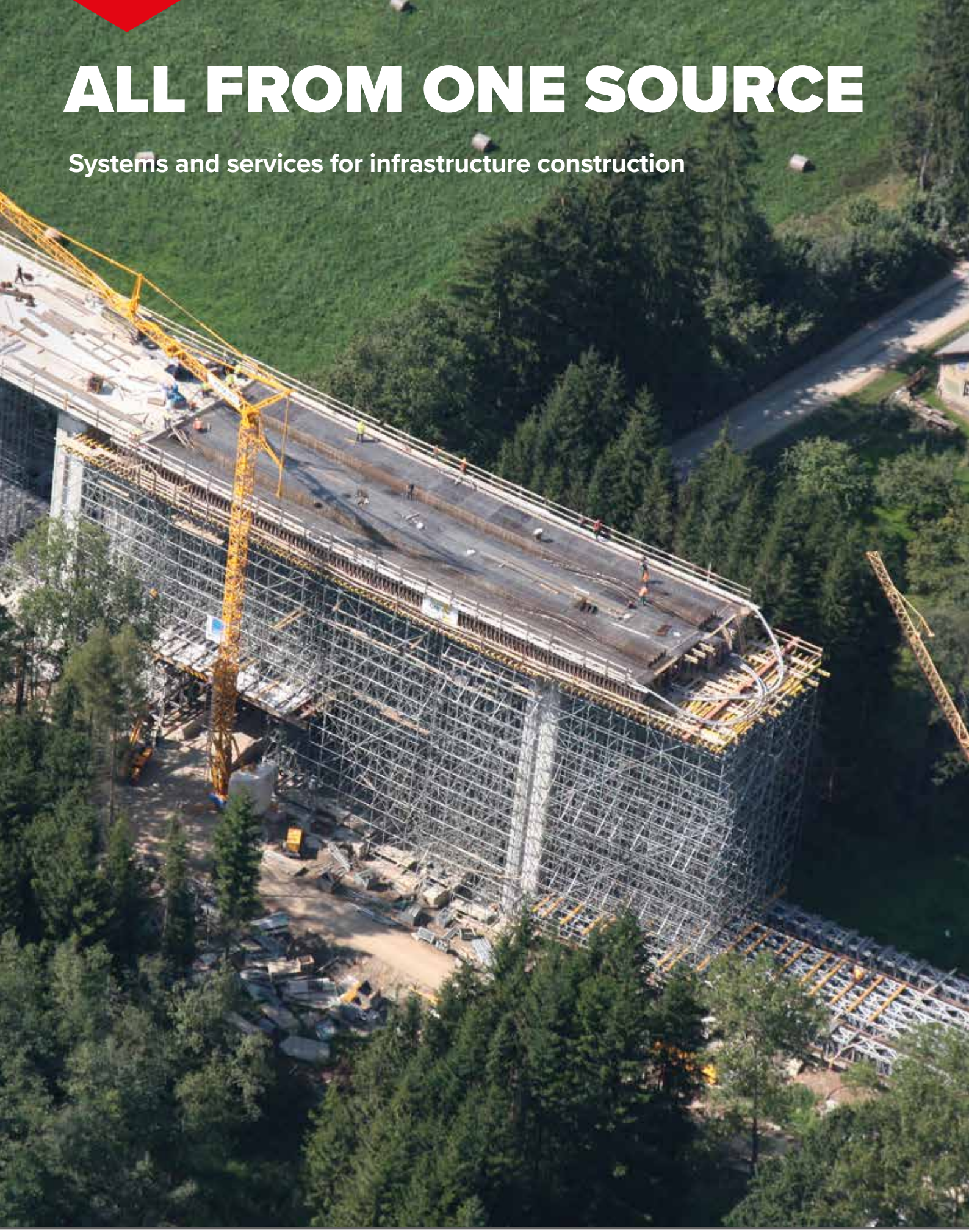
ALL FROM ONE SOURCE

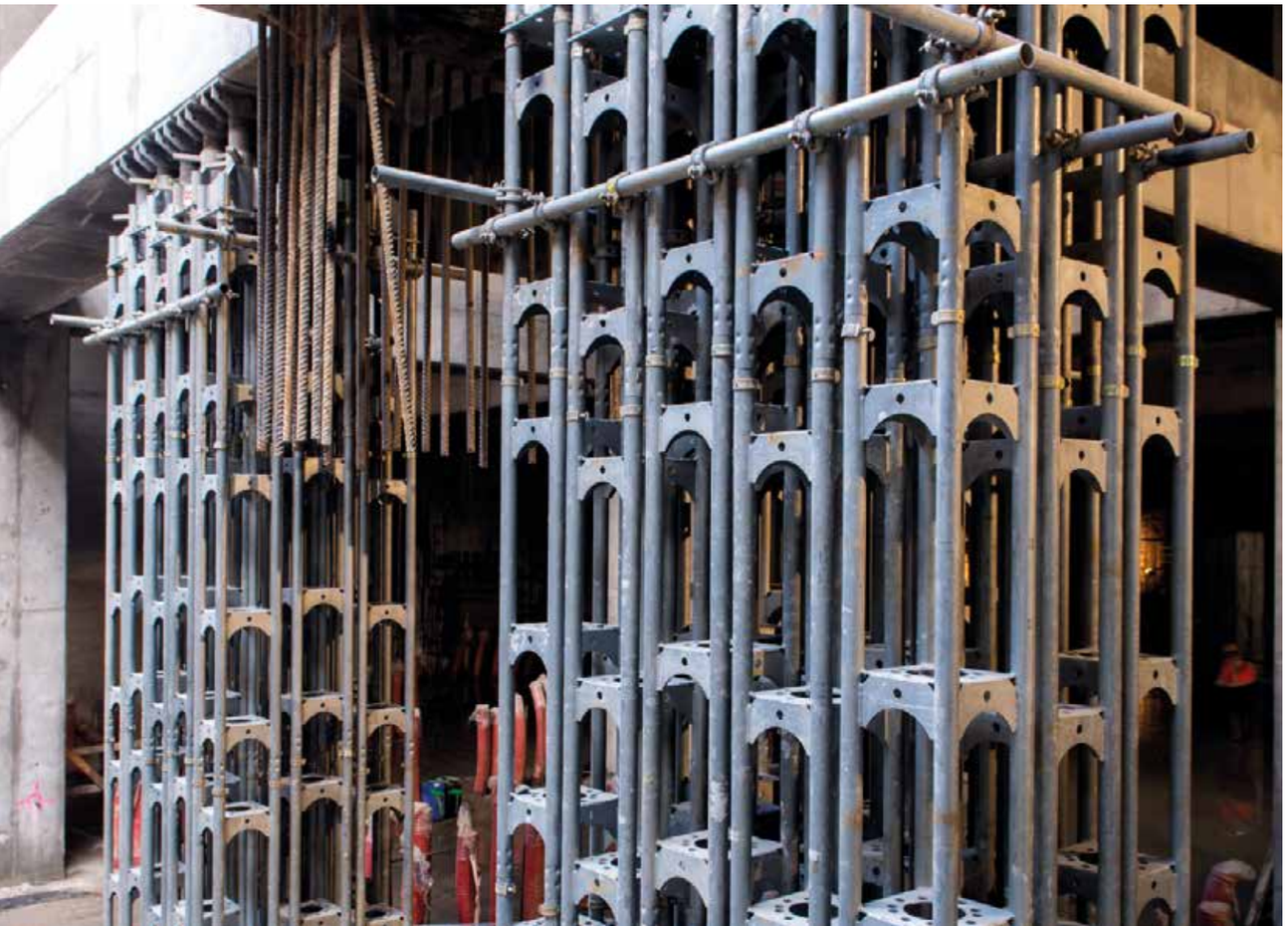
Systems and services for infrastructure construction



At Work For You

HÜNNEBECK

BY BRAND SAFWAY



Dear reader,

The demand for renovation and for erection of bridges and other infrastructure buildings is huge. Analyses show that the volume will heavily grow by 2020. The reasons are manifold. In some countries, there is a high demand concerning infrastructures, in other there is a backlog of refurbishment work on outdated buildings regarding repair and refurbishing.

Be that as is may, the construction industry needs modular, flexible products and services in order to meet the specific demands onsite. More importantly, it needs solutions which make smooth construction progress in due time possible.

With Hünnebeck at your side, you are perfectly positioned to meet the diverse demands infrastructure construction holds. Our dedicated international competence team with its local representatives provides advice and support from day one. It makes sure that you can fit our versatile portfolio of formwork and shoring solutions perfectly to your purposes. Additionally, it provides the services you desire. In short, we help you focus on your core business.

Learn more about our product and service portfolio for infrastructure construction on the following and discover new ideas to support your business.

Martin Hemberger
Hünnebeck Group

Martin Hemberger

Our expertise

Modular variety: Tailored solutions

