

Materials Services
Infrastructure

Trench shoring

The optimum system
for every construction project.



thyssenkrupp



Feeder pipe for spring water in Nördlingen.

Nördlingen gets its drinking water from the Ederheim spring area 6 kilometers away. The last section of the pipeline was renewed at the end of 2014. The old shafts were demolished and replaced by new prefabricated reinforced concrete structures. The construction company opted for our e+s linear shoring system to secure the excavations.

The company used so-called corner rail shoring, which is perfectly suited for working on manhole structures. The system consists of four slide-rail panels and four corner rail soldiers and is particularly simple and flexible to use. The use of panels of various lengths in pairs makes it possible to construct rectangular pits of greatly differing sizes.

In Nördlingen an overlapping shoring system was used. The use of the U-version boogie car made it possible to achieve very high pipe culvert heights. After three months, the measure was completed according to plan.



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Worldwide expertise for infrastructure projects.

Whether mobility, urbanization, climate, or resource efficiency: As a leading supplier in the fields of civil, marine, foundation, and structural engineering, we offer our customers the complete range of products and services for handling their infrastructure projects worldwide. Our portfolio consists of four divisions: steel sections (sheet piles, anchor equipment, flood protection), machinery, trench shoring, and scaffolding systems.

We are a full-service supplier to the construction industry. We always begin our projects by providing customers with in-depth consulting, jointly developing solutions precisely tailored to the job in hand. We can fully depend on the expert support of our own consulting engineers. We provide our customers with all the products they need to implement their projects, most of which are manufactured in-house, such as müller pile driving and extracting equipment and thyssenkrupp cold formed sections. We are the exclusive distributors of thyssenkrupp anchor equipment and trench shoring systems from e+s and krings. We place great emphasis on the topic of sustainability.

Our steel products meet the strictest environmental standards and have a balanced carbon footprint. They are produced with a minimum of energy consumption, are eco-friendly to use, straightforward to dismantle, and virtually 100% recyclable. Our machinery runs quietly and is based on a power supply that generates low carbon emissions. With offices throughout the world, we are present wherever our customers need us. We know the local markets and their requirements, enabling us to provide tailored advice in the field; a crucial advantage, especially in aftersales service.



Project-related consultation.

When trench shoring, it is important to select the ideal shoring system from the multitude of options. It is the best way to ensure rapid construction progress and maximum cost-efficiency. Our project-related consulting service therefore plays a key role: We analyze the conditions on site in great depth and develop tailor-made technical solutions in close cooperation with our customers.





An overview of our services.

- Sale and hire of our products
- Maintenance and repair
- Technical consulting office to prepare or optimize planning
- Site-related planning
- Preparation of structural requirements
- Preparation of site-related drawings
- Installation technicians on construction sites

Trench shoring: Safety has the highest priority.

Every construction site has specific challenges that need to be mastered. However, the requirements of a shoring system are always strict in terms of providing safety, having a minimal impact on the soil outside the shoring, and allowing as much working space as possible.



For almost 70 years, our e+s and krings brand shoring systems have provided cost-effective technical processing solutions with due regard to safety aspects for numerous civil engineering projects, both domestically and on overseas markets.

Unique expertise.

thyssenkrupp Infrastructure is among the world's best-known providers of trench shoring. We offer a wide range of trench shoring equipment and supplementary products. Our portfolio also includes temporary construction site roads made of steel or plastic. For the latter we additionally provide installation services.

For many construction projects, it is more economical to hire the shoring system. Our extensive range of rental equipment means we can always provide our customers with a suitable system, even for large-scale projects.

Cost-effective implementation of large widths and depths: e+s linear shoring.

Our e+s linear shoring system is a patented method for trench shoring that is unique worldwide. It offers a large number of possible applications, either as a single-rail or as an overlapping shoring system. Our technical consultation ensures that the most economical product is always used in the most cost-effective combination.

With e+s linear shoring, rigid boogie cars keep the soldiers and thus the shoring panels at an equal distance. Everything stays linearly aligned, always at the same distance from the opposite side, ensuring more effective, faster, and noticeably more cost-effective operations. A major advantage of the system is derived from the special design of the soldiers, as it allows the shoring panels to be pivoted in from the side.

