FORBUILD

SECUMAX®
PROTECTION SYSTEMS

Edition 1 / 2016

The SECUMAX® system, winner of the **Top Builder 2013** award.

Dear Readers, dear Customers,

the SECUMAX protection systems, thanks to the versatility of its use and the high quality of its components, has gained the trust of a broad range of customers, among which one can name the largest construction companies in the country. Our security systems have been for years protecting the lives and the health of employees execution works in construction.

The broad range of available solutions, and continued development of our products, allows us to optimise the solutions, jointly with Customers, both in technical as well as economic terms. Our technical advisors and designers are at your disposal at every stage of your investments. Thanks to the opening of the work safety equipment rental warehouse, one can use the advantages of the SECUMAX systems without the need to invest in their purchase.

We are hoping that Forbuild shall remain your reliable and professional partner. We are convinced that cooperation with us shall bring measurable results directly related to human health and life.

We supply the technology, experience and high quality.
Build with us ensures success.

FORBUILD SA

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General provisions

According to the ordinance of the Polish Minister of Infrastructure of February 6th, 2003, on occupational health and safety during the execution of construction work (Journal of Laws no. 47, item 401), which entered into force on September 19th, 2003, persons remaining at their workplaces, which are located at least one metre above the relevant floor or ground level, should be protected against falling from a height through the use of safety barriers.

A barrier should be made of a kerb plank with a height of ≥ 0,15 m, and a safety railing located at a height of 1,1 metre. Between the hand rail and the plank, there should be a beam at half this distance, or this space should be filled in a manner preventing the possibility of people falling through.

Construction site management

Construction site management activities are conducted before commencement of construction work. Such work spans as follows, among others:

- preparation of roads for trolleys and wheelbarrows, located over ground level at a height exceeding one metre, which must be protected by safety barriers,
- equipping passages (with an inclination over 15%) with crosswise installed planks, at a spacing not exceeding 0,4 m, or with stairs with a width not lower than 0,75 m, with protection in the form of safety barriers at least on one side,
- securing exits from warehouses and passages between buildings exiting to roads using safety handrails placed at a height of 1,1 metre,
- fencing off the hazard zone, where a risk of items falling from great heights exists, with safety barriers.

Working at heights

Persons remaining at workplaces located at a height of at least one metre above the relevant floor or ground level should be protected against falling from a height through the installation of safety barriers. This applies both to passages and routes to these workplaces as well as to staircases. Other locations, which may be present during the execution of works at heights, requiring the use of protective measures in the form of safety barriers, include, among others:

- ceiling openings, such as elevator shafts or openings of staircases, around which works are being conducted and which may be accessed by people,
- openings in constructed building internal walls, ceilings or others, the bottom edge of which is found under 1,1 m from the ceiling slab or platform level,
- openings left over during execution of works on walls, in particular openings for doors, balconies, elevator shafts, should also all be protected by the safety barriers mentioned earlier.

Safety barriers are basic means of collective protection. They should be used when workplaces, corridors and passages, edges and openings in walls or ceilings are to be protected. A safe barrier is made up of a kerb plank with a height of 0,15 m, and a protective hand rail at a height of 1,1 m.The free space between the plank and the handrail is filled in a manner protecting the employees against falling from heights. Detailed requirements concerning barriers and their strength and resistance are given in Polish Standard PN-EN 13374 - Temporary Edge Protection Systems.The barriers should be stable, fixed permanently to structural components, and resistant to the pressure exerted by a worker. The most important factor is resistance of the material, from which the handrail is made. Due to ease of installation, wooden planks are most often used for this purpose.It is important for them not to be broken or partially damaged and to have a sufficient thickness, which would sustain the weight of an adult person. In any other case, the barrier might pose an additional threat. A further factor is the mode of installation. The ideal case is installing barriers on grips specially foreseen for this purpose.Modern barrier systems differ between them by the mode of installation of the support pillars. The most commonly used are:

- clamp systems
- floor anchor systems
- I-beam-shelf mounted systems
- pillar and façade-mounted systems

Thanks to the use of the indicated systems (i. e. through anchoring to a different component than the ceiling slab), the worker has the option of working with full access to the edge (i. e. doing sheet steel processing work on the roof), keeping in mind that they are fully safe

The greatest number of falls from heights (as indicated by the statistical data published by the Polish Central Statistical Office) is related to an improper state of the material component, including safety equipment. The main cause are improper statics and resistance strength of the structure, on which the workers are present. Other contributing factors are hidden faults and improper use (installation, mounting, gripping, holding, securing) of the equipment required for working at heights.The construction site, its form and character, should be construed as one of the most dangerous places of work, indicating a particularly high risk level.
The cause of a major part of accidents may also be presence at elevations in locations foreseen for other tasks, improper coordination of diverse works, hazards due to external factors, and others.For this reason, in the year 2003, the Polish Minister of Infrastructure has issued an ordinance, defining that during the execution of construction works, persons being at an elevation of at least one metre from ground or floor level, should be protected against falling from a height (Journal of Laws of 2003, no. 47, item 401, par. 133.1).
In relation to this, according to the relevant provisions, two groups of safety equipment are used for the purpose of preventing accidents:

- collective safety equipment,
- personal safety equipmen.t

Collective safety equipment

Collective safety equipment protects a worker or a group of workers against dangerous and hazardous factors found individually or jointly in a work environment, constituting technical solutions used in the open, in rooms, where work is carried out, as well as close to machinery or other devices. Technical solutions allowing safety, are barriers, shields, or such devices, which fulfil one or more of the functions indicated below:

- preventing access to hazard areas,
- stopping the motion of hazardous components before the worker enters the hazard area,
- preventing the motion of hazardous components when a worker is found in the hazard area,
- prevent violation of normal working conditions of machines and other technical equipment,
- prevent activation of other hazardous or dangerous factors.

Personal safety equipment

Personal safety equipment denotes all kinds of measures borne or held by the employee for the purpose of their protection against one or a greater number of hazards related to the presence of dangerous or hazardous factors in the work environment, including as well accessories and additional equipment foreseen for this purpose.They should be used in situations, when the execution of numerous activities (i. e. during removal of collective safety measures) is possible only with their use.

Personal safety measures, in order to ensure sufficient and effective protection, should:
- be chosen appropriately for the present hazard, and consider the conditions at the relevant spot,
- take into account requirements of ergonomics, and cause discomfort related to their use (weight, dimensions, adjustment, sizes) to as limited an extent as possible,
- be mutually suitable for each other - if multiple devices or measures are joined with one another,
- be used according to their foreseen use and requirements described in the relevant instruction manual.

Proper selection of measures is conditioned on many factors, and must span one of two functions or both functions at the same time:
- preventing falls from heights through the use if personal safety equipment fixing one's position during work, according to standard PN-EN 358 and PN-EN 813
- arresting falls according to standard PN-EN 363.

The conditions of use of safety equipment should be described in the instructions for safe execution of works, and must conform to the risk assessment. Instructions and indications should be available to the user, and the employee should be trained with respect to their usage and implementation.
- eriodic inspections should also be carried out - the equipment should be controlled by the user after each case of use, and periodically by an authorised person (according to the requirements of the relevant manual), with an appropriate entry being made in the equipment usage sheet,
- No validity periods should be exceeded - every type of measure has a durability date (expiry date), after which such equipment should be eliminated. Naturally, this time may be reduced if the equipment has arrested a fall or was damaged,
- Measures and devices should be stored and maintained according to manufacturer instructions.

Personal safety equipment includes:
- safety suspensions, harnesses, lap belts,
- ropes,
- self-braking devices,- fall arresters,
- inertia reel belts,
- other measures (i. e. self-clamping harnesses, safety ropes).

The legislator has determined that priority of use, irrespective of the present condition of workplaces or any condition aimed at, should be given to collective safety measures (technical protection measures) against personal safety measures. This should be understood as using personal safety measures if personal protective measures may not be used for technical reasons.Individual solutions may be used in exceptional cases that require proper steps to ensure sufficient employee safety.

Work on roofs

Particularly dangerous places include roofs and works carried out on them. Roofing works and other works close to the edge of a flat roof, which has an inclination of up to 20%, requires the use of appropriate safety measures preventing falls from heights. Safety measures include collective safety equipment, particularly barriers, protective nets and safety nets as well as individual safety measures.The execution of works on a roof with an inclination exceeding 20% requires the use of safety scaffolding and personal safety measures.Any fall from a roof will result, in the best of cases, with grave bodily injuries. The risk is always great, irrespective of whether the works carried out lasted long or short. Numerous victims of fatal injuries were supposed to go up to the roof for just a few minutes to 'quickly check' something or make a quick fix.
In relation to that, one could think that the only obvious thing is securing a workplace against falling from heights. It is very important to consider installing fixed structural points on roofs, used for mounting of anchor devices and personal safety equipment, already during the design phase.Such certified anchor points are an enormous investment in the future, because they will be utilised later on to maintain and repair building roofs. For roofs of large halls and stores, and ideal solution is the installation of a permanent system of safety devices at edges or the top of the roof. The company Forbuild offers just such solutions to its customers.Particularly for these needs, the individual constituent parts of the Secumax Individual system were created as structural anchor points (in line with standard PN-EN 795), which will enable the use of individual and collective safety measures during execution of works on roofs with an inclination of up to 10°.

Such works include:
- execution of diverse construction works on roofs,
- execution of repair and construction work,
- installation of technical systems, i. e. heat exchangers, air conditioning, tele-technical equipment,
- general maintenance
- removal of lingering snow from roofs,

The use of components of the Secumax Individual system allows, depending on relevant needs, the execution of individual safety devices based on requirements of norm PN-EN 795. This provides the option of using safety harnesses systems and belts, arrest ropes and safety ropes, safety suspension systems, snaphooks and other devices.

The Secumax Individual system allows similarly the implementation of temporary protective barriers conforming to requirements of standard PN-EN 13374. At structural anchor points installed are standard system grips (side grips), and then barrier pillars with railing planks are inserted into the system grips. In such a way, temporary collective protection against falling from heights may be created in a quick and easy way.

Earthworks

During the execution of earthworks, the hazard spots must be fenced off and warning signs need to be placed. Apart from that:

- during the execution of earthworks (excavations), at dangerous locations and at spots generally accessible to persons not employed at these works, safety barriers have to be set up, furthermore carrying warning signs, and in the night red warning lights are required. Safety barriers should be placed at a distance lot under 1,0 metres from the excavation edge, and their top railing should be placed at a height of 1,1 metre above the ground,
- if the excavation pit is covered, instead of safety measures described above, the working area may be marked out by pillars and ropes or artificial material bands placed along the excavation edge at a height of 1,1 metres and at a distance of one metre from the excavation edge, however, this solution may only be used if small excavations are made.

OHS requirements concerning Working at heights in the construction industry

The employer has the duty of ensuring appropriate safety measures entailing i. e. the use of safety devices such as edge equipment (safety barriers, safety nets), and appropriate markings of hazard zones and places, among which can be named i. e. ceiling slab openings, ceiling openings, window openings without accessories, etc.

Apart from that, the employer is responsible for:

- execution of a professional risk assessment for the executed works,
- removal of hazards at the source of their emergence,
- usage of modern technical solutions,
- prioritising collective safety measures over personal safety measures,
- training employees with respect to occupational health and safety,
- informing the employees about existing hazards, in particular about hazards, from which personal safety measures will protect them, and about transfer of information concerning the rules of their use,
- the appointment of an occupational health and safety coordination officer, in case workers employed by various employers would be conducting work at the same location at the same time.

How to prevent falls from heights?

When organising work at heights, the construction site manager is obliged to provide appropriate protective measures, which shall guarantee safe working conditions. Properly assumed criteria shall ensure safe movement and execution of all professional and other duties by all employees. The resources utilised must be effective, so that the created solutions prevent falls and injuries of persons working at heights. The arrangement of corridors and passages leading to places of work at heights, in particular between ceilings, platforms, passages or bridges, in both directions, must be foreseen in such a way so that no additional risk of falling emerges. In turn, using an entrance technique utilising ropes and position fixing equipment, they have to be provided with a properly equipped seat. Movement and work on different building levels also both require the use of temporary edge safety systems. This is a safety resource that finds utilisation very often. A barrier is made up of a kerb plank of a height of 150 mm, and a topside safety hand rail. The top rails are placed at a height of 1,10 metres, and in system scaffolding, at a height of 1,00 metres.
The free space between the plank and the top hand rail is filled by a lower rail, protecting against a fall from a height.
Both the kerb plank and the hand rails must be affixed to pillars embedded in grips, selected appropriately for the relevant purpose. Grips are installed directly on building and structure load bearing components. In such a way, ceiling and wall openings are also protected, as are balconies and elevator shafts where works are conducted or to which people might have access.

Despite the actions undertaken, insufficiencies are often seen at construction sites during working at heights, i. e.

- execution of construction works without a safe work organisation concept,
- lack of notification of the workers about occupational risk related to the executed work,
- no documented acceptance procedures for scaffolding before their transfer to use,
- no specialist training,
- no effective oversight over the works conducted at heights,
- safety measures being installed only after the execution of dangerous work is concluded.

The best method of safely running a building execution process is work safety management, or in other words, considering such aspects related to the work as:

- determination of hazards and options of their removal,
- use of appropriate safety measures,
- inspecting the existing state of affairs of occupational health and safety, and training employees in this regard.

The basic tool for proper organisation of work and for selection of all kinds of preventive measures is the evaluation of occupational risk. The evaluation measures utilised, including technical safety measures against falls from heights, should ensure safe working conditions. A documented risk assessment should be periodically analysed and updated (i. e. in case safety measures utilising novel technical solutions become available on the market, or in case new hazards arise).Apart from that, the general condition of scaffolding, in particular platforms and safety barriers, should be checked every day, before commencement of work.

OHS requirements concerning Construction work on railway lines

There exist two documents pertaining to requirements concerning the protection of work places during the execution of railway work:

- Instruction Id-18, Guidelines concerning the protection of places of work along a closed railway track during traffic of railway vehicles along an open track with velocities equal to or exceeding 100 km/h, constituting an annex to regulation no. 21/2010 of the board of directors of Polish Railway Lines PKP PLK S. A. of August 31st, 2010.
- Journal of Laws no. 0, item 911, on the list of types of structures foreseen for running of railway traffic, types of equipment used to run railway traffic and the types of railway vehicles, for which type permit usage certificates are issued; usage certificates are neither required nor issued for temporary protective barriers.

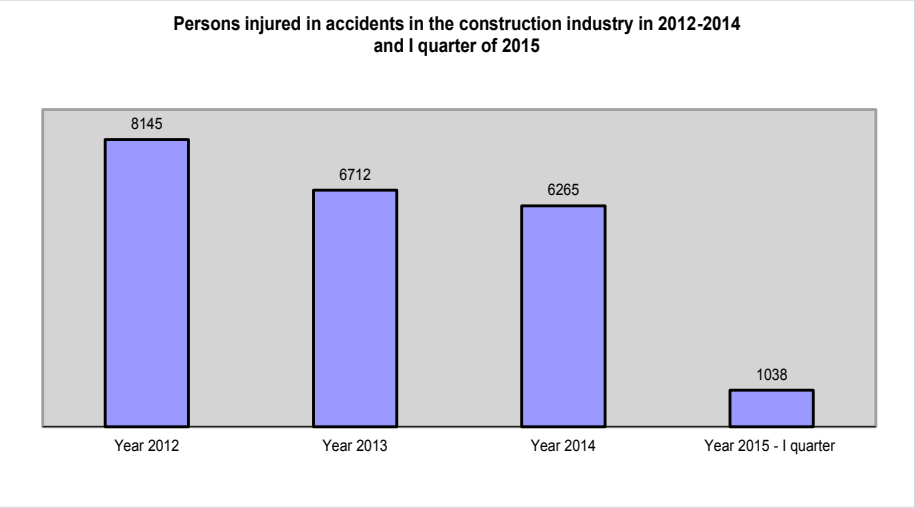
Works at railroad tracks count among the most dangerous due to the possibility of loss of health or life, as threatened by the railroad vehicles travelling along active tracks. Numerous inspections conducted by the Polish National Labour Inspectorate (Pl. Państwowa Inspekcja Pracy) in the year 2013 reveal errors at work places, stemming mainly from tolerance by supervisors of divergences from rules and provisions on occupational health and safety as well as from specific rail-related instructions, in particular does pertaining to proper preparation of employees for the execution of work in a safe and secure manner, and to the securing and marking of spots, where rail track work is being executed.Upgrade work conducted by the Polish Railway Lines PKP PLK S. A. was, beside the general contractor, executed by many subcontractors. The scope of work covered comprehensive railway line upgrades or current maintenance of railway tracks, among these i. e. upgrades of track surfaces with repairs of the area between the tracks and laying out of new straight rail line sections, replacement of rails, replacement of sleepers, upgrades of platforms at passenger stations, road and track work along bridges and viaducts.The Polish National Labour Inspectorate inspected in the year 2013 93 plants (employing a total of approx. 17000 persons) conducting works along sections of rail tracks belonging to the Polish Railway Lines.The problems encountered most often during the inspections of rail track works spanning adherence to provisions and rules of work safety - conducted in the year 2013 - pertained to: lacking or improper protection and marking of construction works - 23,66%.

As a result of the executed inspections, legal means were utilised in the form of:

- 363 decisions to remove the flaws, including 21 decisions halting works,
- 145 motions concerning errors,
- 29 legal fines for a total amount of PLN 34000

In course of inspections foreseen for the year 2014, concerning the limitation of professional hazards for employees conducting rail track work, particular focus shall be made on the following issues: proper general work organisation, proper coordination of work between contractors working along the same work sections with respect to occupational health and safety, proper preparation of employees for the execution of the work and proper equipment of the work places with the appropriate protective measures, as well as appropriate supervision encompassing the assurance of the required occupational health and safety levels for the employees.

The company Forbuild SA, aiming to accomodate requirements concerning securing of rail track works, has in its offer the protective hand rail system for such works: the Secumax Rail system. The system is composed of three basic parts: the rail grip, the barrier pillar and the protective batten. The connection of these details creates a complete protective system, acting as a temporary side protection during rail line upgrades or maintenance. Thanks to grip adjustment options, one can create a protective barrier at a distance of up to 2850 mm, measured from the track axis.



Source: Statistics by Central Statistical Office

Horrifying statistics

Among the total number of those injured in work accidents in the construction industry:

- every third person loses their life,
- every second person is heavily injured.

Note!
Accidents when working at heights often cause death or permanent disability.

The World Health Organisation says that 52% of the world's population spends as much as a third of their adult lives at work, actively contributing to creating goods and value for the general profit of society. The execution of work is usually accompanied by dangerous, hazardous and disturbing factors. It is the obligation of the employer to undertake actions (in particular technical and organisational steps) to remove or at least limit the occupational hazards caused by these factors. Based on work accident reports collected by the Polish Central Statistical office in the first half of 2015, 1038 accidents occurred in the construction industry, with 6265 occurring in the entire year of 2014. In this same period, the number of fatal accidents also fell. In the first half of 2015, thirteen fatal accidents were reported, with 2014 seeing a total of 55. Statistics on serious accidents also improved, with 74 people heavily injured in the year 2014, as compared to 22 in the first half of 2015.

According to the Polish National labour inspectorate, in turn, statistics for those injured at construction sites because of falls from heights shows that in the year 2014, 240 accidents occurred, including 30 fatal and 80 serious, with statistics for the first half of 2015 showing 65 accidents; among them, 10 were fatal and 22 serious.

This proves that construction companies, learning from conclusions from the previous years, adhere in more and more cases to requirements of occupational health and safety, including utilising modern and system safety measures protecting their personnel from falls from heights.It is precisely thanks to systems such as Secumax that these dreadful statistics are improving step by step. Thus, during the execution of diverse construction work, often done at heights, special safety measures must be maintained due to the high hazard for the health and life of the employees.

The most common causes of accidents were:

- lack of supervision,
- tolerating divergences from OHS provisions,
- improper instructions,
- lack of training,
- allowing employees to work despite medical counterindications against such work or without medical examinations at all,
- improper employee behaviour,
- lack of knowledge of hazards or neglect of hazards
- not using personal safety devices.

An analysis of data from the past years shows that the causes of accidents in the construction industry remain unchanged, and that the statistics, despite minor improvements, are similar.

The list of the most common circumstances of accidents is dominated by falls of persons from heights to a lower level, an impact of a person by a falling object, slipping away, falls, flaws in material or slips, trips and falls by a person without a fall from a height.

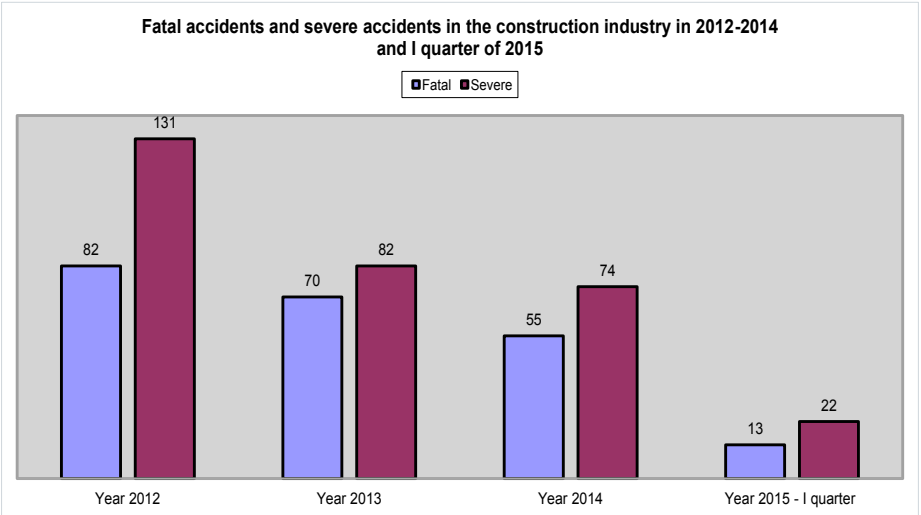
Working at heights thus counts among particularly dangerous work, and a fall from a height is very often the cause of an accident, in most cases, of a grave or fatal accident. In Europe, the most common cause of fatal accidents in the construction industry are falls from heights. They still account for 40% of all fatal accidents at work. According to the data of the Polish Central Statistical Office, falls from heights account for 40% of all accidents at work in Poland.

Working at a height is not deemed to be working on a surface, irrespective of the height at which it is found, if this surface:

- is shielded on all sides by full walls or walls with windows installed, to a height of at least 1,5 m.
- is equipped with other fixed structures or devices protecting the worker from falling from a height.

Remember!
People falling from heights = 40% of fatal accidents at construction sites

An accident might occur at any moment, and it can be caused by even minor movement or an unimportant activity.



Source: Statistics by Central Statistical Office

Costs of work accidents

Work accidents also constitute grave financial burdens for any company, irrespective of the industry or size. In the construction sector, costs of such accidents constitute on average 3% of the national sector turnover. Investments in occupational safety gear permit the companies to limit losses due to accidents, which translates to improved investment revenue.

Proper recognition of hazards of these factors, and the related risk, is a basis for diverse preventive measures.

Both employers and employees of small and mid-sized companies, who themselves evaluate professional risk, should precisely analyse the work location and determine, what factors would cause a fall or influence negatively the health of people or those remaining there and working at the same spot.

According to the regional labour inspector of Łódź, every day about a hundred accidents, considered serious and minor, happen during construction works.

It is thus worthwhile to consider, whether a simple economic calculation is not sufficient to change one's approach to safety.

We need to remember that if an accident happens at a construction site, then the supervisory persons bear the responsibility for not following through with their duties. This is not just responsibility for misconduct, but criminal responsibility as well.

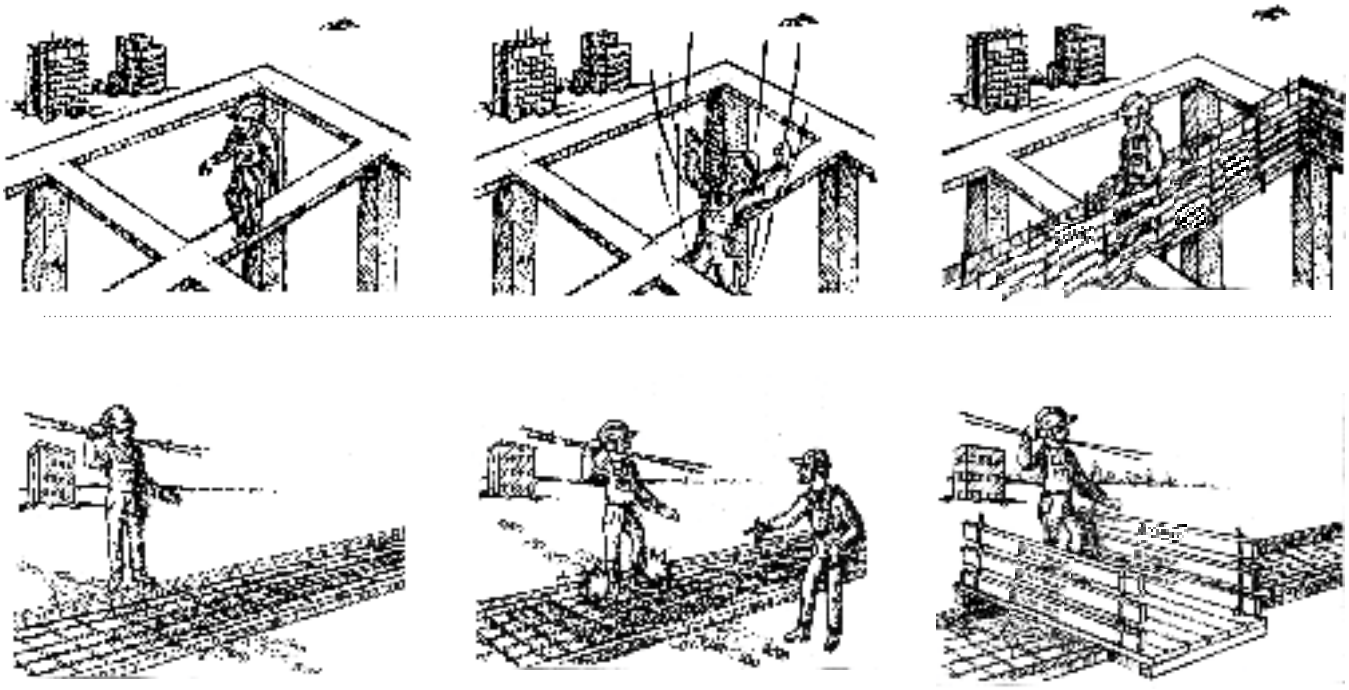
The law in force states that priority in provision of safety for employees is given to group safety methods and resources, as these exclude the will of the person to actually use the safety equipment. According to par. 1 of attachment no. 2 to the ordinance of the Polish minister of labour and social policy, on general work health and safety provisions, personal protection equipment should only be used in situations, in which the hazards cannot be avoided, or sufficiently limited, through appropriate group protection equipment or appropriate work organisation.

Analyses and observations conducted by us, operating for more than a dozen years on the Polish market, have shown that the use of an appropriate edge protection system markedly reduces the risk of accidents – which translates into statistical results, too. Accordingly, investments in security allow companies to limit major losses due to work accidents, which translates to improvement of revenue.

That is why, closely following work methods, and reacting to the needs of customers, as well as considering foremost construction site safety, broadly understood quality and price competitiveness, Forbuild has introduced and is continuously developing two edge protection systems – Secumax and Secumax Individual, which in concert with the knowledge and experience of our technical advisors, as well as the use of CAD systems in course of customer project analyses, permit us to suggest to any customer the solutions that will be most reasonable in any case.

PREVENTING CONSTRUCTION SITE HAZARDS

Lack of preventive work | Accident | Solution



Never use materials foreseen i. e. for safety barriers for other goals.

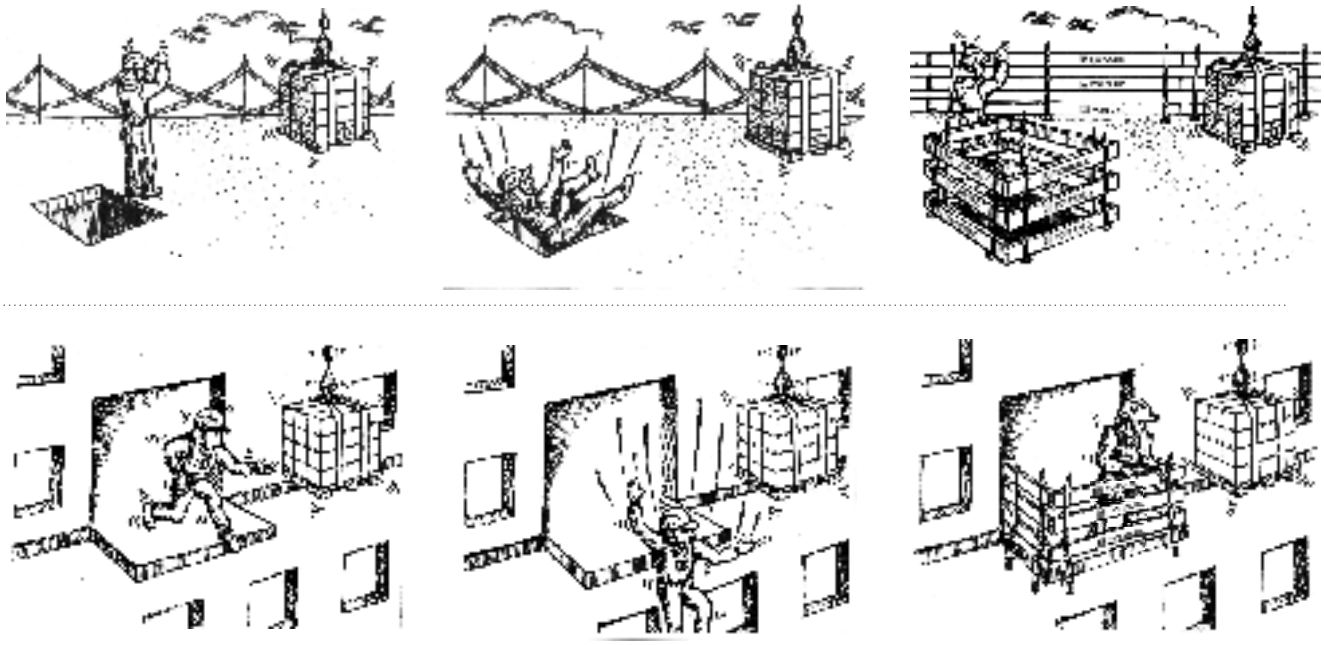
PROTECTION AGAINST FALLING INTO PITS

Lack of preventive work | Accident | Solution

90% of accidents occurring during earthworks are cases of falling into pits. These accidents may be prevented through the installation of platforms allowing passage as well as by reinforcement and securing of pit walls.