Construction, repair and refurbishing: The demands of infrastructure projects are highly diverse. With us, you have tailored solutions at your disposal.

What characterizes a perfect partner? He provides bespoke solutions that fit your demands perfectly – nothing more, nothing less. As people with a sympathetic ear for our customers, as doers and competent experts, we offer you a comprehensive infrastructure supply, consisting of products, services, safety, plus efficiency in a one-stop-shop. As a result, you can focus on your core business entirely.

At the center of our infrastructure portfolio there are two innovative systems: INFRA-KIT and QuikDeck®. In combination with our well-established formwork and shoring portfolio, these two systems are the basis for the customized solutions our competence team infrastructure tailors for your civil engineering project.

INFRA-KIT and QuikDeck® are based on Hünnebeck's longstanding expertise and combine maximum safety with efficiency and profitability. Unlimited flexibility and easy assembly characterize the rentable modular systems, whose sturdy components are made to last a lifetime. Consequently, costly special designs become superfluous.

Our new construction portfolio

For new projects in bridge construction and open-cut tunneling, our competence team combines INFRA-KIT with our tried-and-tested H 20 or MANTO® formwork products, adding our fall protection, climbing systems plus falsework and shoring solutions.

As a result, you are able to cast concrete rapidly, efficiently, and profitably at utmost safety.

