
ECHO
investment

Best Environmental, Health and Safety Practices

ECHO Investment S.A.
#3 (2020)
EHS Dept.

The year 2020 is behind us, another 12 months of visits, discussions and exchange of experiences on ECHO projects. It was a period where - as in previous years - we saw many ingenious and effective solutions that undoubtedly increase the level of safety of work execution and helps to protect the environment in a more effective way. These activities allowed for a significant reduction in the number of accidents (nearly 50% less cases compared to the previous year).

Many of the project teams are proactive on health, safety and environmental issues and they are showig leadership to ensure the task is completed efficiently and safely. High culture of health and safety and environmental protection generates many ideas among employees for surprising and unconventional solutions to problems. They are an essential element of the continuous improvement and development of our company.

We provide you with another set of best practices that we have observed on Echo Investment's projects in the last three years. We believe that they will be a helpful material in everyday work, as well as become a source of inspiration to work even safer and with care for the natural environment.

Dariusz Nowak
EHS Director
ECHO Investment

Smart Way to Stay Safe

Conduct a risk assessment before any activity

Ensure no contact with any source of energy or hazardous substances

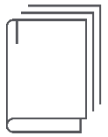
Never enter restricted zones without permission

Act only when you have been trained and assessed as competent

Challenge unsave behaviours and acts. Never walk by

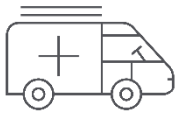
Protect yourself from falling from height

Always wear proper PPE and use proper equipment



Follow safe system of works to any kind of activities

Separate yoursafe from moving vehicles and plant.



Know what to do in emergency

Ensure that required permit, authorization are in place

Don’t take shortcuts.

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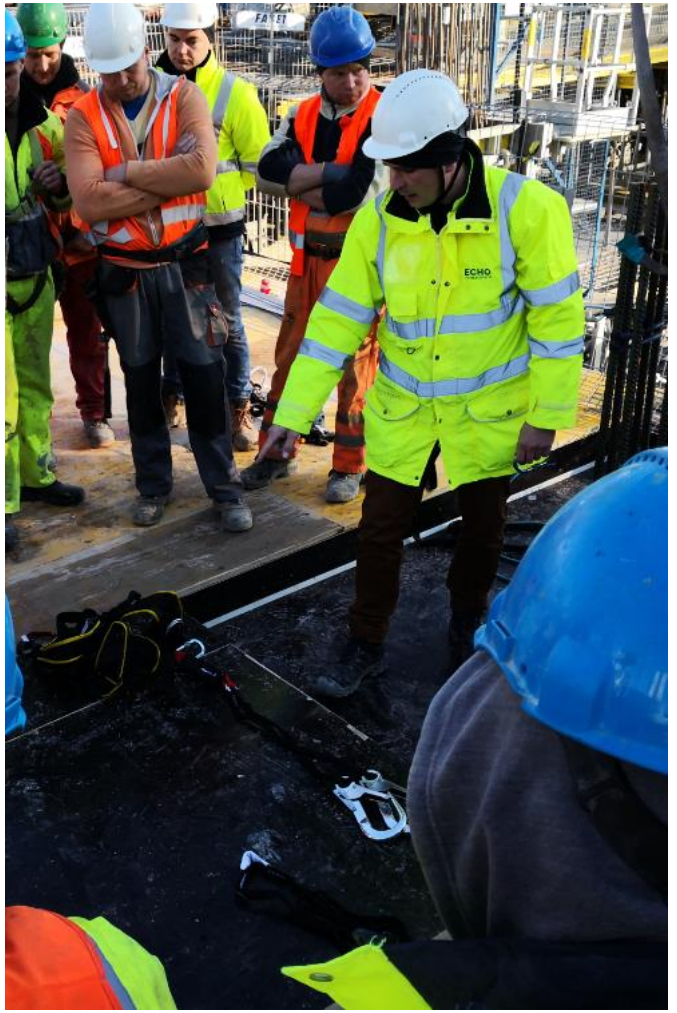
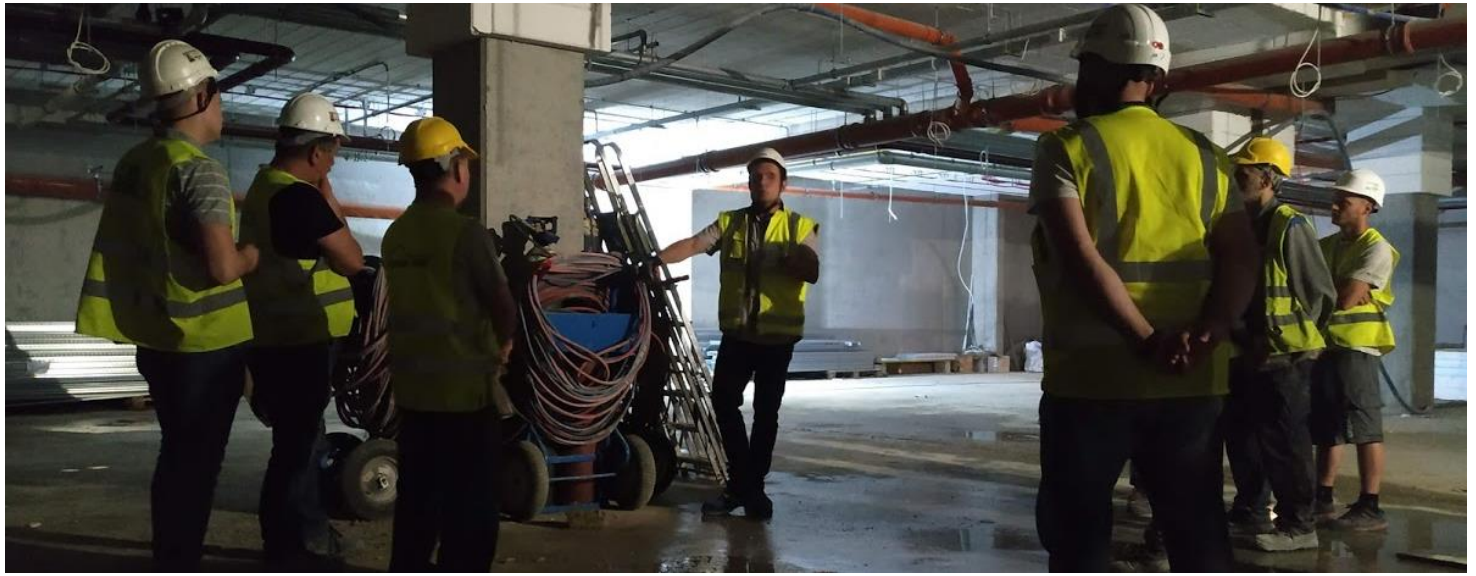
Competences
Topic trainings

Competence and knowledge of proper health and safety techniques and methods - without these elements, work cannot be performed properly. In 2020, on all ECHO projects, the Health and Safety Department together with project management teams – carried out several dozen specialist training sessions for contractors regards: lifting operations, work at heights, hot works, training on supervision duties and responsibilities (SOT). From year to year, we note an increase in attendance during training courses on projects.



Competences
Topic trainings



Competences
Topic trainings

The external training centers are providing addtional trainings on the projects as well. One of the examples are those related to qualified first aid, directed to the contractor supervision employees. Raising competences in the field of correct techniques of providing pre-medical aid is an important element of emergency preparedness.