METHODS OF PROTECTION AGAINST FALLS FROM HEIGHTS

Lack of preventive work Accident Solution



Should an employee notice a dangerous situation, they should act immediately, and notify their employer of the emerged danger.

A simple gesture can save a person's life!

MOSTY - ŁÓDŹ S.A.

SECUMAX®

Properties and scope of use

The Secumax safety barrier system is foreseen for the execution of side protection on building edges in order to protect people from falling from heights. The system has the characteristics and conforms to resistance requirements for class A products according to standard PN-EN 13374 - 'Temporary edge protection systems - Product technical description, test methods'. According to the above indicated standard, the A class defines products for use in case of static loads.

All components constituting the Secumax system by Forbuild are coated with a durable anti-corrosion layer, which allows long life and use of these products.

General requirements

- Before commencing the assembly of safety barriers, their condition needs to be inspected, particularly the condition of the barrier pillar and mounting components, which should have no flaws or visible damage. No damaged components may be used, nor may they have safety functions.
- During installation, use and removal of the safety barriers, provisions of occupational health and safety, as well as information and instructions included in this bulletin and in the functional and operational documentation, need to be adhered to.
- During the installation of safety barriers, safety harnesses and safety ropes need to be used.
- The information provided in this catalogue only consists of product technical data and general indications as to the use of protective barriers, which may be helpful for persons designing the construction site safety system, as well as for persons installing them. They are not, however, specific guidelines, because the safety system needs to be adapted in each case to conditions present at the construction site, including the implementation of OHS provisions, with the most rational solution concept chosen on this basis.
- The photographs and images included in this catalogue are only examples and suggestions, and this is how they should be treated.
- We reserve the right to introduce changes to the Secumax system with the progress of technology and new developments.
- It is forbidden to join Secumax system components with components from other manufacturers, because such an arrangement might be hazardous to its users.

Quality requirements concerning system components made of wood

Wooden components used in the safety barrier system must be made of coniferous tree wood, sorted according to their strength according to standard PN-EN 14081.

Components of top and bottom hand rails as well as the kerb plank should be manufactured of debarked wood of class not lower than C-18, and their dimensions should not be less than 32 mm thickness and at least 150 mm width.

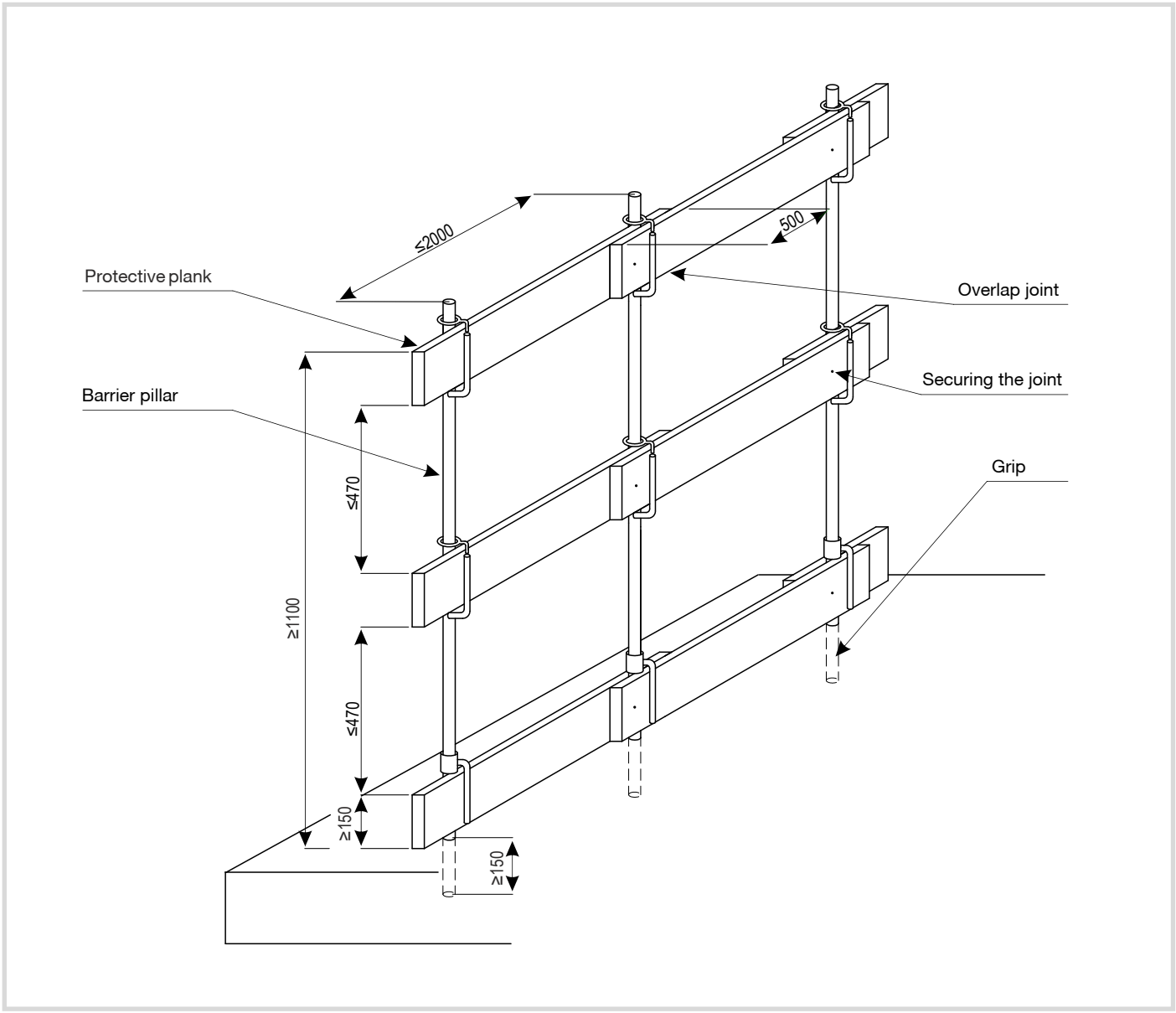
Dimensions of protective planks, as well as the resistance class (C 18) were selected so that they conform to requirements of standard PN-EN 13374 with the given spacing of barrier pillars.

Quality requirements concerning system components made of steel

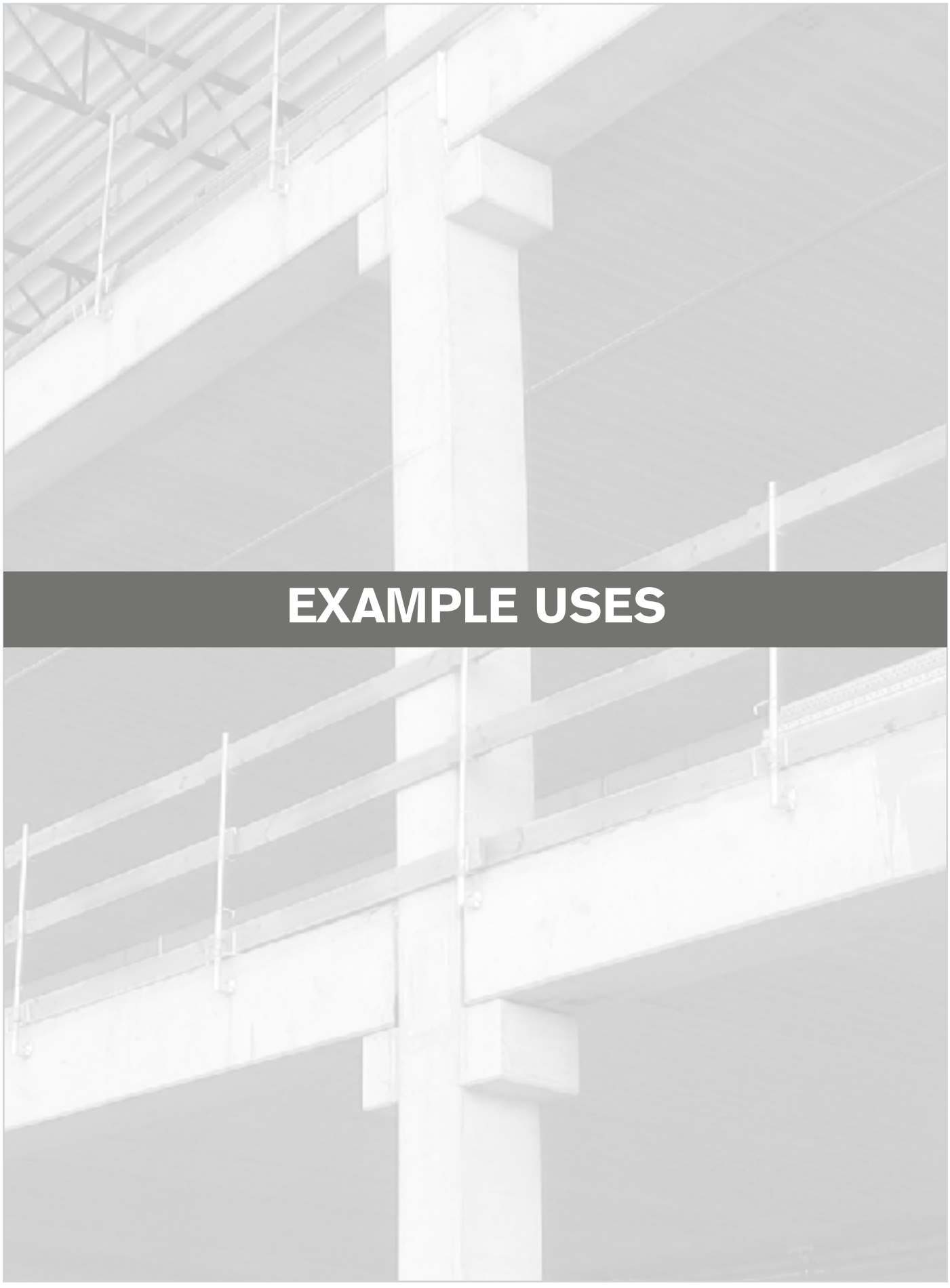
The steel components making up the Secumax safety barrier system from Forbuild are manufactured out of steel with a minimum wall thickness of 3,2 mm. All components are protected by a durable anti-corrosion layer. The barrier pillar and its relevant mounting systems conform to requirements concerning static loads according to standard PN-EN 13374 'Temporary edge protection systems - Product technical description, test methods'.

Assembly notes

The pillar is the main component of the Secumax system. Before assembly, check the condition of the pillar, it should be free of faults and visible damage.
The side safety pillar is attached to the load bearing structure using a joint (grip), the type of which depends on the construction phase or the situation and location, where the safety barriers are erected.
Installation of the proper joint (pillar grip) takes place according to the hints and recommendation (technical and operational documentation) drawn up by Forbuild, considering OHS provisions.
In case of pillar spacing under 2,0 m, wooden components used to make up railings and kerb planks should conform to quality requirements listed above, pertaining to wooden Secumax system components.
The pillar must be inserted into its grip down to a depth of at least 150 mm or until pronounced resistance is felt.
The installed hand rails and the kerb plank, constituting side protection, must always be placed on the inner side of the pillar towards the work surface.
After the mounting of hand rails and the kerb plank providing side protection, the mobile grip securing the planks from sliding upwards must be lowered. The hand rails and kerb planks should have overlap joints only in the pillar grip foreseen for this purpose. The planks should overlap by at least 50 cm, and their overlap should be strengthened by a nail or a wood bracket screw.



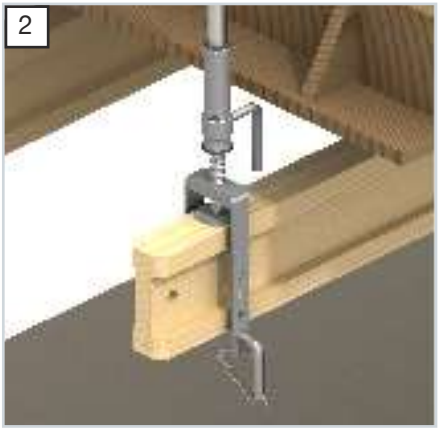
Assembly scheme



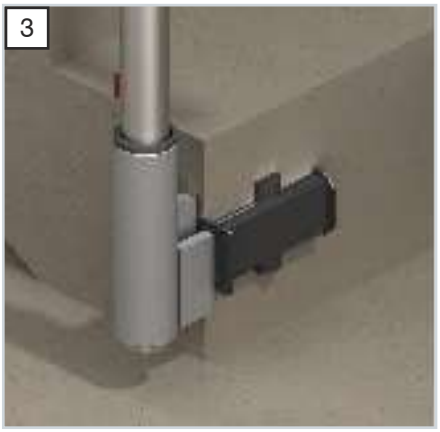
EXAMPLE USES

EXAMPLE USES

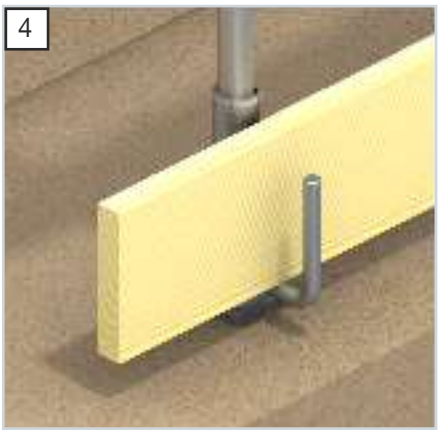
Screw-in grip



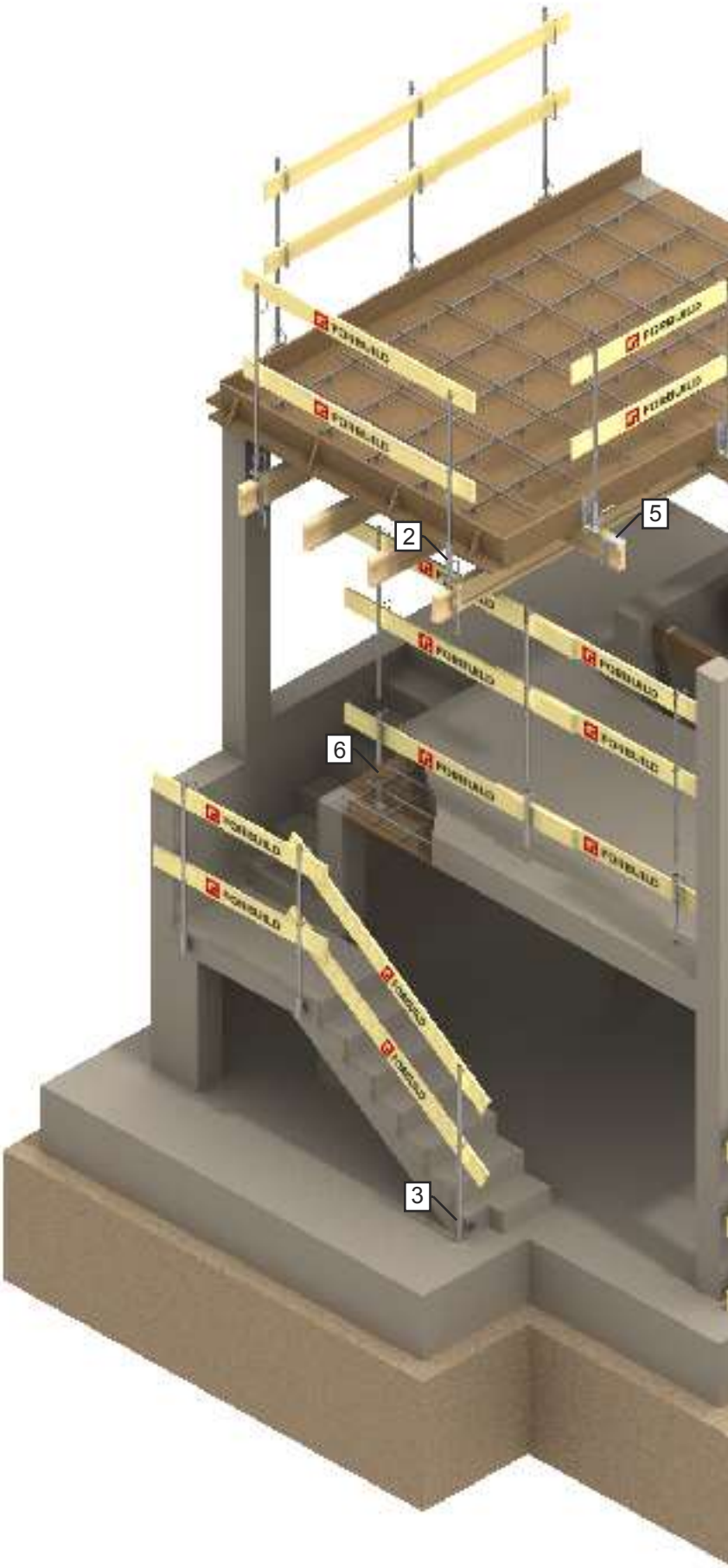
Girder grip

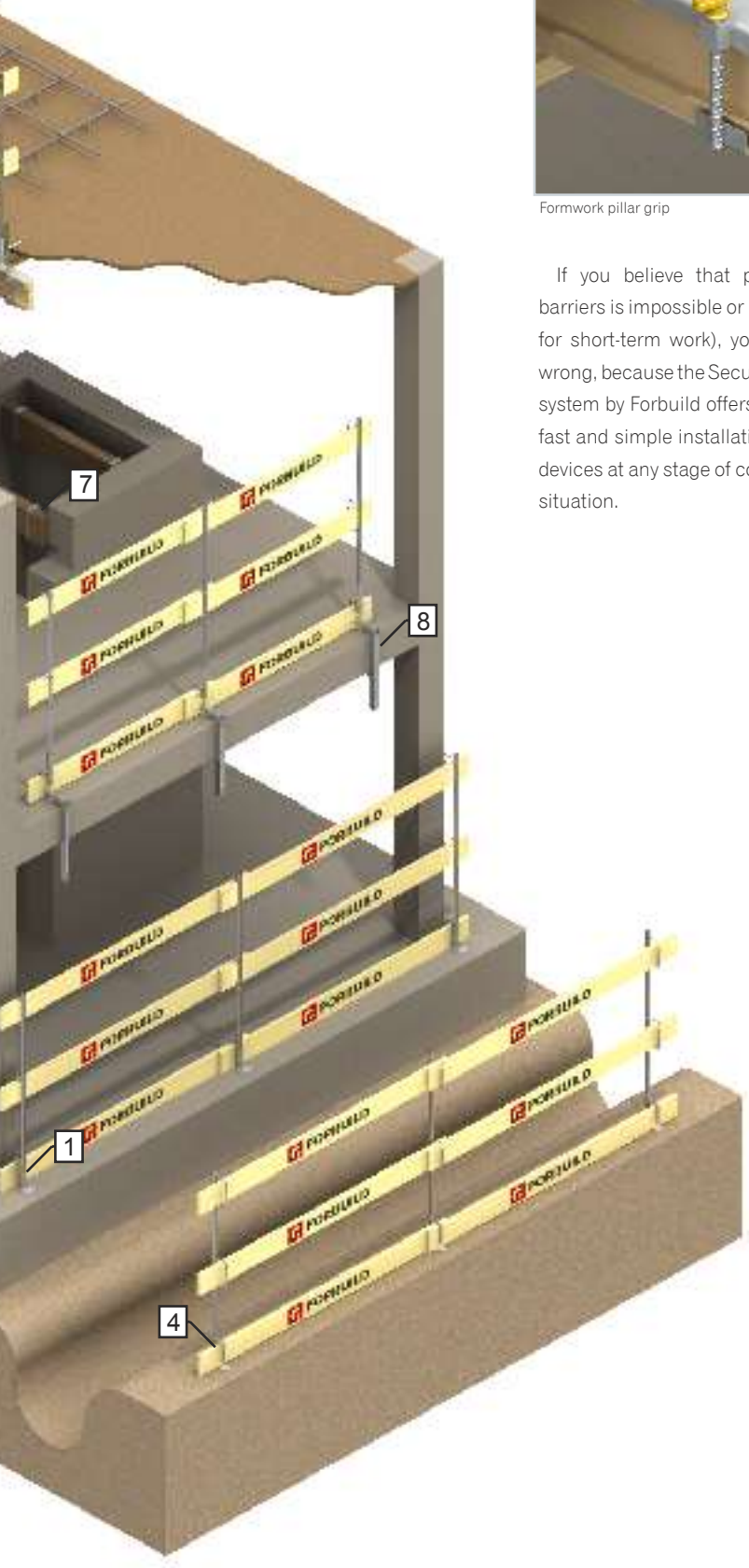


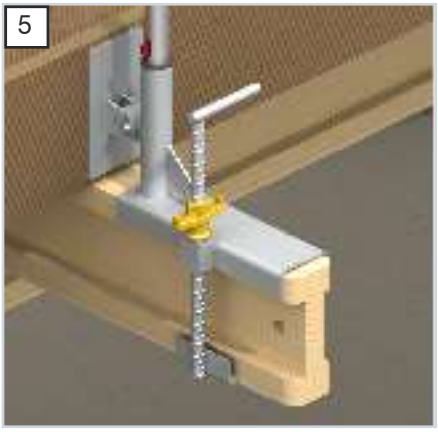
Side grip



Ram-in grip



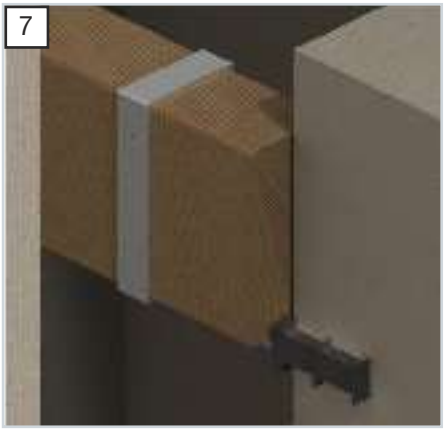




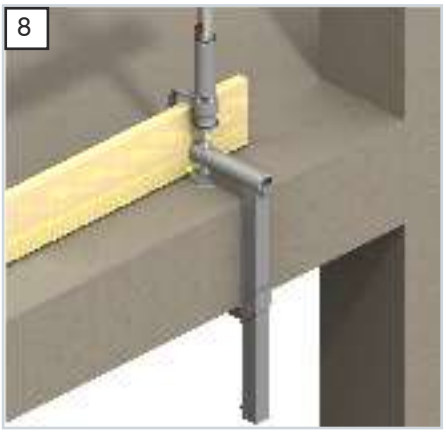
Formwork pillar grip

If you believe that putting up protective barriers is impossible or not substantiated (i. e. for short-term work), you could not be more wrong, because the Secumax protective barrier system by Forbuild offers many possibilities of fast and simple installation of edge protection devices at any stage of construction and in any situation.

Stay-in-place grip



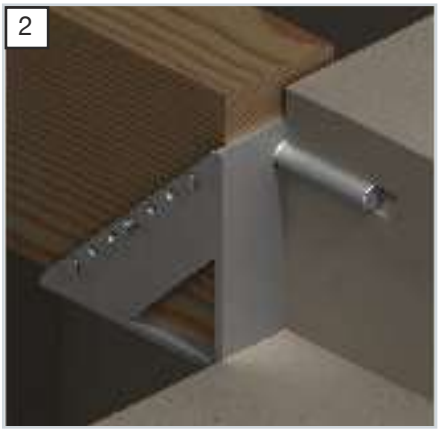
Clip grip



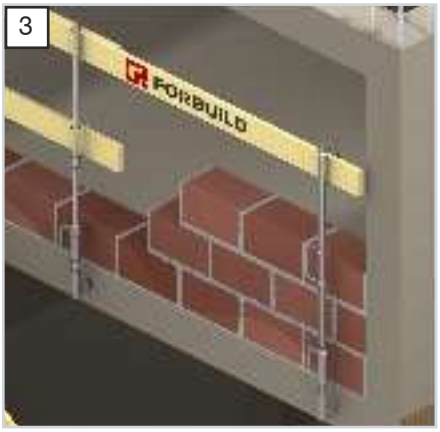
Universal grip

EXAMPLE USES

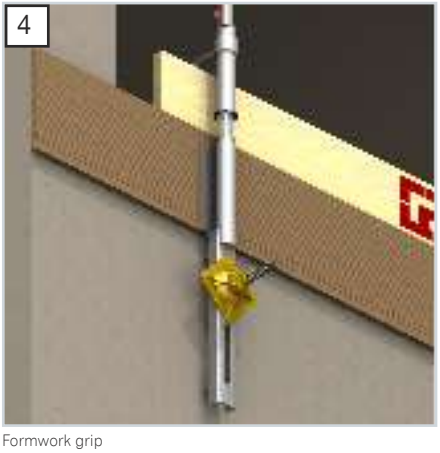
Precast component grip



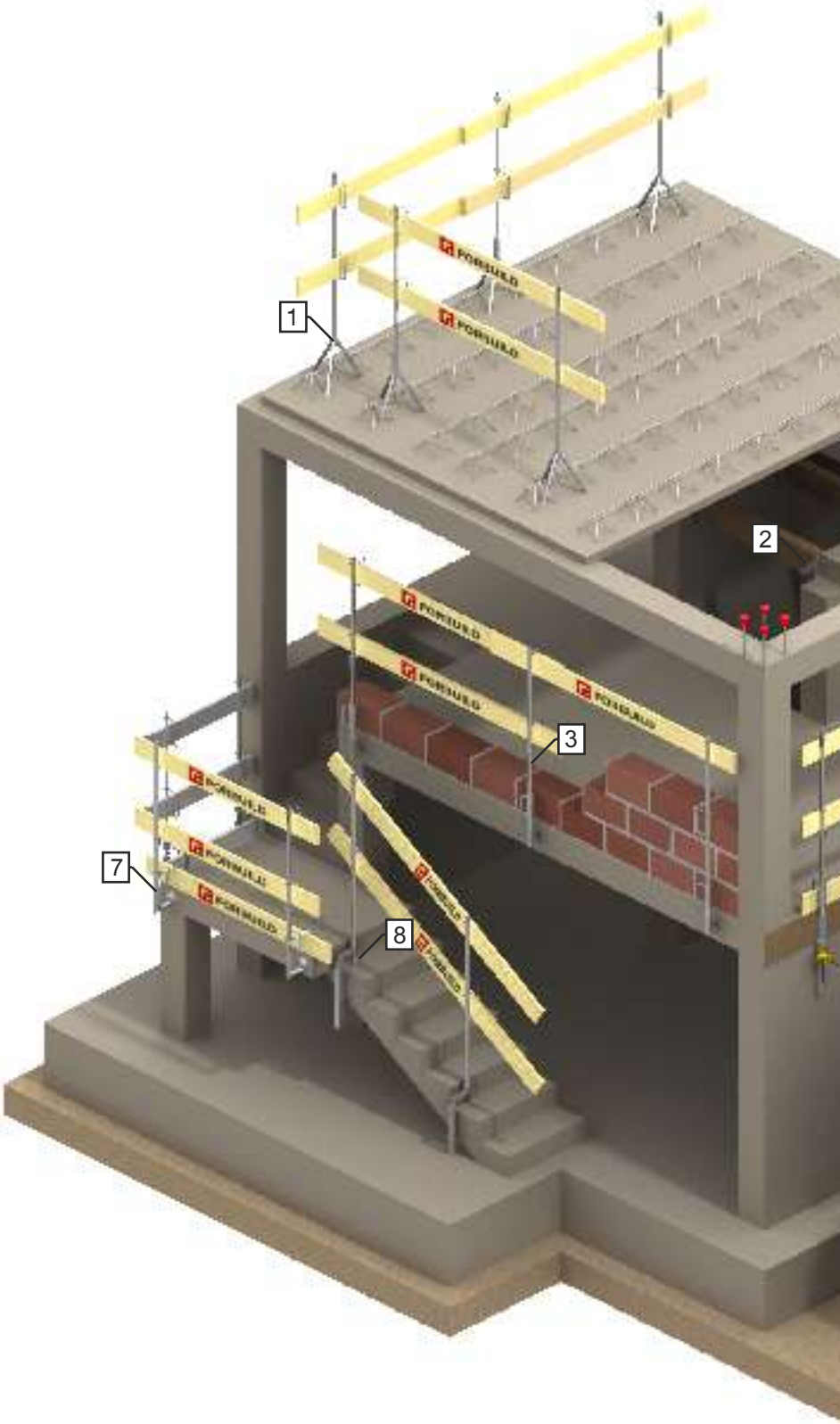
Work platform grip



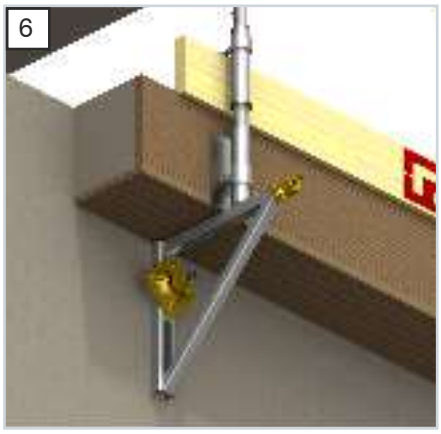
Side grip with extension piece



Formwork grip

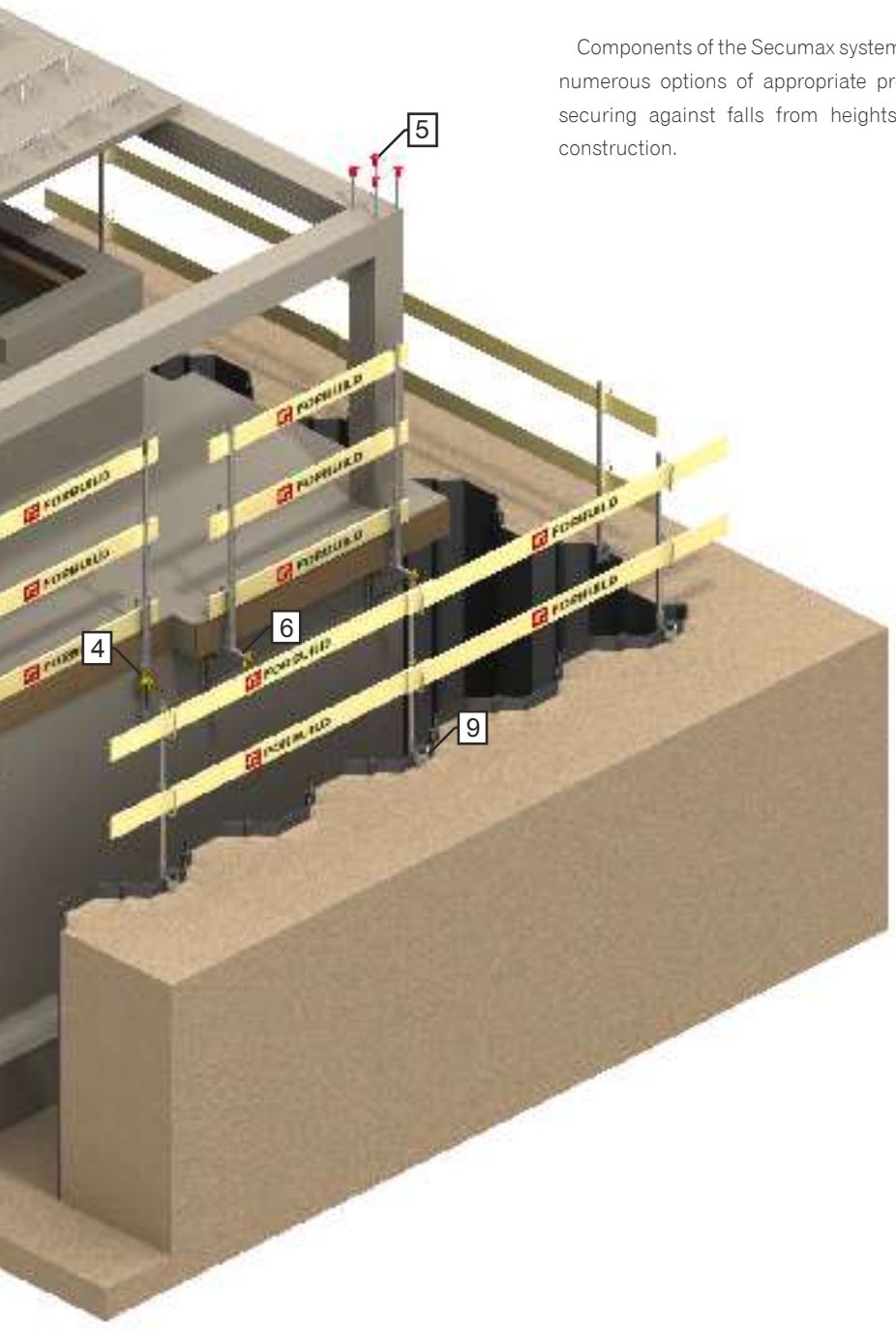


PVC cover for reinforcement bars

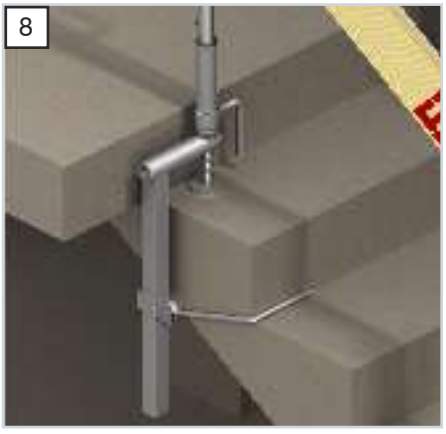


Adjustable formwork grip

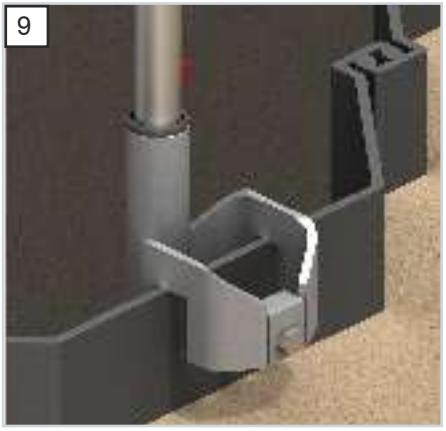
Components of the Secumax system provide numerous options of appropriate protection, securing against falls from heights in civil construction.