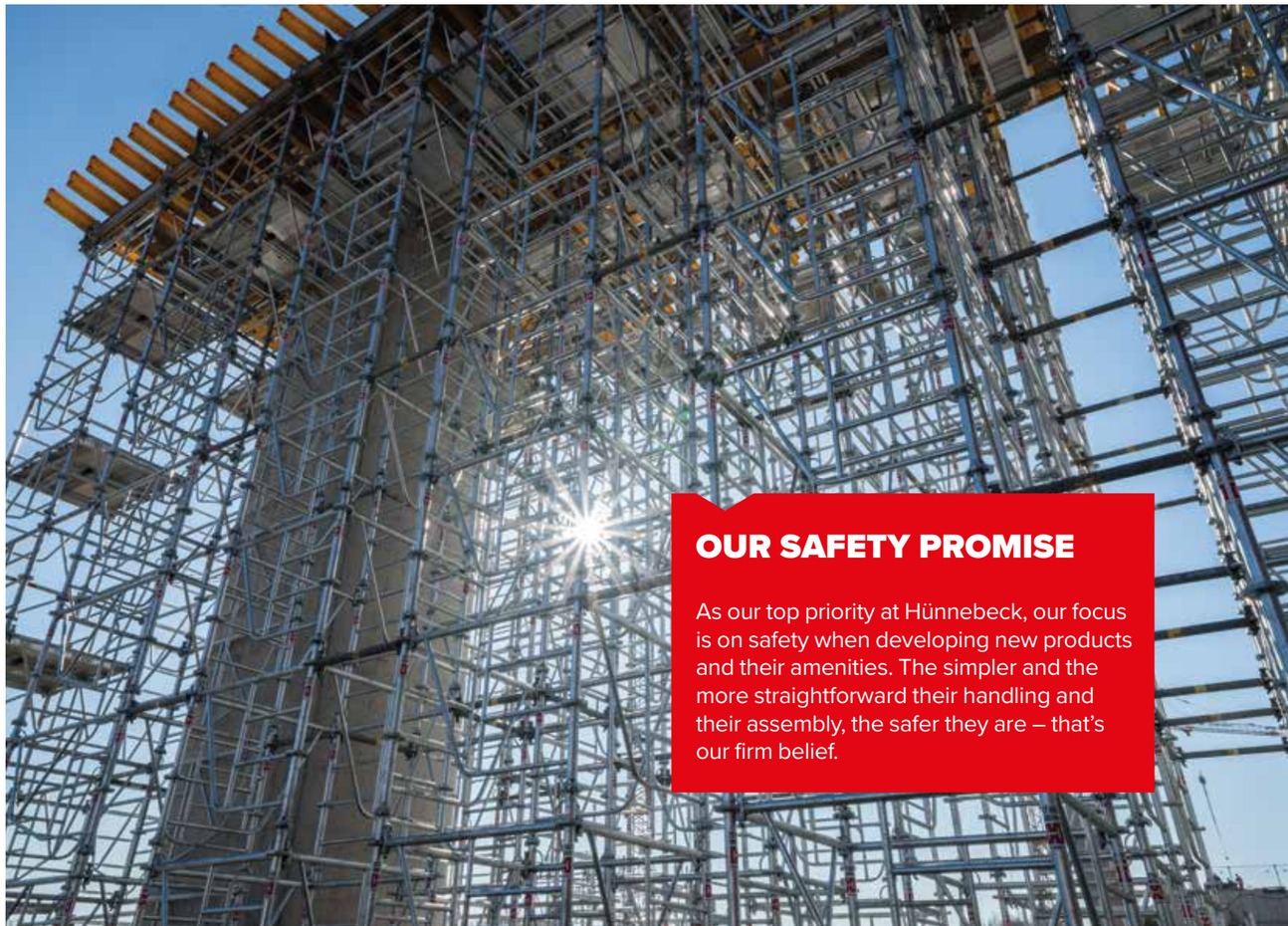
INFRA-KIT's fields of application are manifold. They include cantilever construction and open-cut tunneling as well as temporary bridges, thoroughfares, or heavy-duty shoring towers.

Our portfolio for refurbishment

QuikDeck® is designed as a suspended access system for bridge repair, but can be used for other refurbishings in public spaces, too. It provides a platform for extremely safe and efficient operations. Moreover, traffic restrictions or closures are made obsolete in most cases.

Our services

Our manifold services accompany our infrastructure product portfolio. They range from planning, delivery and assembly to disassembly, cleaning and repair.



OUR SAFETY PROMISE

As our top priority at Hünnebeck, our focus is on safety when developing new products and their amenities. The simpler and the more straightforward their handling and their assembly, the safer they are – that's our firm belief.

Bridge construction

Almost unlimited flexibility thanks to INFRA-KIT

Efficient, modular, and extremely safe: our innovative system of steel beams facilitates customized all-in-one solutions for infrastructure projects.

INFRA-KIT is a versatile modular system for bridge construction, open-cut tunnels, and construction engineering. Providing extreme flexibility regarding form and load distribution, its components can be applied variably. In combination with our tried-and-tested formwork and shoring systems, we cover all infrastructure demands with INFRA-KIT in a one-stop-shop.

The system's modular character reduces planning efforts. Moreover, its easy assembly makes it highly profitable. Costly special designs are superfluous. Incidentally, all INFRA-KIT products are for hire or for sale.

Thanks to its multifarious application possibilities, INFRA-KIT provides all-in-one solutions for the bridge superstructure and bridge cap as well as for abutment and piers. The innovative system stood the test in many different situations. It was not only used to erect temporary bridges and access ways, heavy-duty shoring towers or superstructures, but also when casting heavy slabs.