With the overlapping system, the shoring panels are held in vertically installed rails so that they can slide past one another. Once installed, they form an overlapping shoring system.

Two solutions now provide even more flexibility on the construction site: We have developed a new XL boogie car especially for excavations that are both very wide and very deep, enabling widths to be realized of up to around 18 meters at depths of up to 9 meters. Our innovative trench end shoring boogie car can handle both the compressive forces exerted from the long sides of the trench shoring and the pressure from the front, which means the sheet piles can now lean directly against the boogie car and the pressure is transferred to the shoring.

The e+s linear shoring system can be used as formwork for in-situ concrete and installed with low vibrations, minimizing the impact on the surrounding soil. Existing buildings and traffic flow thus remain largely unimpaired. The system is ideally suited for use at depths of 4 to 14 meters and widths of 0.9 to 18 meters.



The benefits at a glance.

- Low-vibration installation
- Very little impact on the surrounding soil
- No impairment of existing buildings or traffic flow
- Great depths and widths feasible
- Highly suitable for manholes
- Shoring panels can be pivoted in from the outside
- Flexible pipe culvert heights
- Plenty of working space
- Suitable as formwork for in-situ concrete
- Open guidance of the panels prevents jamming in the slide-rail

Examples of our services.

Sewer renovation in Braunschweig.

A number of challenges had to be mastered when redeveloping the sewer system that runs under Salzdhahumer Straße in Braunschweig in 2014: Firstly, conditions on-site allowed very little space to work, and secondly, the redevelopment of the 400-meter-long route had to be completed without obstructing traffic. Secondly, Braunschweig Clinic is situated on Salzdhahumer Straße and accessibility had to be guaranteed for the duration of the project.

After careful consideration, the parties involved opted for our e+s linear shoring system. The design advantages of the system were convincing, as the soil around the excavation was able to remain largely unaffected and hardly subsided. A total of eight fields with double slide-rails were used. Four-meter module lengths were mainly deployed, enabling the pipes to be optimally lowered onto the pipe bases. However, shorter units were also kept available – so that the shoring could also be accurately adapted when dealing with transverse utility lines.

A thyssenkrupp Infrastructure area manager was on site during the first few days to instruct excavator drivers and other workers on how to handle the shoring system.



Trenchless crossing in Innsbruck.

With the laying of a new underground power supply line from the city's central substation to its northern substation in 2014, the Innsbruck municipal companies wanted to complete their urban electricity supply network. The companies decided to install the ducts needed to house the 110 kV power lines under the busy Salurner Straße using a trenchless procedure.

A starting pit 3.10 meters wide and 7.80 meters long had to be built to accommodate the drilling rig. In contrast to the original plan, the pit was not secured with sheet piles, but with our e+s linear shoring system. An essential reason for the decision: Rather than ramming the sheet piles, the installation of our system meant far less vibration in and around the construction site.

Sheet piles were installed to shore up the ends of the starting pit. As the struts of the shoring systems can only be used longitudinally to apply pressure and tension and cannot be strained horizontally, so-called trench-end shoring adapters were integrated in the linear shoring system. These are guided in the profiles of the linear shoring soldiers. They can be raised upwards at any time and close flush to the trench-end edge of the shoring system. Using this method, the sheet piles can be supported against the cross struts, which are resistant to bending.

Renewing the drainage system along the A7 highway.

The drainage system along the A7 needed to be renewed over a length of 2 kilometers near Jagel, Schleswig-Holstein. The tender placed very strict structural requirements on the shoring. The contracted construction company therefore opted for the e+s linear shoring system. Our system proved to be a good choice, particularly when it came to securing the construction pit nearby a bridge abutment, where the entire load was transferred by the shoring during that particular stage of construction.

The tender required strength and stability, as a bridge with shallow foundations was located very close to the construction site. This is where our system proved its design advantages, as with the e+s linear shoring system, the panels are not slotted into the shoring soldiers, but pivoted in from the side – a crucial advantage when securing the construction pit.

It was necessary to secure a pit 3 meters wide and 7 meters deep in order to lay the pipes. In the open sections, the work was completed using 4-meter-long units. However, around the bridge, the distance between the shoring soldiers was slightly reduced and module lengths of 3 meters were used.



