

## 6.1 Work on suspended ceilings

### 1. General characteristics of works

**Working on suspended ceilings** is fraught with many serious threats to the health and life of employees. The most dangerous of them include: falling from a height, exposure to the effects of contact with connected installations (electric shock, explosion of compressed air) and exposure to increased temperature due to weak air movement in the area of work.

1. The spaces between the ceiling and the suspended ceiling are characterized by limited possibilities of entry and exit, difficult to move around due to the high density of individual elements of installations and devices, and constant exposure to ceiling tearing off. **They are not intended for the constant presence of people in them.**

2. Suspended ceilings are areas of special surveillance due to the hazards that occur there. Contractor can send employees to work on suspended ceilings after obtaining a work permit and reading this standard.

3. The prerequisite for obtaining a permit to carry out work on suspended ceilings is the development of the Safe Work Instruction (IBWR), which should contain detailed information on how to perform works, methods of securing employees, and procedures in the event of hazards.

### 2. Before works beginning

1. **Conducting work on suspended ceilings** requires that each employee assigned to this work undergoes appropriate medical examinations with work at height permission and completes appropriate training preparing for work in the security system, and that at the moment immediately preceding the commencement of work (climbing to the ceiling), and should be in at least good psychophysical condition.

2. **Before planning** work on suspended ceilings, familiarize employees with the location of all existing installations and determine which installations are connected and may pose a threat to their health and life.

3. **Work planning** should focus on identifying:

- access and exit routes** from the work area, taking into account the location of workers' anchoring points using the harness for work at height, including the suspension of a safety rope (elements of installations and devices do not serve this purpose)
- the **way of transporting** the necessary devices, tools, and providing them with power, and how to remove any materials, waste, etc.,
- air temperature in the work area**, employee rotation conditions in the case of when the air temperature exceeds **30°C** and the method and possibilities of ensuring air flow in the work area,
- the **method of reliable communication** with employees inside and outside,
- the **method of safe evacuation** of employees and property in the event of threats,
- the **method of securing** the torn part of the ceiling (if such a situation occurs).

If the air temperature in the work area is higher than **28°C** - the contractor is required to provide unlimited access to drinking water for workers in the immediate vicinity of the work area and to ensure the possibility of quick evacuation of injured workers.

**Working on suspended ceilings is not possible alone - it is required to provide at least two employees working on a suspended ceiling and at least two in the external area and uninterrupted supervision of works.**

### Remember!

Proper planning of works, with particular emphasis on their organization, applied safeguards and the development of an action plan in the event of hazardous situations is a key element that must be performed before starting work on a suspended ceiling.



One of the many difficulties and the resulting dangers there are limited spaces for the life and health of workers. Work in such spaces not only hampers movement and freedom of movement during work - they limit the time spent on the job due to the reduced amount of air, especially when the temperature of such area is higher than usual.



The high temperature in the work area also carries the risk of fainting and loss of consciousness by the worker due to insufficient oxygen in the air - this risk increases significantly when the intensity of the work is combined. Measurement of the ambient air temperature and the implementation of safety measures in the form of ventilation of the work area or the use of respiratory protection by workers is essential.



### 3. Rules of safe works

1. Work on suspended ceilings should be carried out in accordance with the Safe Work Instruction (IBWR) prepared by the contractor and approved by the Health and Safety Department of LG, with strict adherence to its provisions.

2. Access to suspended ceilings may take place only from scissor lifts or spaced ladders through ventilation openings or other openings prepared typically for this purpose. After entering the ceiling, cover the ventilation opening with a ventilation grille or a dedicated flap. It is forbidden to leave open vents or open vents in places other than the entrances to suspended ceilings.

3. During work on the suspended ceiling, a person with operator's qualifications must be present in the vicinity of the scissor lift (or other type mobile platform), who will be able to use the platform to evacuate workers in the event of an incident, and an observer, who should ensure safety during the possible use of the platform by the operator.

**The use of a basket hoist in the area must take into account the maximum load of the ceiling! It is unacceptable to introduce jacks weighing more than the ceiling bearing capacity.**

4. When climbing suspended ceilings, power tools should have their batteries disconnected so that they cannot be accidentally turned on, and power tools should be connected to the power supply after transporting them to the ceiling, just before starting work.

5. If there are live or pressurized devices in any installation in the vicinity of the works, it is strictly forbidden to work at a distance shorter than the safe distance described in the operating manual of the given installation. The contractor must determine in advance what installations will be located in the area of work and adapt the Safe Work Instruction (IBWR) to the instructions and the course of these installations.

6. In suspended ceilings, at the edges of sandwich panels, a red warning tape should be placed halfway up. It is forbidden to lean the worker beyond the edge of the sandwich panels.

7. A maximum of one person with tools weighing up to 150 kg may stay on every second suspended ceiling plate, provided that a safety harness with a rope with a shock absorber is attached to the attached lifelines. It is forbidden for more than one person to be on every second sandwich panel.

8. In all workplaces with suspended ceilings, the worker must be effectively secured against falling. This protection is based on predicting the risk of a fall while staying on the ceiling - and thus requires the use of a fall protection system that secures the employee at any time and in any place. It is necessary to meet the condition of stopping a fall on way no longer than 2 meters.