Components for different load-bearing classes

The system's major components are steel beams which have been load-optimized. They come in three different designs: INFRA-KIT L (Light System), INFRA KIT M (Medium System), and INFRA KIT H (Heavy Duty System). All three designs include beams in different lengths, which can flexibly be assembled with the help of spindles, braces, and connectors.

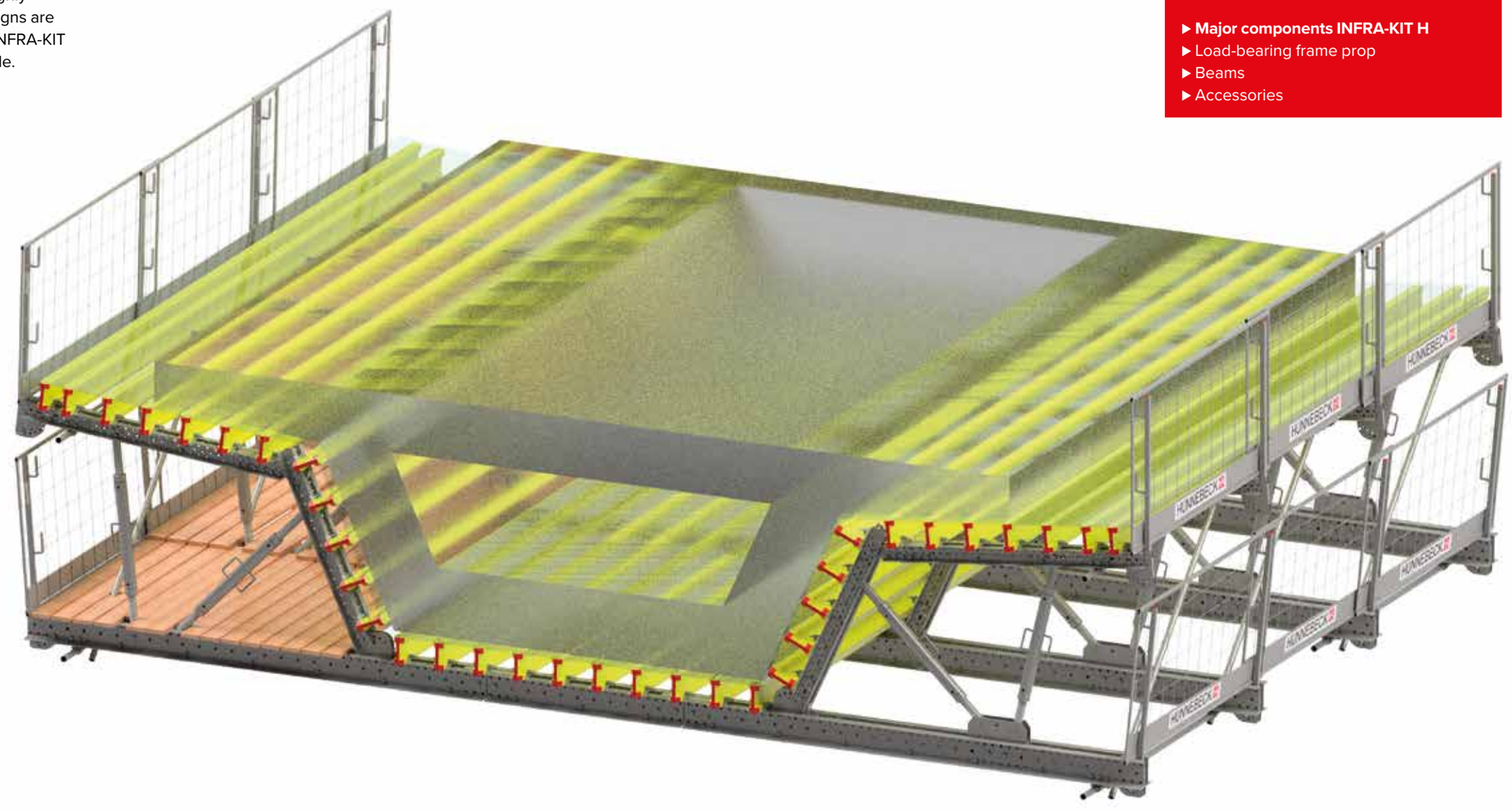
Further components, e.g. adaptors and adjustable connectors facilitate hinged connections and increase the multitude of forms to be produced. All materials consist of galvanized steel. This corrosion protection makes INFRA-KIT particularly durable and hardly susceptible to failure.

MATERIAL

Construction steel, grade S 275 and S 355
Galvanized according to
DIN EN ISO 1461 tZno

Major components INFRA-KIT L/M
- Beams
- Braces
- Spindles
- Connections
- Accessories

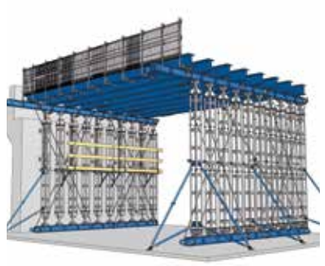
Major components INFRA-KIT H
- Load-bearing frame prop
- Beams
- Accessories



Optimized for different loads, the INFRA-KIT beams are designed for different demands. They can be flexibly combined with each other and carry light, medium and heavy-duty loads. As a result, they can be adopted to the most diverse geometries employed in infrastructure projects or civil engineering constructions.