Construction of collector and rainwater reservoirs in Badajoz.

In 2015, in the provincial capital of Badajoz the municipality constructed a good 800-meter-long collector and several rainwater reservoirs. In order to secure the 5- to 8-meter-deep excavation for the collector, the construction company decided for the overlapping e+s linear shoring system.

A total of 18 of our system modules were installed, each 4 meters long. So-called U-version boogie cars were used, which are designed in the form of a “U.” This feature enables large pipe culvert heights, thus ensuring maximum flexibility on the construction site. U-version boogie cars can be used steplessly in accordance with structural standards in various stages of construction. The U-version boogie car features outstanding structural properties and is extremely strong.

All parties involved in the project agreed that the e+s linear shoring and first-class technical consultation provided on site contributed significantly to reducing costs on the construction site.



Protective wall to fill the beach at Timmendorfer Strand.

The municipality of Timmendorfer Strand on the Baltic Sea wanted to add sand to its beach. In order to carry out this measure, the construction company erected a soldier pile wall as a temporary protective wall, which was done using slide-rail panels from the e+s linear shoring system measuring 3.89 meters x 2.32 meters.

The use of our panels made it possible to increase the distance between the soldiers. As a result, there was significantly less work involved and the project progressed far more quickly. In addition, the entire design was practically watertight.

Cost-effective laying of cables and pipes: e+s trench boxes.

The e+s trench boxes of the Lightweight (LBR), Medium, and Magnum classes make it possible to lay pipes with unusually large diameters or lengths particularly cost-effectively. Outstanding performance factors are, for example, shoring heights of up to 6 meters, possible trench widths of over 5 meters, and vertical pipe clearances of up to 2.46 meters. The strong strut systems can handle large widths and are compatible with all three box systems.



LBR Lightweight shoring. The benefits at a glance.

- Highly cost-effective solution for urban civil engineering projects
- Can be either dropped in or lowered
- Highest safety standard
- Strut system compatible with Medium and Magnum shoring
- Easy handling



Medium shoring. The benefits at a glance.

- Economical shoring solution for urban civil engineering projects
- Stepless adjustability for optimum adaptation to the trench width
- Strut system compatible with Lightweight and Magnum shoring
- Top panels compatible with Magnum shoring
- Easy handling



Drag box – for shoring projects carried out in open and mainly unbuilt terrain.



Magnum shoring. The benefits at a glance.

- Cost-effective shoring solution, e.g. for laying large or long pipes
- Strut system compatible with Lightweight and Medium shoring
- Top panels compatible with Medium shoring



Linear boxes. The benefits at a glance.

- Combination of slide-rail and box shoring
- Stepless adjustability of the pipe culvert height
- Top panel compatible with Medium and Magnum shorings
- High flexibility due to the vertically displaceable boogie car
- Low-subsidence installation and removal

Examples of our services.



Installing new drinking water pipes in Herblay near Paris.

The French municipality of Herblay in the greater Paris area had decided to expand its drinking water network. For this purpose, pipes with a length of 7.20 meters and a diameter of 1,600 millimeters had to be laid at a depth of approximately 2.70 meters.

Installation with conventional boxes was out of the question due to the pipe culvert height and the connecting pieces. The construction company therefore decided to use our "Linearbox" shoring system. The use of vertically displaceable boogie cars makes our shoring extremely flexible and ideally adaptable to the individual requirements of the construction site.

In Herblay, the first boogie car was positioned in the lower part of the pit and the second in the upper part, enabling the pipes to be inserted at an angle. The connecting pieces did not present an obstacle. Altogether, seven linear boxes with a shoring length of 3.40 meters each and a height of 3 meters were used in the project.

Expanding the district heating network in Twist, Lower Saxony.

The municipality of Twist in Emsland wanted to expand its district heating network. To secure the excavation, the building contractor opted for our magnum shoring system, which is ideally suitable for laying large and long pipes cost-effectively.

Around 100 boxes in varying lengths were used – some of them with extension units. A key reason for choosing our system was the short-term availability of all the required material.