Screw-in side grip + kerb plank grip

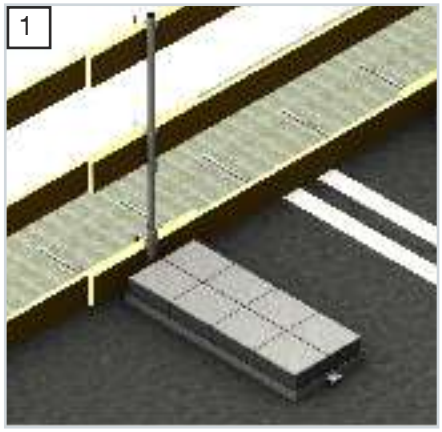


Universal grip with stair catch



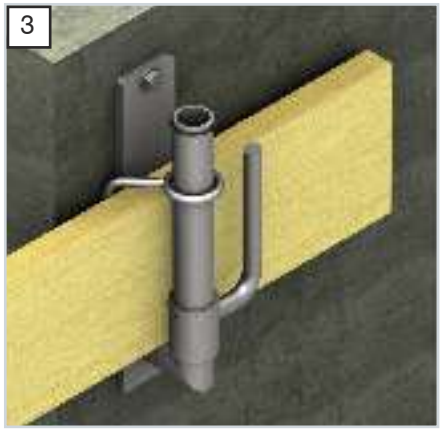
Sheet pile grip

EXAMPLE USES

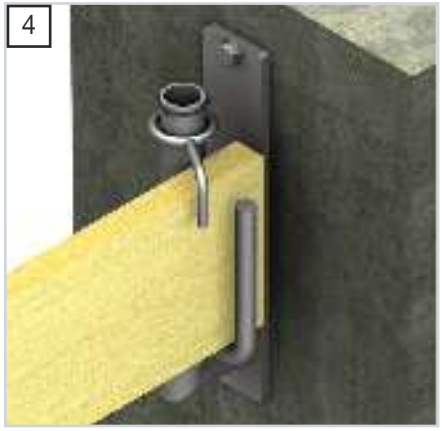


Counterweight grip

Screw-in bridge grip



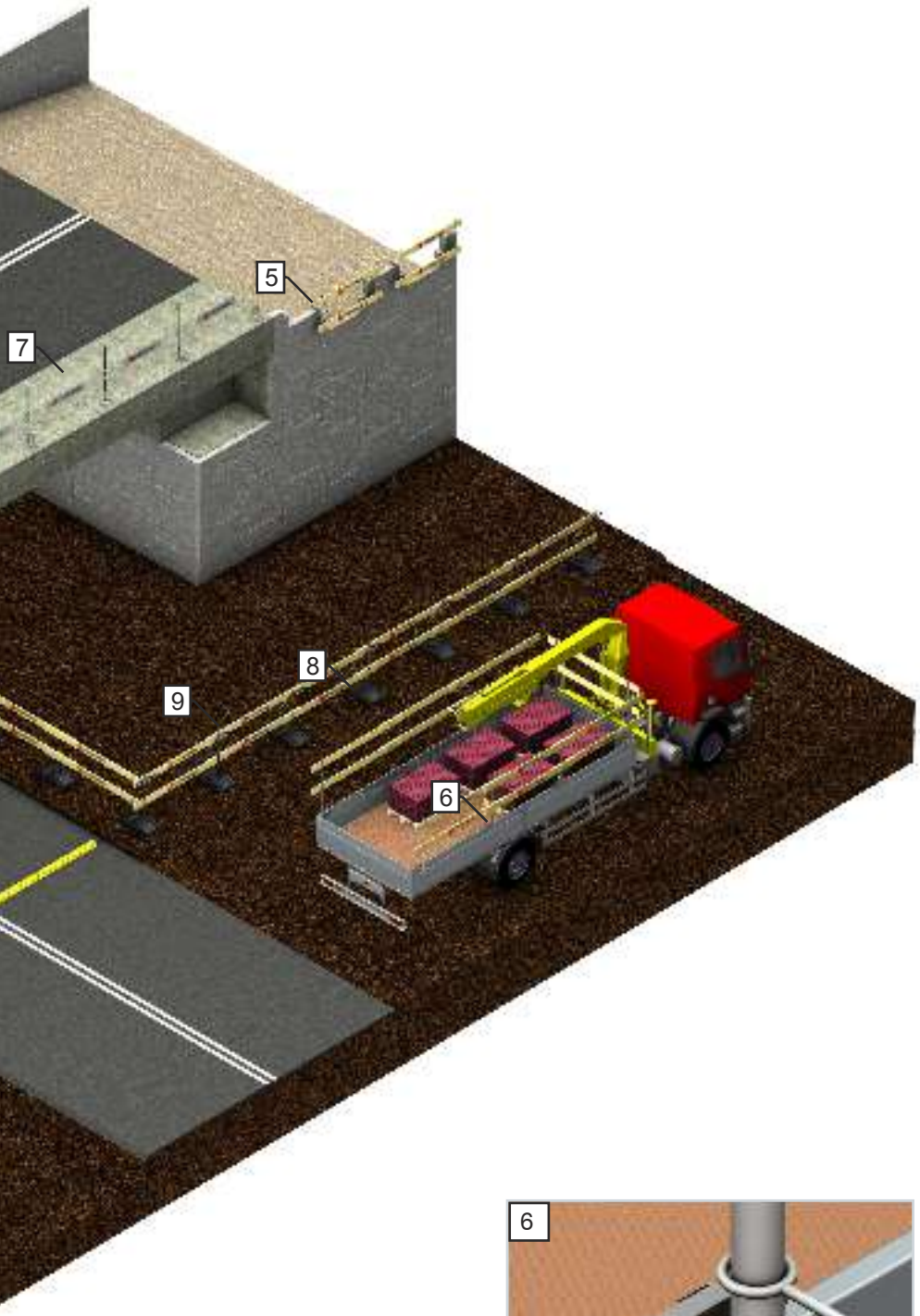
Elevator shaft grip

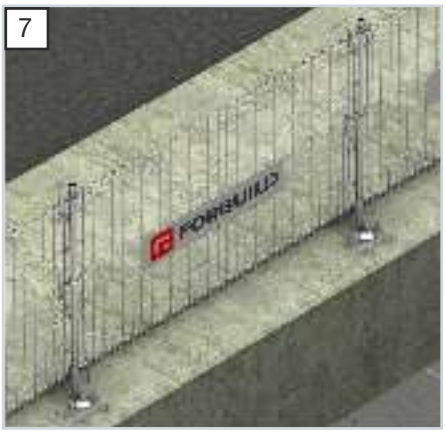


Elevator shaft grip

Protective panel grip

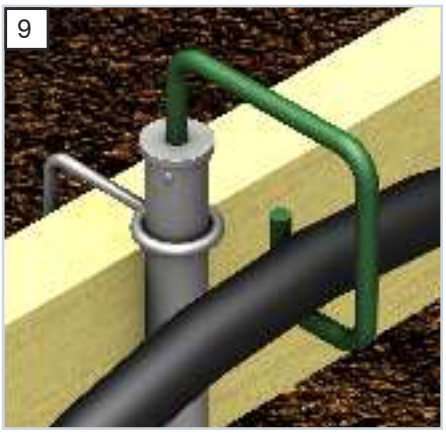
The Secumax system can also be utilised during the construction of roads and bridges.





Safety net

'Foot' grip



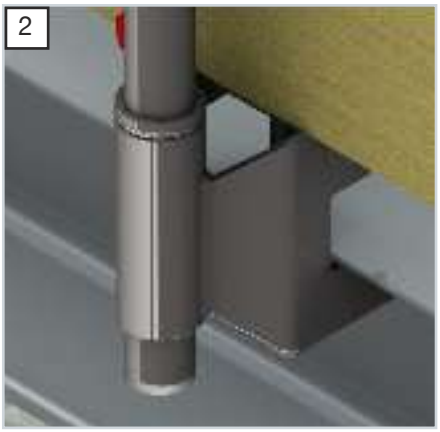
Cable grip

Vehicle board wall grip

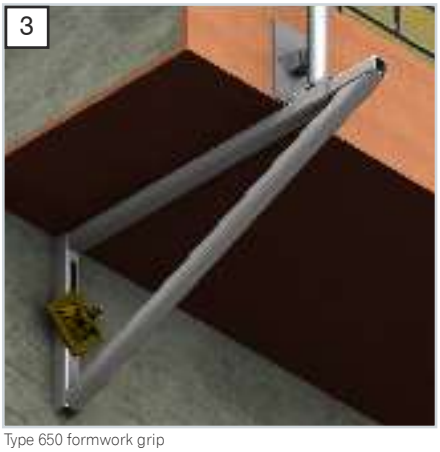
Universal safety profile

EXAMPLE USES

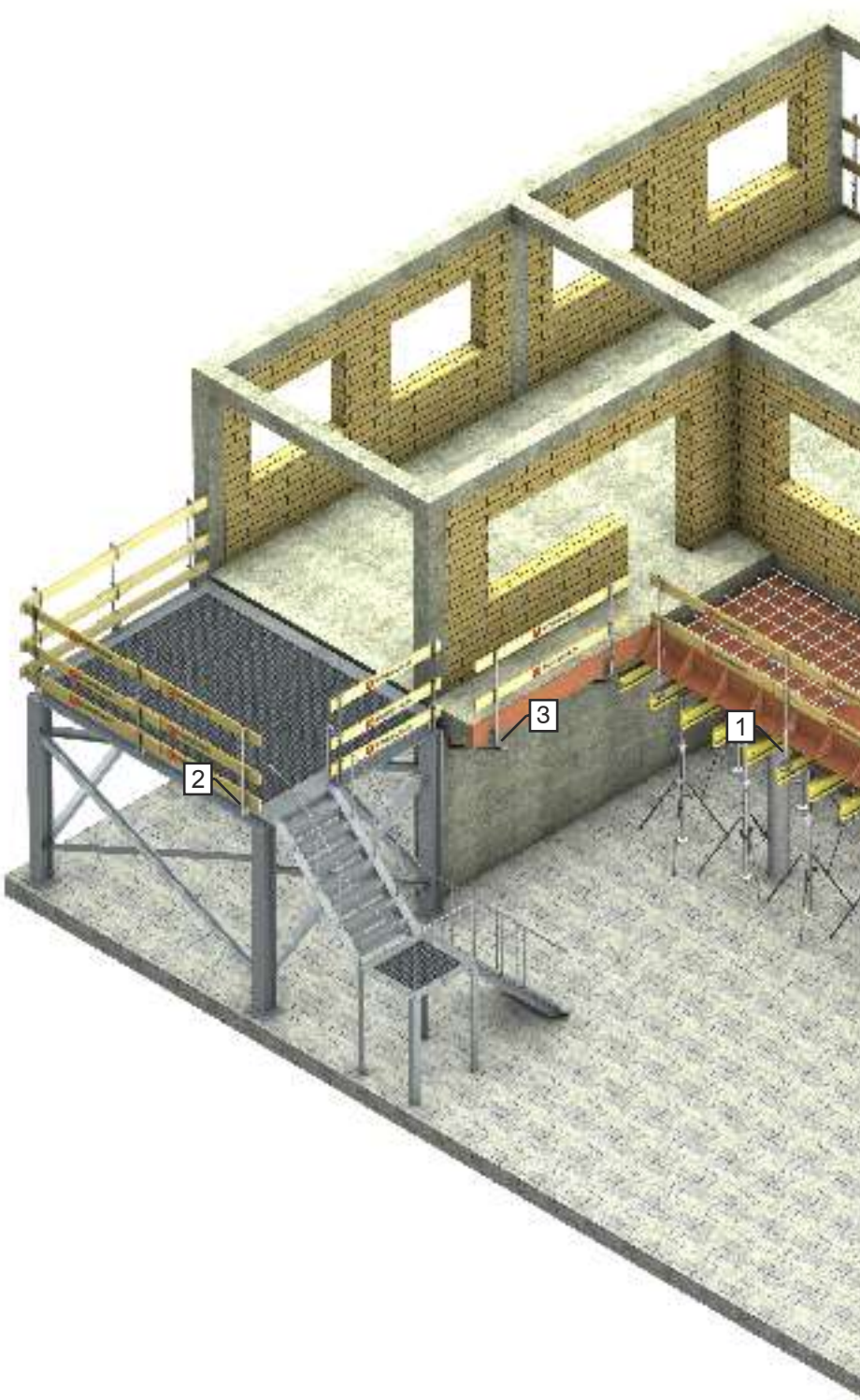
Screw-type pillar grip



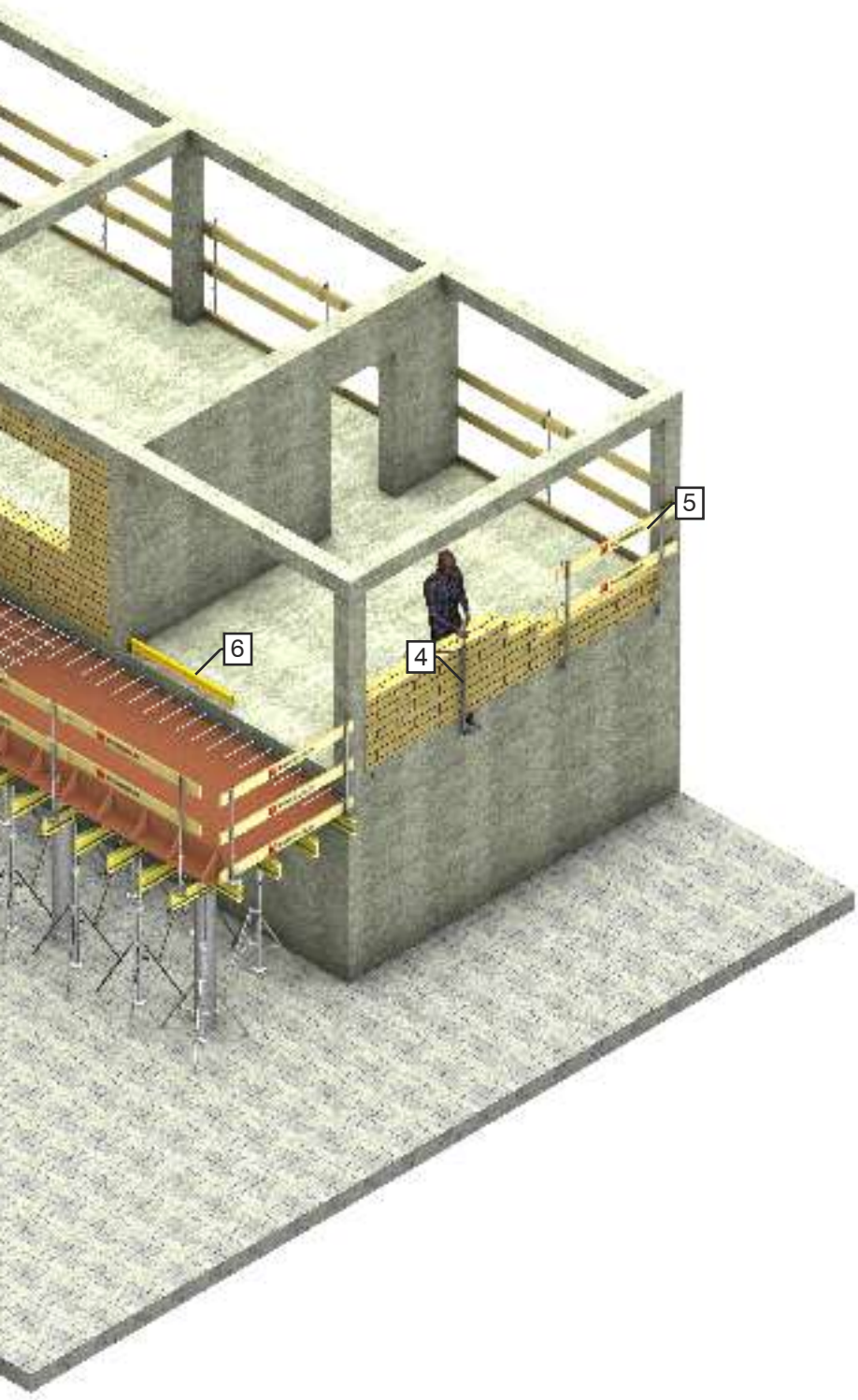
Steel structure grip



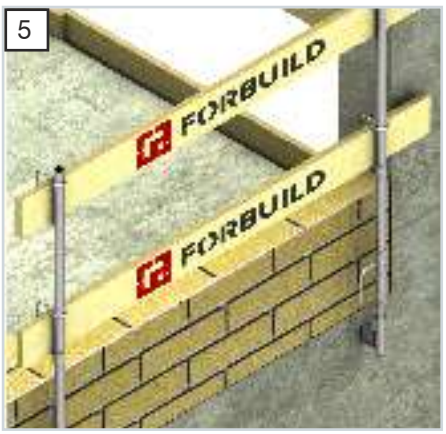
Type 650 formwork grip



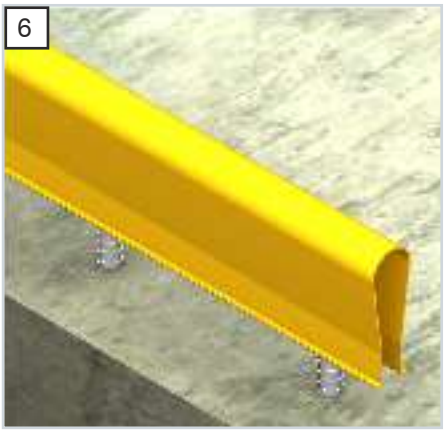
Components of the Secumax system provide many options of fast, effective and simple assembly of edge protection systems, both for concrete as well as for steel structures.



Pneumatic side grip spanner



Protective plank



PCV batten for reinforcement bars

COMPONENTS OF THE SECUMAX® SYSTEM

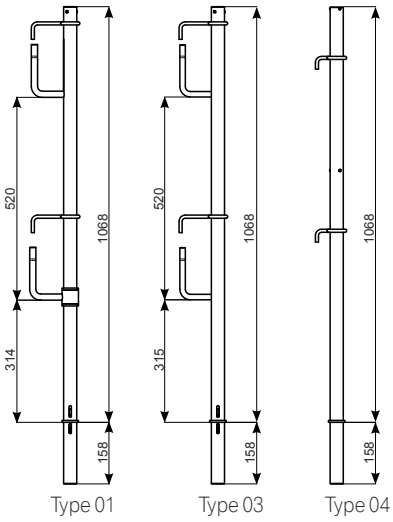
Barrier pillar

REGISTERED DESIGN

The type 01 and type 03 barrier pillars are the basic component of side protection systems. The product conforms to class A resistance requirements per standard PN-EN 13374, and thus it conforms to very strict safety requirements of protection railings.

The pillars have automatic protection components, locking them in their grips. The lock prevents accidental shifts of the pillars from their assembly grips. They are equipped with hooks for the installation of protection railings from planks with a cross-section of 32 x 150 mm, and with mobile devices protecting against the planks shifting upwards. The hook with is adapted to an overlay joint of two 32 mm-wide planks each. The type 03 pillar is equipped solely with fixed barrier hooks and mobile batten grips. The type 01 pillar has a rotating hook for mounting safety railings, greatly facilitating assembly, as well as mobile plank grips.

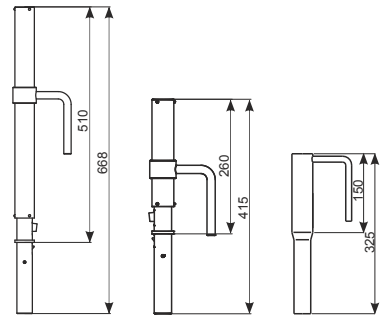
The type 04 barrier pillar is equipped solely with movable hooks for mounting safety nets type 2200 and 2500 (page 42).



Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Barrier pillar Type 01	1	3,960	BH-SX-00-1-00914
Barrier pillar Type 03	1	3,200	BH-SX-00-1-29017
Barrier pillar Type 04	1	2,610	BH-SX-00-1-29016

Pillar extension

The pillar extension is used to increase the barrier pillar height, so that the upper handrail was found (in line with relevant provisions) at a height of 1,1 metre above the working level. The use of the pillar extension may be substantiated in case of installation of the pillar in a side grip (i. e. on a flight of stairs) or in a stay-in-place grip, a formwork grip and an adjustable formwork grip.



Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Pillar extension 150	1	1,100	BH-SX-00-0-00907
Pillar extension 250	1	2,000	BH-SX-00-0-00908
Pillar extension 500	1	2,840	BH-SX-00-0-00910

Universal grip

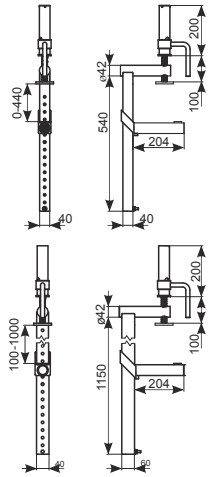
REGISTERED DESIGN

The clamp-type universal grip is foreseen for use on horizontal and slanted structural components, i. e. concrete pillars, balconies, supports as well as wooden and steel components.

Thanks to the option of adjusting the grip, it is possible to install it on components up to 440 mm thick in its basic version, and on components up to 1000 mm thick with the use of the type 1000 universal grip.

Advantages:

- simple installation without the need to use any specialised tools,
- the moving grip arm allows its installation on parts with any given thickness up to 440 mm with use of the basic type, and up to 1000 mm if using type 1000.



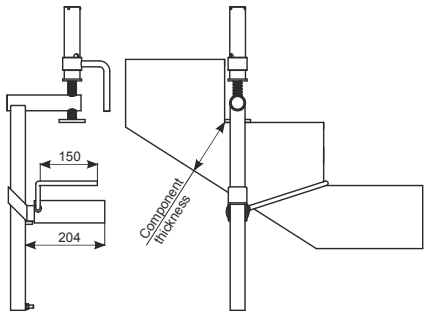
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Universal grip	1	5,340	BH-SX-00-0-00938
Universal grip 1000	1	7,950	BH-SX-00-0-00939

Stair catch for the universal grip

The stair catch with universal grip (as the name suggests) allows one to mount safety barriers on stairs, in which previously no side grip seats were embedded during concreting, and in the case of which for various reasons the installation of screw-in grips is not possible, i. e. no option of drilling holes to install anchors.

The stair catch fixes the universal grip mounted on the flight of stairs, thanks to which, despite a slanted structure of the flight of stairs, the grip constitutes a stable base for the installation of safety barriers on stairs.

The maximum thickness for a concrete component may not exceed 200 mm for the stair catch, and for the type 315 stair catch type, the thickness of the stair flight may not exceed 315 mm. Note! Other varieties of the stair catch are available upon request.

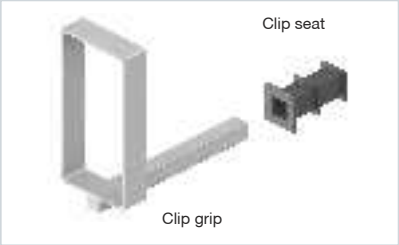


Advantages:

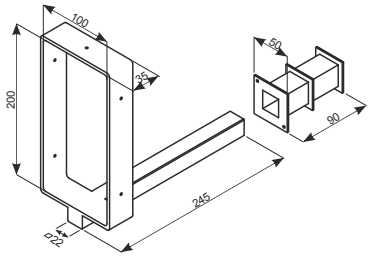
- installation of safety barriers without the need to interfere in the stair structure,
- installation at any spot along the flight of stairs,
- simple mounting without the need to use specialised tools.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Stair catch for the universal grip	1	1,400	BH-SX-00-0-00949
Stair catch 315 for the universal grip	1	1,500	BH-SX-00-0-00951

Clip grip



The Clip grip allows the construction of work platforms at locations, where the use of system work scaffolding is not possible, and work needs to be conducted at locations such as elevator shafts or in-feed ducts. The maximum cross-section dimensions of the square timbers is 100 mm x 200 mm. The length of the load bearing component (beams or battens) must be smaller by 20 mm than the width i. e. of the elevator shaft.

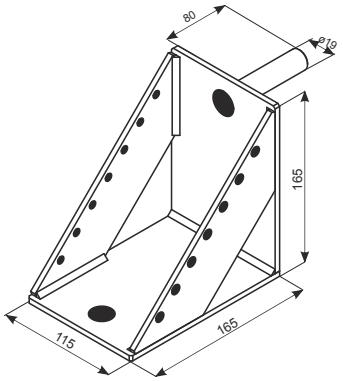


Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Clip grip	1	1,710	BH-SX-00-0-00918
Clip seat	1*	0,020	BH-SX-00-0-00895

*Package: bag 50 pcs.

Work platform grip

This grip, similarly to the Clip grip, is used to mount work platforms in areas, which are hard to reach for standard scaffolding, i. e. in elevator shafts.Other than the Clip grip, in case of this grip, there is no need to embed any mounting seats during concreting.Mounting of the grip entails drilling ø 20 openings at a distance of at least 100 mm from the wall edge, to a depth of approx. 85 mm, and embedding the grip inside them. The grip is adapted also for installation using steel thrust anchors. The maximum width of beams or square timbers to be placed in the grip is 100 mm. The length of the load bearing element must be smaller by approx. 40 mm than the width of i. e. the elevator shaft.



Advantages:

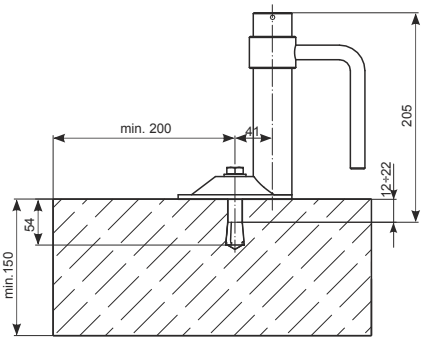
- no need to embed stay-in-place seats (mounting seats) in the wall,
- easy and simple installation at any given spot.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Work platform grip	1	2,400	BH-SX-00-0-00934

Screw-in grip

REGISTERED DESIGN

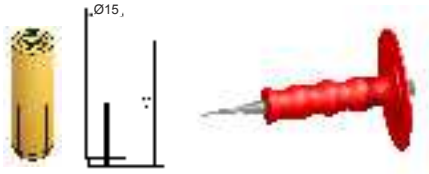
The screw-in pillar grip is foreseen for the installation of a barrier pillar on horizontal work areas, i. e. ceiling slabs.Installation takes place by screwing the grip into a steel ram-in anchor with internal thread, i. e. Fischer EA II M12 or a different anchor available on the Polish market, with equivalent strength and functional parameters, embedded earlier in the lower layer.After the grip is screwed in place, its base should adhere to the mounting surface, i. e. the ceiling surface.In case of use of a pillar along with the screw-in grip, the requirements of the anchor manufacturer must be strictly adhered to.