Perfect for the bridge superstructure

The INFRA-KIT L and INFRA-KIT M beams are specifically designed for infrastructure construction. They can be used to construct trusses for barring solutions. Within the INFRA-KIT Light System, beams range from 100 cm to 600 cm in length, and within the INFRA-KIT Medium Systems from 150 cm to 550 cm. The double u-shaped main beams are joined every 50 cm with screwed spacers. To join the main beams, there are spindles, connections, and adaptors, which are mostly compatible with the different systems. This compatibility increases the degree of utilization, while reducing costs for storage, transport, assembly, and handling.



Technical data

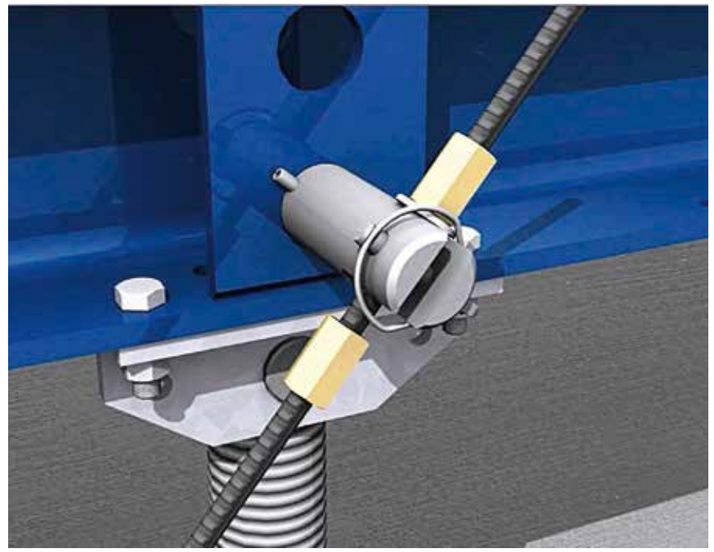
INFRA-KIT L main beam	
Length	100 – 600cm
Weight	25,4 – 142,5 kg
Load	Mpl.y = 21,75 kN/m

INFRA-KIT M main beam	
Length	150 – 550 cm
Weight	73 – 267,7kg
Load	Mpl.y = 68,5kN/m

The system to support heavy loads

The INFRA-KIT H (Heavy Duty) System is designed to transfer heavy loads into the ground. It is particularly suited to construct temporary piers and abutments as well as heavy-duty shoring towers, temporary bridges, and superstructures.

The supporting element of INFRA-KIT H are the load frame props, measuring 25 cm by 25 cm. They provide load transfer on minimum space. Depending on the construction's height, the individual prop's load capacity comes to 210 kN. The load frame prop can be assembled without tools, using the plug-connecting components and secured centering bars. Construction heights range from 1 meter to 16 meters.



Main beams have lengths ranging from 62 cm to 600 cm. Diagonal connections can be mounted with the help of special connecting pins and safety pins. Further accessories, e.g. brackets, angular supports and abutment connections provide an even greater variety of utilization.

To transfer horizontal loads, INFRA-KIT offers many possibilities as well. If needed, it can be supplemented by other supporting systems. Hünnebeck's fall protection systems can be easily combined with INFRA-KIT, providing maximum safety for onsite crews.

Technical data

INFRA-KIT H main beam	
Main beam lengths	62, 175, 300, 450, 600 cm
Frame section lengths	50, 75, 100, 150, 200 cm
Angular compensation	0° to 10°
Common applied heights	1.0 m to 16.0 m (for more heights, special static proof is needed)

Repair and refurbishment

The suspended access system

Extremely safe and extremely efficient: QuikDeck® facilitates undisturbed operations – when rehabilitating bridges and tunnels or repairing railway stations, airports, and power plants.

Refurbishing bridges and tunnels presents a number of simultaneous challenges to the construction industry. Firstly, operations should take place quickly. Secondly, traffic should not be obstructed. It goes without saying, that there should be maximum safety for the onsite team.

QuikDeck® solves all these challenges in a most elegant manner. With our suspended access system, traffic closures are as good as obsolete, since areas above and below the access system are not affected by repair operations.

The multipoint suspended system consists of dynamic chains, joists, connections, plus platforms. Its modules allow flexible structures in almost any size, tailored to the construction that needs refurbishing.

The operating platforms are easy and fast to assemble onsite, on the ground or in the air. When assembled on the ground, the platforms can be hoisted into the desired position as one. No special tools or skills are required for assembly. With a capacity of 460 square meters per low-bed truck, the access systems can be quickly transported to the site.

The platforms have clean, even surfaces. With a dead load of 30 kg, they can carry loads of up to 360 kg per square meter (load class 6). Thanks to their robust and solid construction, lifting carts, trolleys, and other big machines can move on them. Further asset: The platforms are easy to move.