Robust and smooth-running – for easy working: krings parallel shoring.

Our krings parallel trench shoring system is extremely strong and at the same time very smooth-running, making it easy to work with.

Fixing the vertically displaceable boogie car in the position required for structural stability ensures that loads are optimally supported at just the right points. The accurate parallel alignment of the slide-rails enables the frame and the individual panels to slide smoothly, effectively reducing the amount of force that needs to be applied during installation and removal.

Double slide-rails are used to handle greater depths. Whereas the panels in the single slide-rail are only guided at one level, in the double slide-rail they are mounted in two guide levels.

The system is also suitable for constructing in-situ concrete sewers. Once the concrete has set, the concrete base slab structurally braces the base of the rails. The boogie car can then be raised to the top to create sufficient working space for sewers over 3 meters in height.



The benefits at a glance.

- Low-vibration installation
- Very little impact on the surrounding soil
- No impairment of existing buildings or traffic flow
- Frame and individual panels slide smoothly
- Great depths and widths feasible
- Highly suitable for manholes
- Flexible pipe culvert heights
- Plenty of working space
- Also suitable for constructing sewers with in-situ concrete



Examples of our services.

Constructing a dry well in Corsica.

On the island of Corsica, there are frequent thunderstorms that can generate well over 100 liters of rainfall within 24 hours. To avoid flooding as far as possible in the future, the regional government commissioned the construction of a dry well that absorbs the rainwater and channels it into the sea.

For this purpose, long steel pipes of 1,200 millimeters in diameter and 12 meters in length had to be inserted into the soil. The contractor used our krings parallel shoring system for this purpose. The possibilities of this system – especially the use of the U-version boogie car – provided the necessary culvert height, making it possible to insert and lay the pipes into the pit at an angle.

Our system was installed over a total length of 80 meters. The pit was 3.62 meters in width. U-version boogie cars were used at various heights. All those involved agreed that our system had significantly contributed to the rapid progress of the construction project.



Installing a pumping station in Croatia.

In the municipality of Lekenik, southeast of Zagreb, a construction company completed the installation of a pumping station at a depth of 6.50 meters. The heavy, muddy soils and groundwater at a depth of approximately 3.50 meters were a particular challenge. The construction company used our krings parallel shoring system to secure the excavation.

The choice was made for our DGPV6000 with U-boogie cars and corner soldiers. This combination provided both the required stability and a maximum of working space. Moreover, our krings parallel shoring system has the advantage that it can be installed and removed without subsidence, which meant that the adjacent road was not affected in any way.

Quick and easy to use: krings trench boxes.

Our edge-supported shoring systems from krings are particularly versatile. They take up little space during storage and transport and can be very quickly and simply assembled at the construction site.

The little KVL steel box is ideal for inner-city areas, the sturdy KS 60 is recommended for inner-city sewer construction projects, and the KS 100 is designed for use at greater depths.

By means of an adapter, the struts developed for the KS 60 and KS 100 boxes can also be used on the KVL. The shoring struts are compatible with the box and sprung-socket slide-rail systems.



KVL. The benefits at a glance.

- Suitable for use in urban centers
- Lightweight design
- Ideal for handling with smaller wheel excavators
- Also suitable for constructing sewers with in-situ concrete



KS 60. The benefits at a glance.

- Suitable for open terrain and medium-scale sewer construction in urban centers
- Shoring struts are compatible with KS 100 boxes
- Can be installed and removed using smaller excavators
- Low weight, high strength



KS 100 Eck:
Simple, cost-effective
shoring for circular and
masonry manholes.



KS 100. The benefits at a glance.

- Most used trench box worldwide
- Suitable for use at increased depths
- No negative environmental impact from pile-driving and vibration noise
- Shoring struts are compatible with KS 60 boxes



Flex shoring. The benefits at a glance.

- Ecologically compatible timber shoring
- The eco-friendly alternative to aluminum shoring
- Can be easily adapted to suit various pipe culvert heights and transverse pipes and cables

Examples of our services.

Extending the district heating network in the municipality of Meyrin, Switzerland.

The municipality of Meyrin near Geneva wanted to extend its district heating network. Two pipes, each 12 meters in length and 600 millimeters in diameter, needed to be laid simultaneously in the construction pit. To master this challenge both safely and economically, the construction company decided for our krings trench boxes.