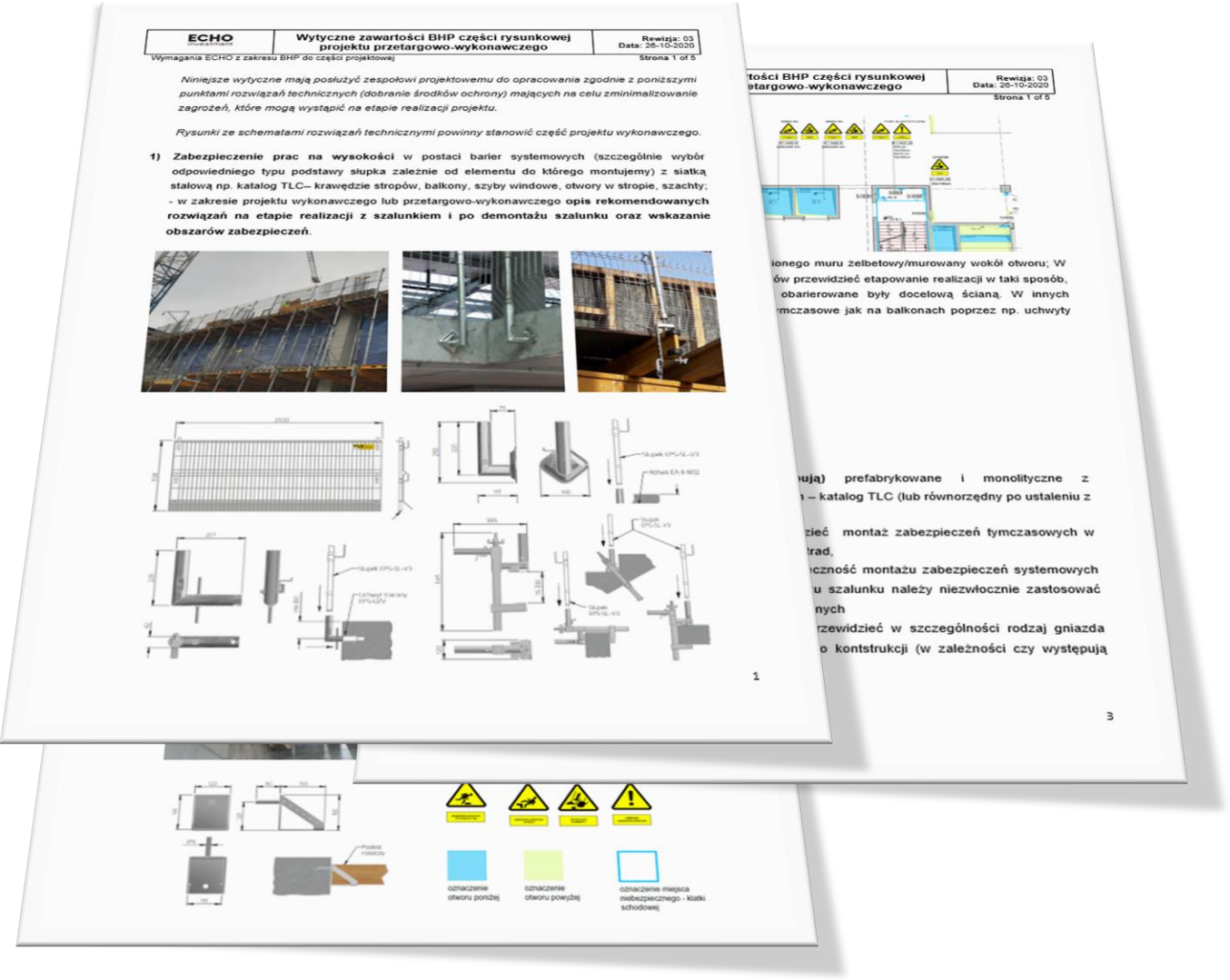
Biological Hazard
COVID-19

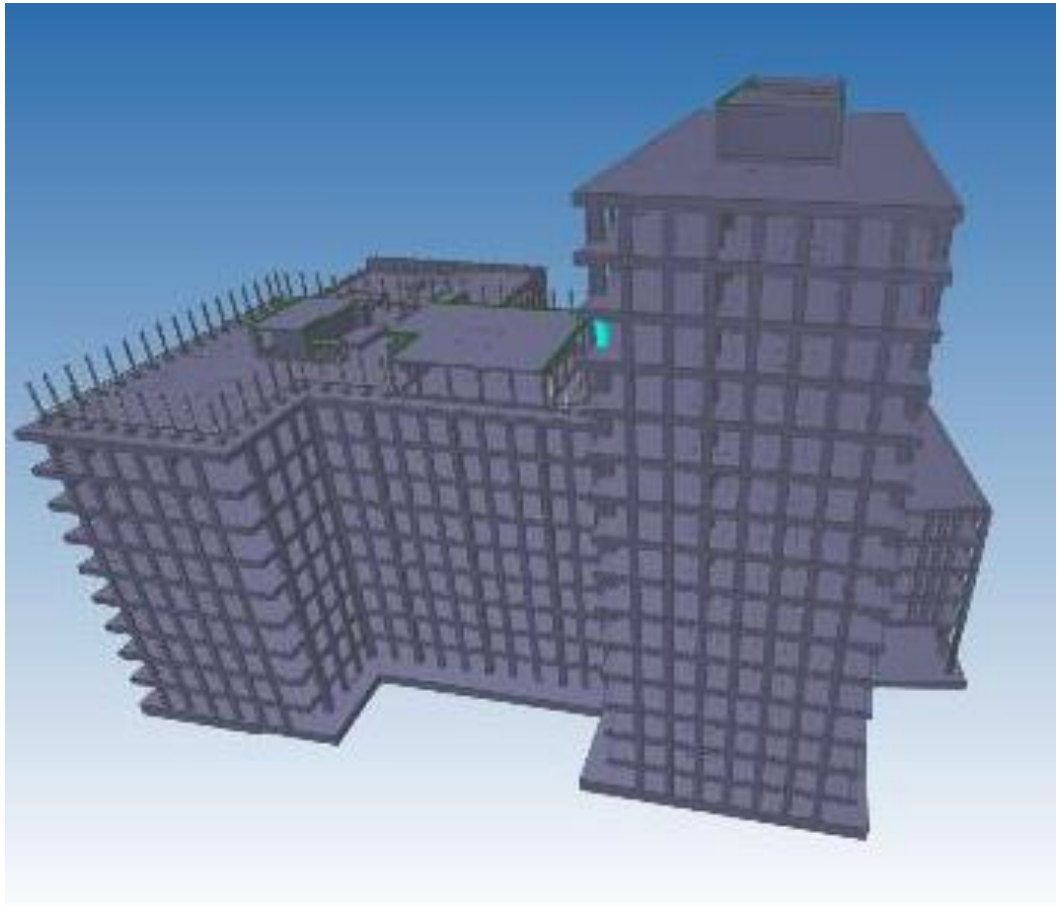
Undoubtedly, one of the real hazard which occured in 2020 is the COVID-19. A crisis management procedure was introduced centrally at ECHO, and our projects teams showed a pro-active attitude in individual projects - in the scope of risk control measures provided. Particularly noteworthy are the automatic temperature measurement at the entrance to the construction site, non-contact disinfectant dispensers, or temperature measurements performed by properly equipped employees. Moreover, projects provded mobile washbasins, disinfection points and information materials developed by the marketing department of ECHO (available on SIDO platform).

Biological Hazard
COVID-19

EHS in BIM
And design project

In 2020, together with the ECHO's Design Managers the EHS team dealt with the development of Safety by Design aspects and EHS elements in the BIM (Building Information Modeling). Based on this, the "Guidelines for the health and safety content of the drawing part of the tender and executive project" and a set of attributes for the H&S component models, which will be an integral part of BIM, were established. Those packages will be continously improved as a design phase of EHS system in ECHO.





Site organisation
Visitors

Personal Protective Equipment (protective helmets, hi-vis vests and safety shoes) available for visitors entering the construction site. It is a good practice to place information plates with the size on the safety shoes or to put the marking on the cabinets in the so-called "Sluice" for a guests.

Site organization
Perimeter fence

A particularly important part of the construction site is the perimeter fence and tightness of fencing. By providing separate and marked entrances and access points including access control – we can easily reduce the risk of unauthorized access of bystanders. The vehicle entrance gate has to be equipped with lift barier.

Site organization

The 24/7 security of the construction site and providing the CCTV monitoring system can reduce the risks: of unauthorized access, potential thefts or possible acts of vandalism.

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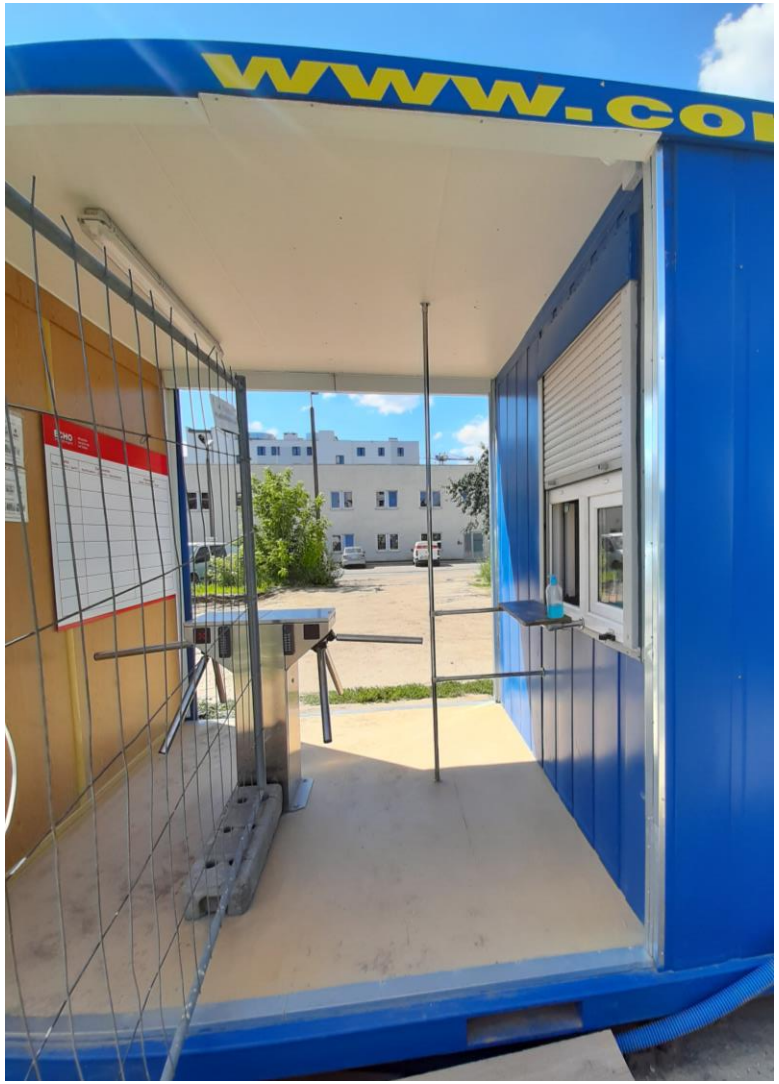
Site organization

One of the key threats on the construction site are those related to the movement of wheeled vehicles. They generate the risk of being hit by vehicles. The fundamental ECHO standard is the separation of pedestrian routes from roads for vehicles, at the entrance to the construction site or at the construction site itself. Many ECHO projects are very good at implementing and maintaining this standard.



