

## **SAFETY IN DEMOLITION**

### **DEMOLITION**

Demolition or dismantling refers to breaking up of buildings , structures either fully or partially .

Utmost consideration is to be given to demolition or dismantling of structures than to erection, construction and maintenance. The problems, hazards and uncertainties can be much greater in demolition and it is also carried out by the unskilled workers.

The design engineers have responsibility for safety for not only for design and construction but also for the demolition of the structures at the end of its usual life.

Precautions during demolition has three goals. (1) specifically aimed at safeguarding the personnel on the site. (2) safeguarding of persons not connected with demolition including the general public and (3) the protection of the property likely to be effected by demolition operation.

The causes of accidents to workers involved with demolition are fall from heights, falling materials, inadequate access, over-fragile materials etc. Premature collapses due to incorrect dismantling, over loading or excessive pre- weakening feature particularly during demolition.

### **SAFETY PRECAUTIONS :**

The safety precautions to be taken before demolition depends on method of demolition.

Demolition methods include (1) manual demolition (2) mechanical demolition by pusher arm, demolition ball and wire rope pulling; explosives; demolition by hydraulic busters and the thermic lance.

These used methods of demolition vary depending on types of buildings and structured such as houses, large buildings, bridges, arches, independent chimneys, steel and concrete structures, spires, pylons and masts, petroleum tanks etc.

Any demolition work should be proceeded by

- (a) Site survey which should be comprehensive
- (b) Decide on the location and position of screens, scaffolds etc.,
- (c) Protection of the public
- (d) Methods to protect surrounding buildings from the danger of collapse.
- (e) Electric power to all services within the structures should be shut off. Similarly all )
- (f) Gas, water and steam service lines should be shut off.
- (g) The structure to be demolish should be adequately fenced and cordoned off
- (h) Display boards to be displayed prominently warning the public of the danger.
- (i) Glass in doors and windows, loose objects and projecting parts to be removed.

### **SAFETY MEASURES IN DEMOLITION OF THE BUILDINGS:**

1. Workers should not be deployed at different levels unless adequate precautions are taken to ensure safety of them
2. Demolition work should begin at the top of the structure and proceed downwards. .
3. Masonry concrete and other dismantled materials should not be allowed to accumulate in quantities which may endanger the stability of any floor or structural support.
4. Part of the structures, where necessary should be adequately shored, braced or otherwise supported.
5. If the structure is to be demolished by explosives, all safety measures pertaining to explosives such as transport, storage, handling, loading firing etc. should be strictly adhered to.
6. Foundation walls serving as retaining walls to support of adjoining structures should not be demolish until the adjoining structure have been under pinned or braced or earth supported by sheet piling.
7. Stairs with hand railing should be kept in place as long as practicable to provide access and egress.
8. If the work of demolition is continued in night, all passageways, stairs and other parts of the structure where the workers have to pass and also to work should be adequately lit.
9. Workers should wear strictly safety belts, safety belts, safety helmets and hand glove.

10. If the demolition is carried out by machines such as power shovels, bulldozers etc. the safety measures relevant to operation and use of such machines should be adhered to.
11. If swinging weight such as ball is used for demolition, a safety zone having a width of at least 1.50 times the height of the building or structure should be maintained.
12. Scaffolds used for demolition operations should be independent of the structure to be demolished.
13. If ladders are used for demolition, only travelling mechanical ladders should be used.
14. The hoists or chutes, whenever it is practicable, should be used to lower the materials. Materials chutes should have a gate at the bottom with suitable means for regulating the flow of materials.

**Safety measures in demolition of structural steel works:**

1. The steel structures should be demolished from top tier by tier.
2. Removing the various members of the steel structures should be done in a planned manner.
3. All precautions should be taken to prevent danger from any sudden twist, spring or collapse of steel parts/work when it is cut or released.
4. Structural steel parts should be carefully lowered

and not dropped from a height.

5. Safety precautions of gas cutting of the steel members should be adhered to.

**Safety measures in demolition of tall chimneys, minars, pylons etc.**

1. Tall chimneys, minars, pylons, etc., should not be demolished by overturning or blasting unless a protected area of an adequate dimension in which the chimney or the structure can fall safely..
2. If the demolition of the tall structures are done by , blasting with explosives, it should be done with the services of specialized engineers . The entire operation should be under his supervision and control.

**Safety measures in demolition of Industrial Structures:**

1. The Safety measures in removing heavy and bulky machinery, plant and equipment should be observed in addition to some of the relevant safety measures already stated.
2. If the industrial Structure such as a nuclear power station the services of the specialist expert in the field of radio-activity and radiation should be utilized.