made on firm foundation not liable to settle and such material or article and shall not overload the floor on which such stacking is made;

- n. The material or articles shall not be stacked against partition or walls of a warehouse or stores unless it is known that such partition or the wall is of sufficient strength to withstand the pressure of such materials or articles;
- o. The materials or articles shall not be stacked to such a height and in such a manner as would render the pile of such stack unstable and cause hazards to the building workers or the public in general;
- p. Where the building workers are on stack exceeding one point five meters in height, safe means of access to the stack shall be provided;
- q. All stacking or unstacking operations shall be performed under the supervision of a responsible person for such stacking or unstacking;
- r. The stacking of construction materials or articles shall not be made near the site of excavation, shaft, pit or any other such opening;
- s. Stacks that may lean heavily or become unstable or collapse are barricaded shall be avoided;
- t. Structural steel, poles, pipe, bar stock and other cylindrical materials, unless racked, shall be stacked and blocked so as to prevent sliding, spreading or tilting.

2.2. LUMBER:

- a. Used lumber shall have all nails withdrawn before stacking;
- b. Lumber shall be stacked on level and solidly supported sills;
- c. Lumber piles shall not exceed 6 m in height provided that lumber is handled manually, shall not be stacked more than 5 m height;
- d. Lumber shall be so stacked as to be stable and self-supporting.

2.3. STACKING OF CEMENT AND BAGS CONTAINING OTHER MATERIALS:

- a. The cement or other material in bags shall be stacked in a header and stature-wise in rows alternately in not more than 10 numbers and there will be circulation of space of at least 600 mm in between two such rows;
- b. While removing bags from the stack pile the stability of such stack pile shall be ensured;
- c. Bags containing cement or lime shall be stored on a firm ground;
- d. The materials like bricks, tiles or blocks shall also be stored on a firm ground;
- e. Reinforcing steel shall be stored according to its shape, size and length and stack of reinforcing steel kept as low as possible;
- f. No pipe shall be stored on rack or in stack where such pipe is likely to fall by rolling;
- g. The angle of repose shall be maintained where loose materials are stacked;
- h. When dust laden material is to be stored or handled, measures shall be taken to suppress the dust produced by such storing or handling and suitable personal protective equipment supplied to and used by the building workers working for such storing or handling.

2.4. DISPOSAL OF DEBRIS AND WASTE MATERIAL:

- a. It shall be ensured that debris is
 - i. Handled and disposed of by a method, which does not cause danger to the safety of a person and not allowed to accumulate so as to constitute a hazard;
 - ii. Kept sufficiently moist to bring down the dust under control;
 - iii. Not thrown inside or outside from any height of such building or other construction work;
- b. Brought down by suitable means/chutes provided for the purpose and on completion of work, leftover building material, article or other substance or debris shall be disposed off as soon as possible to avoid any hazard to any traffic or person;
- c. Whenever materials are dropped more than 6 m to any point lying outside the exterior walls of the building an enclosed chute of wood, or equivalent material shall be used;
- d. When debris is dropped through holes in the floor without the use of chutes, the area where the material is dropped shall be completely enclosed with barricades not less than 1.1 m high and not less than 1.9 m back from the edge of the opening above. Signs warning of the hazard of falling material shall be posted at each level;
- e. All scrap lumber, waste material and rubbish shall be removed from the immediate work area as the work progresses;
- f. Disposal of waste material or debris as per the guideline issued by CPCB in compliance of Rule 10 sub-rule 1(a) of C & D Waste Management Rules, 2016).
- g. All bio-degradable material shall be disposed off in the pit for making compost. Pellets can also be made from bio-degradable material
- h. All solvent wastes, oil rags and flammable liquids shall be kept in fire resistant covered containers until removed from the work site.

2.5. HANDLING GAS CYLINDERS:

- a. Gas cylinders shall not be lifted on bare slings. For lifting the cylinders, cage of suitable size shall be used and all cylinders shall be horizontally positioned in it. Such cage shall have fencing in such a way that there is no possibility of fall of cylinders from this cage.

2.6. RIGGING EQUIPMENT FOR MATERIAL HANDLING:

- a. Rigging equipment for material handling shall be inspected prior to use in each shift as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service;
- b. Rigging equipment shall not be loaded in excess of its recommended safe working load, as prescribed in the Indian standards;
- c. Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to persons engaged in the area;

- d. Special custom designed grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures and similar materials, shall be marked to indicate the safe working loads shall be proof tested prior to use 125% of their rated load;
- e. Welded alloy steel chain slings shall have permanently affixed-durable identification standing size, grade, rated capacity and manufacturer.