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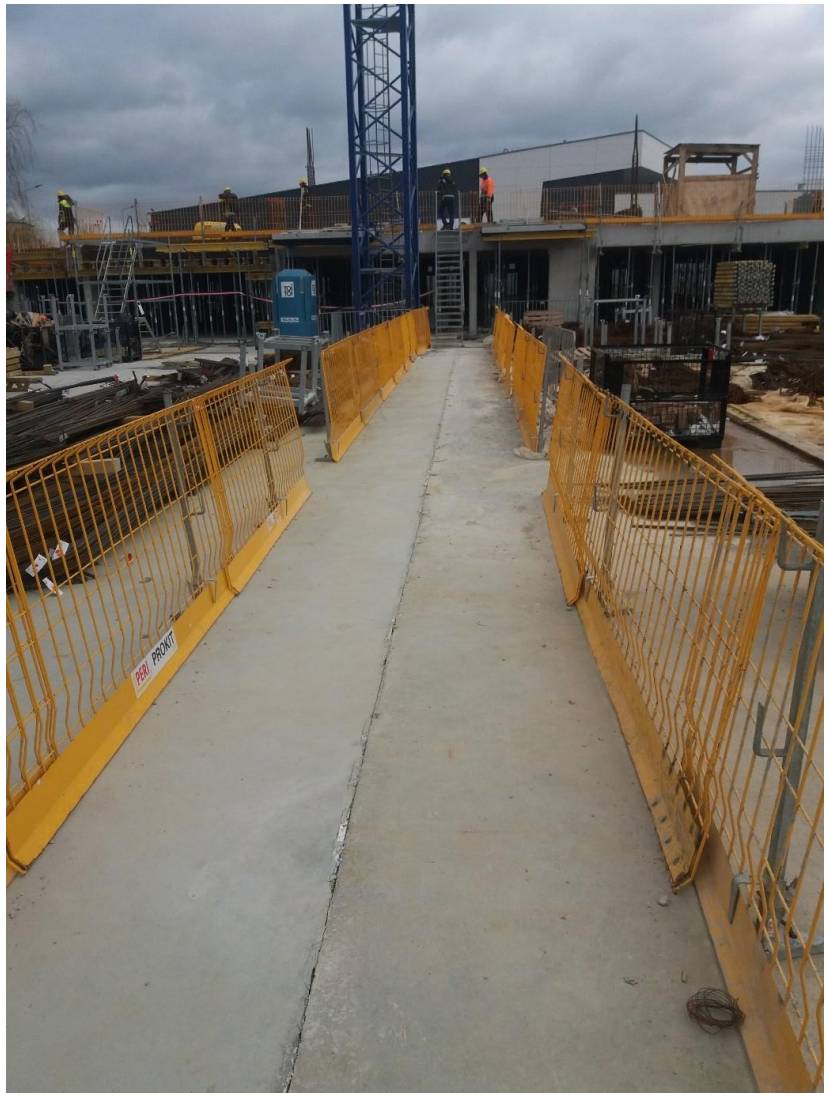
Site organization – separating of pedestrian routes

Vehicle traffic is one of the main hazards for pedestrains. One of the most effective methods of minimizing this risk is to separate pedestrian routes from roads for vehicles, using permanent fences - e.g. using protective barriers, low fences, etc.

Site organization
Footpaths and laydown areas

Material storage areas and pedestrians routes on the construction site should be separated and clearly marked, and their maintenance should be entrusted to individual contractors. The stored materials can not block pedestrian routes and evacuation routes.



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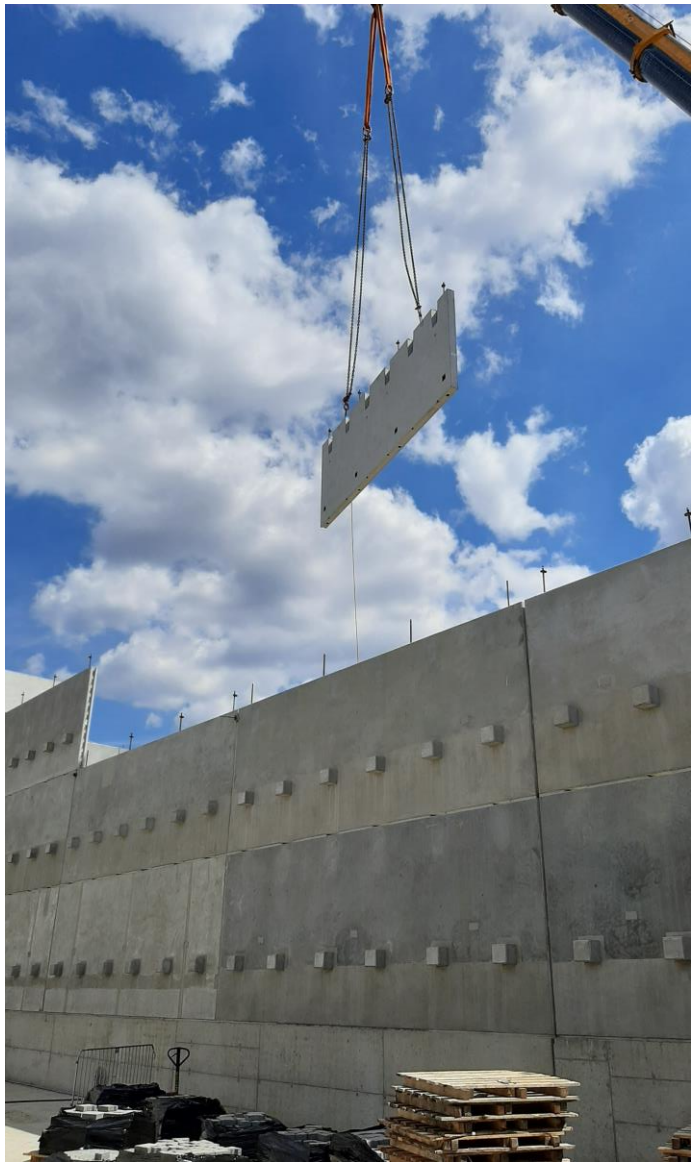
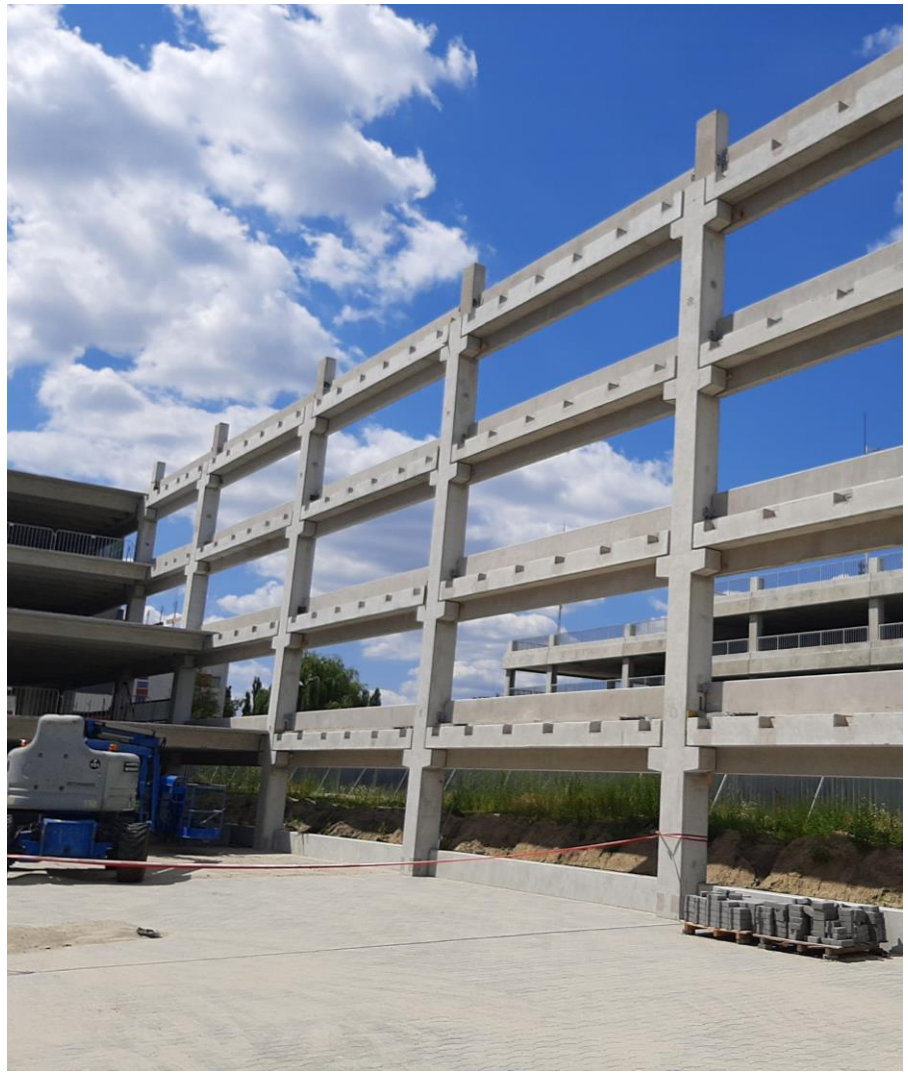
Site Organization
Access equipment

Safe access equipment to the work area should always be provided, in particular - as communication between the floors being constructed and where high-risk work is performed. Two-way communication (in case of an emergency) - entrance and exit should be provided to such places. System solutions - temporary stairs - are preferred in Echo.

Prefabrication

The ENTER site in Poznan implemented the prefabrication technology. Prefabricated elements are produced directly in the contractor's factory facillity. When comparing prefabrication with monolithic technology, the following advantages should be mentioned: assembly time, the possibility of producing structural elements throughout the year, the possibility of designing edge protections and securing openings, reducing the exposure of workers being at height (compared to e.g. monolithic ceilings).