KS60 boxes with a length of 3.50 meters and a height of 2.40 meters were used and extended with attachments of 1.30 meters in height. The strategy allowed the pit to be dug deeper, making it far easier to feed in the long pipes. The total length of the shoring was 400 meters. The project was divided into four sections, so that in a second step the pipes could be welded immediately and tested for leaks using X-ray procedures.

A special feature of the implementation was that the pipes were moved 100 meters within the trench using steel rollers and then finally pushed in.



Laying new supply lines in Hockenheim.

New supply lines had to be laid in the Hockenheim city area. To implement the project, the construction company selected our KVL small steel boxes, which are specially designed for inner-city conditions. Another decisive factor in the choice was that we were able to supply these boxes at short notice and in large quantities.

In total, we delivered over 240 KVL boxes in just five days. The contractor also deployed three civil engineering crews. Boxes with two different types of spindle were used, which enabled the construction company to implement two different trench widths. In order to complete the project as quickly as possible, excavation work was commenced at several points simultaneously.

Expanding the district heating network in Hamburg.

Hafencity in Hamburg is one of the largest inner-city construction projects in Europe. The area is to be gradually connected to the district heating system of the Hanseatic city. In order to do so, district heating pipes had to be laid on a large scale in the area of the Georgswerder Dam.

When it came to securing the excavation, the contracted construction company opted for our KS boxes. Our very short delivery time was a particularly good reason to work together with us. All in all, 82 KS 60 and 18 KS 100 boxes in different lengths were used.



Getting you quickly and easily to the construction site: Site road systems.

Plastic site road.

Our plastic site road features a combination of low weight and high load-bearing capacity. It is easy to lay, ensures optimal weight distribution, and can be installed on practically any surface.

The plastic site road is a genuine lightweight. A single truck can transport up to 75 panels, which keeps transport costs to a minimum. The processing of the plastic panels is also inexpensive, making the plastic site road a particularly cost-effective solution for a wide range of applications. It is not only suitable for construction sites, widening existing roads, or as storage space, but equally for use as a crane or assembly platform for wind power, line construction, or photovoltaic systems. Fitted with a specially designed geotextile underlay, the plastic site road can be used to protect sensitive surfaces such as natural stone or precast concrete paving.



Plastic site road.

The benefits at a glance.

- Low weight, high load-bearing capacity
- Low transportation and processing costs
- Up to 75 panels can be transported per truck
- Protects the substrate of temporary construction site access roads
- No special-purpose vehicles needed for transporting the system
- Can be laid without excavation work
- Easy to install
- Fast laying speed



e+s steel construction road. The benefits at a glance.

- For utmost strength requirements
- Protects the substrate of temporary construction site access roads
- No special-purpose vehicles needed for transporting the system
- Can be laid without excavation work
- Easy to install
- Relatively fast laying speed
- Site road can be used in flooded areas

Steel construction roads.

Our e+s steel site road system provides great freedom of mobility as well as a host of technical options and broad scope for cutting costs.

The site road consists of heavy-duty angles laid lengthwise and special profiles laid crosswise. Its simple design and special connectors make installation a very straightforward matter. The speed of laying is relatively high, as an excavator lifts the elements one after another from a reversing truck. The sections are then connected together with a kind of chain joint.

Examples of our services.

Temporary access to a construction site near Kehlen-Olm, Luxembourg.

A rainwater reservoir was to be built on a meadow in the municipality of Kehlen. However, access to the construction site proved to be a real challenge, as the terrain had a noticeable gradient and was strongly impacted by precipitation. In addition, the load-bearing capacity of the soil was low.

The idea of a conventional road with a base course was rejected by the construction company due to the high cost of installation and removal. Moreover, the original substrate was to be affected as little as possible. Finally, the project managers opted for our plastic construction site road.

The complete site road with a length of 625 meters was laid within only two days. A total of 250 panels were used, each 3.0 meters long, 2.50 meters wide, and 0,038 meters thick. The load-bearing capacity is 160 tonnes per square meter and the system is designed for construction site traffic with SLW60. The reservoir was completed within three months and the plastic site road was dismantled in a very short time.