2.7. FENCING OF MOTORS ETC

- a. All motors, cogwheels, chains and friction gearings, flywheels, shafting and the other dangerous and moving parts of machinery (whether or not driven by mechanical power) and steam pipes shall be securely fenced and the fencing of dangerous parts of machinery not removed while such machinery is in motion or in use;
- b. No part of any machinery which is in motion and which is not securely fenced, shall be examined, lubricated, adjusted or repaired except by a person skilled and trained for such examination, lubrication, adjustment or repairs and machine parts cleaned only when such machine is stopped;
- c. When a machine is stopped for servicing or repairs, adequate measures shall be taken to ensure that such machine does not restart inadvertently and not only tag-out sign is required; it is also essential that an active system of isolating the power be applied.

2.8. PROTECTION AGAINST LIGHTNING

- a. Where necessary, installations shall be protected against lightning, provided further that;
- b. No bare conductors or bare current-carrying parts of equipment be permitted to be installed unless adequate precautions are taken to prevent direct or indirect contact;
- c. Only flame-proof equipment and conductors shall be installed at places where explosives or inflammable substances are stored, handled or used or where explosive atmosphere exists;
- d. Persons competent and authorized only shall attend to electrical breakdowns and other operational faults and give or restore power to an equipment and such persons shall be easily identifiable by their dress or special helmet worn;
- e. It will constitute a standard practice to switch off portable tools while shifting from one place to another or while leaving them behind unattended;
- f. The contractor shall ensure that a system is in place to always keep tools well maintained.

2.9. VEHICULAR TRAFFIC

- a. Whenever any building or other construction work is being carried on, or is located in close proximity to a road or any other place where any vehicular traffic may cause danger to building workers, it shall be ensured that such building or other construction work is barricaded and suitable warning signs and lights displayed or erected to prevent such danger and if necessary, a request in writing made to the concerned authorities to control such traffic;

- b. All vehicles used at construction site shall comply with the requirements of the Motor Vehicles Act, 1988 (59 of 1988) and the Rules made hereunder;
- c. The driver of a vehicle of any class or description operating at a construction site shall hold a valid driving license under the Motor Vehicles Act. 1988 (59 of 1988).

2.10. USE OF SAFETY BELT OR OTHER FALL ARREST SYSTEMS:

Wherever any work at a height of 3 m or more is carried out, use of a suitable fall arrest system is mandatory if the workplace has already not been provided with an otherwise reliable means of protection for preventing the fall of persons from that height, provided further that:

- a. Safety belt, lanyard, life lines and devices for the attachment of such life lines shall conform to the approved standards;
- b. Every building worker shall be supplied with safety belt and safety life lines for his protection and such building worker shall use such belts and life lines during the performance of his work;
- c. All building workers using safety belt and safety life lines shall have the knowledge of safe use and maintenance of such belts and life lines and shall be supplied with necessary instructions for its use;
- d. The responsible person for supervising the use of safety belts and safety lifelines shall inspect and ensure that such safety belts and lifelines are fit for use before taking them into use.

2.11. SAFETY NET AND ITS USE

- a. Every safety net shall be of adequate strength, made of sound material and suitable for use and conform to the approved standards;
- b. The responsible person for maintenance of safety nets and their use shall ensure safe fixing of such safety nets and provide such safety nets with suitable and sufficient anchorage so that the purposes for which such safety net is intended for use is served;
- c. Use of multi-layer safety net to be ensured to avoid fall of material/objects.

2.12. STORAGE OF SAFETY BELTS AND NETS, ETC:

- a. Proper arrangement shall be made for the safe storage of safety belts, safety lifelines and safety nets when they are not in use and are protected against mechanical damage, damages from chemicals and damages from biological agents.

2.13. SAFETY HELMETS AND SAFETY FOOTWEAR

- a. The Engineer in-charge may declare whole or part of a site as the hardhat area and in such an eventuality it shall be the responsibility of the contractor to provide safety helmet of the approved quality to all personnel engaged in construction and erection work, including the visitors to the site;
- b. Accordingly, wherever safety footwear is required for the safety of the personnel, the contractor shall provide the same of the approved type free of charge.