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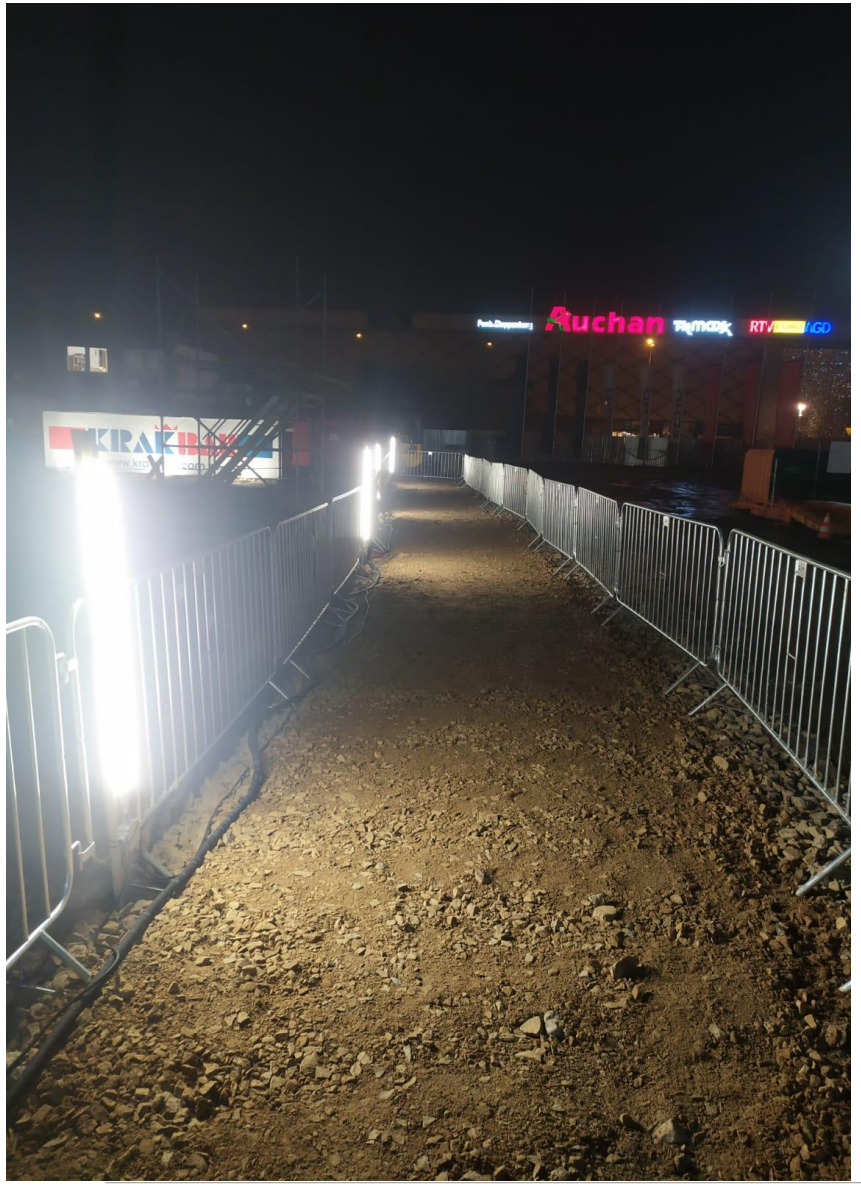
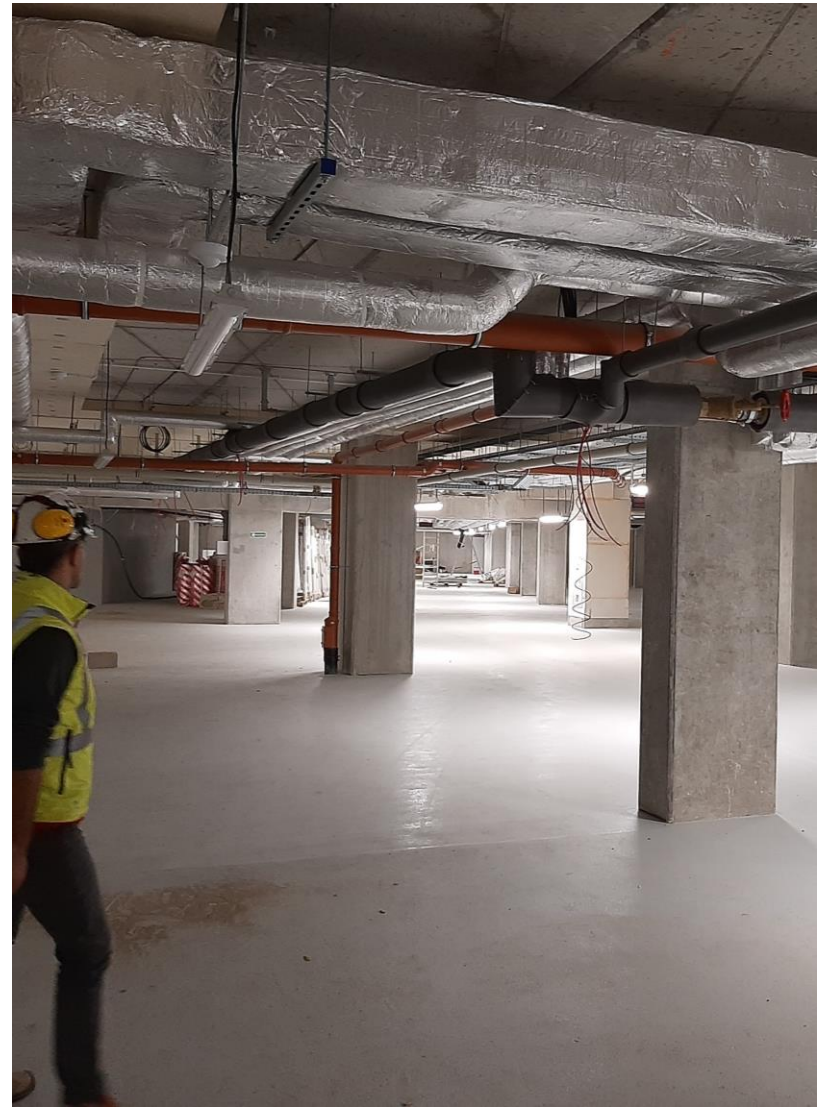
Site Organization
Temporary Lighting

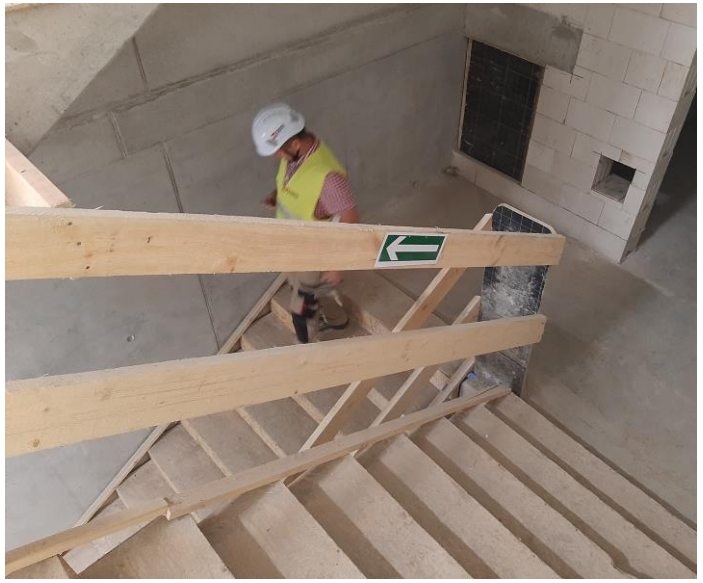
The proper lighting of common parts on the construction site is a one of the basic requirements. In particular, attention should be paid to ensuring the appropriate lighting illumination at communication routes (also located in open ground), staircases and underground storyes or without daylight. The construction site must be provided with proper lighting.

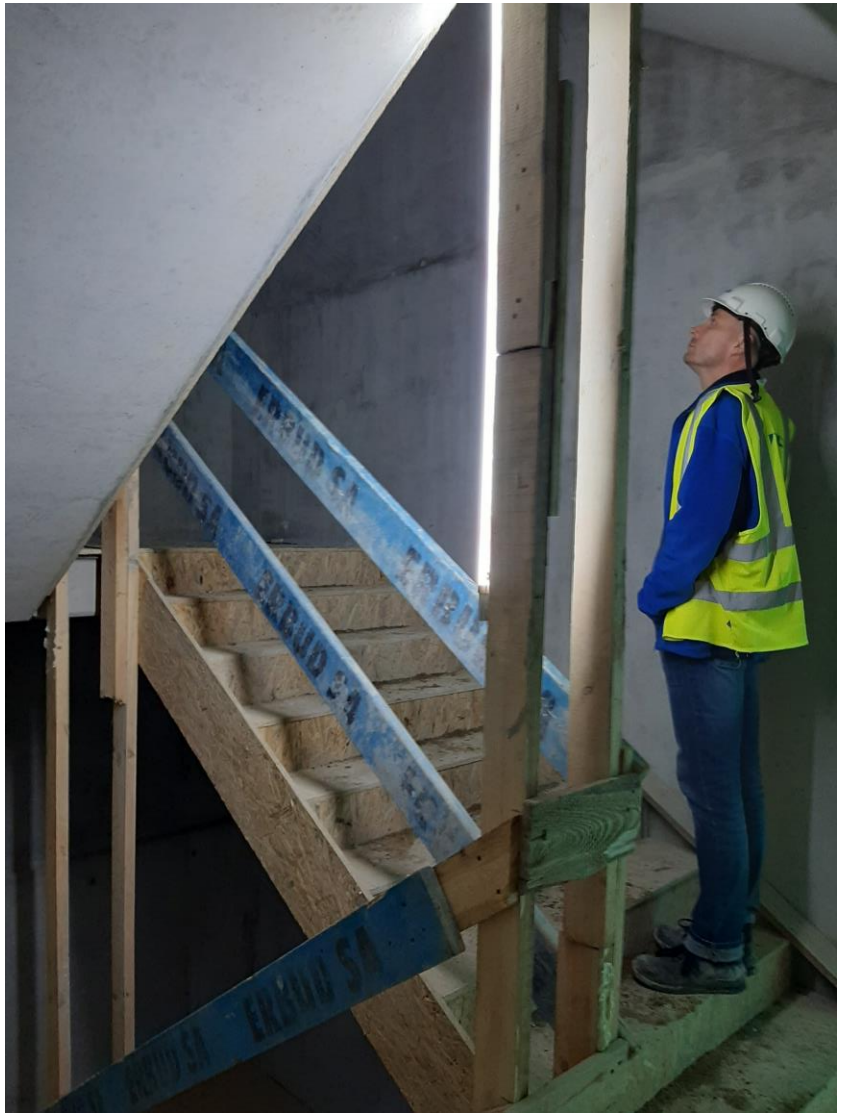




Site Organization
Staircases

In many cases on construction sites, pedestrian communication between levels is led through the staircases. It is required to provide properly assembled handrails and balustrades - until the permanent balustrades are fixed.