9. Belaying is based on the proper use of fall protection equipment (safety harness, belaying lines) connected to a fixed belaying point. Permanent belaying points are life ropes installed by specialists, confirmed by an assembly protocol, to which the worker attaches a safety rope. Each worker must be equipped with at least 2 lanyards.

10. During the movement of workers on the sandwich panels to the place of work, the employee should not perform other activities, may be loaded with equipment or tools up to a maximum total weight of 150 kg, and the employee's safety system must guarantee the ability to effectively stop a fall on the way during the entire movement no longer than 2 meters.

### Remember!

When working on suspended ceilings, it is required to use appropriate personal protective equipment:

- a) a helmet for work at height,
- b) with a fastened chin strap,
- c) a safety harness with a lanyard with shock absorber,
- d) work shoes and work clothes,
- e) a warning vest,
- f) depending on the type of work - other adequate PPE.

It is allowed not to use protective masks if the air temperature exceeds 30 °C



A maximum of one worker may be attached to one section of the lifeline (from pole to pole). The use of lifelines must be included and described in the Instruction of Safe Work. Anchoring points are those intended for this purpose, it is not allowed to anchor to installation elements, e.g. pipes, pins, ventilation ducts, etc.

During the works, the space between the suspended ceiling and the ceiling must be properly lit. It is forbidden to work on suspended ceilings in the absence of lighting or its insufficient intensity. It is advisable to use wireless light sources.

It is forbidden to carry out work on suspended ceilings in such a way that could lead to the destruction of sandwich panels that make up the ceiling. The contractor will be charged with the repair costs in the event of destruction or damage to the panels.



### 4. Emergency situations proceeding

The use of appropriate safety measures and appropriate organization of work based on Safe Work Instruction are to effectively prevent dangerous situations during work, it is also important to prepare employees for dealing with emergency situations. It is also required and the procedure to be followed in such situations has been included within Safe Work Instruction. However, accident situations are not excluded and can therefore be classified as follows:

**1. Tearing off the ceiling** - a situation in which as a result of overloading the load-bearing capacity of the ceiling, the bearing plates break and some parts of the structure, tools, materials, objects, including people, fall to a lower level. Procedure:

- check whether and how many people were under the torn part of the ceiling and how many people were on the ceiling, who was injured or crushed and cannot leave the scene. People who can walk and do not take part in the evacuation action immediately go to safe zones.
- immediately proceed to secure the intact part of the ceiling as described in IBWR and start evacuating the injured, bearing in mind that the greatest threat is for the injured person, there may be secondary tearing of sandwich panels and the effects of compression of blood vessels in workers whose fall has been prevented by the harness. Evacuation should be carried out in accordance with the instructions in Safe Work Instruction.
- after evacuating casualties to the safe area, proceed immediately to provide first aid, call the company emergency services and the Health and Safety Department of LG.

#### 2. Situations particularly threatening the life / health of employees:

- fainting or loss of consciousness** - evacuate the injured worker from the work area as soon as possible, provide first aid and call the company ambulance service, the employee should not be left unattended until his arrival.
- cuts, wounds** - it is obligatory to provide a first aid kit at the workplace, employees are obliged to help themselves in the event of such situations, if necessary, call the company's ambulance service.
- starting a fire** - suppress the source of fire with handheld extinguishing agents as soon as possible and notify the fire brigade of the situation, the place of fire should not be left unattended until the arrival of the services.
- electric shock** - if the worker remains conscious as a result of electric shock from the installation / power tools and has lost contact with the power source, he should be evacuated from the workplace and the company emergency services should be called, if he remains unconscious due to electric shock and it is suspected that he has not lost contact with a power source (e.g. a cut cable) - disconnect the power source from the power supply as soon as possible, start rescue actions and call the company emergency services as soon as possible.
- injuries related to unsealing of the installation** - as a result of assembly / installation and other works, there is a risk of unsealing of installations (compressed air, water, etc) and therefore employees are exposed to the risk of hitting the system components under pressure. In such situations, it is important to quickly and efficiently evacuate the workplace and stop the flow in a damaged installation and reporting the incident to the appropriate company services.

The above-mentioned situations should not take place if the work is properly planned and the safety measures before and during its duration are provided and complied with. If such situations arise - employees should have the knowledge and training to react appropriately in their face and the necessary equipment to counteract the effects of these events (handheld firefighting equipment, first aid kit).

The accident site should be secured against access by third parties until a decision on the next steps is taken by the LG coordinator or persons authorized by him.

### Remember!

It is forbidden to use open fire, smoking, using electronic cigarettes, eating meals and taking care of physiological needs on suspended ceilings. At the end of work, work stations must be cleaned and the waste removed.



It is recommended that the area below the ceiling on which the work is carried out is also fenced off and, if possible, secured by an observer - in the event of the suspended ceiling breaking, it will minimize the risk of injury to bystanders.

In the event of any accident, the contractor is obliged to notify the LG Health and Safety Department of this fact and, if necessary, call the company's emergency services.

Each employee should have skills in the field of first aid, according to Polish law, this activity is the responsibility of every full citizen.



Required equipment and contractor's equipment during the work on suspended ceilings are:

- portable extinguishing agents (4 kg ABC fire extinguisher, fire blanket),
- a first aid kit.

This equipment should be checked prior to commencement of work and supplemented if necessary.