Advantages:
- no need to position the grip during screwing in of the grip into the anchor,
- installation at any location on the horizontal surface, if the distance of the anchor to the edge is adhered to.

In case of use of the Fischer anchor for installation of the screw-in grip, please adhere to the following manufacturer indications:

PRODUCT DESCRIPTION
- ksleeve anchor with internal thread for initial installation,
- with the help of the EAW H12 plus setting tool, ram the spike inside the sleeve causing it to deform and exert pressure on the internal hole walls.



Advantages:
- use in uncracked concrete from classes B25 (C20/25) to B55 (C50/60) or in natural stone,
- low anchor depth reduces drilling cost and time,
- existing seat in the lower surface allows multiple instances of component installation and removal.

Technical details:
- ram-in anchor type EA II M12: drill bit - ø 15 mm, min. opening depth - 54 mm, effective anchor depth - 50 mm, anchor length - 50 mm, thread - M12, min. thread screw-in depth - 12 mm, max. thread screw-in depth - 22 mm, min. axial anchor spacing - 145 mm, min. distance of anchor to edge - 200 mm, min. surface layer thickness - 120 mm, min. torque - 35 Nm,
- for the installation of the EA II M12 anchor use the EAW H12 plus nail gun from Fischer,
- flush anchor sleeve type HKD-S M12x50 from Hilti may also be used for the mounting process.

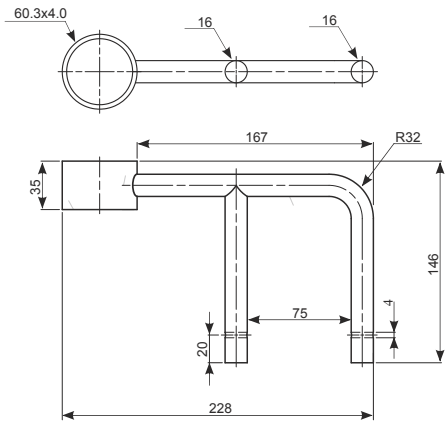
Note: Anchors must be mounted according to manufacturer indications.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Screw-in grip	1	1,740	BH-SX-00-0-00943
Sleeve anchor EA II M12	1	-	MO-MM-00-0-04405
EAW H12 plus setting tool	1	-	NA-NA-00-0-04798
SDS Plus 15/160 drill bit	1	-	NA-NA-00-0-04864

Kerb plank grip

PATENT SUBMITTED

In case side grips are used, there may exist the need to mount toeboards so that they rest close to the edge on the lower surface of ceiling slabs, panels, etc. This safety measure is created so as to prevent items such as tools, devices and components of an employee's equipment from falling from a height. For this purpose, the kerb plank grip, mounted on a type 250 extension installed earlier in a side grip, is used.



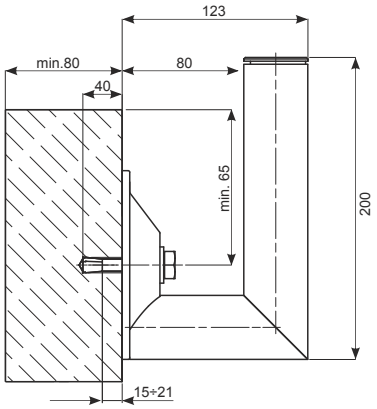
Advantages:
- full protection of lead bearing structural edges against items rolling off or slipping from the ceiling slab level and from falling onto persons located below,
- simple installation, not necessitating the use of tools,
- full compliance with other components of the Secumax system.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Kerb plank grip	1	0,800	BH-SX-00-0-00919

Screw-in side grip

REGISTERED DESIGN

The screw-in side grip is foreseen for the installation of a barrier pillar on vertical surfaces of working parts, i. e. flights of stairs, ceiling slabs, etc. The grip is screwed into the previously embedded anchor, i. e. the Fischer Zykon FZEA II 14 x 40 M12 or a different available anchor with comparable strength parameters. The arrangement of the vertical mounting sleeve position takes place through the embedding of a further dowel in the grip foot. The grips are spaced apart at most 2000 mm from each other, tightening them with a s = 19 mm spanner with a torque of approx. 20 Nm.



Advantages:
- installation at any spot on the vertical surface, with adherence to the distance of the anchor from the edge,
- allows the execution of masonry and finishing work on horizontal working surfaces with side grips already mounted.

In case of use of the Fischer anchor for installation of the screw-in grip, please adhere to the following manufacturer indications:

PRODUCT DESCRIPTION
- sleeve anchor with internal thread for initial attachment,
- using the FZED 14 plus setting tool, the bolt is driven inside the sleeve, causing it to deform and to exert pressure on the opening internal walls.

Advantages:
- use in uncracked concrete from classes B25 (C20/25) to B55 (C50/60) or in natural stone,
- low anchor depth reduces drilling cost and time,
- existing seat in the lower surface allows multiple instances of component installation and removal.

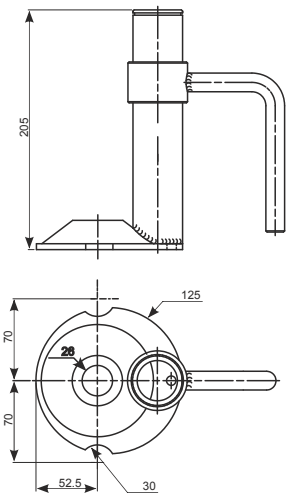
Technical details:
- ram-in anchor type FZEA II 14x40 M12: drill bit - FZUB 14x40, effective anchor depth - 40 mm, thread - M12, min. thread screw-in depth - 15 mm, max. thread screw-in depth - 21 mm, min. axial anchor spacing - 50 mm, min. distance of anchor to edge - 50 mm, min. surface layer thickness - 80 mm, min. torque - 20 Nm,
- for the installation of the FZEA II 14x40 M12 anchor use the FZED 14 plus nail gun from Fischer,
- the type HSC-I M12x60 anchor from Hilti may also be used for the mounting process.

Note: Anchors must be mounted according to manufacturer indications.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Screw-in side grip	1	1,760	BH-SX-00-0-00944
Anchor ZYKON FZEA II 14x40 M12	1	-	MO-MM-00-0-04409
FZED 14 plus setting tool	1	-	NA-NA-00-0-04800
FZUB 14x40 drill bit	1	-	NA-NA-00-0-04860

Screw-in bridge grip

The screw-in bridge grip is used for protecting engineering structure edges, where traffic barriers, barrier-handrails or barriers with rungs, mounted using anchored screw spaced every 70 mm, were foreseen. The use of safety barriers for protection of edges of bridges, viaducts or high embankments allows safe execution of all kinds of works up until the time of installation of permanent barriers. The grip is screwed in using a nut with a spacer, using a tightening torque of approx. 20 Nm.



Advantages:
- assembly with standard anchored bolts of traffic barriers, barrier-handrails or runged barriers,
- use of standard Secumax system components for the creation of the safety barrier, such as: barrier pillar, pillar extension, kerb plank and railing plank.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Screw-in bridge grip	1	1,700	BH-SX-00-0-00946

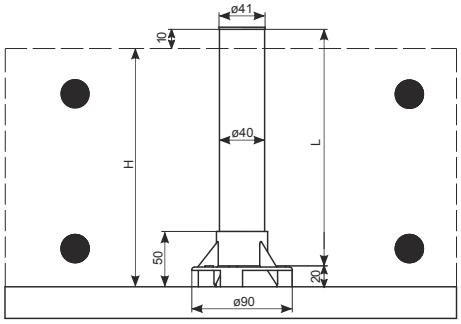
Stay-in-place grip

The stay-in-place grip is mounted on the internal horizontal surface of formwork or a different structural component being formwork, i. e. a wall.

Before installation, calculate the length of the K 34/40 pipe, in which, later, the barrier pillar shall be placed.

For trimming the pipe to the right size, use the following simple formula:

$$L = H-10 \text{ mm}$$



where: L - required pipe length, H - ceiling slab thickness (or thickness of other relevant component).

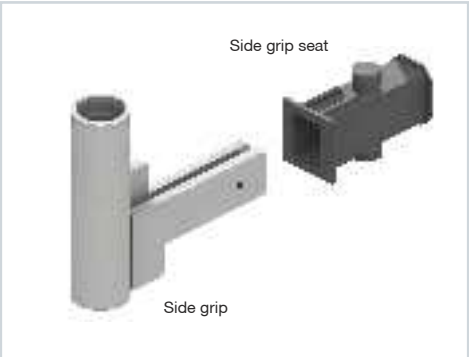
For the purpose of protection of the pipe against intrusion of the concrete mix into it, use the K34 cap. The mounting seat and the pipe are stay-in-place components, with the cap being usable multiple times. There exists the possibility of preparation of ready stay-in-place grips of an appropriate height. A stay-in-place grip must be installed between reinforcement bars. The mounting seat is nailed to the formwork i. e. with nails, and must be installed between reinforcement bars.

Symbol	Unit [pcs.,lm]	Weight [kg/pcs.]	Art. no.
Mounting seat	1	0,030/pcs.	BH-SX-00-0-00896
Plastic pipe K 34/40	1* (2 lm)	0,350/lm	AS-DK-ST-0-00774
Cap K 34	1**	0,012/pcs.	AS-DK-SC-0-00696

*Packaging: bunch 25 pcs. (50 lm)
**Packaging: bag 500 pcs.

Side grip

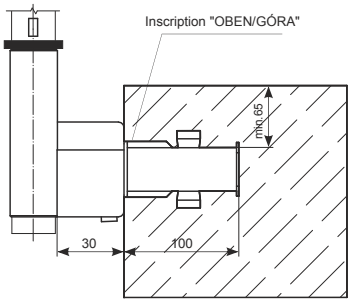
REGISTERED DESIGN



Thanks to side mounting of the barrier pillar, the side safety devices do not hinder works on stairs or other work surfaces.

The installation surfaces may be protected with a safety barrier until the works are completed, the grip is affixed to the side surface, i. e. of stair flights. Maximum spacing: 2000 mm.

Note: The grip seat must be mounted on the formwork in such a way so that the side with the inscription 'Oben/Góra' points upwards.

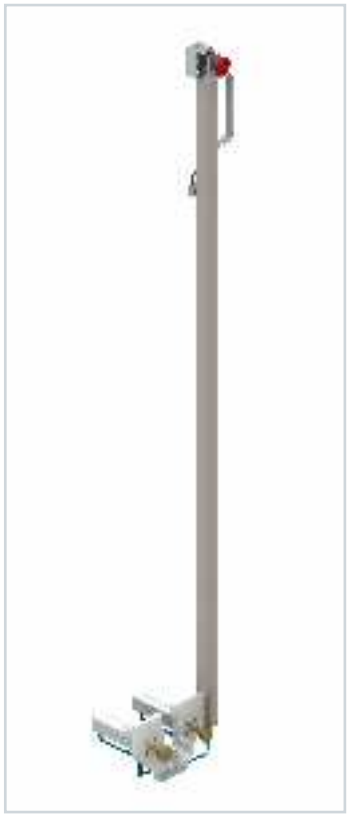


Advantages:
- easy seat installation on formwork internal surface,
- installation of pillar grip at any time (during removal of formwork or during installation of safety barriers),
- thanks to side mounting of the barrier pillars, the safety devices do not hinder works carried out in the horizontal area of the room or the flight of stairs, and allow safe execution of works up until the moment if installation of target barriers.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Side grip	1	1,120	BH-SX-00-0-00916
Side grip seat	1*	0,040	BH-SX-00-0-00897

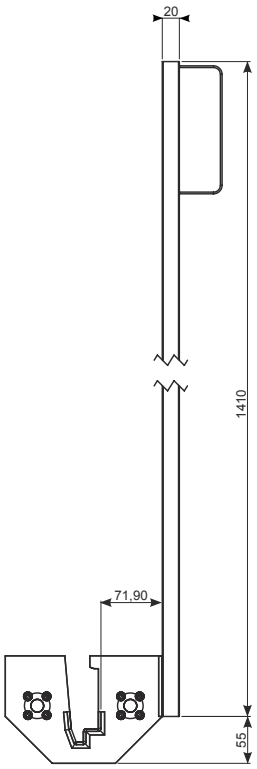
*Packaging: bag 50 pcs.

Pneumatic side grip spanner



The pneumatic spanner is used to facilitate removal of the side grip. The side key requires the use of a compressed air source, to which it is hooked up.

Product available exclusively upon request.



Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Pneumatic spanner	1	-	BH-SX-00-0-05805

Support pillar grip

REGISTERED DESIGN

The support pillar grip is foreseen for mounting of side safety barriers on system formwork support pillars with a mounting height between 16 cm and 24 cm.

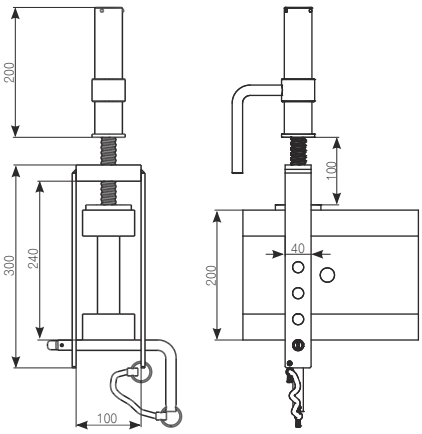
In case of use of support pillars with other heights, there exists the possibility of execution of a special grip foreseen for this type of component.

The pillar grip may also be installed on steel profiles and square timbers with a width b of up to 10 cm and a maximum height h of up to 24 cm.

Maximum spacing: 2000 mm.

Advantages:

- allows placement of side safety components on support pillars already in the phase of execution of i. e. ceiling slab formwork,
- simple installation without the need to use specialised tools,
- movable cross bar ensures stepped height adjustment,
- rotating support pillar grip.



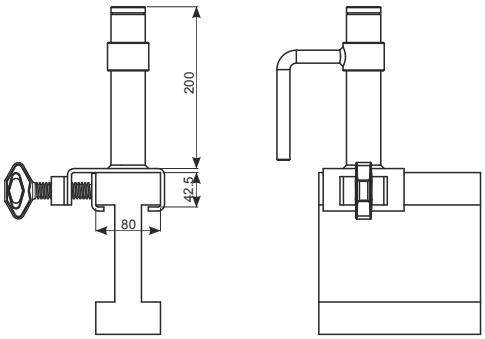
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Support pillar grip	1	3,980	BH-SX-00-0-00930

Screw-type pillar grip

The screw-type pillar grip allows the installation of a system pillar on wooden support pillars with heights of 160 mm, 200 mm and 240 mm. The grip is mounted on the top support pillar shelf, height 40 mm, width 60 mm.

Advantages:

- allows placement of side safety components on support pillars already in the phase of execution of i. e. ceiling slab formwork,
- simple installation without the need to use specialised tools,
- attached exclusively to the support pillar upper shelf.



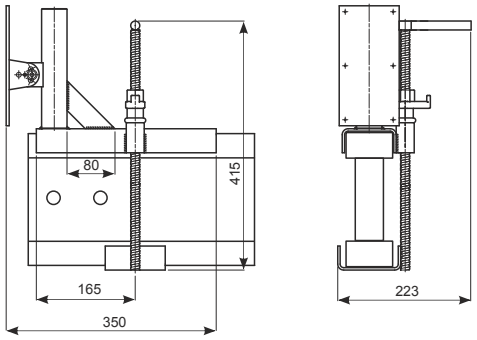
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Screw-type pillar grip	1	2,800	BH-SX-00-0-00929

Formwork support pillar grip

The formwork support pillar grip is used for mounting of the Secumax system pillar on wooden support pillars with heights of 160 mm, 200 mm and 240 mm, the upper and lower shelves of which have a width of 80 mm and a height of 40 mm or 60 mm. This component allows one to create side formwork of the ceiling slab at the same time. In case of using a support pillar grip for the execution of formwork, exclusively to install barrier support pillars, their spacing should be 2000 mm at most. If the component will also be used as a part of formwork, then the spacing is indicated in the functional documentation.

Advantages:

- simple installation with the use of standard tools,
- option of using the formwork grip,
- full compliance with other Secumax system components



Recommended grip spacing			
Ceiling slab thickness [mm]	150	200	300
Grip spacing [m]	1	0,75	0,5

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Formwork support pillar grip	1	5,500	BH-SX-00-0-00931

Pipe wrench

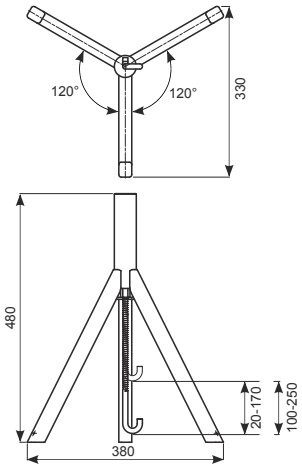
The s-17 mm pipe wrench is used for the adjustment of mobile parts in the SECUMAX system grips – the 650 formwork grip, the precast component grip, and in the SECUMAX RAIL system – the rail grip.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Pipe wrench	1	0,450	NA-NA-PR-0-04723

Precast component grip

REGISTERED DESIGN

The precast component grip is foreseen for use on pre-cast slab components of composite ceilings. The use of this grip allows the installation of safety barriers already at lay-out of the first ceiling slab, and keeping them in place until concreting of the ceiling. The grip is equipped with a replaceable threaded hook, the length of which may be selected depending on the height of reinforcement bars. According to indications of the standard, the grips, together with the pillars, should be arranged at maximum spacings of 2000 mm. The grip is tightened using the special s = 17 mm pipe wrench.



Advantages:
- simple installation on existing grids of reinforcement bars, i. e. in filigran ceiling slabs
- option of adjustment of the grip hook to the height of reinforcement in the slab

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Precast component grip	1	2,540	BH-SX-00-0-00924
Pipe wrench	1	0,450	NA-NA-PR-0-04723
Hook for pre-cast component grip, 20-170 mm	1	-	BH-SX-00-0-01744

Formwork grip

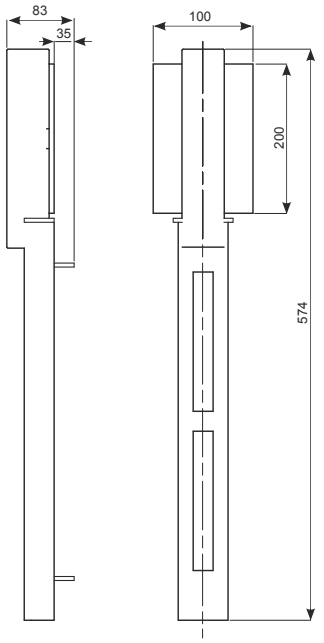
REGISTERED DESIGN

The formwork grip is used to install barrier pillars, with the simultaneous option of executing of the ceiling slab side formwork.

The barrier pillars installed using this grip do not prevent in any way any works during concreting the mounting of reinforcement bars and during concreting of the ceiling, because the barrier pillar is installed outside of the ceiling side formwork in adherence of all provisions of occupational health and safety.

The grip is mounted to vertical wall surfaces using a threaded tie, i. e. type B 15, or a different tie of equivalent strength parameters, placed in in the openings in walls left over from formwork ties. The grip should be affixed using the Kipp nut from Forbuild.

In case of using this grip as a component of side formwork of the ceiling slab, adhere to the component spacing indicated below, which depends on the thickness of the slab. Grips utilised only for the installation of safety barrier pillars, should be installed at a distance of up to 2000 mm from each other.



Recommended grip spacing			
Ceiling slab thickness [mm]	150	200	300
Grip spacing [m]	1	0,75	0,5

Advantages:
- installation of barrier pillars outside of the ceiling working area,
- option of using the grip as ceiling slab side formwork,
- easy installation thanks to the option of using the existing openings in the walls left over by the ties.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Formwork grip	1	2,940	BH-SX-00-0-00926

Adjustable formwork grip

REGISTERED DESIGN

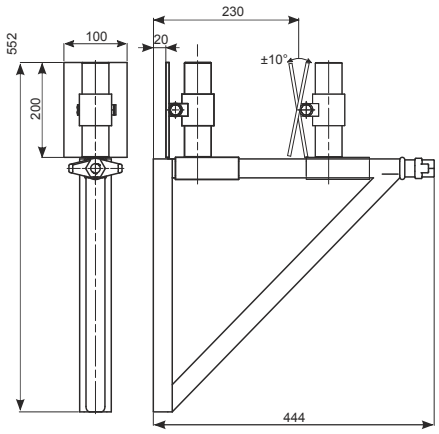
The adjustable formwork grip is used to install the barrier pillar, with simultaneous option of execution of the side formwork of the ceiling slab, or the formwork for a building structure component protruding outside of the wall outline. The barrier pillars installed in this grip hinder in no way the works during reinforcement bar layout and concreting, because the barrier pillar is installed outside of the ceiling slab side formwork, with adherence to all requirements of occupational health and safety.

The grip is attached to vertical wall surfaces with the use of a threaded tie, i. e. type B15 or a different with not lesser strength characteristics, placed in openings left over in the walls after the removal of the formwork ties. For the purpose of affixing the grips, the KP nut from Forbuild should be used.

A second important advantage of this grip is the option of using it in conjunction with the ceiling slab side surface formwork, and even for the formwork of ceiling slab components protruding outside of the wall outline, i. e. cornices. The maximum extent of the building structural component outside of the wall outline, which can be obtained using this grip, is 230 mm, with simultaneous option of obtaining a side surface inclination against vertical by ±10°.

In case of use of this grip as a ceiling slab side formwork component, one needs to abide by the spacing of these components given below, dependent on the thickness of the executed part, i. e. the ceiling. Grips used only for installation of safety barrier pillars should be mounted using spacing values of up to 2000 mm.

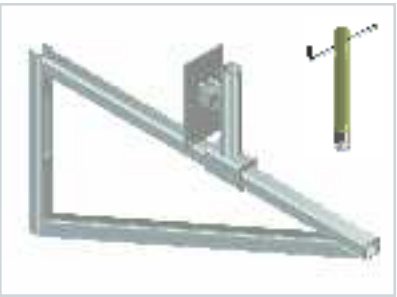
Recommended grip spacing			
Ceiling slab thickness [mm]	150	200	300
Grip spacing [m]	1	0,75	0,5



Advantages:
- adjustable grip arm,
- installation of barrier pillars outside of the working area i. e. of the ceiling,
- option of using the grip as the ceiling side surface formwork,
- easy mounting thanks to the use of existing openings in walls left over after ties.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Adjustable formwork grip	1	7,300	BH-SX-00-0-00922

Type 650 formwork grip

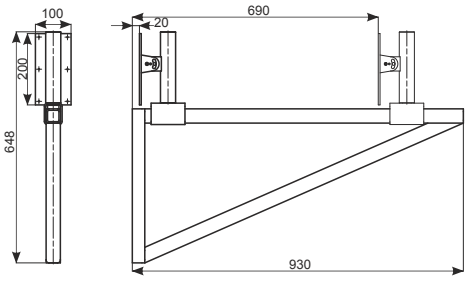


The type 650 formwork grip is used for mounting barrier pillars, with simultaneous option of execution of the ceiling slab side surface formwork protruding outside of the wall outline. The safety barrier pillars mounted in this grip do not hinder in any way works during reinforcement layout and ceiling concreting, because the safety barrier pillar is installed outside of the ceiling side formwork, with adherence to all requirements of occupational health and safety.

The grip is attached to vertical wall surfaces with the use of a threaded tie, i. e. type B15 or a different with not lesser strength characteristics, placed in openings left over in the walls after the removal of the formwork ties. For the purpose of affixing the grips, the KP nut from Forbuild should be used.

Thus, this grip has similar qualities to the adjustable formwork grip, with the maximum distance between the installation area of the grip and the edge of the projected ceiling may be 650 mm. Apart from that, the mode of adjustment was altered here. Shifting the mounting sleeve requires the use of a pipe wrench.

In case of use of this grip as a ceiling slab side formwork component, one needs to abide by the spacing of these components given below, dependent on the thickness of the executed part, i. e. the ceiling. Grips used only for installation of safety barrier pillars should be mounted using spacing values of up to 2000 mm.



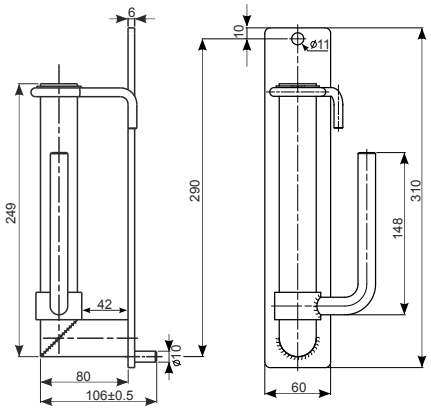
Advantages:
- adjustable grip arm,
- installation of barrier pillars outside of the working area i. e. of the ceiling,
- option of using the grip as the ceiling side surface formwork,
- easy mounting thanks to the use of existing openings in walls left over after ties.

Recommended grip spacing			
Ceiling slab thickness [mm]	150	200	300
Grip spacing [m]	1	0,75	0,5

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Type 650 formwork grip	1	12,500	BH-SX-00-0-00923
Pipe wrench	1	0,450	NA-NA-PR-0-04723

Elevator shaft grip

This grip allows securing elevator shafts, transport ducts (media) and all other wall openings. The elevator shaft grip is mounted to the type EA II M8 anchor by Fischer, which needs to be mounted prior to the grip, or any other anchor with not worse strength characteristics, utilising the M8x20 screw (with spacer), with mechanical property class not worse than 5.6.The use of an anchor with an external M8 thread is also possible, provided it has strength characteristics not worse than the Fischer EA II M8 anchor, with the M8 nut (with spacer). The grip's structure allows its installation on surfaces parallel or perpendicular to the opening's axis.



Advantages:
- mounting using standard M8 anchors,
- use of standard Secumax system plank,
- mounting on surface parallel or perpendicular to the opening's axis.

In case of use of the Fischer anchor for installation of the screw-in grip, please adhere to the following manufacturer indications:

PRODUCT DESCRIPTION
- sleeve anchor with outside thread for preliminary installation,
- using the setting tool EAW H8x30 plus, the bolt is driven inside the sleeve, causing it to deform and to exert pressure on the opening internal walls.

Advantages:
- use in uncracked concrete from classes B25 (C20/25) to B55 (C50/60) or in natural stone,
- low anchor depth reduces drilling cost and time,
- existing seat in the lower surface allows multiple instances of component installation and removal.

Technical details:
- ram-in anchor type EA II M8: drill bit - ø 10 mm, min. opening depth - 33 mm, effective anchor depth - 30 mm, anchor length - 30 mm, thread - M8, min. thread screw-in depth - 8 mm, max. thread screw-in depth - 13 mm, min. axial anchor spacing - 90 mm, min. distance of anchor to edge - 140 mm, min. surface layer thickness - 100 mm, min. torque - 8 Nm,
- for the installation of the EA II M8 anchor use the EAW H8x30 plus nail gun from Fischer,
- flush anchor sleeve type HKD-SM 8x30 from Hilti may also be used for the mounting process.

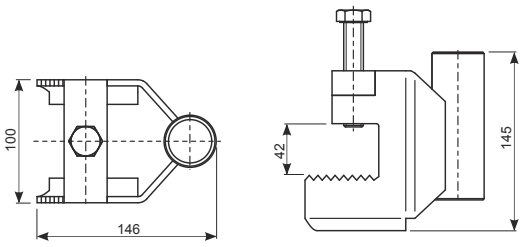
Note: Anchors must be mounted according to manufacturer indications.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Elevator shaft grip	1	2,500	BH-SX-00-0-00927
Sleeve anchor EA II M8	1	-	MO-MM-00-0-04406
Setting tool EAW H8x30 plus	1	-	NA-NA-00-0-04799
SDS-Plus 10/160 drill bit	1	-	NA-NA-00-0-04873

Steel structure grip

The steel structure grip is used for mounting on steel profiles with a shelf thickness of up to 40 mm. Mounting is executed by overlay of the grip onto the profile shelf, and the entire arrangement is secured by tightening the grip screw.

Advantages:
- quick and simple installation on steel profiles,
- full compatibility with other system components,
- compact, efficient design.



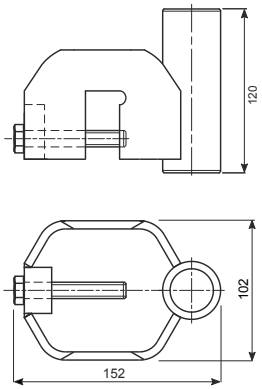
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Steel structure grip	1	2,100	BH-SX-00-0-00921

Sheet pile grip

REGISTERED DESIGN

The sheet pile grip is foreseen for mounting on edges of sheet piles, protecting the edges of deep pits. The grip is adapted for sheet piles with wall thickness values from 5 mm to 16 mm. The structure of the mounting steel sheet parts of the grip allows mounting it on slightly deformed edges. The grip spacing should not exceed 2000 mm.The grip is affixed through tightening its screw with a torque of 40 Nm. Tightening is done using a s=19 mm wrench.

Advantages:
- intuitive, easy installation on top sheet pile edges,
- compact, efficient design.



Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Sheet pile grip	1	1,420	BH-SX-00-0-00920

Ram-in grip

REGISTERED DESIGN

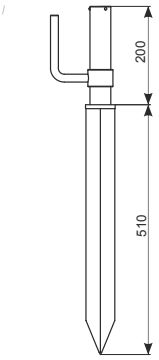
The ram-in grip simplifies and greatly facilitates edge protection installation for earthworks (excavations).

The grip should be rammed into the ground to a depth of approx. 500 mm, with a barrier pillar with its protective planks placed in it afterwards.

Before installation of the pillars, first the embedding and fixing condition of the grip in the soil needs to be checked.

In order for the ram-in grip to be used correctly during installation, the special mallet from the Secumax system range should be used.

Maximum spacing: 2000 mm.