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Site Organization
Washing of Trucks

On construction sites - despite the provision of hardened surfaces - mud is often accumulated. Below we see a very good practice where a professional undercarriage washer is provided. In this way, you can reduce the muddy area of the construction site exit and public roads. In addition, on construction sites, it is recommended to designate and mark the places where operators of concrete trucks can wash their vehicles.

Logistics
Mechanical transport

Providing machines for horizontal transport reduces the time of material delivery to the place of storage / built-in and the time of unloading. Fromt the safety point of view, it reduces the involvement of tower and truck cranes on the construction site, thus reducing the risk associated with lifting operations.

Logistics
Traffic Controller
Empployees

When organizing the traffic of vehicles and pedestrians, particular attention should be paid to entry and exit roads from the construction site, in particular to the contact points (intersections) with public pedestrian walkways, bicycle paths, public roads.
When this risk arises, provide traffic banksmen who will have the rquired quallifiactions (Voivodeship Road Traffic Center training).

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Lifting Operations
Loading Platforms

The system unloading platforms, will increase safety of lifting operations. Additional anchoring through the ceiling slab or addtional braces in shuttering props are an additional safety elements – in case of a being hit by horizontal dynamic force (eg in the event of an impact with the transported material by crane).

Lifting operations
Slinging of loads

The transported material - in particular - long elements stored in piles must be properly slinged each time: slings in the „choke-hitch" methods and with additional fastening of the load using transport belts.

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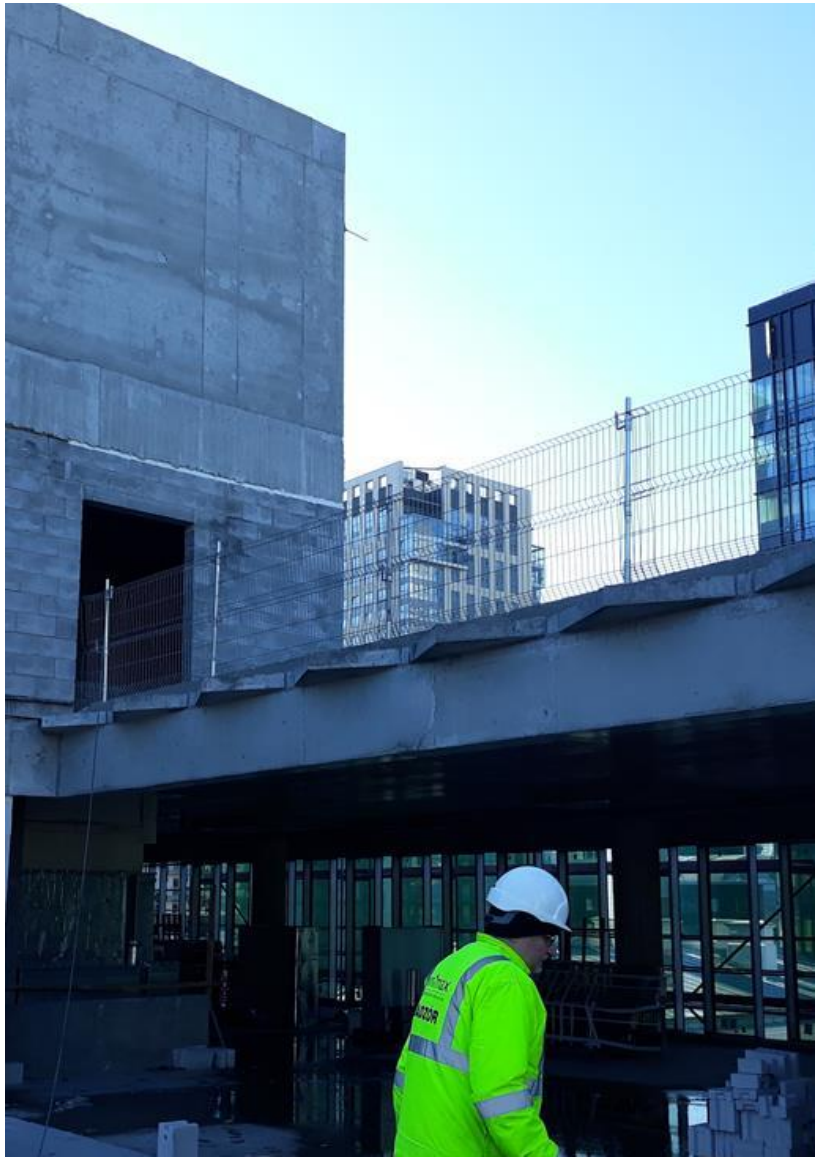
Lifting operations
Cranes

When lifting operations are carried out by truck cranes, the key element of safety is the correct setting of the crane outriggers. Special attention to be paid to whether the ground in which the crane is placed allows to transfer the given load capacity and whether system sleepers are underneath the outrigger „foots”.

Working at height
Higher standard of the edge protection

Works perfromed close to the edges are a significant challenge and a major risk factor on construction sites. They are associated with various risks, e.g. people falling from a height, falling objects. The following simple solutions will allow you to ensure safe wrokplaces on the construction site. System solutions are required in Echo. For edge protection a system mesh metal panels to be provided.

Working at height
Higher standard of the edge protection



Working at height
System edge protetion

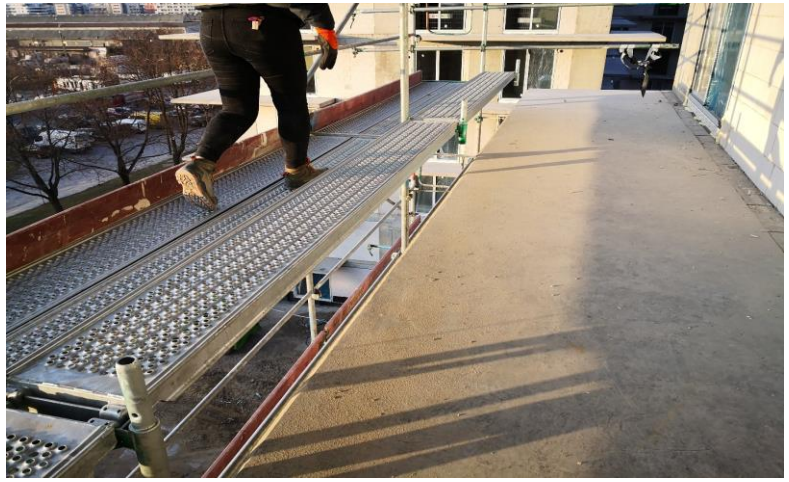
Today, many suppliers provide various systems that are flexible when it comes to fixing points. Suppliers provide mounting of edge protection sockets, eg. anchor sockets fixed on the silicate wall.

Working at heights
Flat roofs

For work on flat roofs to be performed safely, it requires prior analysis and selection of appropriate collective protection measures. In these areas it is necessary to select the correct mounting method (type of anchor socket) of the edge protection, adapted to the given place / element of the structure.

Working at heights
Collective protection at balconies

When planning works at height proper sequence of works regarding hierarchy of control should be taken into account. Our first choice should always be use of collective protection equipment such as facade scaffolding when working on balconies, roofs etc.



Working at height
Fall restraint

When the collective edge protection – as a mesh metal pannels - cannot be provided, the preferred method of personal protection against falling is „fall restraint” (not starting to fall). Most often it is used, eg. for formwork and reinforcement on bindings joist. Anchoring to the re-bars can be done only with the dedicated and certificated anchor tapes catches or through the STRUMIN system posts fixed directly in the pillar socket.

Working at height
Shuttering / formworks systems

Choosing the right formwork system has a significant importance from the safety point of view. Before selecting a given system, it is necessary to take into account and analyze what solutions the manufacturer offers, in particular temporary platforms. System and complete platforms increase undoubtedly safety as well as reduce the time needed for assembly and disassembly such components.

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Working at height
Webbing slings

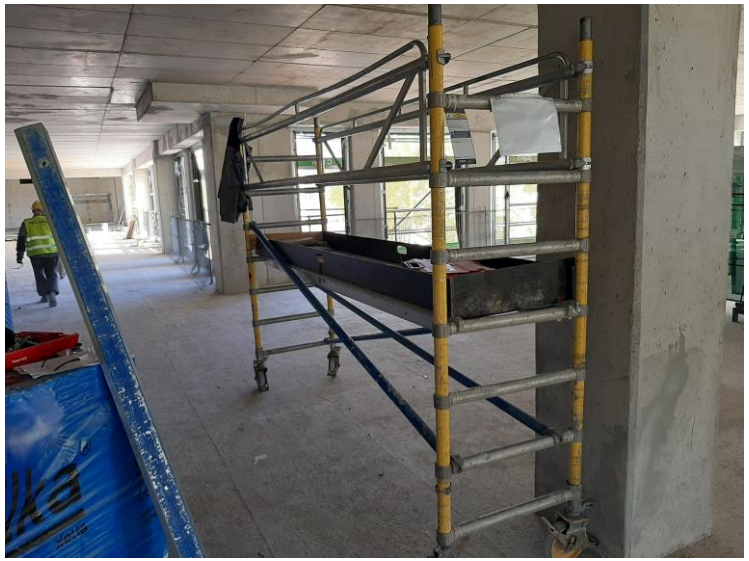
When working near shafts or in other places where there is a high risk of falls from a height, the assembling of „webbing slings" is a helpful solution. Their assembly should be taken into account at the stage of reinforced concrete works.

