

Prevention of occupational injuries and extraordinary events during demolition work

As far as the building industry is concerned demolition work belongs to the category of activities which carries an increased risk of danger to the life and health of employees. However, demolition work may also represent a danger to the site surroundings (e.g. due to the collapse of a building) with devastating consequences. The degree of risk depends on the method of demolition work, ranging from the relatively safe with the use of machines or even explosives to the most dangerous, manual demolition. The risks lie in the behaviour of the structure during the individual stages of demolition, which are difficult to accurately pre-define or even predict, and which are often underestimated. From the point of view of occupational safety, these requirements are similar to the ones that are prescribed for construction.

These matters also concern the seemingly insignificant but relatively frequent restoration work that is often carried out when premises are being modernized whilst fully operational. Accidents resulting from an incorrect procedure during demolition work are not exceptional at all.

Preparatory work

- Demolition work, which affects the load-bearing elements of the structure of a building are allowed to be performed only in accordance with the technological procedure specified in the documentation for the demolition work.
- Prior to the commencement of demolition or restoration work, the contractor must provide a survey of the condition of the premises concerned from the point of its structural analysis, materials used, technical equipment, safety of the distribution systems and installations, the condition of the affected neighbouring structures, etc.
- Results of the survey must be recorded, including facts discovered.
- On the basis of the results of the survey and the structural analysis report, the technological procedure for the work is prepared, which includes information on how occupational safety is to be secured.
- The survey must identify the presence of any asbestos as well. Where possible, asbestos and materials containing asbestos must be removed prior to the commencement of demolition work.
- The technological procedure must include the continuity and synchronization of individual work operations, the work procedures for individual activities related to the work concerned, the method of material removal, the method of vertical as well as horizontal transport, material storage, the security of the site and place of work, the use of auxiliary engineering structures – scaffolding and supports, engineering communications and service pipelines security, the use of provisional energy distribution systems, determination of personal protective equipment.
- Technological procedures used for the handling of building materials containing asbestos must be adapted in a manner, which prevents the release of asbestos dust into the atmosphere.
- Upon partial demolition, restoration and modernization of buildings, which remain

under operation, the technological procedures must include methods of securing the operation and inspection of the places of work concerned from the point of view of employees and third parties.

- Commencement of demolition work can only be performed on the basis of a written order issued by the responsible employee on the part of the contractor and only after the place of work has been equipped with the auxiliary structures, material and equipment specified in the technological procedure.
- Entries, exits, descents and approaches to the area of the premises subject to demolition as well as individual places of work must be secured for the entire period of work and must be marked in a visible manner.

Principles applied to demolition and restoration work performance

- Prior to commencement of demolition work, it is necessary to determine a signal, by means of which the person appointed by the contractor to be in charge of demolition work will give instructions to leave the place of work immediately in case of an emergency; it is necessary to secure the area where demolition work is to be performed as well.
- Permanent supervision by an individual appointed by the contractor must be secured during the demolition of structures which are higher than single-storey ones, upon pulling down vertical structures, the height of which exceeds 3 m, during demolition of staircases, during machine demolition or in cases where individuals performing demolition work can be endangered by objects or material falling down from a place of work located above them.
- Permanent supervision must be secured in case demolition work is carried out in two or more places within the framework of a single structure under demolition at the same time.
- Material resulting from demolition must be removed in a manner that prevents overload of the floors.
- Demolition must proceed with no effect on the stability of the neighbouring premises; otherwise, the neighbouring structures must be secured in a manner defined in the documentation.
- Demolition of a roof structure or roofing by means of ropes and pulling machines is only permitted on the condition that measures to stabilize the remaining parts of the structure have been applied.
- Demolition of an arch by releasing the part of the structure securing the arch can be performed by mechanical means only and on condition that there is no risk to individuals resulting from the fall of the arch.
- In case the bearing capacity of a structure under demolition cannot be secured, then such demolition must be performed from an independent auxiliary structure.
- During the demolition of walls stabilizing projecting structures, such as balconies or bay windows, it is necessary to secure these structures to prevent undesirable loss of their stability.
- Structural elements can be removed by means of manual demolition on condition that they are not subject to load.
- Manual demolition of load-bearing vertical structures must always be performed from the top down.

- Manual demolition of ceilings with a load-bearing structure is permitted on the condition that the walls above the structure have been demolished, the load-bearing elements have been uncovered and material resulting from demolition has been removed from the ceilings.
- Demolition work must be forbidden unless conditions for securing employees are defined in the technological procedure.
- Demolition must not be interrupted unless the stability of the structure subject to demolition, or a part thereof, has been secured.
- Progressive demolition of structures built using prefabricated panel technology can be performed only after individual panels have been separated and their stability has been secured.
- If asbestos is discovered in the course of demolition work, then the hazardous area must be defined by means of a controlled zone, within which eating, drinking and smoking is forbidden. Additional measures must be taken in compliance with the technological procedure.
- Material resulting from demolition, which contains asbestos, must be treated as hazardous waste.

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