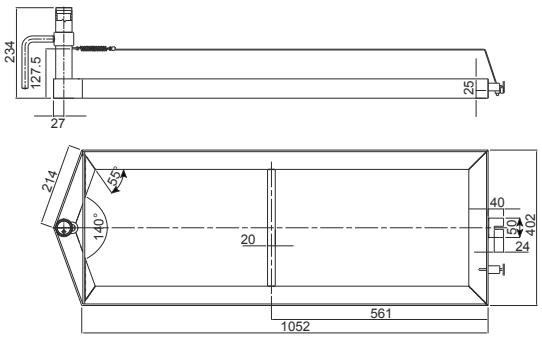


Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Ram-in grip	1	3,720	BH-SX-00-0-00941
Ram-in grip mallet	1	2,750	BH-SX-00-0-00905

Counterweight grip

The structure of the counterweight grip allows its use practically at any spot of the load bearing structural components of buildings or other constructions. In order to stabilise the counterweight grip, one uses four concrete blocks with the following dimensions: 380 x 230 x 120 mm, 380 x 240 x 120 mm, 380 x 250 x 120 mm per standard PN-EN 771-3 and with own mass of 23 kg. The grip conforms to requirements of standard PN-EN 13374 for class A.

Advantages:
- simple mounting without anchor components,
- use of standard concrete blocks,
- use of standard Secumax system components.

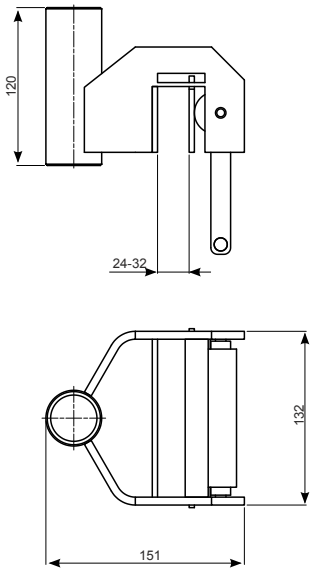


Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Counterweight grip	1	11,00	BH-SX-00-0-00936

Vehicle board wall grip

The grip is foreseen for installation on vehicle side boards having a thickness of up to 25 mm. The installation is carried out through attachment of the grip on to the side board, secured through an excentric clamp. The grip is manufactured of certified structural steel, protected against corrosion through galvanic coating, ensuring long life under natural conditions.The grip is mounted on a correctly placed side board through attachment to its vertical surface using the excentric clamp. The side board edges should not be damaged, and the surfaces coming into contact with the grip should be free from foreign bodies and contaminations. The grip should rest on the vehicle side board in such a way, so that the two horizontal edges of the installation channel of the grip would rest on the edge of the mentioned side board. After conclusion of installation, the barrier pillar is inserted into the grip mounting sleeve, with the battens installed afterwards.

Advantages:
- quick and easy installation on steel structures
- full compliance with other system components
- solid and compact design



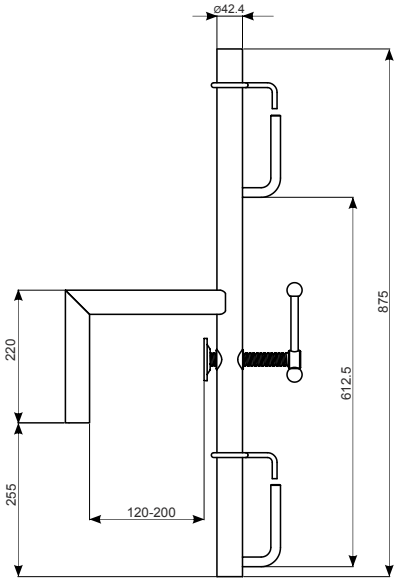
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
SECUMAX Vehicle board wall grip	1	2,70	BH-SX-00-0-23959

Protective panel grip

PATENT SUBMITTED

The protective panel grip is a grip from the Secumax system range. In conjunction with system protective planks, creates a full protective barrier system is created, to provide side protection during the erection of reinforced retaining structures. The grip is installed on a selected component through the tightening of the grip screw. The grip has two hooks for the installation of protective planks, as well as movable hooks securing against accidental removal of the planks to the top. The protective panel grip is foreseen for use on reinforced concrete or concrete protective panels when erecting retaining walls. It is also possible to use the grip on other concrete, reinforced concrete, steel or wooden components. The protective panel grip is placed on a previously installed panel. The grip is mounted through tightening of the grip screw to the panel vertical surface. After the installation of further grips and protective planks, the work may be continued safely.

Advantages:
- simple and quick installation,
- low weight,
- usable on components with thicknesses of 120-200 mm,
- protected by a durable anti-corrosive coat.



Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
SECUMAX Protective panel grip	1	5,20	BH-SX-00-0-19665

FORBUILD protective plank

Forbuild protective planks, used for safety handrails and kerb planks, are made of at least C-18 class wood, and have minimum dimensions of 32 x 150 x 2500 mm and 32 x 150 x 1500 mm.

Upon request, the safety planks may have the company name placed on them.

In order to estimate the number of planks for a required structure, the following formulae may be used:

A=(L/2)+1, where A - number of barrier pillars, L-length of required structure in metres;

Should one want to use three planks for the structure, then one should use the following formula:

X=(A-M)*3, where X - plank count, M - barrier count.

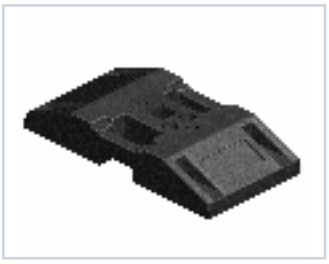
Should one want to use two planks for a structure (i. e. flights of stairs), then one should use the following formula:

X=(A-M)*2, where X - plank count, M - barrier count.

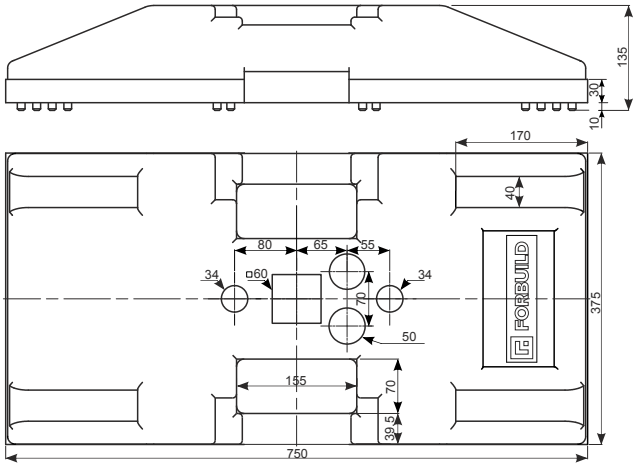
A barrier is a single structure of an edge protection system.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
FORBUILD protective plank	1	5,5÷6,5	BH-SX-00-0-00894
Protective plank with company logo	1	5,5÷6,5	-

'Foot' grip



This grip allows securing of corridors at the construction site. The material this grip is made of is PVC, thanks to which its use is possible on any construction surface of the building during any kinds of works, as well as after their conclusion. The grip does not conform to requirements of standard PN-EN 13374 for class A.



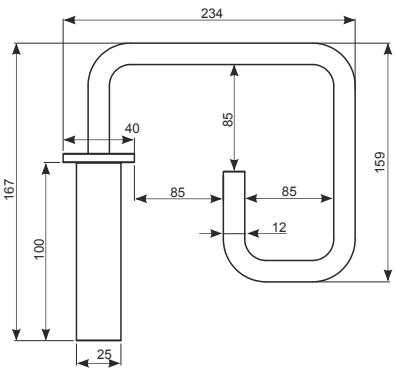
Advantages:

- simple mounting without anchor components,
- any chosen mounting surface - also any finished surface - ready for acceptance,
- use of standard Secumax system components.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
'Foot' grip	1	28	BH-SX-00-0-00937

Cable grip

The grip is made of galvanised steel, and the part holding the cables is further protected by an additional coat providing impulse resistance of at least 1 kV. The structure allows suspension of electric, hydraulic, pneumatic and other types of cables, protecting them from accidental damage or destruction. Using these grips, one can quickly and simply lay out diverse cables connecting numerous devices used at various stages of execution of the relevant building or structure.



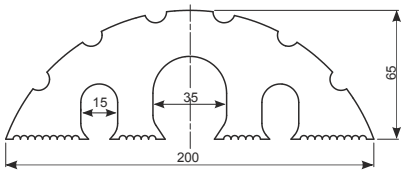
Zalety:

- component compatible with Secumax system pillars and grips,
- option of hanging multiple cables,
- guaranteed impulse resistance of 1 kV.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Cable grip	1	0,600	BH-SX-00-0-00925

Universal safety profile

The universal protective profile is used for securing electrical cables and installation piping with a maximum diameter of 30 mm. The standard issue profile has a length of 1500 mm. The universal protective profile is able to sustain vehicle traffic of the construction site.



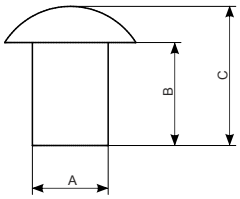
Advantages:

- protection of electrical cabling and installation piping,
- characteristic contrasting colour permanently marks the point of layout of electrical cables or installation piping.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Universal safety profile L=1500mm	1	16,5	BH-SX-00-0-00948

PVC cover for reinforcement bars

These covers are foreseen for protecting protruding reinforcement bars at the construction sites. They protect from injuries, which are threatened by sharp bar ends.
PVC cover for 8-16 bars: A = 25 mm, B = 48 mm, C = 71 mm
PVC cover for 16-32 bars: A = 39 mm, B = 55 mm, C = 76 mm

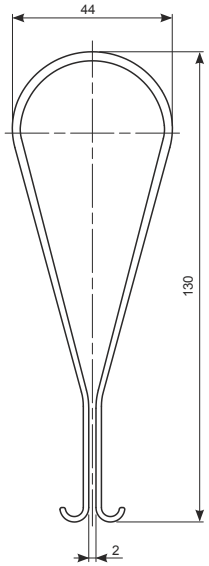


Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
PVC cover for reinforcement bars D8/16mm	1*	0,010	BH-SX-00-0-00904
PVC cover for reinforcement bars D16/32mm	1**	0,020	BH-SX-00-0-00903

*Packaging: bag 250 pcs.
**Packaging: bag 125 pcs.

PVC batten for reinforcement bars

The batten is manufactured of synthetic material that is resistant to the influence of weather conditions, a large number of chemical substances used during construction work, as well as adverse physical conditions. The battens are used for protecting protruding reinforcement bars at the construction site. They protect against injuries that may be caused by sharp bar ends. The battens are placed onto bar ends by hand, until resistance is felt. When doing that, the operator needs to fold away the lower, closable side of the batten. The relevant is protected through a brief, light impact (using a gloved hand) on its top part. The batten needs to be placed onto bar ends in an even manner.



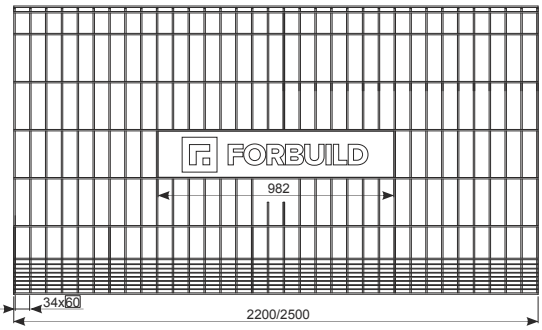
Advantages:

- multi-use,
- ensure safety and reliability,
- very visible colour,
- easy and quick to install,
- resistant to atmospheric conditions,
- reliable and stable on protruding reinforcement bars of all diameters,
- can be installed both vertically as well as horizontally.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
PVC batten for reinforcement bars	1	1,00	BH-SX-00-0-06750
Steel-core PVC batten for reinforcement bars	1	1,35	BH-SX-00-0-06751

Safety net

The safety net is used to provide safety from falling from a height for persons and tools. The use of the protective net allows one to secure the entire space described by the barrier of the Secumax system along its length and height, constituting a barrier for employees and items exceeding 50 mm in size. In the bottom area, up to a height of 150 mm, a thicker weave was used, to ensure compliance with requirements of standard PN-EN 13374. The entire part was made of certified steel with a zinc coat, ensuring long life.



Advantages:
- assembled using standard Secumax system components,
- durable zinc coat warranting long-term use.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Safety net 2200	1	16,000	BH-SX-00-0-00912
Safety net 2500	1	19,000	BH-SX-00-0-23905

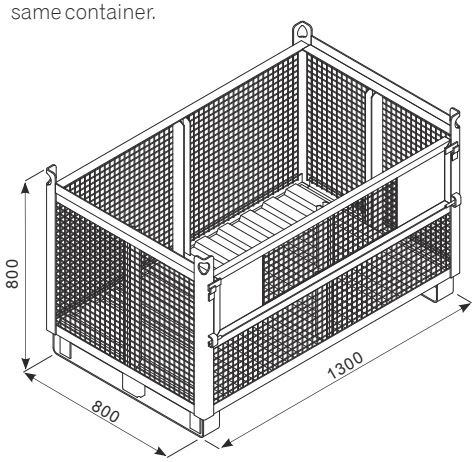
Transport container

Advantages:
- transport using a forklift or crane
- proper storage of Secumax system components,
- container made of zinc-coated components,
- optimum use of storage space.

As the name suggests, the transport container is used to transport, store and secure Secumax edge protection system components. The container structure allows transport of parts weighing up to 1200 kg in total. The container base rests on two support feet, which simplifies setting it up on the ground, even if the ground area is not level.

In addition, these feet allow transporting the container using a forklift and stacking the containers in a warehouse. In the corners, eyes were installed, allowing transport with a hoisting device using a sling. One container side is a swing-away wall, allowing easier access to the components stored inside.

The container bottom is made of profiled sheet steel, and the side walls are made of mesh. Internal reinforcement ribs (placed at each container side walls) allow division of the container into smaller spaces, thanks to which diverse system components can be stored in the same container.



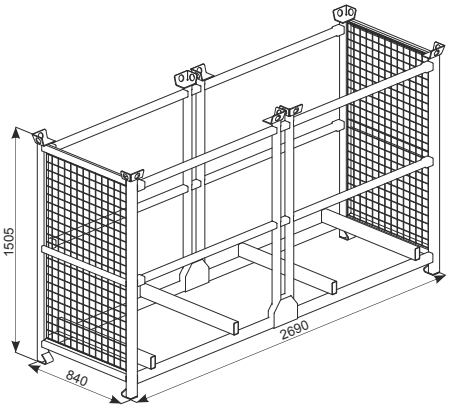
Number of individual Secumax system components stored in the container	
Barrier pillar	100 pcs./container
Pillar extension150	600 pcs./container
Pillar extension 250	350 pcs./container
Pillar extension 500	200 pcs./container
Universal grip	70 pcs./container
Universal grip 1000	30 pcs./container
Side grip	600 pcs./container
Formwork pillar grip	50 pcs./container
Pillar grip	100 pcs./container
Screw-in grip	250 pcs./container
Ram-in grip	150 pcs./container
Precast component grip	60 pcs./container
Sheet pile grip	250 pcs./container
Screw-in side grip	250 pcs./container
Adjustable formwork grip	30 pcs./container
Formwork grip	140 pcs./container
Work platform grip	200 pcs./container
Screw-in bridge grip	250 pcs./container
Elevator shaft grip	300 pcs./container
Kerb plank grip	600 pcs./container
Cable grip	600 pcs./container
Stair catch	300 pcs./container
CLIP grip	300 pcs./container

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Transport container	1	77,500	BH-SX-00-0-00899

SECUMAX® transport container for planks and meshes

The Secumax transport container for planks and meshes allows transport and storage of planks (148 pcs) or protective mesh (29 pcs.) of the Secumax system. It is a light (190 kg) structure, with a removable front panel, allowing quick loading and unloading of parts. The entire product may be transported using a forklift, or close-range transport equipment with an appropriate four-wire sling.

The Secumax transport container for planks and meshes was made of certified steel profiles with a zinc coat, and its dimensions and load bearing capacity allow storage together with the transport container for storage and transport of system pillars and grips.



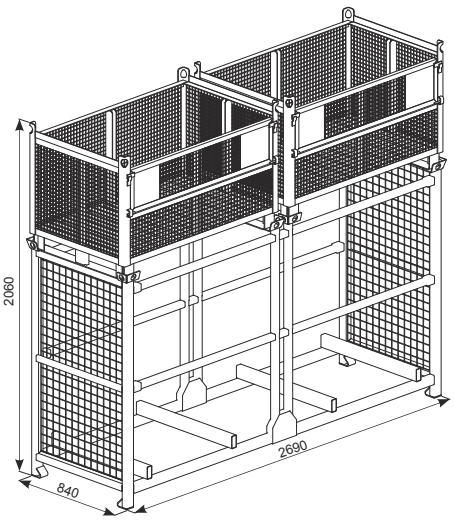
Advantages:

- transportation of planks and safety meshes of the Secumax system,
- proper storage of planks and safety meshes of the Secumax system,
- durable corrosion protection,
- optimum warehouse space use.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Secumax transport container for planks and meshes	1	190,00	BH-SX-00-0-00901

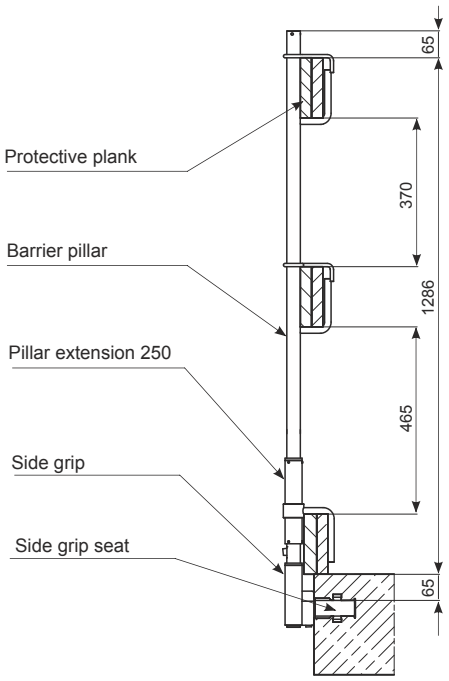
Rules of storage of SECUMAX® system transport containers

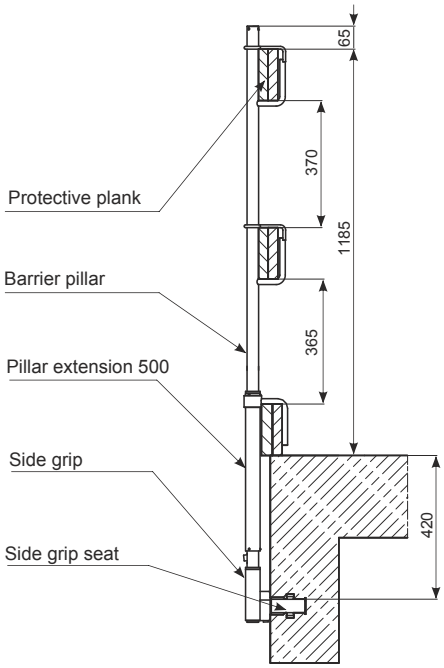
The system containers were designed in such a way, so that it would be possible to store and transport them jointly. Two simple transport containers (beside each other) may be put on top of a Secumax batten and mesh transport container. One container for planks and meshes can be put on top of two simple transport containers. Two containers for planks and meshes may also be put on top of one another. Containers, on top of which other containers are stacked, must always be filled with stored parts. It needs to be remembered in all cases that each constituent element may only be carried individually.