The plus for productivity

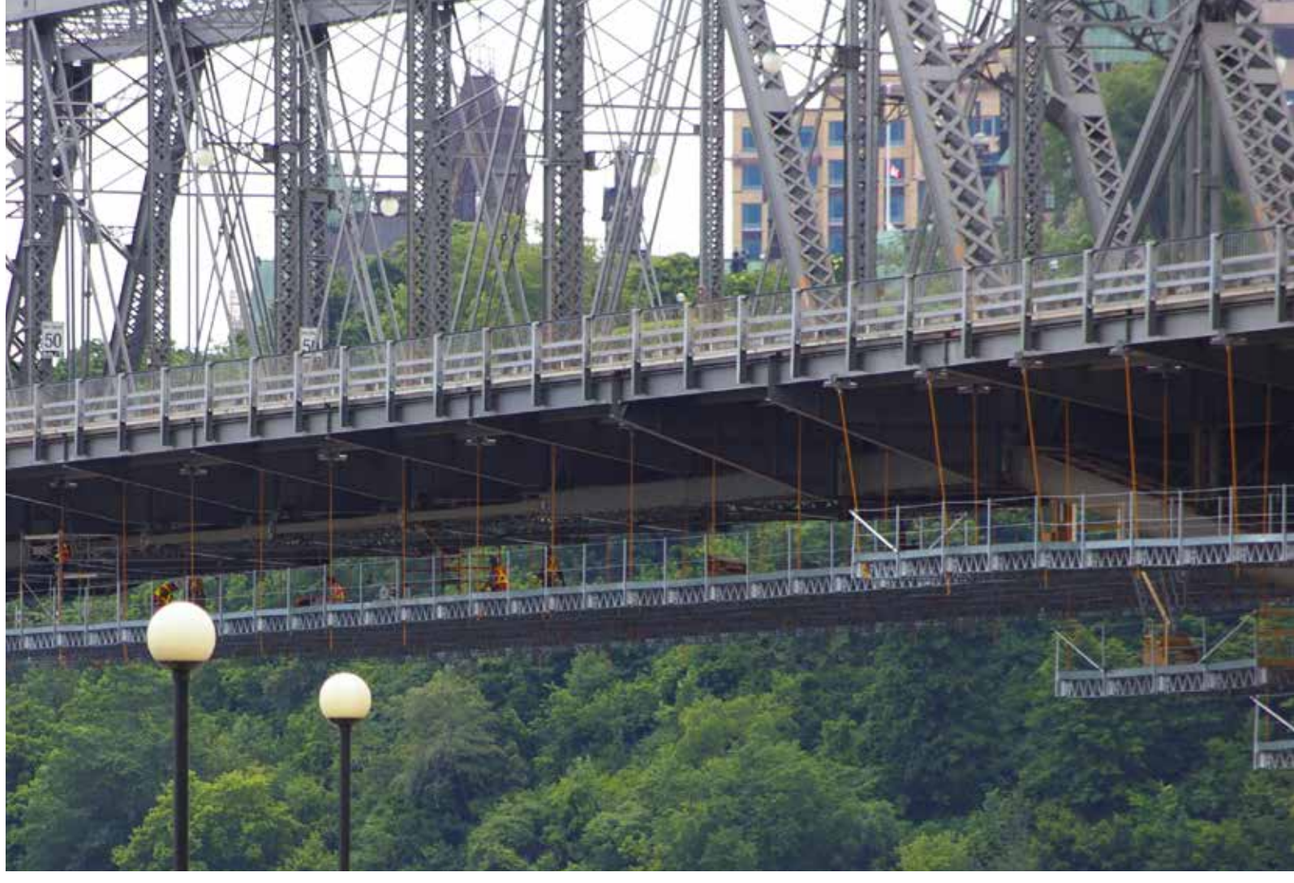
QuikDeck® creates an ample workspace. In total, up to seven operating levels can be erected on top of each other, with different trades working in parallel and machines and tools being relocated according to operational progress. As a result, the corrosion-protection-work of the bridge can start with QuikDeck®'s assembly still going on. This increases productivity and reduces expenses.

Maximum safety

The platform system provides maximum safety reserves. On the one hand, they are based on the multi-dimensioned load capacity of the dynamic chains. On the other, the platform's solid surfaces and sides provide maximum safety for the onsite crew.

QuikDeck® at a glance

- Easy assembly, fast erection, clean and even surfaces
- All components can be handled by one person
- Solid and robust construction allows use of lifting carts, trolleys, and other machines
- Fast, parallel operations of different trades possible
- Load capacity of up to 360 kg/m², load class 6
- Each suspension has a maximum load of up to 4 t
- Minimal or no traffic obstruction, no or short closures



Our Case Studies

Practice proves system variety

From Canada to Poland: a selection of the most interesting infrastructure projects we did in the last years.

Calafat Bridge, Danube, Romania

The challenge: The widening of the bypass from two to four lanes should not impede traffic. This was the precondition for the construction of two almost identical bridges as part of the road.

Our solution: To erect two abutments and three piers of up to eight meters, our experts used our INFRA-KIT system. It helped to transfer the loads of up to 2,900 kN into the foundation.

Customer: Romstrade SRL

Construction Moselle Bridge, Germany

The challenge: The bridge across the Moselle spans the valley between Ürzig and Zeltingen-Rachtig at a height of up to 158 meters. Its complex geometry demanded special formwork solutions for abutments and foundations as well as for the ten tapered reinforced concrete piers in different sizes.

Our solution: For the ten piers with a height of up to 150 meters, our engineers employed two sets of SCF climbing brackets. Their extraordinary load capacity (150 kN vertically, 100 kN horizontally) allows diverse platform setups. Simultaneously, the brackets provide a safe, enclosed workspace. The foundations of the piers were erected with the help of MANTO® formwork. For the abutment, preassembled ES 24 formwork was used.