Access roads to events around the 2017 UN Climate Change Conference in Bonn.

In November 2017, some 22,000 people from more than 190 countries attended the UN Climate Change Conference. Many of the related events were held in temporary buildings set up in nearby fields.

In order to protect the greenery, a large number of plastic site roads were laid. They provided optimum protection for the soil and good access to the various events, largely avoiding any damage to the fields.

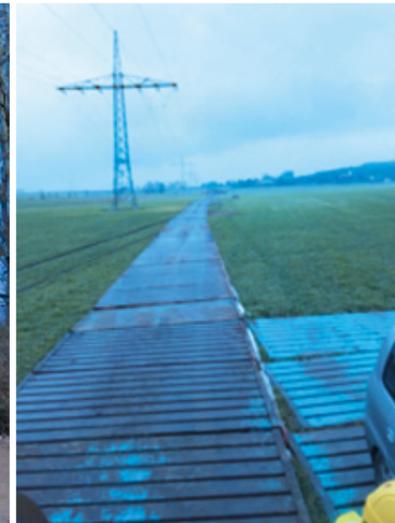


Constructing a drinking water pipeline from Trages to Kömmlitz, Saxony.

The town of Kitzscher in Saxony planned the construction of a drinking water pipeline from Trages to Kömmlitz. The planned excavation led through meadows and fields with several particularly damp sections.

In order to carry out the preparatory work for the laying of the line as quickly and simply as possible, the contracting company decided to use our construction site roads. Around 1,000 meters of plastic site road and 800 meters of e+s steel construction road were used in the project. The installation was carried out according to a specified site plan. Wherever the ground was particularly wet, steel road elements were used.

The temporary construction site access road was completed within a very short time, enabling technical equipment and materials to be easily transported to the installation site. Furthermore, the construction road helped reduce the renaturation costs, as it enabled the return transport of discarded material.



Access roads and footpaths for the Reload Festival in Sulingen.

Every year during the summer months, the Reload Festival is held on open spaces in the municipality of Sulingen, Lower Saxony. More than 10,000 fans attend the multi-day rock event and a large number of them also spend the night at the site.

Plastic site roads were used in various areas to protect meadows and soils, providing access to the loading dock in the backstage area. They also served as the base for a parking lot where the nightliners of the bands stood and were used to form footpaths through the sanitary area.

All those responsible agree that the solution will again be deployed at the next festival.

For trenches in towns and urban centers: thyssenkrupp aluminum lightweight shoring.

Our thyssenkrupp aluminum lightweight shoring is the ideal solution for construction sites in cities and urban centers. The modular system is made of aluminum and closes the gap between steel systems, which are often too heavy and unwieldy, and timber planks.

The range is divided into several groups in order to cater for varying specific requirements. The modular system can be combined and supplemented as required.

The lightweight sections (max. 42 kilograms) can be brought to the site with a light commercial vehicle or car trailer. The aluminum boards can then be quickly connected by hand on site using aluminum couplings and struts to form a shoring unit of the desired depth. All conventional trench widths, depths and degrees of difficulty (transverse electrical lines, tight working areas) can be handled using the standardized thyssenkrupp aluminum lightweight shoring, even without heavy equipment.

thyssenkrupp aluminum lightweight shoring. The benefits at a glance.

- Easy to transport
- Simple to install on site
- A wide range of variations
- Suitable as a box combination for securing trenches
- Long service life, highly durable, no rusting



System components:

Aluminum trench edge supports.

A frequent application of our system is partial shoring with aluminum trench edges, suitable for stable soils and trenches up to 1.75 meters in depth, where most of the supply lines are located. Even with this simple design, all the advantages of our modular system come into their own. One trench edge unit weighs a maximum of 130 kilograms.

Aluminum lightweight shoring.

From a depth of 1.75 meters or with only short-term stable soils, the entire structure needs to be shored up. Several aluminum boards are connected by means of aluminum couplers to form large-scale shoring units, allowing trenches to be excavated quickly and safely. Sewer struts in various lengths enable trench widths of up to 2.26 meters.

Strongframe trench shoring system.