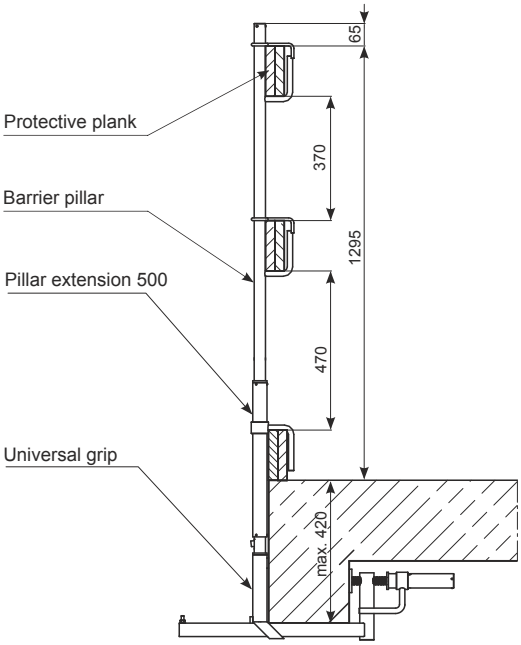
ASSEMBLY SCHEMES

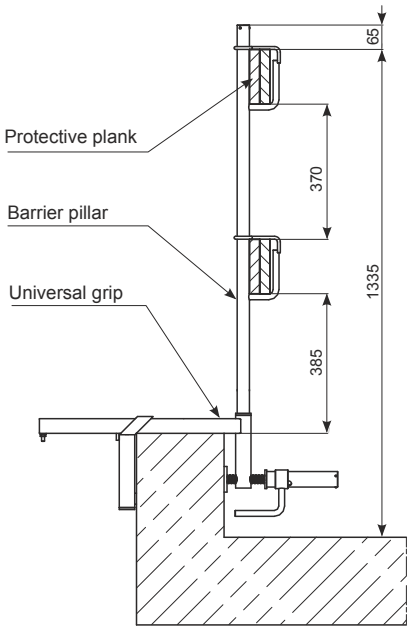
with side grip

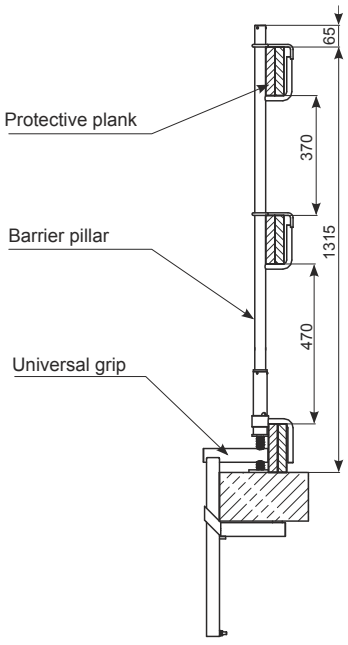




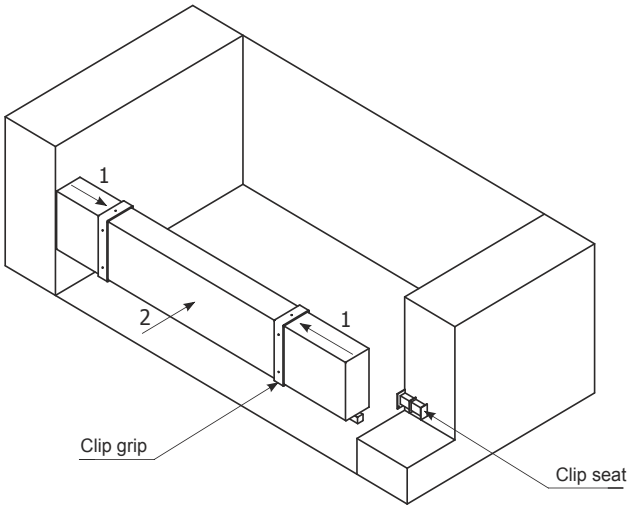
with universal grip

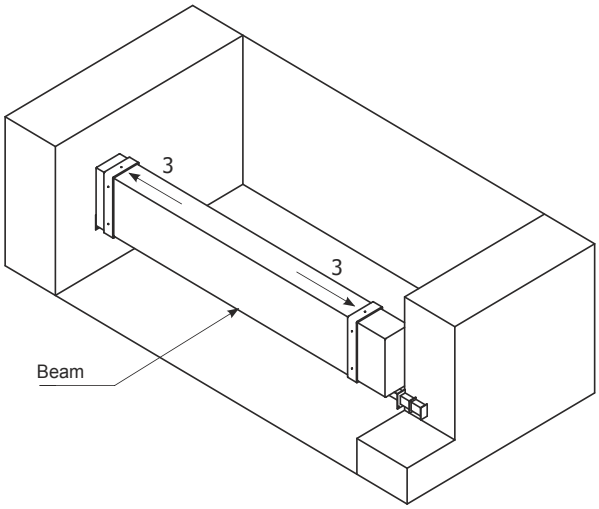




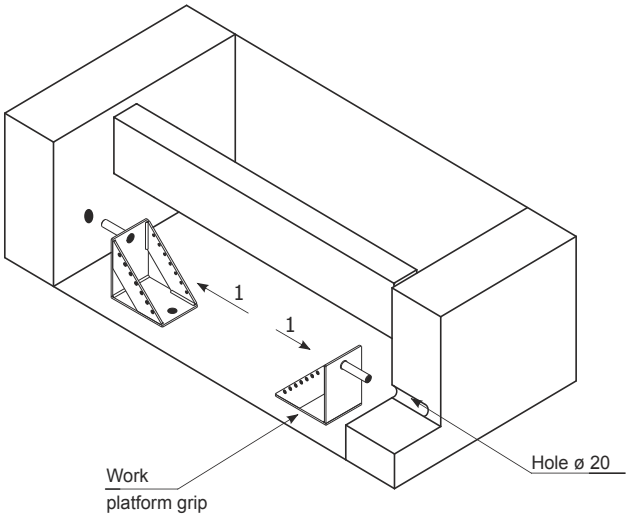


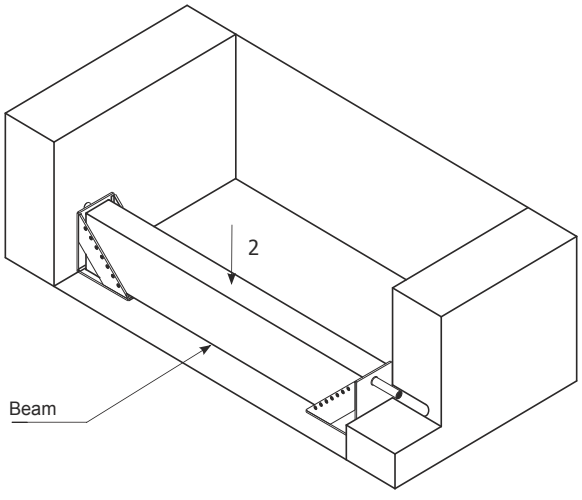
with Clip grip



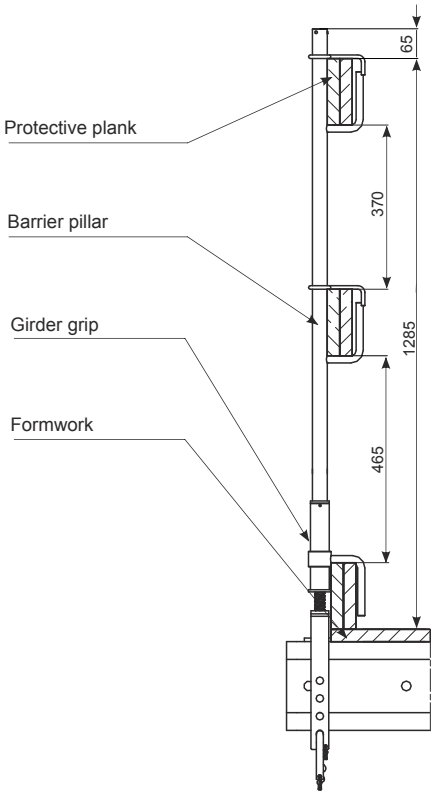


with work platform grip

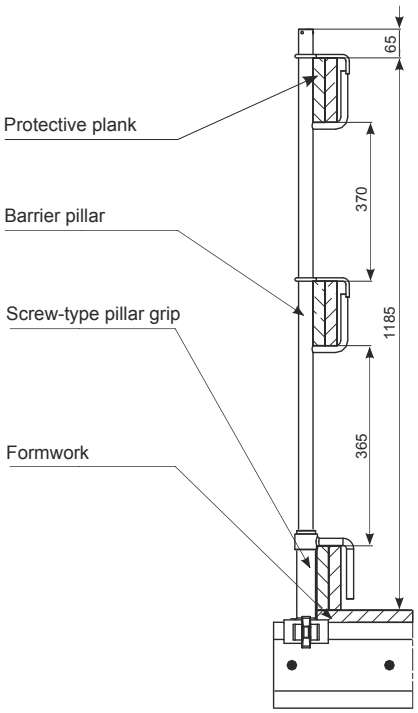




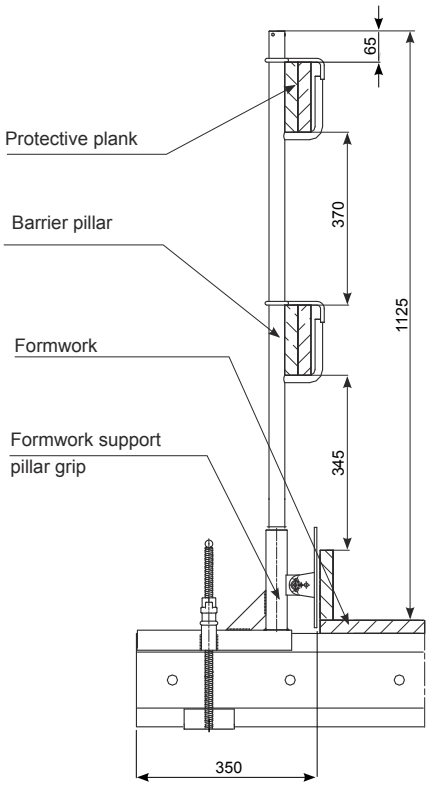
with girder grip



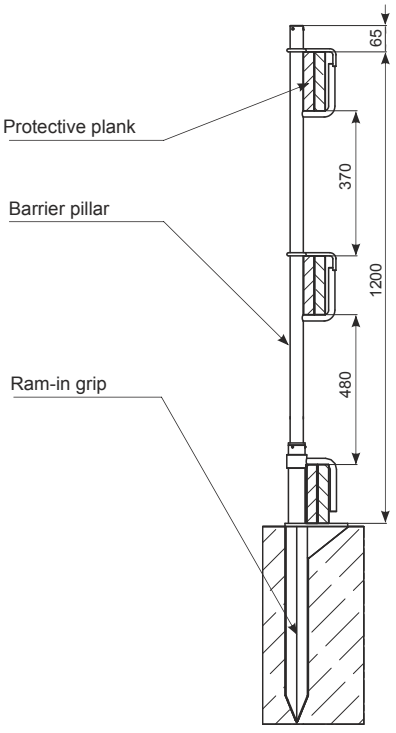
with screw-type pillar grip



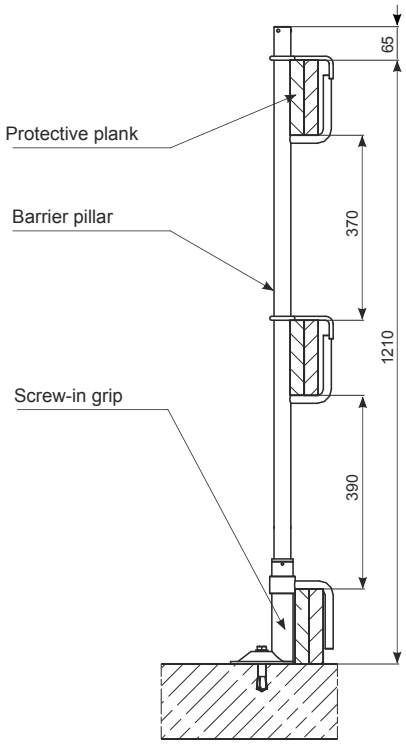
with formwork pillar grip



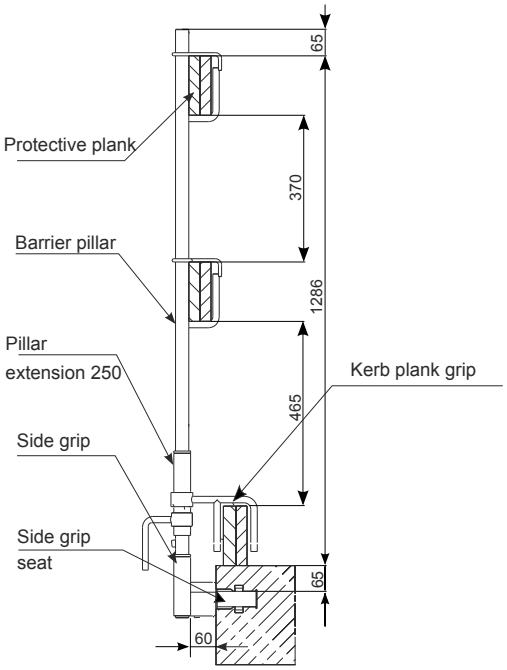
with ram-in grip



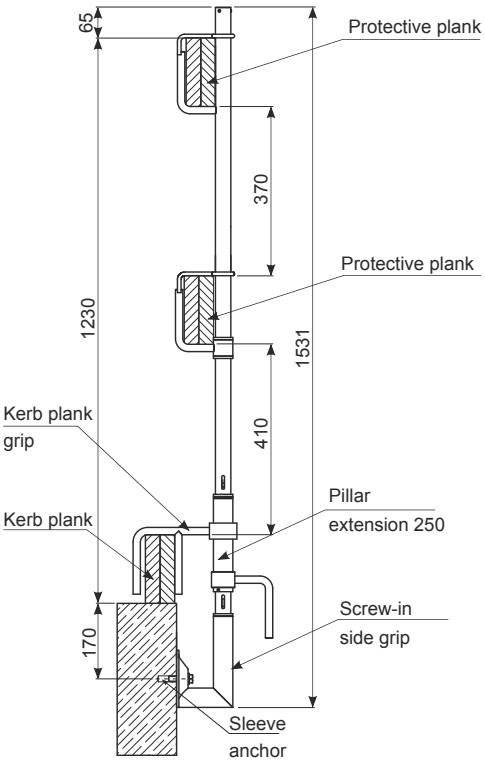
with screw-in grip



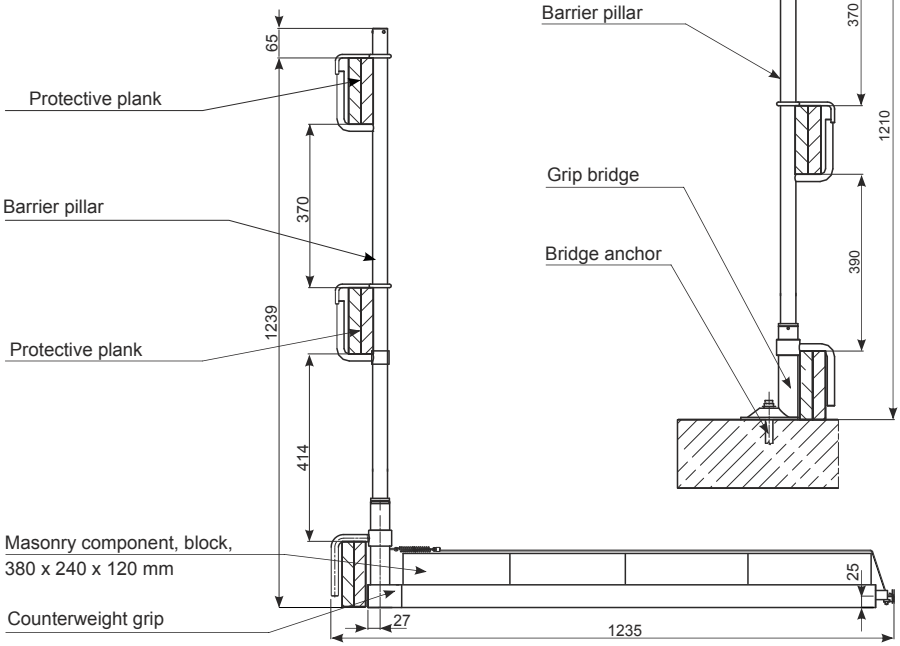
with kerb plank grip



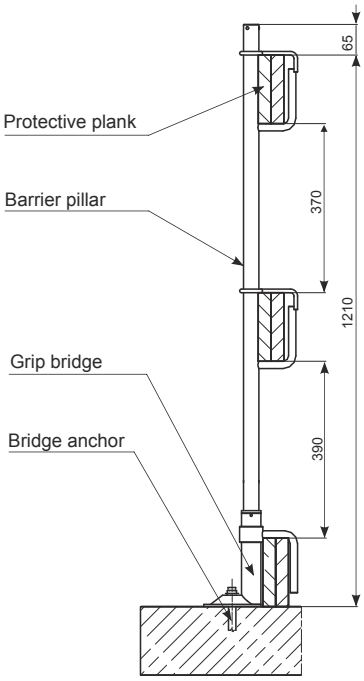
with side screw-in grip



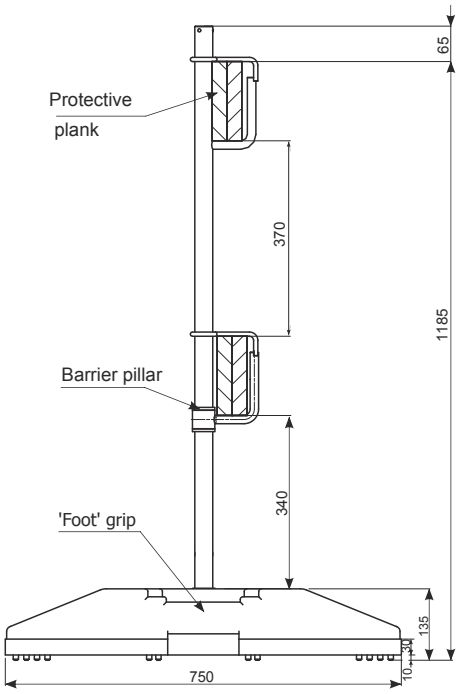
with counterweight grip



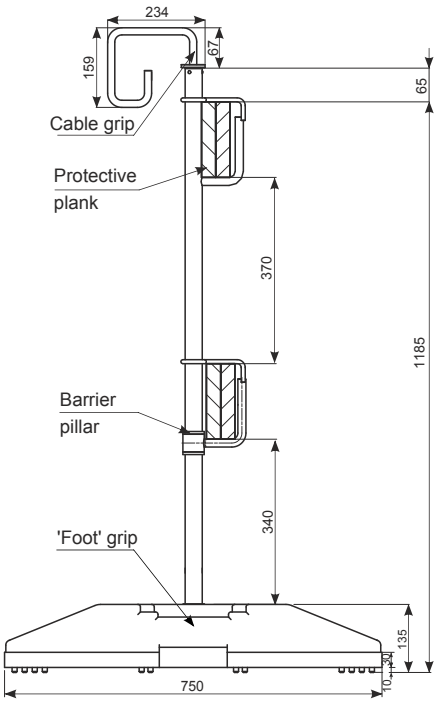
with bridge grip



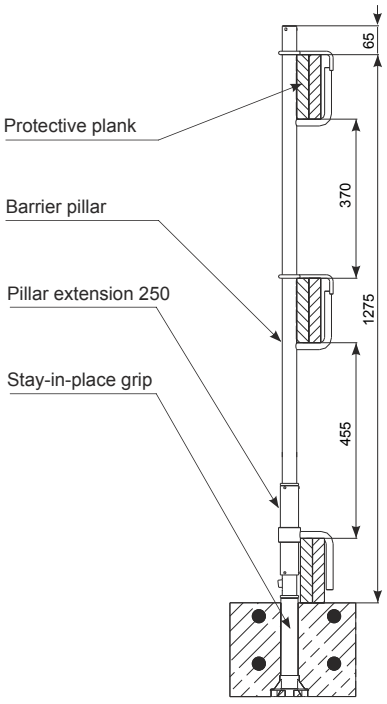
with 'foot' grip



with cable grip

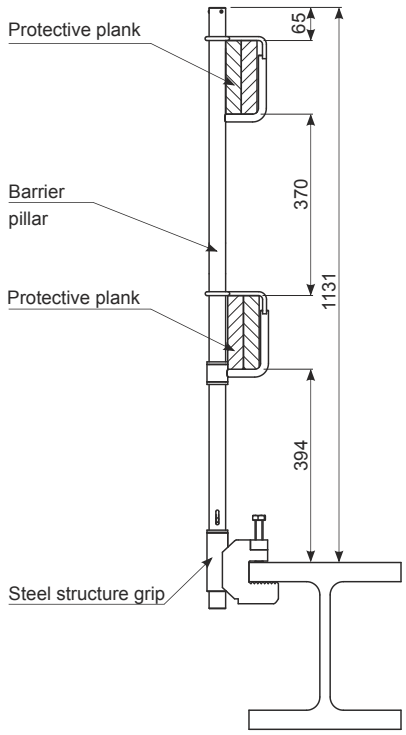


with stay-in-place grip

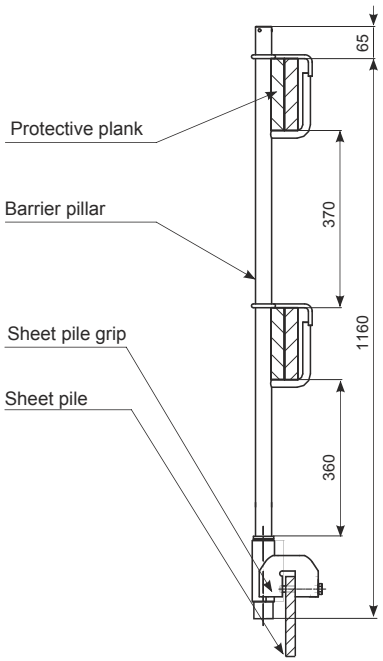


ASSEMBLY SCHEMES

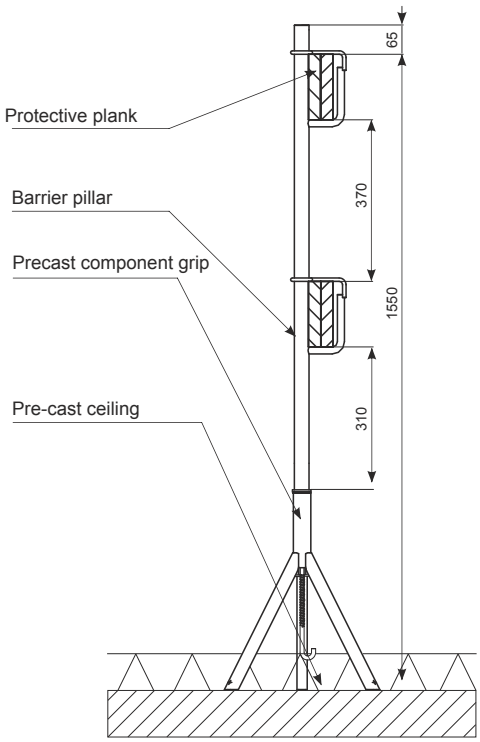
with steel structure grip



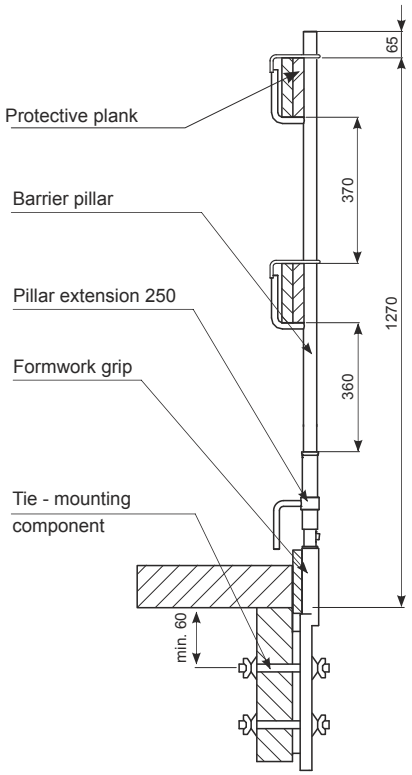
with sheet pile grip



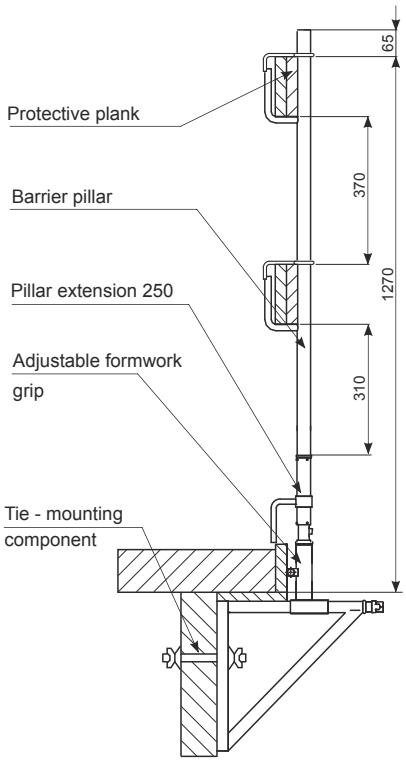
with pre-cast component grip



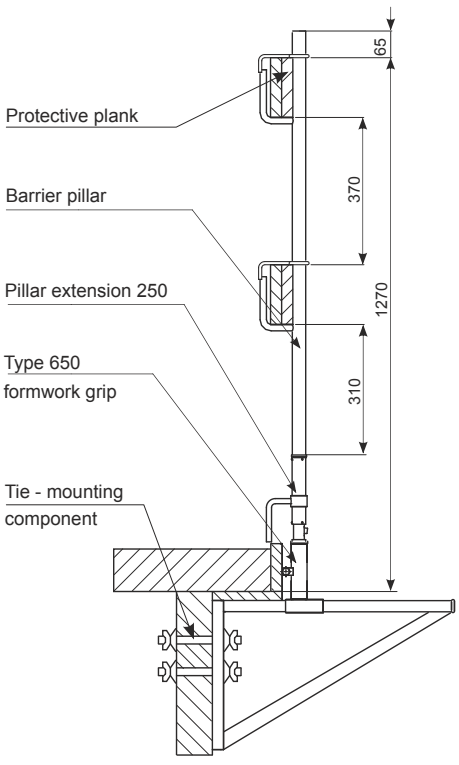
with formwork grip



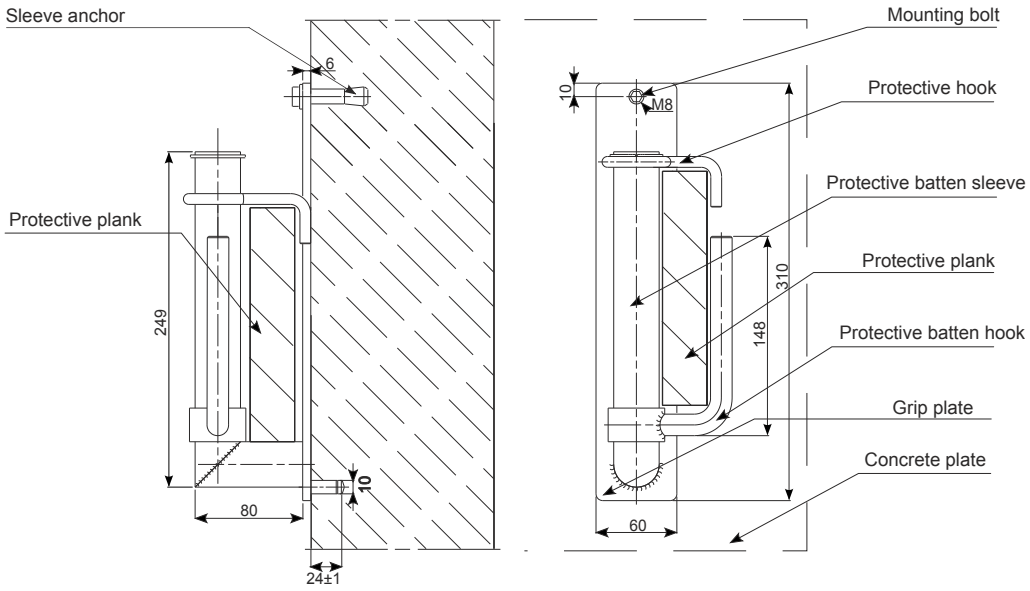
with adjustable formwork grip



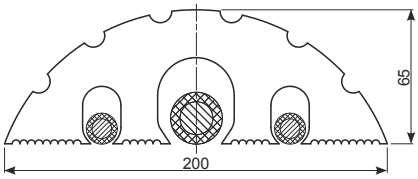
with type 650 adjustable formwork grip



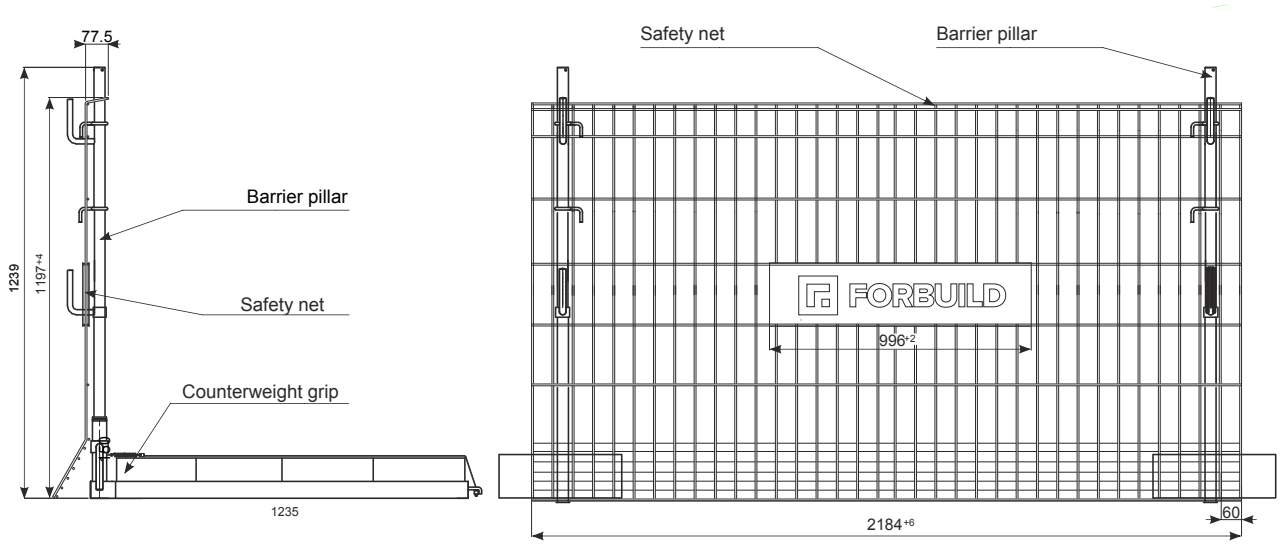
with elevator shaft grip



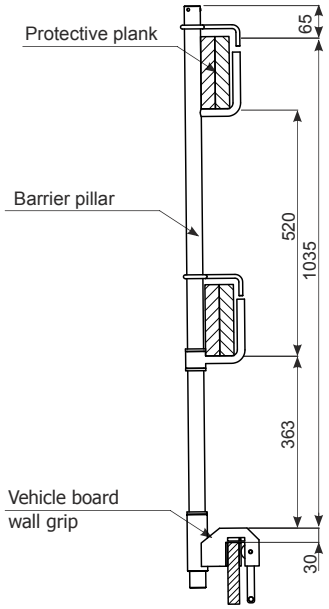
universal safety profile



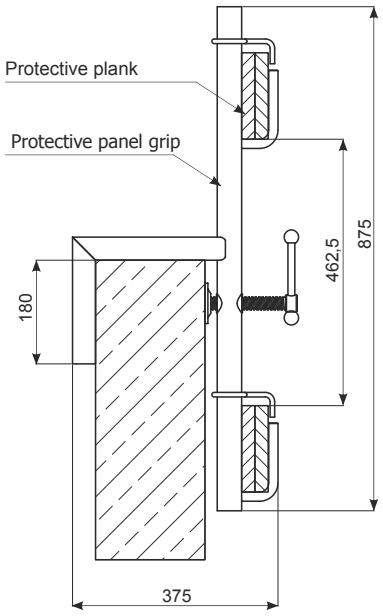
safety net



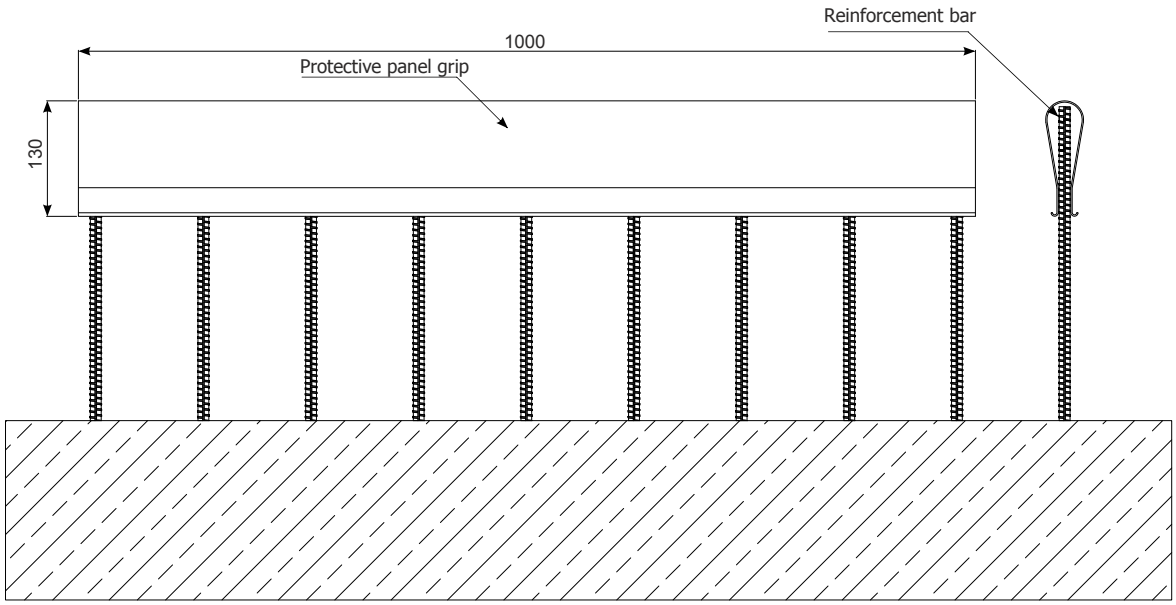
with vehicle side board grip



with vehicle panel grip



PVC batten for reinforcement bars



CHOSEN REALIZATIONS

WARSAW SPIRE OFFICE BUILDING IN WARSAW

Rental of the SECUMAX edge protection system components.

General contractor:
Ghelamco Poland Sp. z o.o.

NGK CERAMICS POLSKA PLANT IN GLIWICE

Rental, installation and removal of the SECUMAX edge protection system.

General contractor:
TAKENAKA EUROPE GmbH (Polish branch)

PAEDIATRIC HOSPITAL OF THE MILITARY MEDICAL UNIVERSITY IN WARSAW

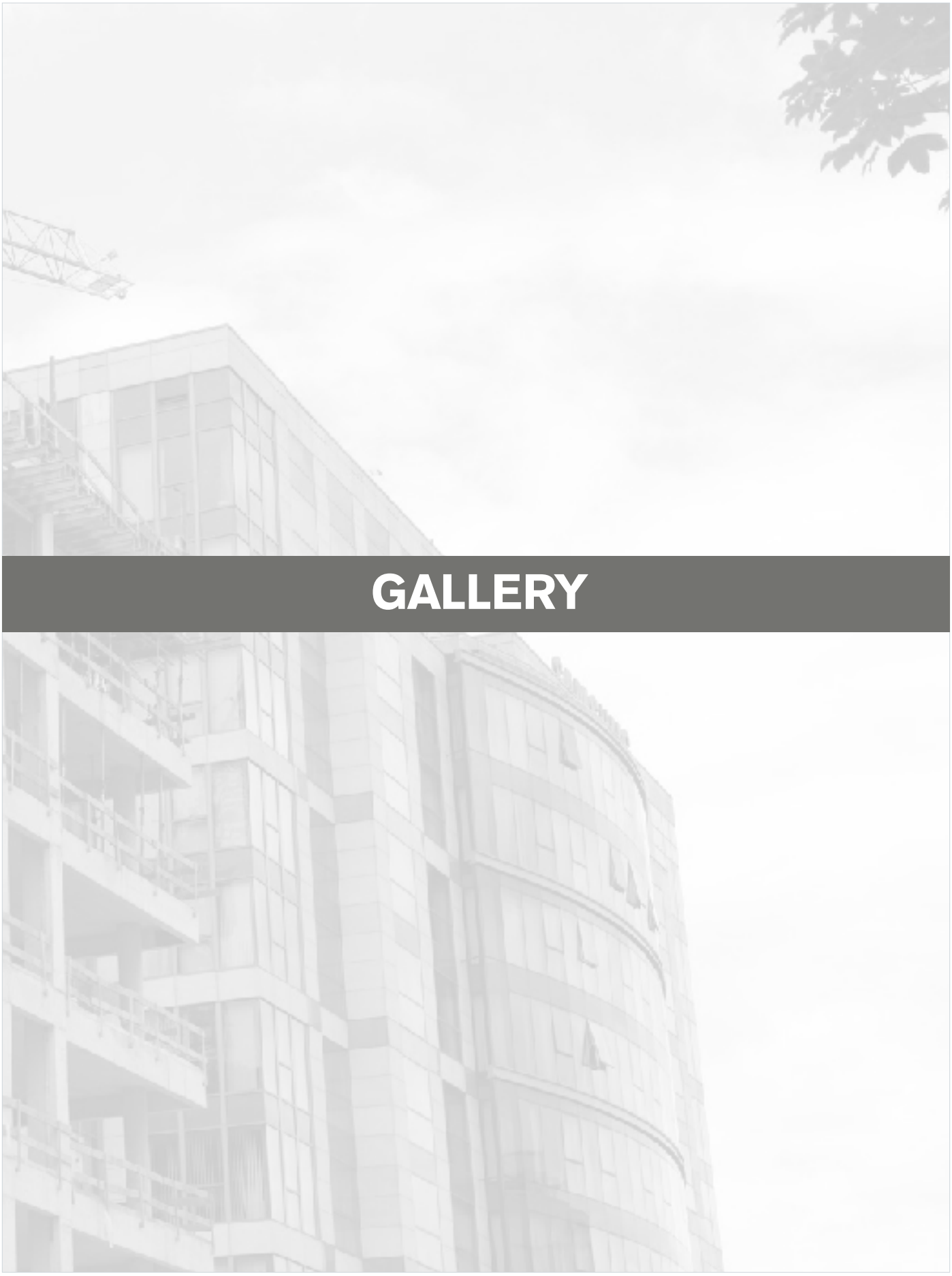
Rental of the SECUMAX edge protection system components.

General contractor:
Warbud, Qumak Sekom, Imtech

DOMANIEWSKA 45 OFFICE BUILDING IN WARSAW

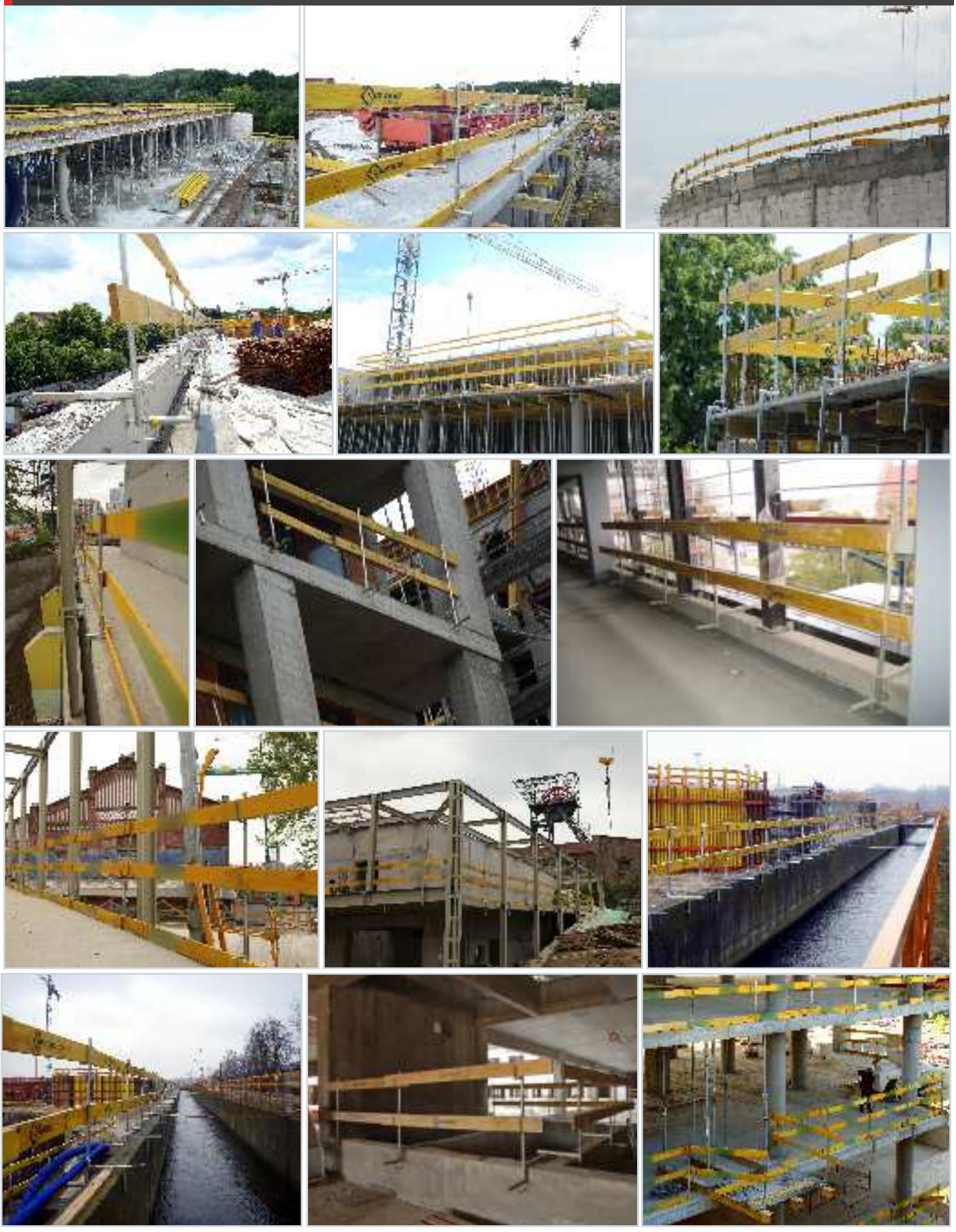
Rental of the SECUMAX edge protection system components.