Workings at height
Access equipment

The photo below shows an interesting solution - a given scaffolding system enables the installation of system footbridges that allow access to the facade scaffolding from each floor on the building.

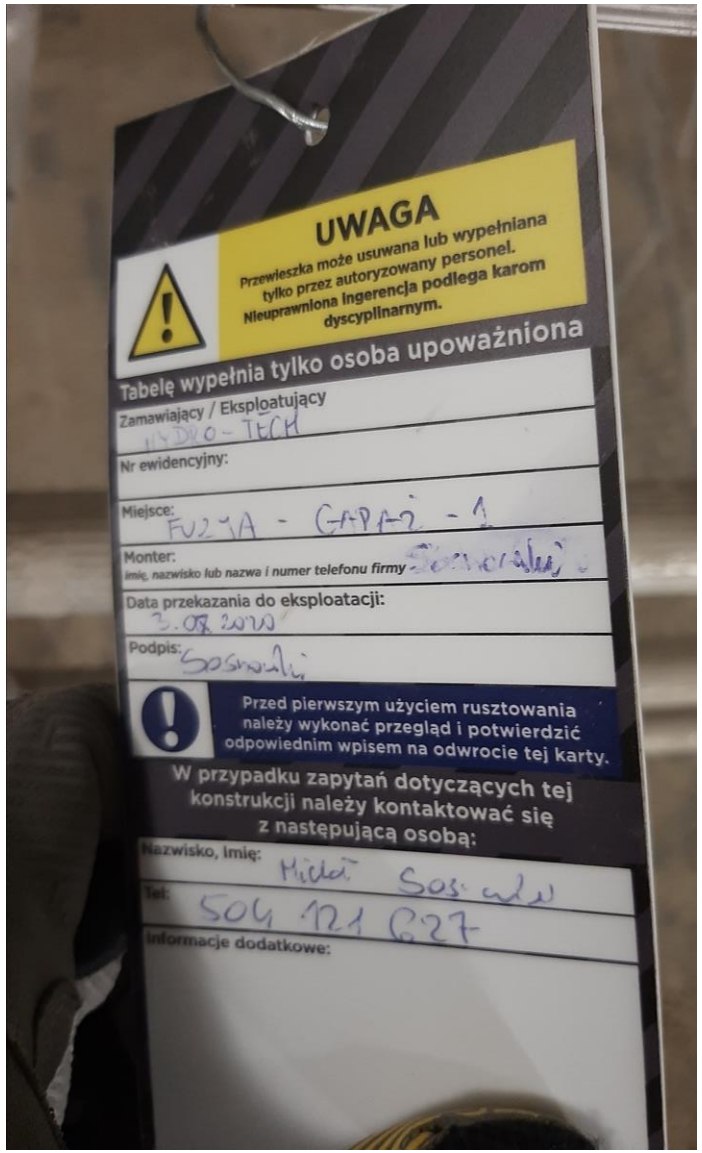
Working at height
Mobile scaffolds

On ECHO projects we observe a constant improvement in the scope of mobile scaffolds used by contractors. They use better and better solutions.



Working at height
Scaff-tags

The projects have implemented the Scaff-Tags, which allows to improve the current control over the condition and completeness of the scaffolding used (mobile, facade, etc.). The supervision carries out periodic inspections of the scaffolding every 7 days (completeness, technical condition).



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Hazardous areas
Safety (mobile) barriers

A good method of separating hazardous areas - where there is a risk of falling from a height or into a excavation - is the use of mobile (adjustable) barriers. As you can see in the examples below, the possibilities are many. Remember that this type of fence should be placed at least 2 m from the edge from which there is a risk of falling.

Hazardous Areas
Protective roofs

Below are examples of securing hazardous areas under the works carried out at heights. Protective roofs are a risk control measure which can be implemented to facade scaffolding, over building entrances, over ppedestrian routes, or when the hazardous zone extends from construction site to the public zone.

Hazardous Area
Additional securing of props

The formwork props carry considerable capacity loads. Incidentally, the forces exerted by the structure of the object may cause the supports to expand and fall to a lower level. The risk is also present during formwork disassembling works, often occured due to the human error. One of the methods of risk control is the use of securing ropes installed through the formwork supports, which in the unexpected release of the props will prevent it from falling to a lower level.

Opening securing
Safe Block i3 isolet

At ECHO, together with teams on individual projects, we try to look for new solutions that increase work safety. On the Stacja Wola II project in Warsaw, the project team together with the General Contractor supervision decided to implement a higher standard of securing shafts and ceiling openings using the i3 Isolet polystyrene concrete panels. The first batch of security has already been built into the structure. This solution significantly minimizes the risk of employees falling through inadequately secured shafts and openings.

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Securing of shafts and openings

At ECHO projects, it is required that the temporary platforms in the shafts have to be mounted on certified system grips. Shaft protection eliminates the risks associated with falling from a height, thus giving more effective control over hazardous zones. An alternative to the grips of working platforms are platforms mounted on system locks - used in elevator shafts or within ceiling holes for prefabricated stairs.

Provides a stable platform during work

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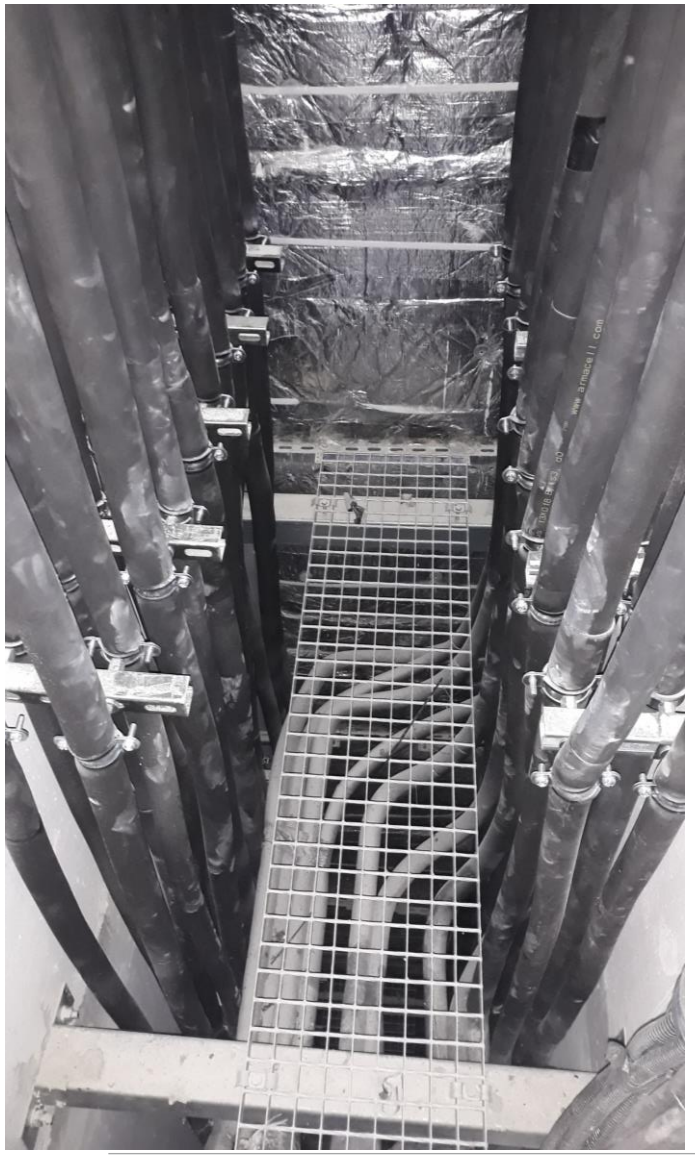
Securing of shafts and holes

Technological openings - such as holes for separators or transformer stations - should be secured with target gratings and barriers as soon as possible. It is the most effective method of accidents avoiding. Similar solutions can be used in the case of atypical installation shafts, where a particular risk of falling is present at the stage of installation works, as well as during the service works during use of building.