Customer: Porr Deutschland GmbH

Bypass Sanok, Poland

The challenge: As part of the national road 28, a new bypass is built around the town of Sanok to relieve the heart of the town from traffic. Among other things, the new road crosses a river and includes twelve bridges and viaducts plus a number of passages.

Our solution: Our engineers used ID 15 towers plus our INFRA-KIT system with spans of up to 12 meters as load carrying structures to cross the river valley as well as the non-electrified railway line. To cast walls and supporting structures, they employed our MANTO® framework, which was supported by WD-1, WD-3, and WD-8 frames. For the foundation, they used RASTO® formwork.

Customer: Consortium of Max Bögl Polska and Max Bögl Stiftung

Rehabilitation Alexandra Bridge, Canada

The challenge: The steel truss bridge connects the provinces Ontario and Quebec between Ottawa and Gatineau. The repair required a lightweight, versatile platform suited to the fragile steel truss.

Our solution: Employing our suspended access system QuikDeck®, a stepped platform was erected. It was tailored to the truss and served as a safe workspace for the different trades involved in rehabilitation operations. Pedestrians, cyclists and cars were able to cross the Ottawa river unimpededly during operations. Additional plus: QuikDeck® fulfilled all construction regulations in both provinces.

Customer: Pomerleau Inc.

Construction of Power Plant, Boxberg, Germany

The challenge: Formwork concept for boiler house, powerhouse, and main switchboard plant with building heights of up to 60 meters and room heights of close to six meters; formwork for substructure to erect the girders with axial dimensions of 8,60 meters to 10 meters.

Our solution: To cast the 30 cm thick outer walls, our team used the MANTO® formwork with its 6,40 meter high frame. It was positioned on the platform of our CS 240 L climbing system with the platform also serving as workspace. To erect the girders, our team designed a substructure consisting of ID 15 towers plus load frame props in two different heights. Covered with timber planking, the lower construction served as a protected workspace while the slabs were being shuttered. The higher level was used as support for the girder formwork.

Customer: Strabag AG

Grand Renaissance Dam, Ethiopia

The challenge: Design and supply of formwork solutions for dams, spillways, culverts, draft tubes, and two power plants on both riverbanks of the Blue Nile.

Our solution: To erect the dams, our engineers designed a special construction of brackets and timber beam formwork, tied with special threaded bars. For the funnel-shaped draft-tube walls and for the culvert walls, they construed special timber beam formwork. The culvert formwork was highly pressure resistant, to allow concrete pouring in two lifts. Using ID 15 towers, the team also designed a transport frame on wheels, which supported slab shuttering for the culvert.

Customer: Salini Costruttori SpA

Our services

Tailored perfectly to your demands

Our manifold services help you focus on your core business.

Efficient construction progress depends on smooth processes. They start with planning way before the bidding phase. In cooperation with our local project teams, our competence team infrastructure supports you with diverse services. This means you can focus solely on your core business.

Our services include:

Technical design
Even before the bidding phase, our experts develop a bespoke formwork and shoring concept that is tailored to the demands of your project. Safety and efficiency have top priority in our planning. The modular character of our INFRA-KIT and QuikDeck® systems as well as the versatility of our formwork help to provide a profitable concept that employs standard products in most cases. Should customized solutions be required, our engineers optimize the profitability of the concept to the greatest possible extent.

Assembly, preassembly, disassembly
The assembly of our modular INFRA-KIT and QuikDeck® systems is entirely uncomplicated. Neither special skills nor extra tools are required. The technical documentation available for both systems provides further safety. If desired, we deliver preassembled QuikDeck® units.

Regarding the assembly of our formwork, we make it easy and efficient. Our master craftsmen offer special onsite trainings for assembly and disassembly, so that site crews become familiar with our products. These trainings are an additional factor to increase onsite safety. Formwork, too, can be delivered preassembled. The delivery of preassembled units is carried out according to the onsite situation and in close contact with the customer. This simplifies onsite processes and reduces not only the transport volume but also the need for assembly space and temporary storage. Overall, preassembly can support rapid construction progress considerably.

Customized formwork can be delivered preassembled, too. The formwork is assembled into transportable units and delivered to site, where the units only need to be pieced together.

Delivery and return
The delivery of hired materials as well as their return is part of our services, too. In these cases, we make sure to coordinate schedules with our customers.

Onsite services
Depending on the project's complexity, we offer continuous onsite supervision. In consultation with our customers, these include the management of schedules and the management of the quantities of on-hand-materials. Our experts support work preparations and are available with practical advice for the onsite crew.

Hiring services
Our INFRA-KIT and QuikDeck® systems are designed for infrastructure projects in particular. Like our formwork and shoring systems, they are available for hire.

Cleaning and repair
Formwork materials need to be cleaned and repaired regularly. This ensures high product quality and its intended service life. We clean used formwork equipment expertly and efficiently at our special cleaning and repair centers. If required, we repair them according to uniform quality standards. The latest equipment and high-performance special-purpose machines bring fast results. Our INFRA-KIT and QuikDeck® systems are designed for easy repair.

Our portfolio for efficient casting

Our wide range of formwork, self climbing, and shoring systems allow bespoke formwork solutions for infrastructure projects.

In combination with different formwork systems, INFRA-KIT provides solutions for diverse challenges. H 20 and MANTO® products are part of the formwork. For complex geometries with high load bearing capacities, we recommend our self climbing platform SCF. Additionally, CS 240 and ID 15 towers offer many possibilities for infrastructure projects.