General contractor:
AB - Projekt



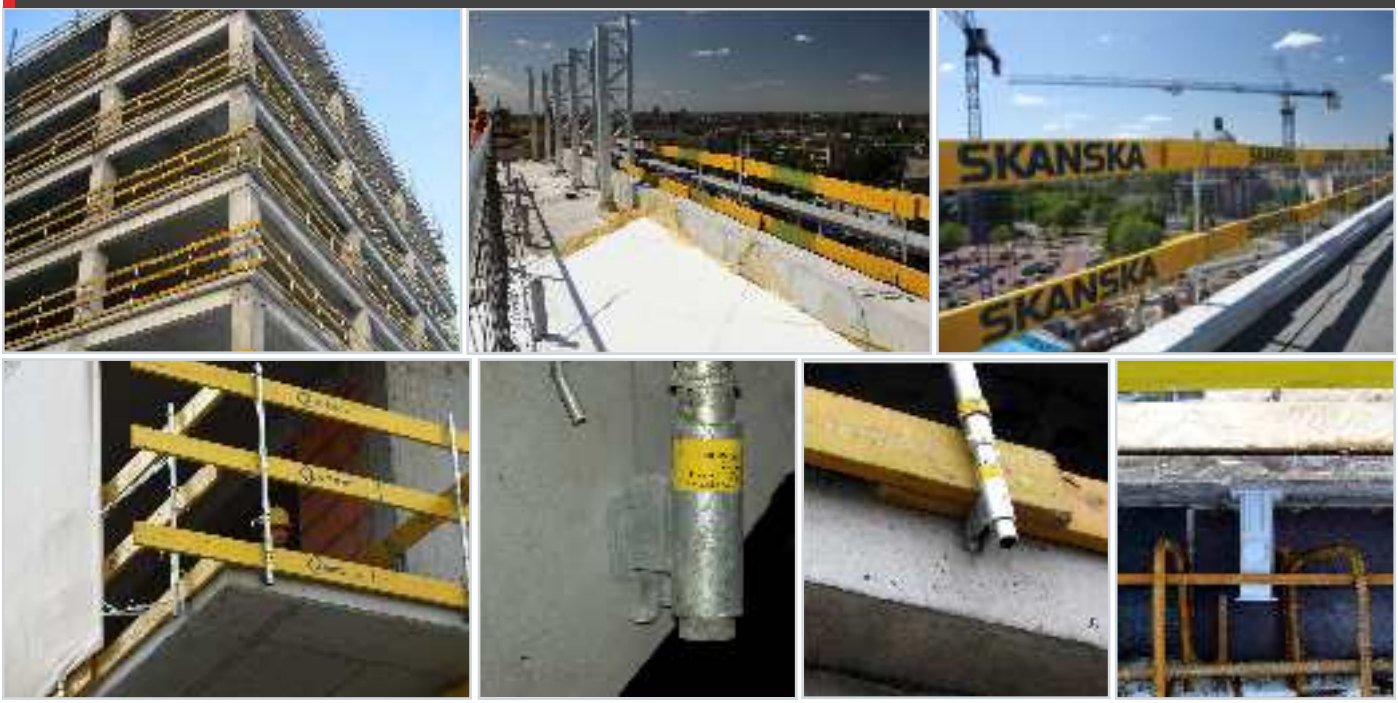
GALLERY

Universal grip



Stair catch for the universal grip

Side grip



Pillar grip



Screw-in grip



Screw-in side grip





Adjustable formwork grip


Ram-in grip





Work platform grip



Clip grip


Elevator shaft grip


Stay-in-place grip





'Foot' grip





Other










Other

SECUMAX® INDIVIDUAL

General information and scope of use

The Secumax Individual system is used for protection of the top edges of various structures, such as buildings and objects, allowing the use of individual and collective equipment protecting against falls from heights. The use of individual solutions is described in the ordinance of the Polish Minister of Labour and Social Policy of September 26th, 1997., on the general provisions of occupational health and safety (Journal of laws no. 169, item 1650) as well as the ordinance of the Polish Minister of Infrastructure of February 6th, 2003., on occupational health and safety during the execution of construction work (Journal of Laws no. 47, item 401).The Secumax Individual anchor point system fulfils the requirement of Polish and European standard PN-EN 795 'Anchor devices. Testing and requirements' as well as of standard PN-EN 13374:2004 'Temporary edge protection systems'. It allows one to use personal protection equipment (braces, lines, carabiners) as well as Secumax system barriers, giving one a safe item to hold on to when moving along a barrier, stopping persons moving perpendicular to the barrier or falling onto it.

General requirements

The use of the anchor point system named Secumax Individual, by Forbuild SA, requires a range of preparatory work related to the choice of a mounting spot appropriate for the relevant construction conditions. A correct analysis of the problem allows one to assume the most economic and functional mounting method. In course of the analysis, one should check the stability of the structure, to which the grips should be mounted, as well as, whether the solutions assumed for the work would not conflict with further structural work. System components are always attached to structures that have reached their projected load bearing capacity. After determination of the installation mode, one should check whether the components they have at hand are in technically functional condition.When installing steel anchors, one checks before proceeding with the work, whether the concrete, in which the anchors should be embedded, does not exhibit cracks or breaks. When drilling openings for the anchors, one should keep a distance from the edge as suggested by the manufacturer. When using the anchor points as grips in the Secumax system, one installs them with a spacing amounting to up to 2000 mm. Keep in mind that double components are mounted at structure corners.The use of the Secumax Individual anchor point system from Forbuild, used for protection of the top edges of diverse structures, such as buildings or objects, should take place according to OHS provisions and manufacturer recommendations, keeping in mind that:

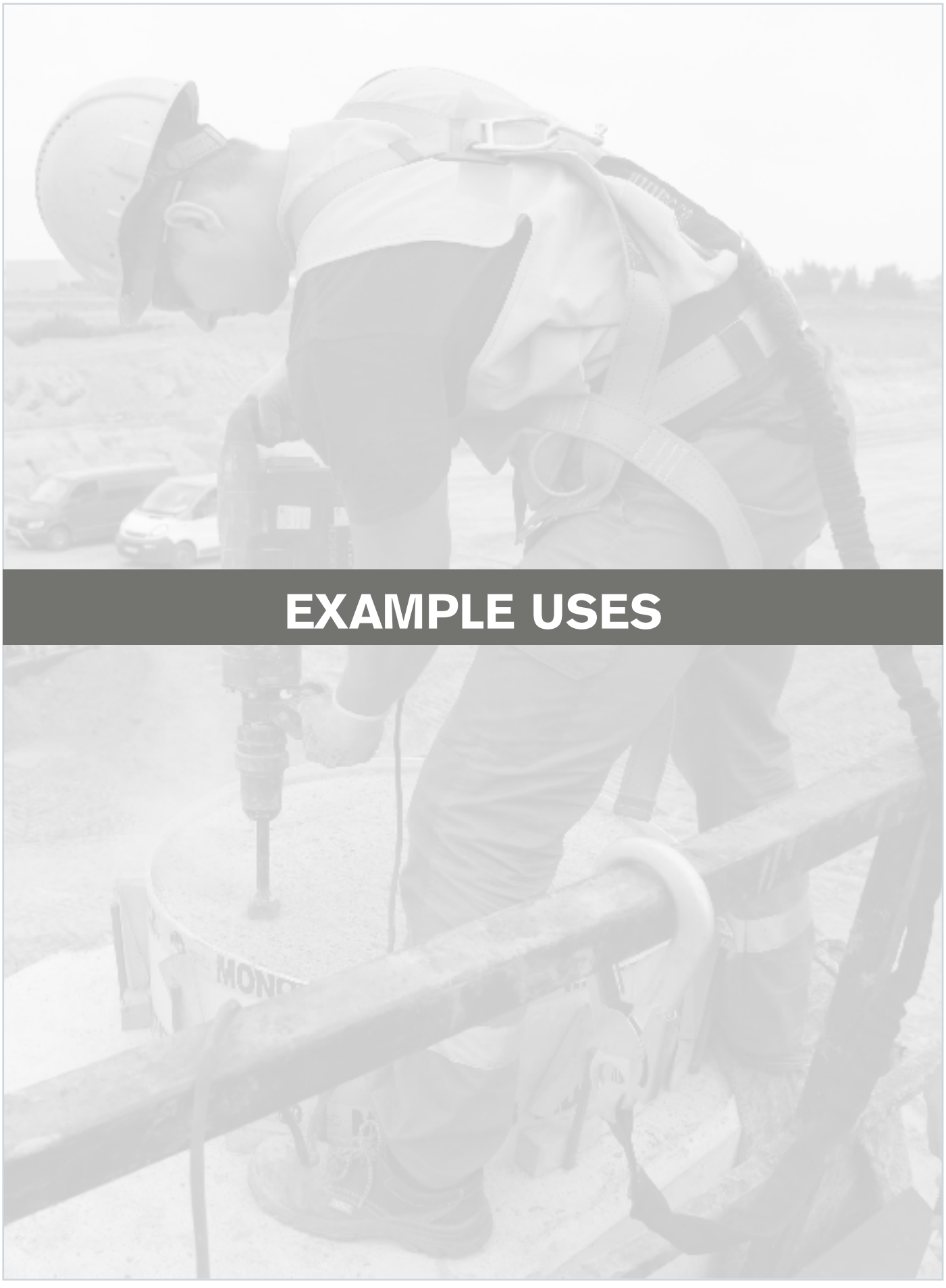
- The instruction manual should be read and understood before mounting and use of the component.
- During execution of installation work, all employees should be protected against falling from a height.
- Upon installation, mounting correctness should be checked.
- All work should be carried out by trained personnel.
- Be careful when mounting, using, and removing the equipment.
- Only use original components and spare parts.
- Check all components for damage and flaws before installation.
- Do not use system components that have been damaged or destroyed.
- The use of installed components of the Secumax Individual system should be congruent with the recommendation of collective (Secumax) or individual (hooks, lines) equipment protecting against falls from heights.

Forbuild may conduct training encompassing the installation and use of the Secumax Individual system. Such training may be conducted at the place of use.

SECUMAX INDIVIDUAL - system description

The system is composed of three anchor points. Components of the Secumax Individual system were tested at the Personal Protection System Research Plant (Pl. Zakład Ochron Osobistych) of the Polish Central Labour Safety Institute (Pl. Centralny Instytut Ochrony Pracy, CIOP).
In test report no. 59/PZ/2009/NO, it was stated that all components were able to carry the required loads.The components of the system are manufactured of certified non-alloy steel (PN-EN 10020), and the extension seat for side grip no. 290 is manufactured of a synthetic material. Metal parts of the system are protected against corrosion by a durable immersion-applied zinc coat (PN-EN ISO 1461), guaranteeing long life under natural conditions. The synthetic materials used in the system are polyethylene and its derivatives, which remain inert when in contact with steel, concrete and wood. They are also resistant to the influence of atmospheric conditions and most chemicals used at construction sites. All system components are marked according to requirements of standards PN-EN 795 and PN-EN 13374.

In the year 2009, the Polish Central Labour Safety Institute had conducted a test of the SECUMAX INDIVIDUAL protection system for class A1 anchor systems per the standard PN-EN 795:1999, which were concluded with a positive result.



EXAMPLE USES

EXAMPLE USES

Mounting seat with type 290 side grip extension.

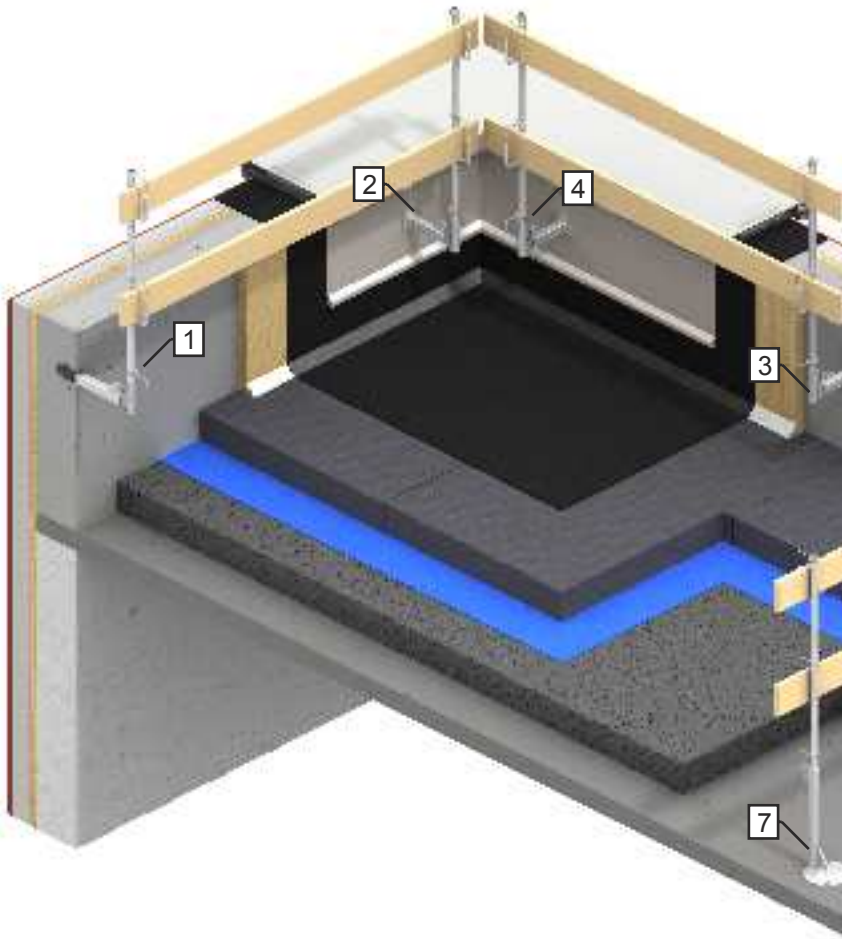
Masking using a square rosette.

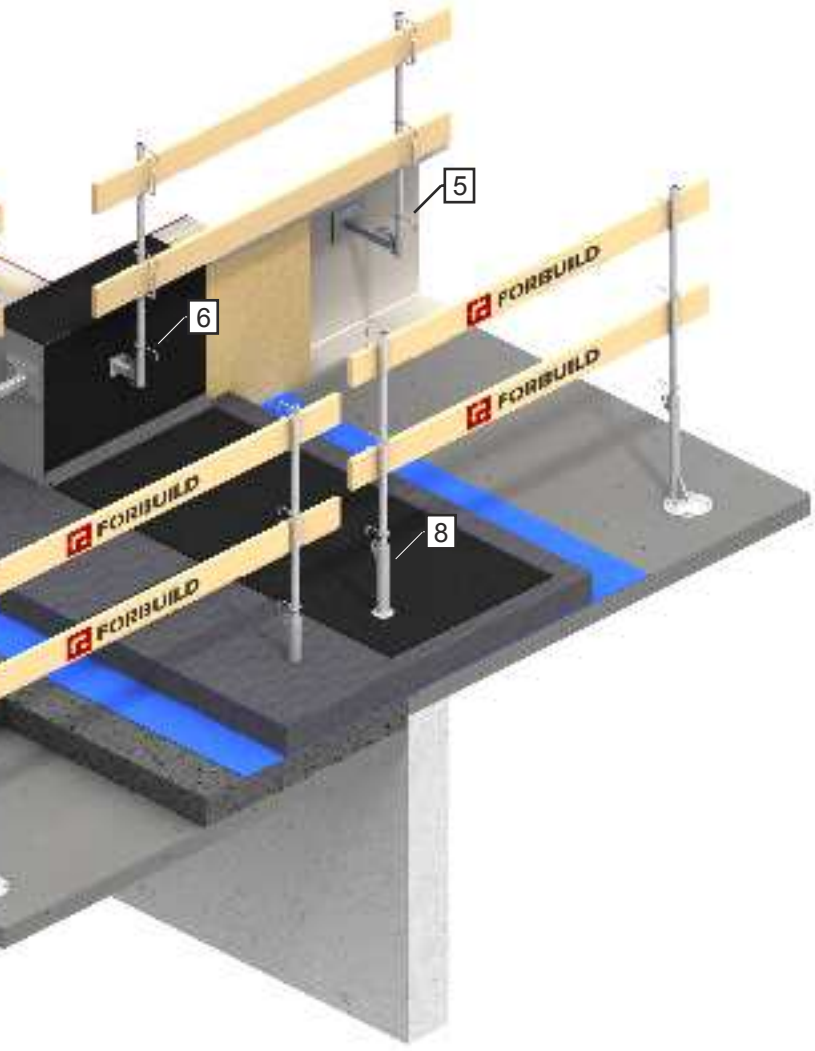
Installation of barrier pillar with side grip in type 260 universal steel seat.

Mounting of barrier pillar with side grip to type 290 extension.

Beside its basic function - assurance of individual safety, the Secumax Individual system also provides the option of erecting a temporary safety barrier conforming to requirements of standard PN-EN 13374.

This may be done using standard Secumax system parts (side grip, barrier pillar, protective plank or net).





Type 260 universal steel seat with side grip.

Type 290 side grip extension with side grip and rosette.

Type 500 screw-in grip with installed barrier pillar.

Type 500 screw-in grip with round rosette.

EXAMPLE USES

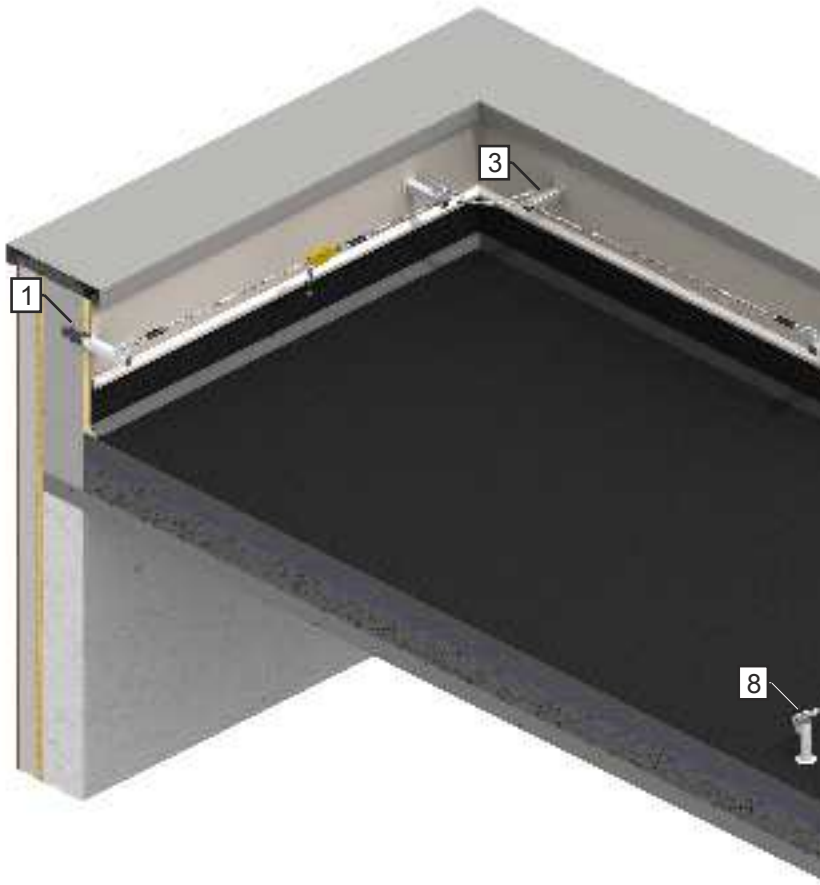
Components of the Secumax Individual system allow the option of execution of proper personal protection, protecting against falling from a height, protecting the health and life of workers during their occupational duties.

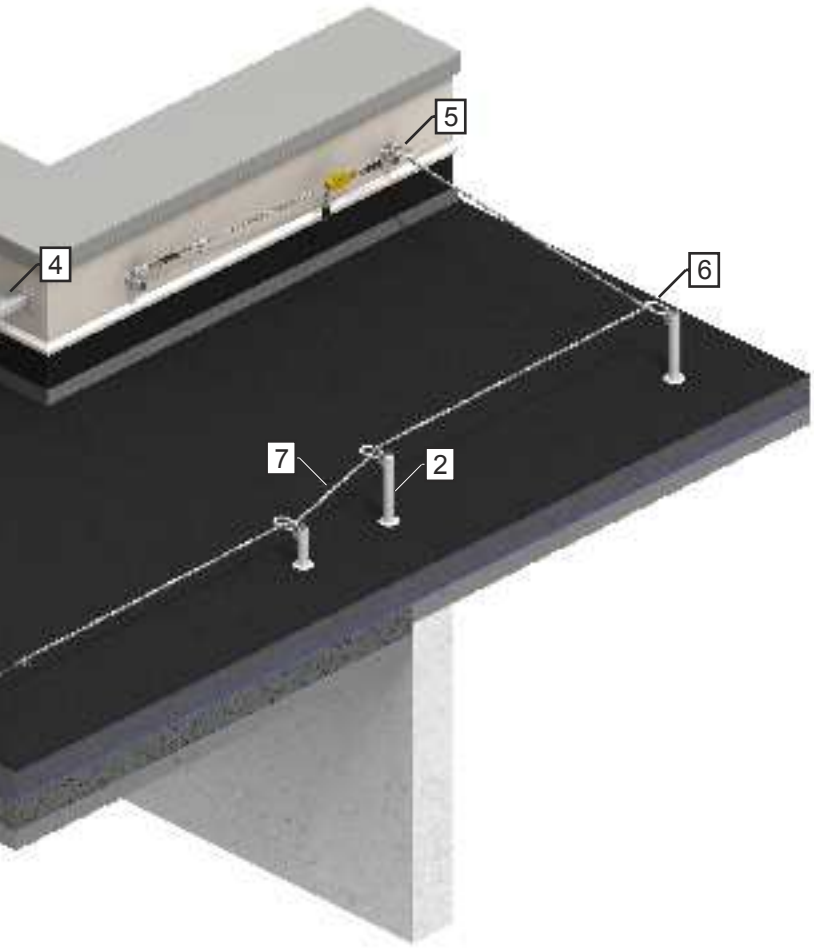
Type 290 side grip extension with mounting seat.

Harip BF 540 anchor rope tensioning component.

Type 290 side grip extension - square rosette.

Installation of tension rope to type 290 side grip extension.





Harip BF 540 anchor rope.

Mode of attachment of anchor rope to building corners.

Layout of tensioning rope.

Installation of tensioning rope to type 500 screw-in grip.

COMPONENTS OF THE SECUMAX® INDIVIDUAL SYSTEM

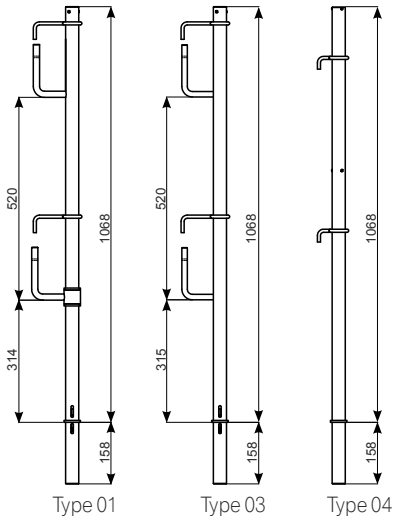
Barrier pillar

REGISTERED DESIGN

The type 01 and type 03 barrier pillars are the basic component of side protection systems. The product conforms to class A resistance requirements per standard PN-EN 13374, and thus it conforms to very strict safety requirements of protection railings.

The pillars have automatic protection components, locking them in their grips. The lock prevents accidental shifts of the pillars from their assembly grips. They are equipped with hooks for the installation of protection railings from planks with a cross-section of 32 x 150 mm, and with mobile devices protecting against the planks shifting upwards. The hook with is adapted to an overlay joint of two 32 mm-wide planks each. The type 03 pillar is equipped solely with fixed barrier hooks and mobile batten grips. The type 01 pillar has a rotating hook for mounting safety railings, greatly facilitating assembly, as well as mobile plank grips.

The type 04 barrier pillar is equipped solely with movable hooks for mounting safety nets type 2200 and 2500 (page 42).



Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Barrier pillar Type 01	1	3,960	BH-SX-00-1-00914
Barrier pillar Type 03	1	3,200	BH-SX-00-1-29017
Barrier pillar Type 04	1	2,610	BH-SX-00-1-29016

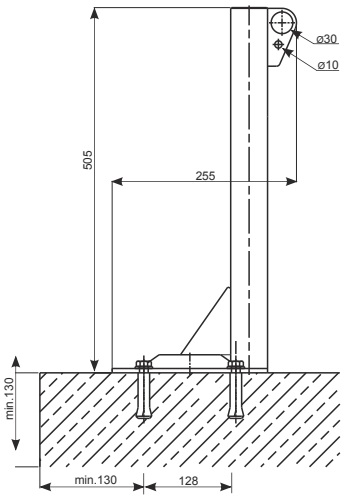
Type 500 screw-in grip

The type 500 screw-in grip allows the installation of the barrier pillar at a height of 500 mm above the horizontal work surface. This component is screwed onto four anchors embedded earlier, i. e. the Hilti HSC M12x60 or others with similar or better resistance characteristics. It is screwed in place with a s = 19 mm wrench with a torque of 35 Nm. The grip is equipped with an eye to guide the safety rope. Its durable zinc coat allows long years of use as an edge protection system component.

The synthetic material cap protects the inside of the sleeve mounting the barrier pillar against adverse influence of atmospheric conditions outside of periods, when the grip is in use. The cap is available upon request.

Advantages:

- the grip allows the execution of installation and maintenance work without reducing the quality of insulation surfaces,
- quick and easy installation with the use of a standard anchor.



Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Type 500 screw-in grip	1	7,20	BH-SI-00-0-00892
Cap K 34	1*	0,012	BH-SI-00-0-05916

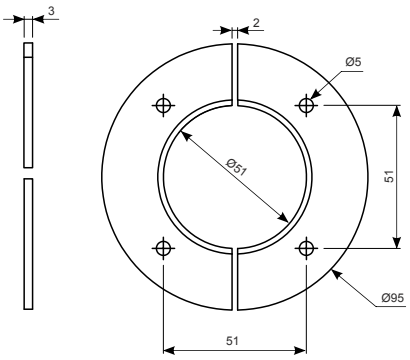
* Packaging: bag 500 pcs.

Round rosette

The round rosette is adapted for use with Secumax Individual components. It is made of galvanised steel or stainless steel, guaranteeing long-term use - irrespective of any influences environmental conditions.

Advantages:

- quick and simple installation with the use of a standard expansion dowel and/or bolt,
- long-term use,
- proper protection of insulation layers.



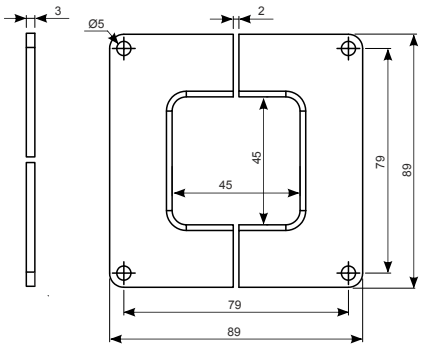
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Round rosette	1	0,1200	BH-SI-00-0-05914

Square rosette

The square rosette is adapted for use with components of the Secumax Individual system. It is made of steel covered with a galvanic coat or from stainless steel, which guarantees long-term use - irrespective of any influences environmental conditions.

Advantages:

- quick and simple installation with the use of a standard expansion dowel and/or bolt,
- long-term use,
- proper protection of insulation layers.



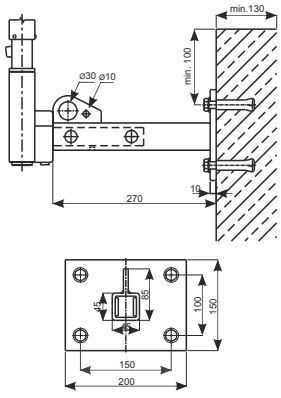
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Square rosette	1	0,1500	BH-SI-00-0-05915

Type 260 universal side grip steel seat

The seat is foreseen for installation of different components on surfaces through welding or by screw connections. It allows embedding of a side grip at a distance of 270 mm from the outside wall surface. A durable galvanic coat (applied by hot-dip galvanising) ensures long years of use.

Advantages:

- the extension allows execution of installation and maintenance work without reduction of quality of insulation layers,
- long-term use,
- quick and easy installation with the use of a standard anchor.