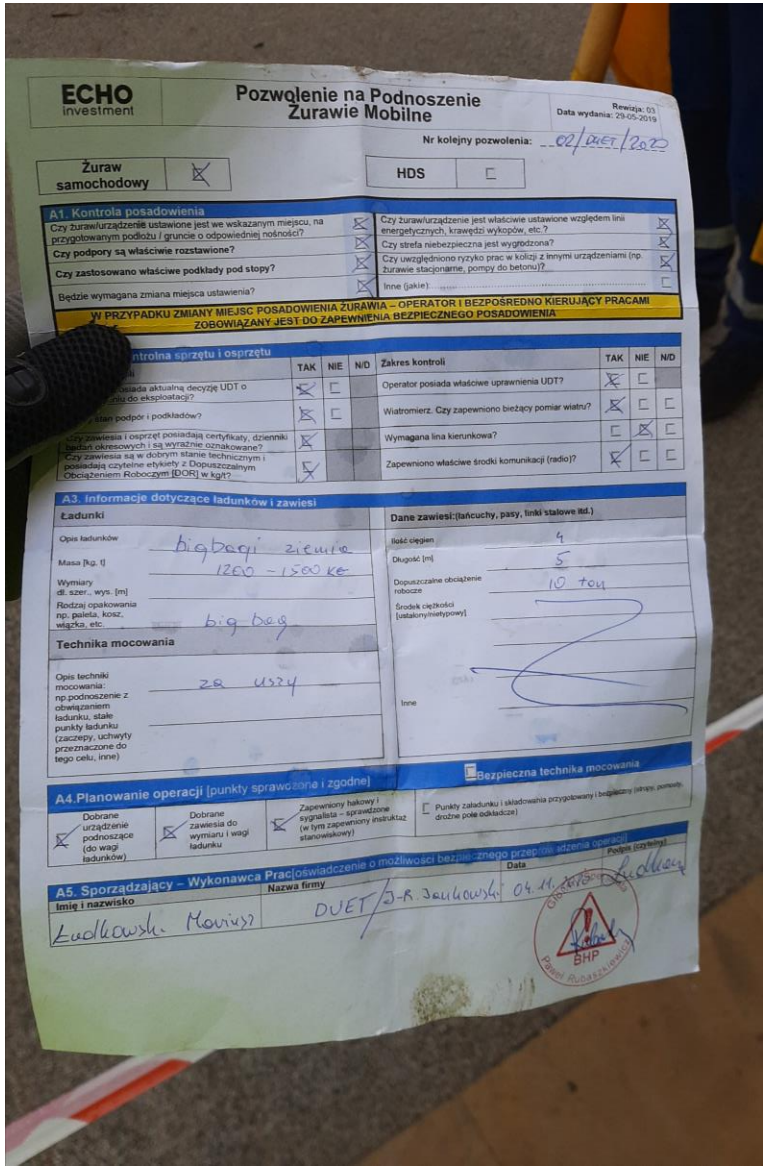


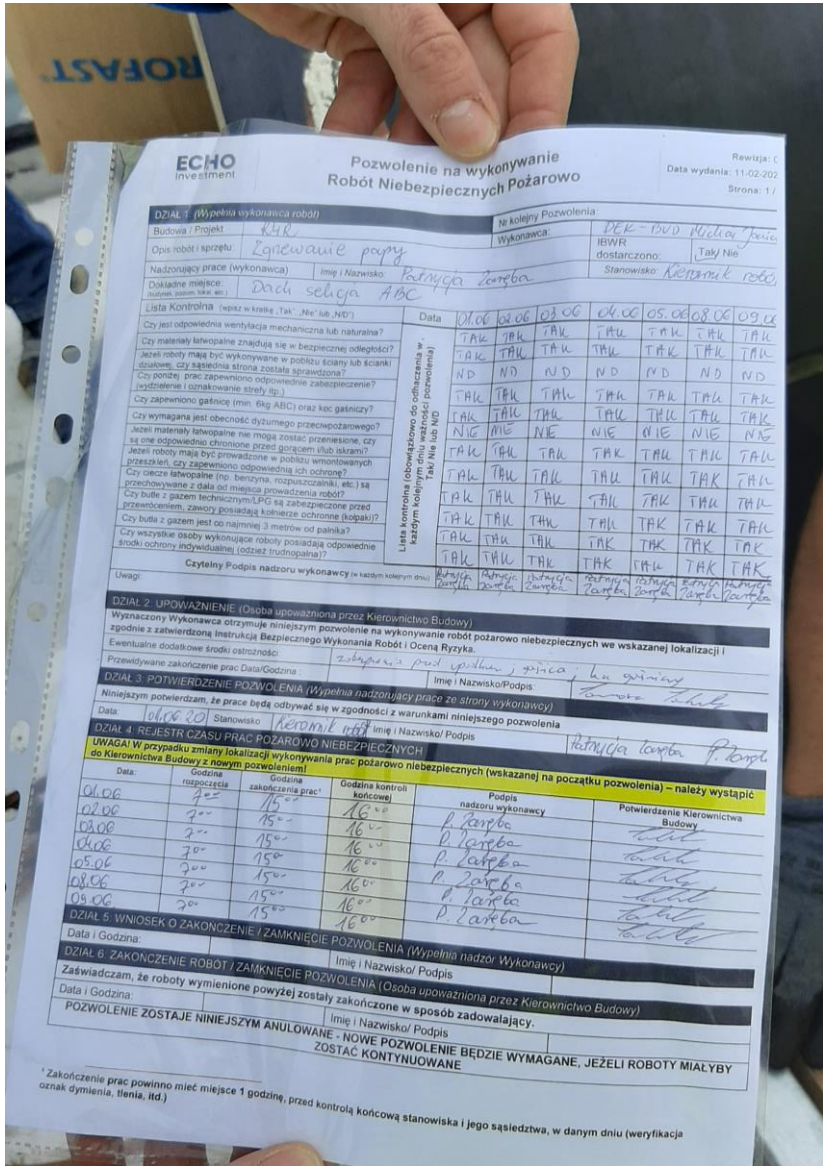
Securing of openings

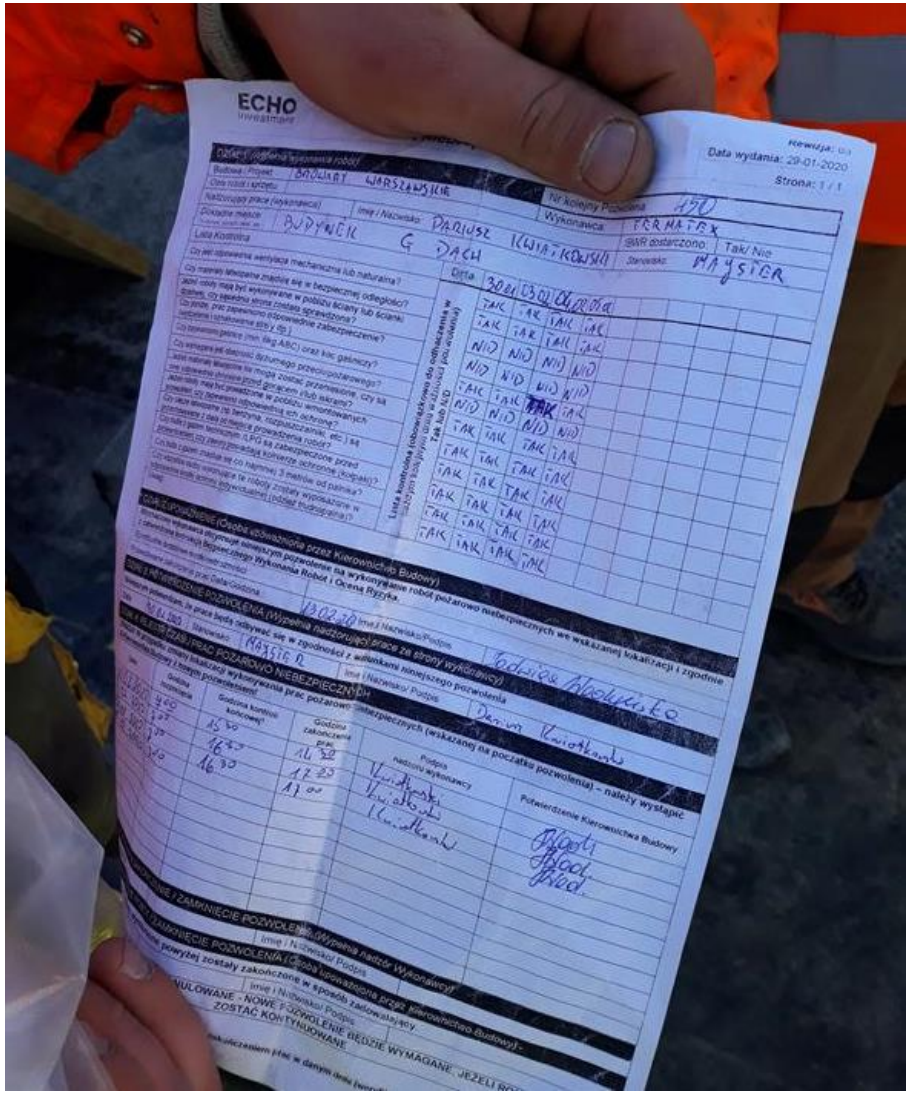
Below are presented two solutions which are reducing the risk of falling. In the first case, the project team ensured the assembly of the scaffolding between the stairs flights - securing the works related to the assembly of the target railing and providing the temporary stair railing. The second solution - marking the shaft covers, increases the visibility of such places.

Works permits

Hot works, excavation work, work in confined spaces and vertical transport - according to ECHO requirements, they are classified as particularly hazardous work. The introduced system of permits for these works - in combination with complete Method Statements and Risk Assessments - allows for even better planning and safe execution of these works. We are also improving the shape and content of permit forms based on our observations and conclusions from the project teams.





