



Infrastructure



# Infrastructure

Road construction	04
Supply and disposal	06
Pipe rehabilitation	08
Civil Engineering and Construction Technologies	10
Tunnelling	12
Special civil engineering	14
Pipe jacking	16
Soil freezing technology	18
Building maintenance – mastic asphalt	20
Bridge construction	22
Hybrid Railway Bridge Bögl	24
Modul Bridge Bögl	26
Landfill construction	28
Track technology	30
Automotive test site	32
Max Bögl	34

Mobility for tomorrow

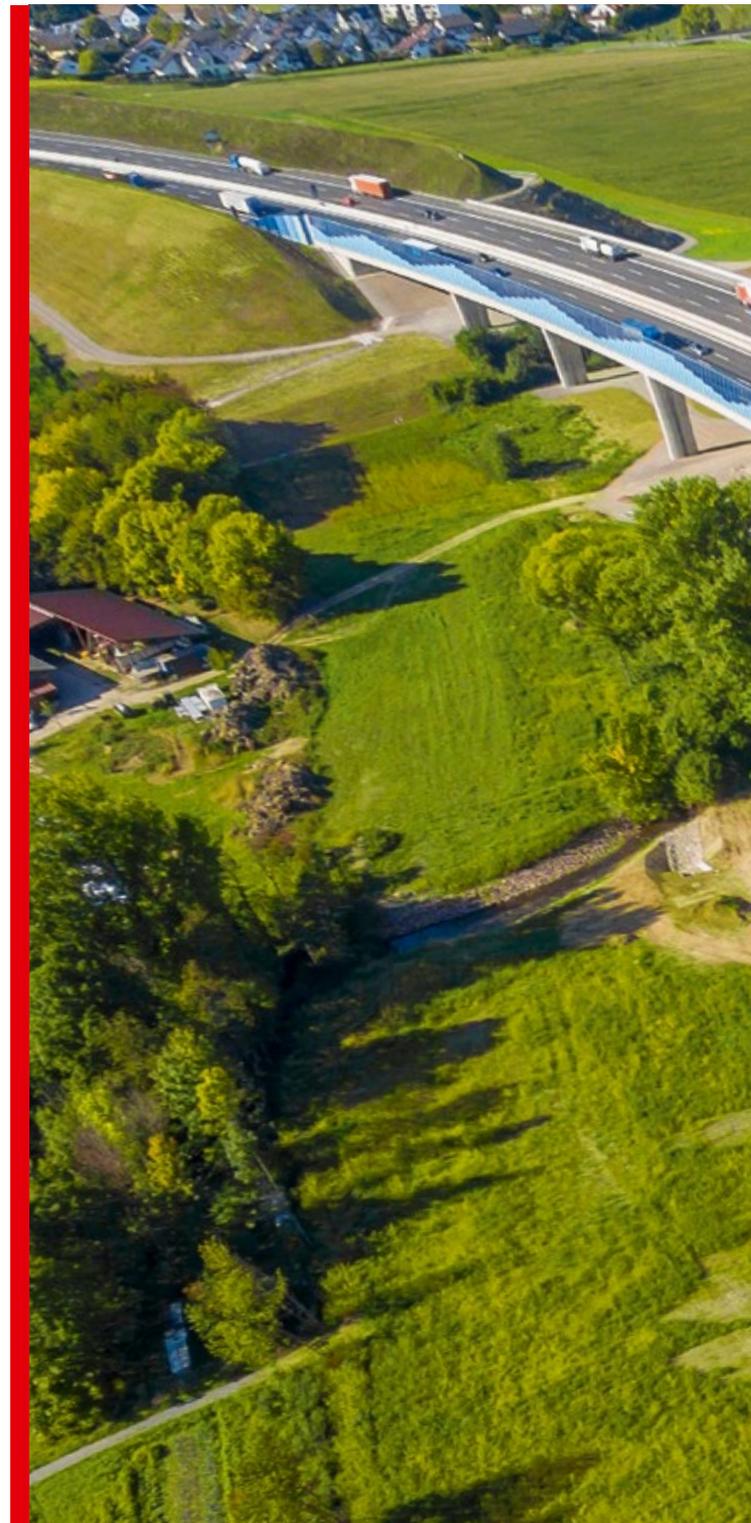
# Traffic route construction

Air, road, water and rail: mobility and transport are hallmarks of a modern society. The expansion and further development of the transport infrastructure stand for quality of life and economic prosperity and are therefore among the most important tasks of our time. Increasing (individual) traffic and the associated higher environmental pollution today require far-sighted solutions and concepts for our “lifelines”.

For decades, the Max Bögl Group has been constantly facing up to the structural challenges in the field of traffic route construction. The continuation of tried and tested construction technology in connection with the technical further development of road pavements, the associated paving technology and logistics strengthens our competence, especially in classic road construction. Thanks to our many years of experience in the production and processing of asphalt and concrete, our group of companies has the know-how to create high-quality traffic surfaces in asphalt and concrete construction that meet the growing demands of increasing traffic loads. Highly qualified and committed employees, the use of state-of-the-art equipment and satellite-supported monitoring of construction processes not only ensure extremely cost-effective project management, but also a high degree of adherence to schedules and quality assurance.

