

Prevention of Work Related Accidents and Emergencies during Earthwork

Earthwork belongs to those construction works where possible accidents often result in serious damage to health, or even death. The pressure of earth on the body is so huge that it leads to the pressing of arteries and veins in the body. Even if the rescued person is relatively unharmed, blood or fat clots may be released into the body with the consequences that brings at a later stage (emboli). As earth is very heterogeneous it is not possible to state the exact requirements to secure it beforehand. The professional knowledge and experience of the foreman must be emphasised. Well prepared project documentation may significantly influence the safety of earthwork carried out.

Preparatory work

- Technical infrastructure routes must be staked, especially energy and communication lines, water-supply and sewer networks, or other obstacles.
- Layout and size of ground excavations, methods of excavating earth, securing the stability of ground excavation walls, types of planking and strutting, inclinations of slopes, etc. must be specified.
- If earthworks involve work under the level of the surface or in ground under water, necessary precautions must be taken during the progress of the work.
- Before the commencement of earthworks, the height and position of all networks or other underground obstacles must be marked on the terrain.
- Before the commencement of works, machine operators and other persons who will carry out the earthworks must be provably informed of transmission routes, exclusion areas, underground obstacles and the conditions for carrying out earthworks.
- Before the commencement of works, surrounding buildings at risk from the ground excavations must be secured.

Executing and securing ground excavation works

- Ground excavations in residential areas, in public spaces and in enclosed buildings must be covered and must be secured in a requisite way along the edges where there is a risk of falling into the ground excavation.
- The edges of ground excavations are secured with a strong railing on the edge of the ground excavation or with a barrier (if a natural or artificial barrier is placed 150 cm from the edge and marks off or divides the area specified for the movement of persons or vehicles or prevents movement in an undesirable direction it does not have to meet the same requirements for load as a railing).
- A railing 1.1 m high, an obvious barrier of at least 0.6 m or freshly excavated material 0.9 m high at a distance of at least 150 cm from the edge of the ground excavation are regarded as satisfactory barriers.
- Crossings in public spaces and communications open to the public must have the capacity to meet the given traffic; crossings of at least 150 cm width must be equipped with a double two-bar railing with a stop.
- Crossings at building sites must be built if the ground excavation is more than

0.5 m deep, the width of the crossing is 0.75 m; if the ground excavation is no more than 1.5 m deep.

- a railing on one side of the crossing is sufficient, crossings over ground excavations deeper than 1.5 m must be equipped with a double railing.
- Safe load of the crossing must meet the presumed load.
- The sides of the ground excavations must not be overloaded within a distance of 0.5 m of the edge; the surface of the terrain within the skid wedge range stated in the documentation must not be loaded with construction traffic, buildings, machinery or material.
- A safe descent into the ground excavation must be provided.
- In remote work places excavation work deeper than 1.3 m must not be carried out by an individual on their own.
- In built up areas vertical walls of manually dug ground excavations must be secured with planking and strutting if they are deeper than 1.3 m and in non built up areas if they are deeper than 1.5 m.
- The planking and strutting of the ground excavation walls must be designed and built in such a way that it reliably holds the pressure of the earth, secures the safety of persons working in the ground excavation, prevents the subsidence of the surrounding terrain and the sliding of the ground excavation walls and potentially eliminates the danger to the stability of the buildings adjacent to the ground excavations.
- Manually dug ground excavations into which workers enter must be at least 80 cm wide.
- During work on slopes with a gradient of more than 1:1 and height of more than 3 m, measures must be taken to prevent workers slipping or material sliding.
- Communications which are uncovered, even partially, during the ground excavation works must be properly secured, piping in the wall of the ground excavations must immediately be secured against bending, buckling or disaggregating.
- Large boulders, remains of building constructions or crumbly materials in the walls of the ground excavations which could loosen the earth due to pressure must immediately be secured against loosening, or removed.
- Should ground excavation works be interrupted, the contractor must ensure the regular professional checking and maintenance of the barriers, railings, planking and strutting, crossings, signs and other equipment safeguarding the safety of the workplace and its surroundings.

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