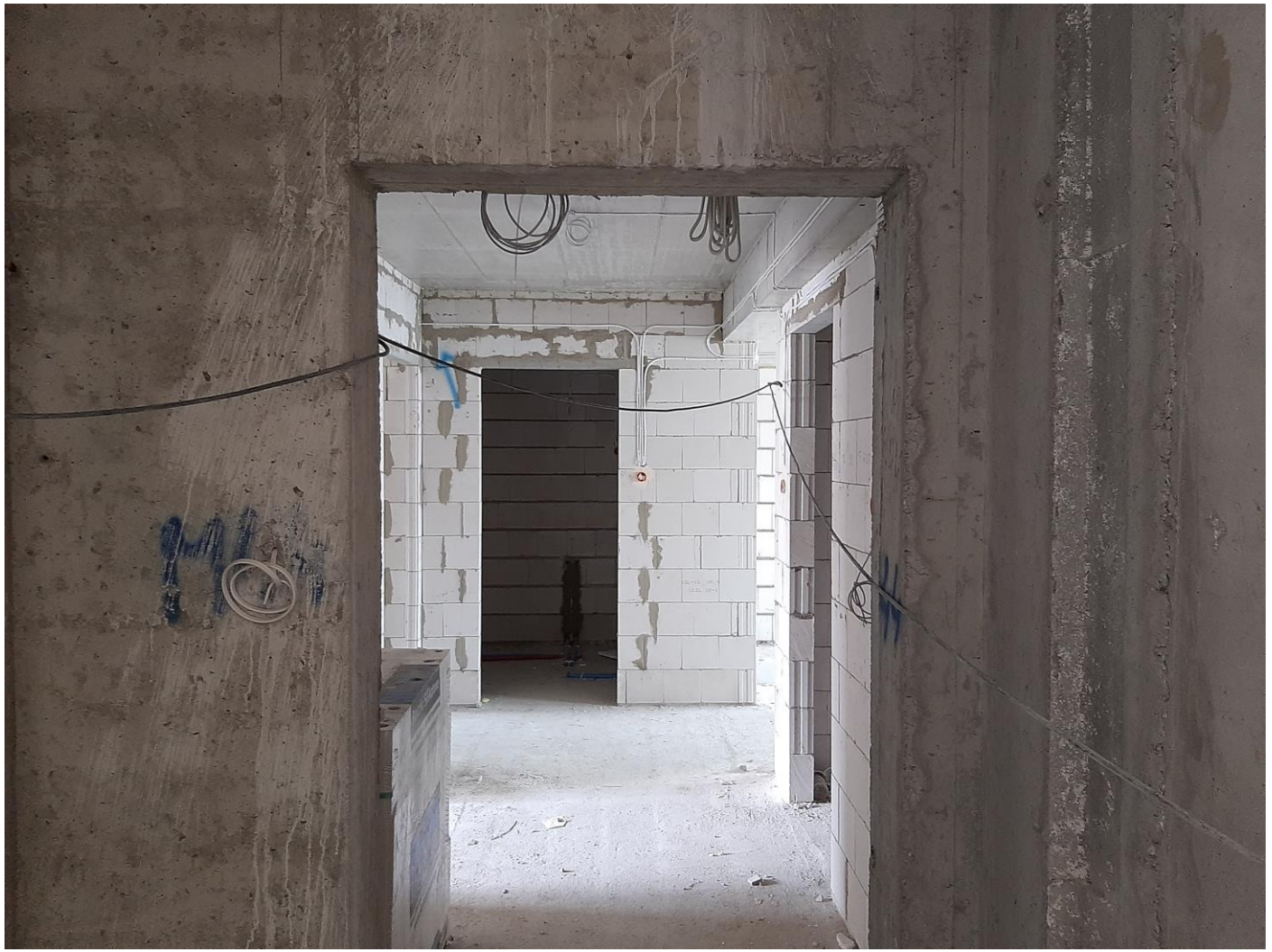


Electricity

Proper placement and the number of temporary Power Distribution Boards allows to minimizes the problem with a large number of used extension cords and avoiding possible overloads of the temporary electrical installation. In the context of these scope, we observe good practices – hermetic housing, wall-mounted Power Distribution Boards and daily inspection reports cards filling by electricians on duty at the construction site. The new type of switchgear with a fuse panel on the housing significantly minimizes the risk of unauthorized opening and destroying of this element of electrical equipment at the construction sites.

Electricity

Suspending of electric extension cords allows you to avoid possible trips and falls as well as damage to the insulation cables shell.

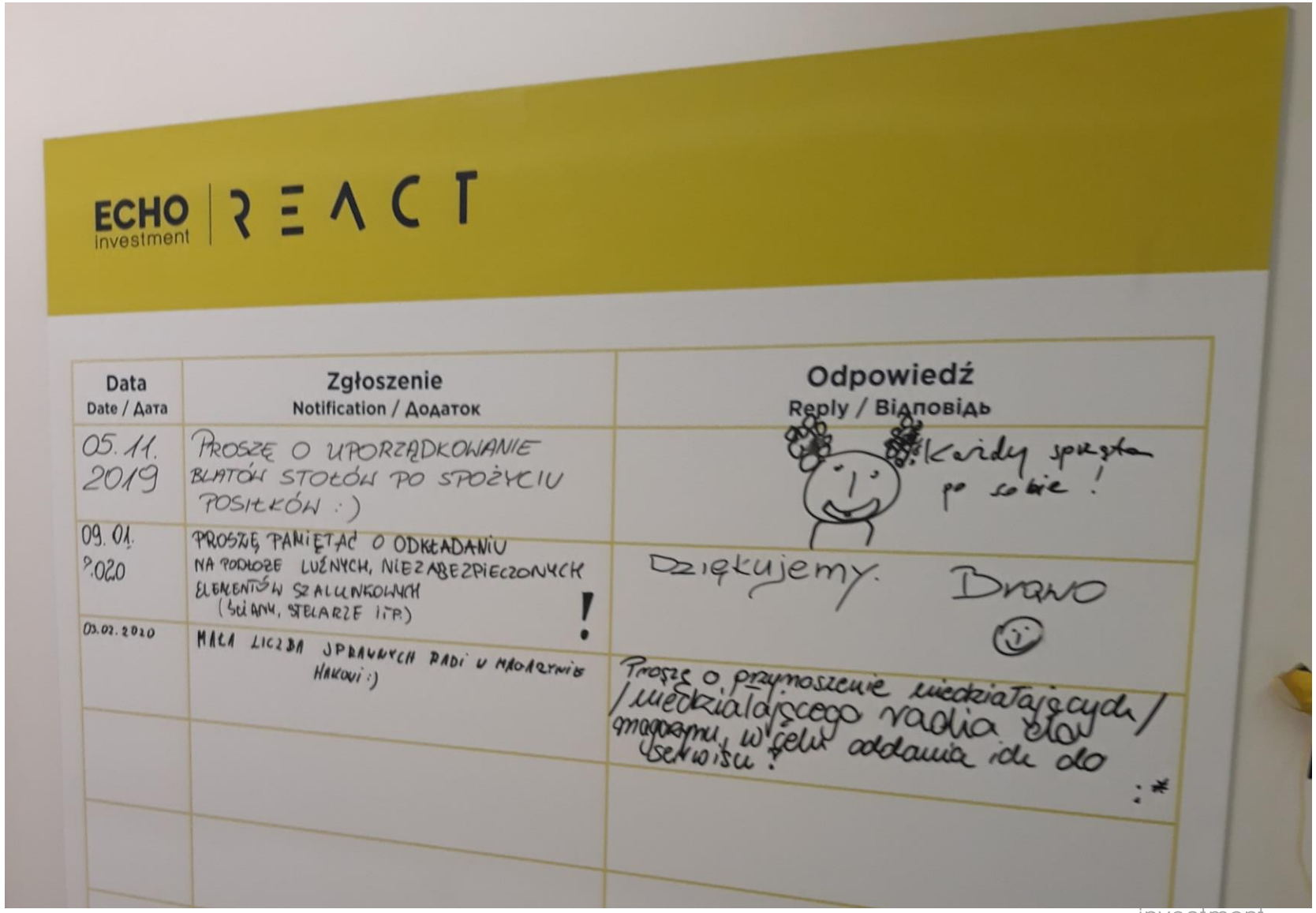


Electricity
Inspection of power tools
Colour coding tags

ECHO projects implemented the color-code standard - identification of electrical equipment of the construction site with labels. This is a visual confirmation that the power equipment (including extension cords) on our projects has been inspected by an authorized electrician and is in working order. It is worth bearing in mind that each project should have an electrician on duty with SEP qualifications applied.

Communication

Building mutual trust is not possible without proper communication, especially with line employees. ECHO EHS boards are a channel of information about a given project, as well as events (accidents/incidents) from other projects. At ECHO, we also develop bottom-up communication, employees have the opportunity to submit their observations and ideas on the boards „You Reported-We did". In the context of ISO 45001 and employee consultation, this is a particularly important element.



Environemntal Protection & COSHH

Chemical substances and mixtures that we store on projects - can generate risks to health and the environment. In the case of using and storing hazardous substances, it is necessary to provide anti-spillage trays (protection against possible spillage and penetration into the soil) and the preparation of COSHH cards and familiarization with their content to the contractor's employees.

Environmental Impact

Environmental issues are constantly being improved. One of the key aspects is the management of waste generated on site. Maintaining proper segregation can be ensured by installing CCTV cameras near the containers. A proper contract with a waste recipient allows for better monitoring of the sorting of mixed waste and thus a more effective implementation of the environmental goal: no more than 10% of waste that is disposed of in landfills.

Dustiness Reduction

Construction is an environment where several different contractors can perform work at one place and time. Appropriate risk management measures must be implemented taking into account the risk of dustiness. We observe good practices related to this on our projects. During cutting and grinding and material processing, the generated dust is extracted using industrial vacuum cleaners. Apart from the undoubted benefits for the health of employees, this solution also increases the service life of the power tools used as well.

Hot works

During works with technical gases the cylinders must be equipped with the necessary safety elements: valve protection flanges, non-return armature, reducers. In the case of oblong cylinders, additional protection against overturning is required.

Emergency situations

More often, AED defibrillators can be found on ECHO projects. They are invaluable rescue equipment. In case of sudden cardiac arrest, they increase the chances of survival from 5% to 70%.

Emergency Management
Fire protection equipment

An important aspect of preparation in the event of an emergency is to maintain the construction site's equipment with fire-fighting equipment and proper evacuation marking, indicating a safe escape route from the builidng to the evacuation assembly point.

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Wszystko zaczyna się od Ciebie

Head Office in Kielce
25-323 Kielce
al. Solidarności 36

Front Office in Warsaw
00-133 Warszawa
al. Jana Pawła II 22

http://www.echo.com.pl/
https://extranet.echo.com.pl/BHP.aspx