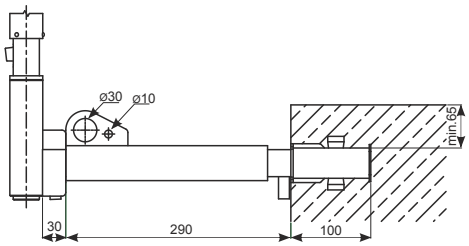
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Type 260 universal side grip steel seat	1	4,250	BH-SI-00-0-00893

Type 290 side grip extension

Extension used for mounting a side grip. Allows its use at a distance of 290 mm from the interior surface of the wall, in which the side grip seat is embedded. Durable galvanic coat (made through hot-dip galvanising) ensures long life.

Advantages:

- extension allows execution of installation and maintenance works without damaging insulation coats,
- long usable life,
- quick and easy installation with the use of the grip seat.



Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Type 290 side grip extension	1	3,800	BH-SI-00-0-00906

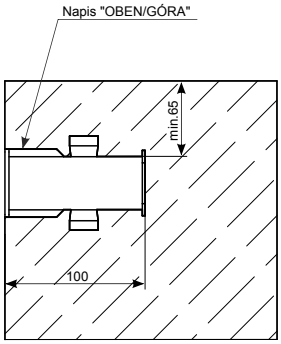
Side grip seat

The seat is used to install a type 290 side grip extension. It is embedded between the support structure rebar components. The dimensions to be maintained are indicated in the diagram.

Note:
The grip seat must be mounted on the formwork in such a way so that the side with the inscription 'Oben/Góra' points upwards.

Advantages:

- simple seat installation on formwork inside surface,
- seat material is resistant to many chemical factors.



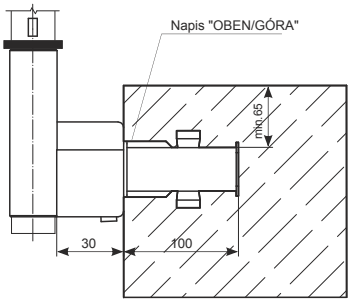
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Side grip seat	1*	0,040	BH-SX-00-0-00897

*Packaging: bag 50 pcs.

Side grip

REGISTERED DESIGN

Thanks to side mounting of the barrier pillar, the side safety devices do not hinder works on stairs or other work surfaces. The installation surfaces may be protected with a safety barrier until the works are completed, the grip is affixed to the side surface, i. e. of stair flights. Maximum spacing: 2000 mm.



Advantages:

- installation of pillar grip at any time (during removal of formwork or during installation of safety barriers),
- thanks to side mounting of the barrier pillars, the safety devices do not hinder works carried out on the horizontal surface of the room or the flight of stairs, and allow safe execution of works up until the moment if installation of target barriers.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Side grip	1	1,120	BH-SX-00-0-00916

FORBUILD protective plank

Forbuild protective planks, used for safety handrails and kerb planks, are made of at least C-18 class wood, and have minimum dimensions of 32 x 150 x 2500 mm and 32 x 150 x 1500 mm.

Upon request, the safety planks may have the company name placed on them.

In order to estimate the number of planks for a required structure, the following formulae may be used:

A=(L/2)+1, where A - number of barrier pillars, L-length of required structure in metres;

Should one want to use three planks for the structure, then one should use the following formula:

X=(A-M)*3, where X - plank count, M - barrier count.

Should one want to use two planks for a structure (i. e. flights of stairs), then one should use the following formula:

X=(A-M)*2, where X - plank count, M - barrier count.

A barrier is a single structure of an edge protection system.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
FORBUILD protective plank	1	5,5÷6,5	BH-SX-00-0-00894
Protective plank with company logo	1	5,5÷6,5	-

Harip 540 anchor rope

The ø 16 mm polyamide rope is equipped with a tensioning mechanism and steel coupling components. The rope is foreseen for a single worker. The component complies with requirements of standard PN-EN 795, is CE-certified for safety. Rope lengths: 10 m, 20 m and 30 m.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
HARIP BF 540 10 m anchor rope	1	1,7	BH-SI-00-0-05917
HARIP BF 540 20 m anchor rope	1	3,9	BH-SI-00-0-05918
HARIP BF 540 30 m anchor rope	1	6,1	BH-SI-00-0-05919

For safe use of Secumax® Individual anchor points, the use of safety suspensions, ropes and joining components (carabiners, thimbles, shackles) is necessary. All named components must have the CE safety certification.

CHOSEN REALIZATIONS

PARK AND RIDE IN WARSAW

Sale of SECUMAX INDIVIDUAL edge protection system components

General contractor:
Warbud

ŻOLIBORZ PARK - MADISON APARTMENTS IN WARSAW

Sale of SECUMAX INDIVIDUAL edge protection system components

General contractor:
BUDIMEX S.A.

EXPANSION OF A CONSTRUCTION COMPANY HEADQUARTER IN JAWORZNO

Sale of SECUMAX INDIVIDUAL edge protection system components

General contractor:
RISER Sp. z o.o.

THE POMERANIAN MUNICIPAL RAILWAY IN GDAŃSK

Sale of SECUMAX INDIVIDUAL edge protection system components

General contractor:
BUDIMEX S.A.

GALLERY

GALLERY






GALLERY



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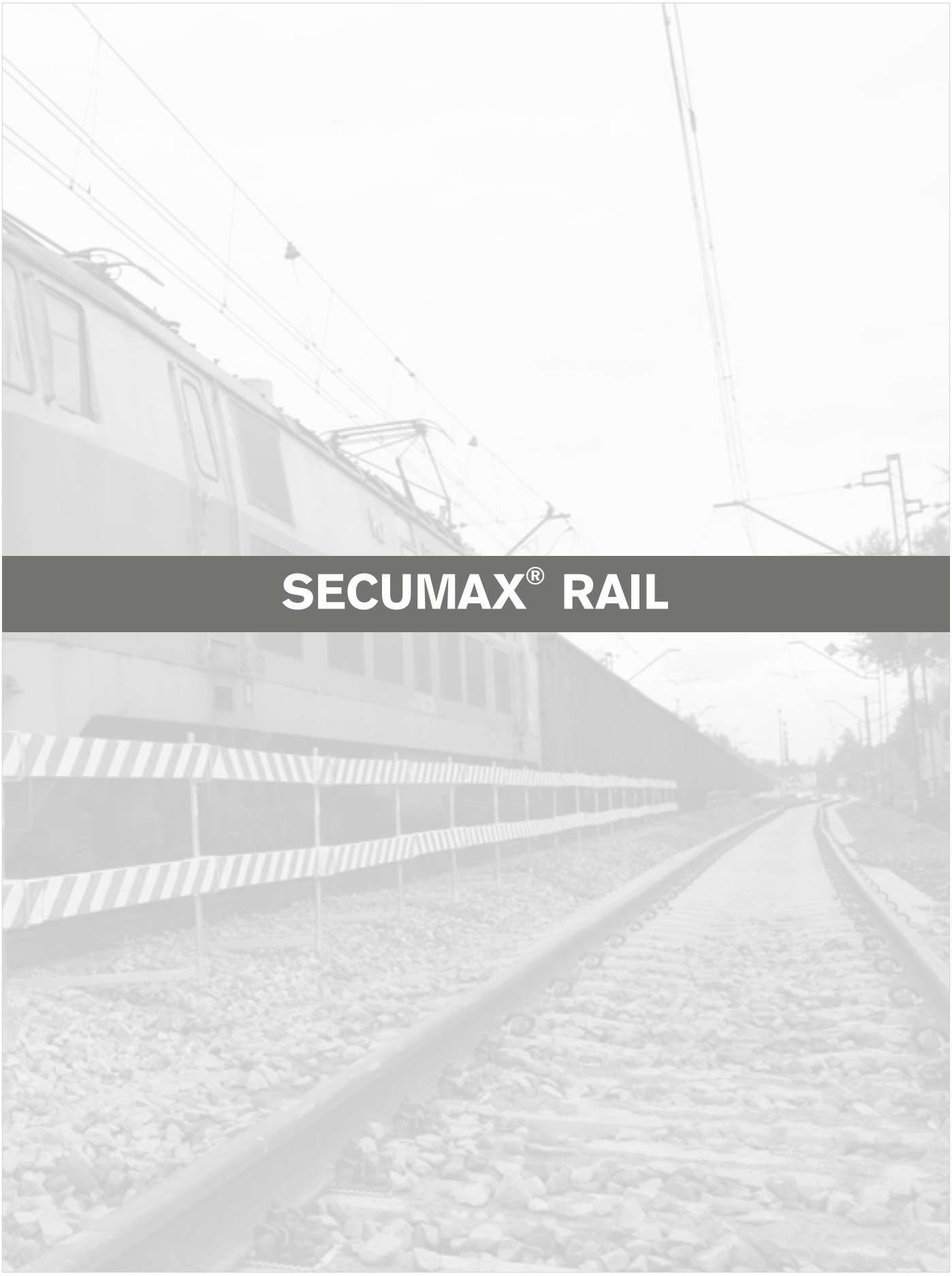


SECUMAX® RAIL

Properties and scope of use

The Secumax Rail system is used for the purpose of execution of side protection during upgrades, reconstruction or construction of railway lines. The system is used to mark out the hazard zone when securing work places on closed tracks, while traffic on open tracks with a speed equal to or exceeding 100 km/h is ongoing.

The Secumax Rail system conforms to requirements of instruction Id-18, 'Guidelines concerning the protection of places of work along a closed railway track during traffic of railway vehicles along an open track with velocities equal to or exceeding 100 km/h, constituting an annex to regulation no. 21/2010 of the board of directors of Polish Railway Lines PKP PLK S. A. of August 31st, 2010., with respect to par. 10 of this study. It protects persons resting on the barriers, allows one to hold on when moving along the barrier, and stops persons moving perpendicular to the barrier or falling onto it.

General requirements

The use of the Secumax Rail protective barrier system by Forbuild requires a range of preparatory work. A correct analysis of the area, where the track barriers are to be erected, is the key to ensure appropriate design of the protection plan for hazardous spots. In course of the analysis, requirements of instruction Id-18, constituting an annex to regulation no. 21/2010 of the board of directors of Polish Railway Lines PKP PLK S. A. of August 31st, 2010., should be taken into account; furthermore, it should be checked, whether the assumed solutions would not conflict with further stages of execution. One should also check, whether the components at one's disposal are technically in functional condition, and whether they are available in quantities allowing the execution of the assumed amount of barriers. If not, the required components should be ordered, using their order numbers. The system grips are installed spaced 1800-2300 mm apart.

System component installation should only be carried out, when the used track does not experience rail vehicle movement/traffic.

The use of the protective barrier system should take place according to OHS provisions and manufacturer recommendations, keeping in mind that:

- The instruction manual should be read and understood before mounting and use of the device.
- Upon installation, mounting correctness should be checked.
- All work conducted with the protective barrier system in use should be carried out by trained personnel.
- Be careful when mounting, using, and removing the equipment.
- Only use original components and spare parts.
- Check all components for damage and flaws before installation.
- Never use barrier system components that have been damaged or destroyed.

Forbuild may conduct training encompassing the installation and use of the protective barrier system. Such training may be conducted at the place of use.

SECUMAX RAIL system description

The system spans a mounting grip, allowing the installation of pillars, and the barrier pillar. The set also includes planks, of which horizontal barrier components are made, as well as system component transport containers.The system parts are manufactured of steel: pillars, grip and containers; as well as wood: protective planks. The steel profiles of the protective barrier system are made of certified steel. Mechanical and physical properties of screws and nuts conform to standard PN-EN ISO 898-2:2002, and are included in mechanical property class 8.8. Metal structure components are protected against corrosion through galvanic zinc coating (transport containers are immersion-coated), with white passivation, ensuring their long life under natural conditions. The barrier hand rails are made of coniferous wood, with resistance classified per standard PN-EN 14081:2005 and standard PN-EN 338:2004. The upper and lower hand rail should be made of stripped wood of a class not lower than C-18, and the crosswise dimensions should be 32 x 150 mm.

COMPONENTS OF THE SECUMAX® RAIL SYSTEM

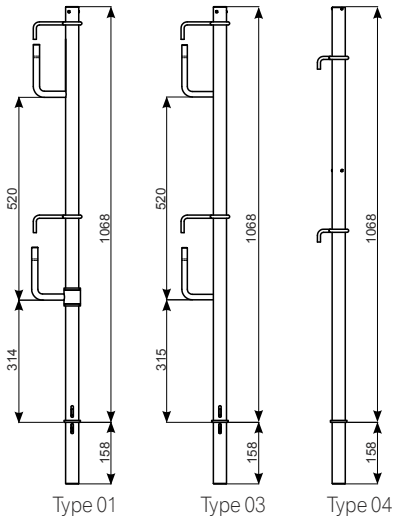
Barrier pillar

REGISTERED DESIGN

The type 01 and type 03 barrier pillars are the basic component of side protection systems. The product conforms to class A resistance requirements per standard PN-EN 13374, and thus it conforms to very strict safety requirements of protection railings.

The pillars have automatic protection components, locking them in their grips. The lock prevents accidental shifts of the pillars from their assembly grips. They are equipped with hooks for the installation of protection railings from planks with a cross-section of 32 x 150 mm, and with mobile devices protecting against the planks shifting upwards. The hook with is adapted to an overlay joint of two 32 mm-wide planks each. The type 03 pillar is equipped solely with fixed barrier hooks and mobile batten grips. The type 01 pillar has a rotating hook for mounting safety railings, greatly facilitating assembly, as well as mobile plank grips.

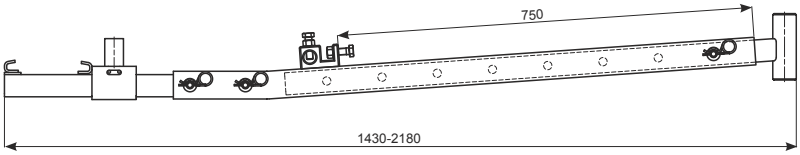
The type 04 barrier pillar is equipped solely with movable hooks for mounting safety nets type 2200 and 2500 (page 42).



Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Barrier pillar Type 01	1	3,960	BH-SX-00-1-00914
Barrier pillar Type 03	1	3,200	BH-SX-00-1-29017
Barrier pillar Type 04	1	2,610	BH-SX-00-1-29016

Rail grip

REGISTERED DESIGN



The rail grip is a basic component of the Secumax Rali system. When used in conjunction with system barrier pillars and protective planks, it creates a complete protective barrier acting as side protection when executing upgrades or improvements to railway lines. The grip is mounted to the foot of the rail of the active track using a system pipe wrench. Thanks to grip adjustment options, one is able to execute a complete protective barrier at a distance of 2850 mm from the track axis. The Secumax Rail system conforms to structural requirements according to the annex to regulation no. 21/2010 of the board of directors of Polish Railway Lines PKP PLK S. A. of August 31st, 2010.

RAIL track clamps, with pillars and protective handrails, are used for fencing off hazard zones when securing working areas at the rail track taken out of use during traffic of trail vehicles on the track in service, in case of service speed of V ≥ 100km/h.

Advantages:

- simple, easy assembly
- low weight
- for use with all types of rails
- stability (vibration resistance)
- reliable attachment mechanism
- option of usage at track switches
- movable clamp extension allows execution of the protective hand rails at a distance of 2850 mm from the track axis
- protected by durable anti-corrosive coating

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Rail grip	1	9,70	BH-SR-00-0-19109
Pipe wrench	1	0,45	NA-NA-PR-0-04723

Protective plank

Protective planks used as protective hand rails are made of stripped wood of class at least C-18 per standard PN-EN 14081, with dimensions of 32 x 150 x 2500 mm.

The planks are provided with a durable varnish coat guaranteeing long life under the condition of adherence to the basic guidelines for use of natural wood products.

The planks are painted according to stipulations from documents of the Polish State railway Lines, meaning, in white and red belts at an angle of 45°.The protective planks are inserted into the upper and lower hooks of the barrier pillars, so that they are located on the side of the passageways.

Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Protective plank	1	6,00	BH-SR-00-0-19381

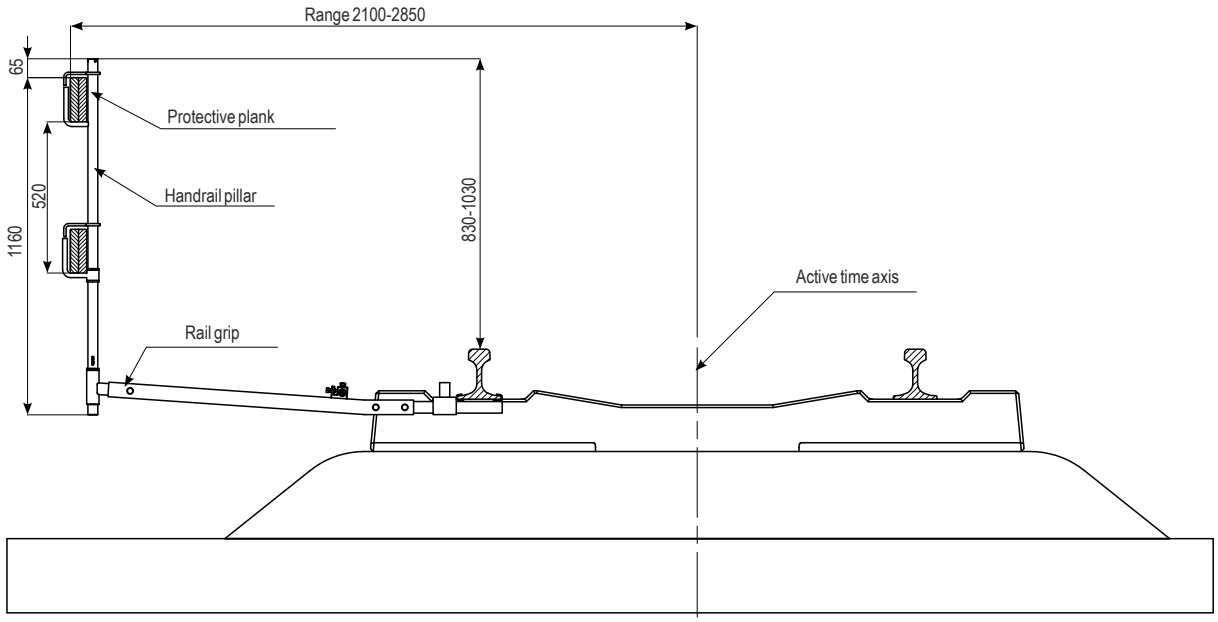
Pipe wrench

The s-17 mm pipe wrench is used for the adjustment of mobile parts in the SECUMAX system grips – the 650 formwork grip, the precast component grip, and in the SECUMAX RAIL system – the rail grip.

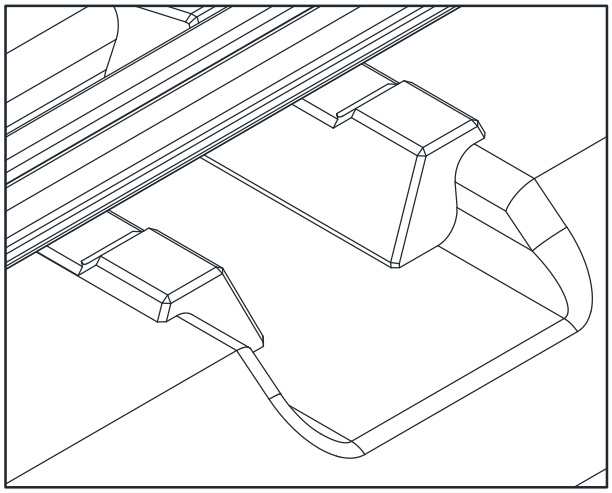
Symbol	Unit [pcs.]	Weight [kg/pcs.]	Art. no.
Pipe wrench	1	0,450	NA-NA-PR-0-04723

Installation diagram

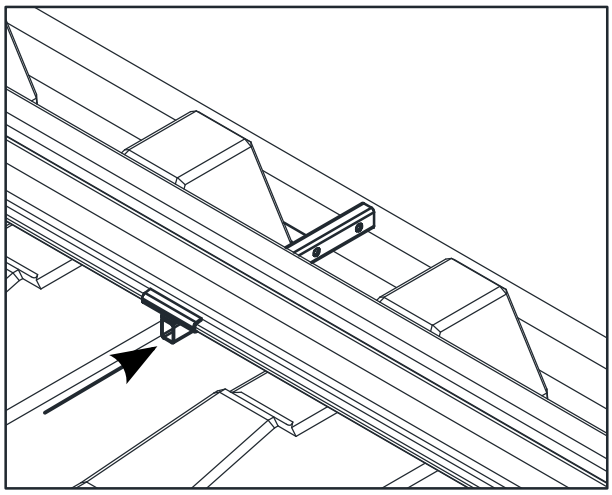
with rail grip



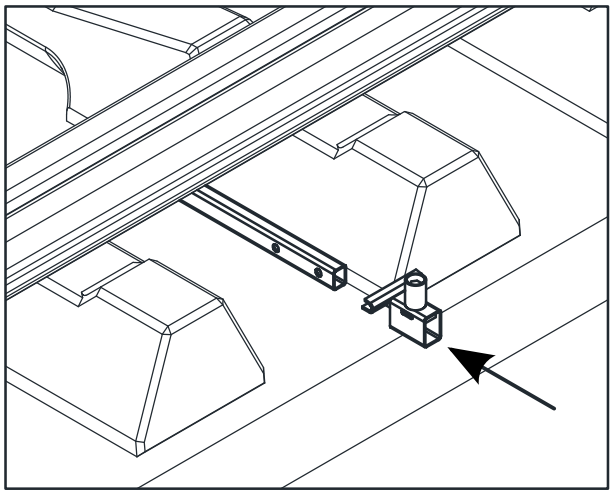
ASSEMBLY SUGGESTIONS



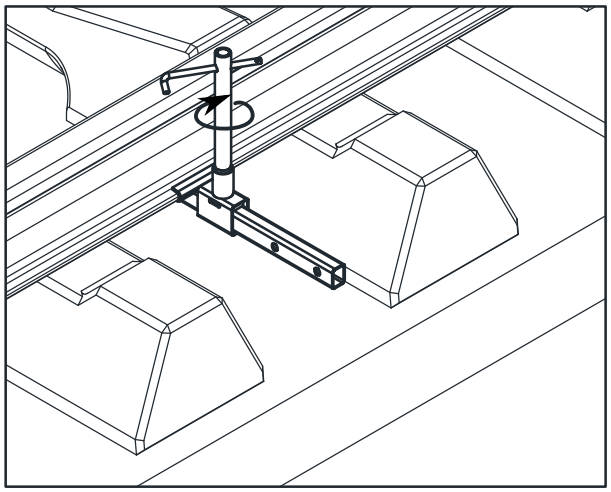
1. Remove aggregate from under the rail.



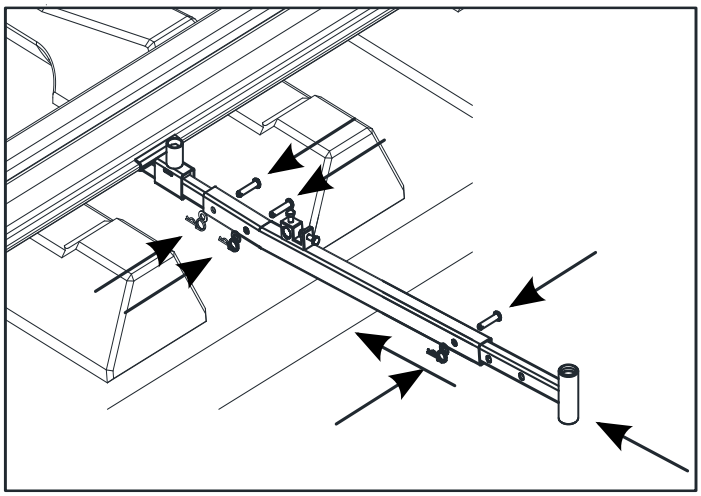
2. Insert guide with grip/clamp under the rail, and then mount guide grip/clamp on the rail foot.



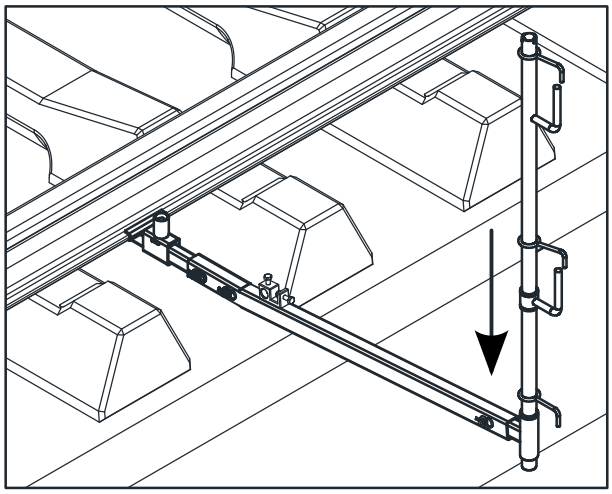
3. Onto the guide, insert the clamp with the compression mechanism, embed on the rail foot.



4. Tighten the compression mechanism screw with the pipe wrench.



5. On the guide, embed the grip arm, and then insert the grip extension and secure the components using bolts and pins with spacers.



6. Affix barrier pillars to the extensions; on these, the safety planks will be mounted.

CHOSEN REALIZATIONS

UPGRADE OF POLISH RAILWAY LINE NO. 273, SECTION GŁOGÓW - ZIELONA GÓRA - RZEPIN

Rental of SECUMAX RAIL safety barriers

General contractor:
PORR Polska S.A.

CONSTRUCTION OF THE RAILWAY LINE PACZYNA – TOSZEK - BŁOTNICA STRZELECKA

Rental of SECUMAX RAIL safety barriers

General contractor:
Skanska SA

UPGRADE OF THE RAILWAY LINE SĘDZISZÓW MAŁOPOLSKI - TRZCIANA

Rental of SECUMAX RAIL safety barriers

General contractor:
Skanska SA

UPGRADE OF RAILWAY LINE NO. 131, SECTION BABIAK - ZARYŃ, PIOTRKÓW KUJAWSKI - CHEŁMCE

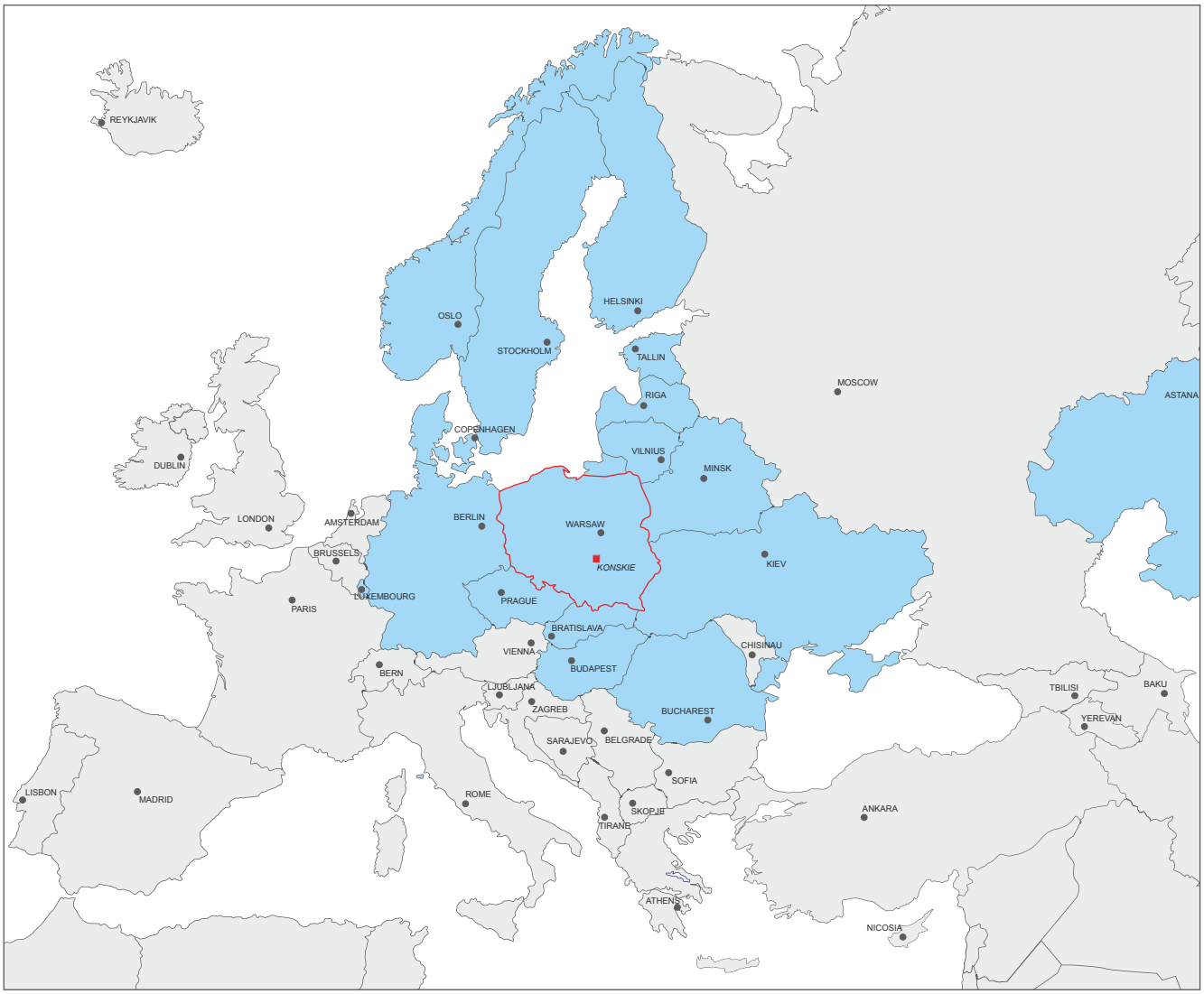
Sale of SECUMAX RAIL safety barriers

General contractor:
EIFFAGE POLSKA KOLEJE

GALLERY







REYKJAVIK
OSLO
HELSINKI
STOCKHOLM
TALLIN
RIGA
MOSCOW
ASTANA
COPENHAGEN
VILNIUS
MINSK
DUBLIN
LONDON
AMSTERDAM
BERLIN
WARSAW
BRUSSELS
KONSKIE
KIEV
LUXEMBOURG
PRAGUE
PARIS
BRATISLAVA
VIENNA
CHISINAU
BERN
BUDAPEST
LJUBLJANA
TBILISI
BAKU
ZAGREB
BUCHAREST
YEREVAN
SARAJEVO
BELGRADE
SOFIA
LISBON
MADRID
ROME
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