H 20 timber beam formwork

The H 20 timber beam formwork is designed for large surfaces. It can be employed to realize individual formwork concepts. Users can determine element dimensions, type of form sheets, and tying points individually. The formwork is designed to bear concrete pressures of up to 60 kN/m² and can be employed to cast columns, piers, and abutments.

MANTO® wall formwork

In combination with INFRA-KIT main beams we recommend the MANTO® formwork. With its 14 cm frame thickness plus interior stiffening ribs, the hot-dip galvanized formwork is extra robust. Panels come in various sizes. MANTO® is designed to bear concrete pressures of up to 80 kN/m². Useful for the erection of abutments and piers, MANTO® formwork has become firmly established in infrastructure projects.

SCF Self Climbing Formwork

Our self climbing formwork SCF is a modular system. It climbs crane-independently, step-by-step, vibration-free with the help of an inbuilt hydraulic device. SCF is compatible with our MANTO® formwork products. The self climbing system can be employed to cast piers and abutments. It is also suited to extraordinary geometries.

The SCF brackets are the system's most important element. The brackets have an extremely high load bearing capacity, combining simultaneously 150 kN vertically and 100 kN horizontally. Its maximum width is 8,5 meters. This allows shuttered surfaces of 5,5 meters in height and 17 meters in width. SCF complies to all safety regulations according to DIN, British, and US standards.

CS 240

CS 240 is a crane-depended versatile climbing system that was designed for diverse construction purposes. It is available in two versions: The basic version CS 240 L is developed for pressures of up to 60 kN/m². The extended version CS 240 H is suited to a maximum pressure of 90 kN/m². Additionally, it can be employed for wall inclinations of up to 30 degrees. In combination with our catch platform beams, the system is perfect for casting interior shafts.

ID 15*new*

The frame prop ID 15*new* is designed to support high weight in confined spaces. With its six basic components, the diagonally reinforced prop can be erected in any height. Per tower, its load bearing capacity comes to 200 kN on a base area of one square meter. All materials are hot-dip galvanized on the inside and on the outside. In combination with the H 20 bracket, ID 15*new* provides safe workspaces. Additional asset: Thanks to its captive quick locks, the frame prop can be assembled by a single person. ID 15*new* is compatible with the INFRA-KIT System.

Rely on Hünnebeck’s expertise

With Hünnebeck at your side you can plan and manage a seamless and efficient construction process – smooth running operations included.

1

We analyze the situation.

2

We develop the technical drawings and calculate the costs.

3

We plan and implement the realization.

4

We assist with project finalization.

Infrastructure projects demand efficient planning

In most European countries, the renewal and extension of infrastructures is a pressing demand. Many roads have aged or are undersized for today’s traffic volumes. Bridges suffer from the heavy duty traffic, which grew over the past years, and show damages that call for repair or new construction. Bypasses are built to shield residents from traffic or from particulate emissions or to protect sensitive ecological systems. New railway tunnels are needed to shorten travelling time of trains and to master the increased freight volume logistically.

The multitude of measures pending across Europe requires the infrastructure business to focus particularly on efficiency and profitability. Dominating many infrastructure projects, pricing and time pressures make comprehensive cost and schedule management inevitable. This is the only way to allocate resources optimally and achieve best results in the shortest time possible.

It is all the more important therefore to develop a detailed planning for infrastructure projects that bear in mind all essential aspects. Planning should start during the bidding phase and be continued in all the following steps. It should consider crane times, access ways, choice of formwork and shoring, casting cycles, resource allocation, and logistics.

Your partner for profitability and safety

Additionally, it is demanded that infrastructure measures should not impede road or railway traffic – and if so, it should affect it as little as possible. This can result in confined work and storage space or limited access ways.

Most importantly, safety demands are extremely high. The aim is to protect the site crews against traffic risks and to safeguard road users against hazards caused by falling materials or maneuvering construction vehicles.

Expertise is vital for all these demands. Ours is based on our longstanding experience as a provider of access, formwork and shoring solutions for ambitious infrastructure projects. It combines economic efficiency with flexibility, and innovation with a hands-on, can-do-attitude. We support our customers with innovative systems and high performance products, with services and with expertise. In doing so, we help them to grow.

Our key account managers act as partners to our customers and provide the necessary support exactly when and where it is needed. Our support starts well before the bidding phase with a thorough project analysis, which defines specifications and schedules based on the data provided by our customers. This analysis is followed by our schedule for construction progress and pouring cycles. Our schedule rests upon the choice of formwork and shoring systems, our application engineers drew up for the project. It also includes our calculation for the bidding price.

For the construction phase, we provide schedules for the use of formwork, for assembly, for deployment and resource management before delivering the equipment. If needed this is complemented by onsite instruction and site consultations. Once the project is completed, we organize the return of the equipment and assist with the accounting and the project review.

▶ **See for yourself how our expertise supports efficient infrastructure projects. Just get in touch with us.**

Hünnebeck Austria GmbH
Wiener Straße 30
2326 Maria Lanzendorf
+43 2235 4203039
www.huennebeck.at

Hünnebeck
Deutschland GmbH
Rehhecke 80
40885 Ratingen
+49 2102 9371
www.huennebeck.de

4500 EN 2019-03-18

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Editor: Hünnebeck GmbH, Rehhecke 80, 40885 Ratingen.