With the aluminum strongframe trench shoring system, complex situations such as transverse lines or other obstacles can be easily avoided by up to 3 meters. By connecting the aluminum boards and the aluminum chamber wall, the aluminum planks can be laid to the required depth in the soil. Excavation is controlled and secured by the shoring – even on loose, unstable soils.

Aluminum manhole shoring.

A range of shaft layouts can be implemented by combining aluminum boards of varying lengths, resulting in a free working area without cross struts at a depth of up to 3 meters. Starting and target pit solutions are easy to implement. Closed on one side, aluminum manhole shoring is also very well suited as end face shoring.

Examples of our services.

Laying supply pipes in Bremen.

New supply pipes needed to be laid at a depth of up to 2 meters on a section of Osterstraße in Bremen. In order to secure the excavation pit, the construction company required a quick and particularly lightweight solution. Our thyssenkrupp aluminum lightweight shoring was an obvious choice due to its low weight and immediate availability.

Because of the depth, the entire area needed to be shored up and a total of 28 boxes in different lengths were used for the purpose. A 14-tonne excavator was sufficient to install our system in the excavation pit.



Basement renovation in Osnabrück.

A basement needed to be renovated in the main street of Osnabrück. The construction company selected our thyssenkrupp aluminum lightweight shoring to implement the project.

A one-sided strongframe trench shoring system with a depth of up to 3 meters was used. Ten 2-meter lightweight aluminum strongframe sections were used in combination with a sheet pile of 3.50 meters. The excavation had a clear width of 2 meters and a freely available height of 2.20 meters under the struts.

All those responsible were highly satisfied with the quick, easy solution and particularly with the fact that our system could be easily installed and removed using a 16-tonne excavator.

For specific requirements: Supplementary products for civil engineering.

krings RG2500/RG5000 pipe grabs.

Over many years, our krings pipe grabs have proven to be the ideal devices for the safe and efficient handling and laying of pipes of all kinds. Both types work very simply with automatic grabbing mechanisms. After picking up the load, the jaws lock automatically without manual intervention. An interlocking latch prevents the load from being accidentally released, thus providing greater safety.



Sewer struts.

Particularly in inner-city areas, rapid excavation and pipe-laying are essential. However, problems may arise in deep excavations if tie-back anchoring is not allowed – e.g. if there are adjacent buildings. In this case, sewer struts can be used to support the walers.



krings SZ 10 pipe puller. The benefits at a glance.

- With an additional adapter, pipes of up to 2,400 millimeters in diameter can be pulled
- Compact design
- No damage to the ends of the pipes

krings SZ 10 pipe puller.

The krings SZ 10 pipe puller enables pipe socket seals to be pulled together without damage and also prevents the bed or pipe ends from being damaged by the excavator bucket.

Our pipe puller is a very compact unit: All its key working parts, such as the hydraulic cylinders, the control unit, and the double clamp mechanism are accommodated on a smooth-running trolley. Power is provided by a 12-volt battery and vertical anchoring in the socket between two pipes is effected with a socket spindle. The pulling force is 100 kN and the pulling length is not limited.

Further supplementary products for civil engineering.

thyssenkrupp shoring extractor.

Our unique shoring extractor guarantees the quick and easy dismantling of linear shoring. A chain of optional length on a sprocket enables it to adapt optimally to changing trench depths, effectively eliminating the time-consuming shortening or lengthening of chains.



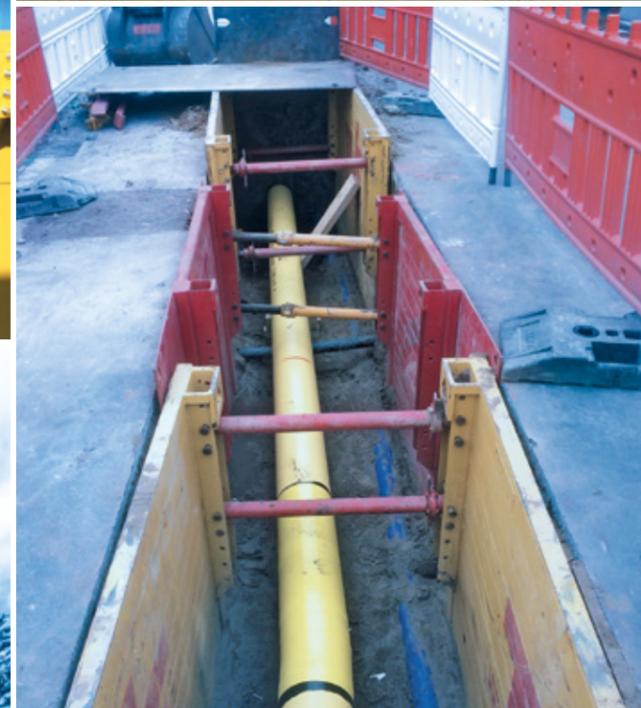
MTS pipe laying device.

The MTS pipe laying device can move, position, and install pipes from DN 1200 to DN 2200 in lengths of 2.5 meters and 3.0 meters with a total weight of up to 15 tonnes. It also has a joining function for all sizes of reinforced concrete pipes, powered by the hydraulic energy of the excavator. This solution enables sewer construction to be completed more quickly, safely, and economically.



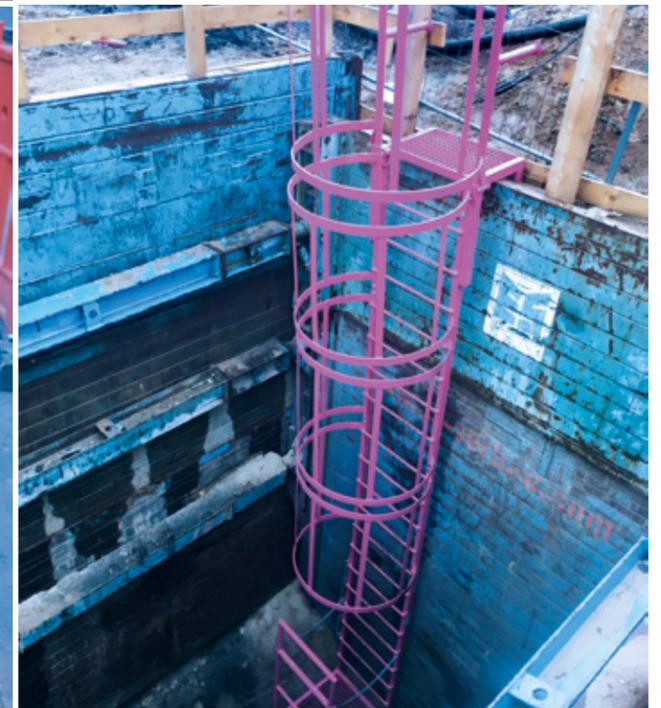
PASSLER edge-supported corner shoring.

PASSLER edge-supported corner shoring is ideally suited for making directional changes of up to 90 degrees in the shored trench. The conventional shoring method with wooden planks, squared timber, etc. can be either omitted or reduced to a minimum, saving considerable working time and effort, during both installation and removal.



PASSLER length-compensation shoring.

PASSLER length-compensation shoring is a special base box with a transfer steel plate. Its special design enables shoring gaps in the pipe trench to be safely shored up, which saves a lot of time when crossing divisional lines. The box ideally supplements our krigs KVL box.



Shoring ladder.

Our shoring ladder was developed in cooperation with the trade association BG Bau and complies with DGUV Regulation 38, Section 10 Traffic Routes.

Further supplementary products for civil engineering.

Trench sheeting.

Our trench sheeting sections are used to reliably shore up trenches, shafts, and construction pits. They are used when the water-tightness of an interlocked section is not required. For technical reasons, a model with high dimensional stability has become established to facilitate repeated driving. Their special shape makes them easy to adjust and stack.

We manufacture the sections with great accuracy in our cold-rolling mill and stock them in lengths of up to 8 meters. Longer sections can also be cold-rolled upon request.

Railguard.

The safety barrier for trenches and excavations can be used as a module for mounting on top of trench boxes and sliding-rail shoring. It is a simple system of protection in accordance with the BG Bau regulations on fall protection. Thanks to its versatility, this railguard system can be adapted to suit numerous shoring configurations on site.



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