## Range of services:

- Asphalt roadways
- Concrete roadways
- Test tracks
- Steep curve construction in asphalt
- Flight operating areas
- Traffic technology
- Poured asphalt
- Hydraulic engineering







For a better environment

# Supply and disposal

Electricity, Internet, running water and the smooth discharge of waste water are a matter of course for people today. In order to guarantee a future supply and disposal as well as the increasing demand, the existing sewer and pipeline systems are renewed and maintained under consideration of environmental, sustainability and cost aspects. In many respects – for a clean future!

The extensive range of tasks and solutions requires well-founded knowledge and continuous further training of management and specialist staff. In addition to this permanent training and further education, the quality marks awarded for canal construction, gas and water pipeline construction, underground cable line construction and tunnelling work document careful quality monitoring in the interests of our clients.

The Max Bögl Group offers clients solutions from a single source thanks to its broad profile. A powerful fleet of equipment and vehicles, our own sand pits and quarries as well as concrete and asphalt mixing plants are available to find technical solutions even for the most difficult problems.

Max Bögl meets the high quality demands of its customers by professionally covering the entire material spectrum of gravity and pressure pipes. As a certified waste management company, we also fulfil all requirements for the professional handling of contaminated sites.

## Range of services:

- Pipeline construction
- District heating
- Duct construction
- Gas and water pipeline construction

## Pipe rehabilitation

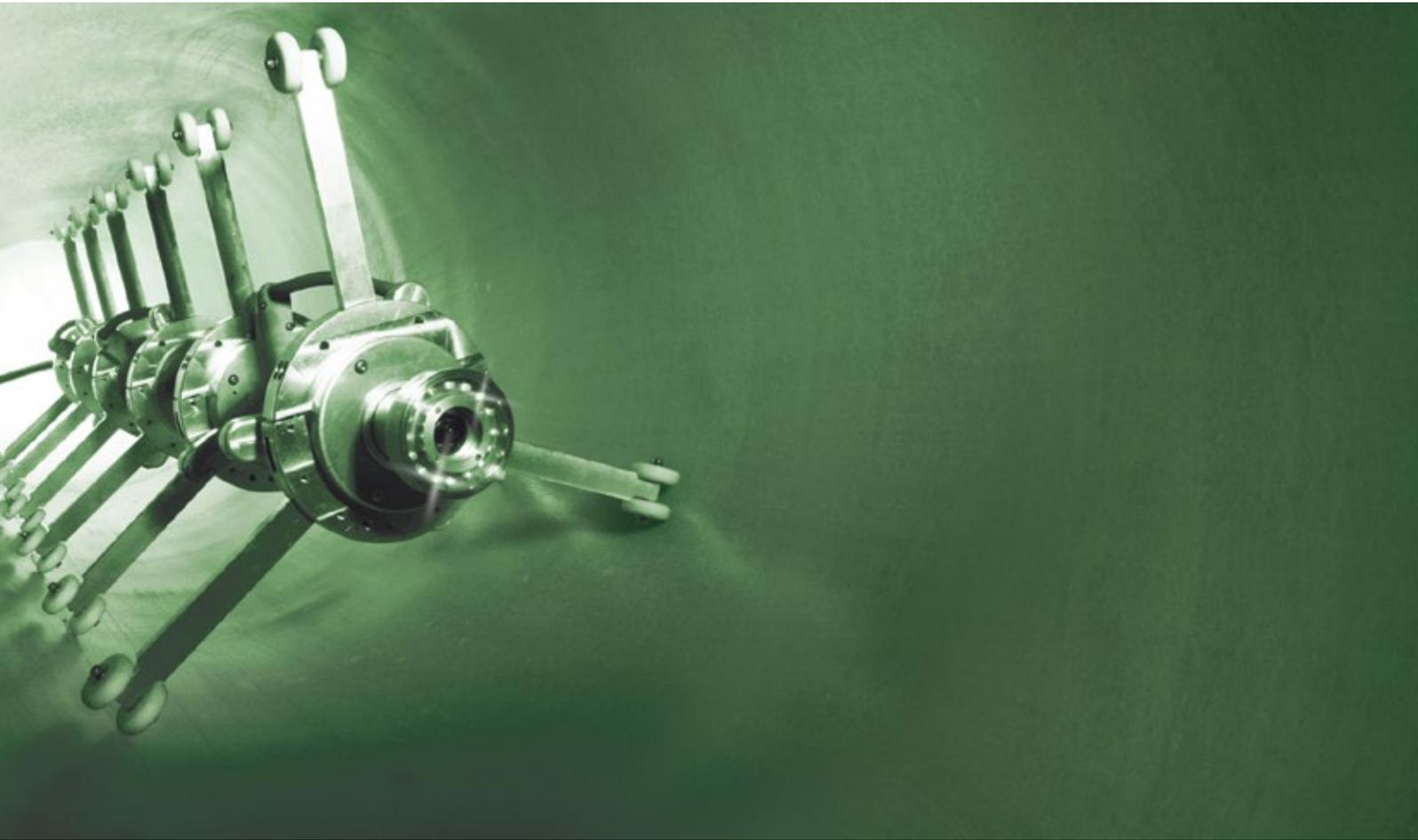
Pipe rehabilitation refers to the rehabilitation of supply and disposal pipes laid in the ground. New process technologies can restore the functionality of the pipes and extend their service life. These techniques differ from conventional Pipeline civil engineering, especially in that roads and paths do not have to be dug up lengthwise. This is why we speak of trenchless pipe rehabilitation. Another advantage of this approach: shorter construction times and thus lower costs and environmental pollution.

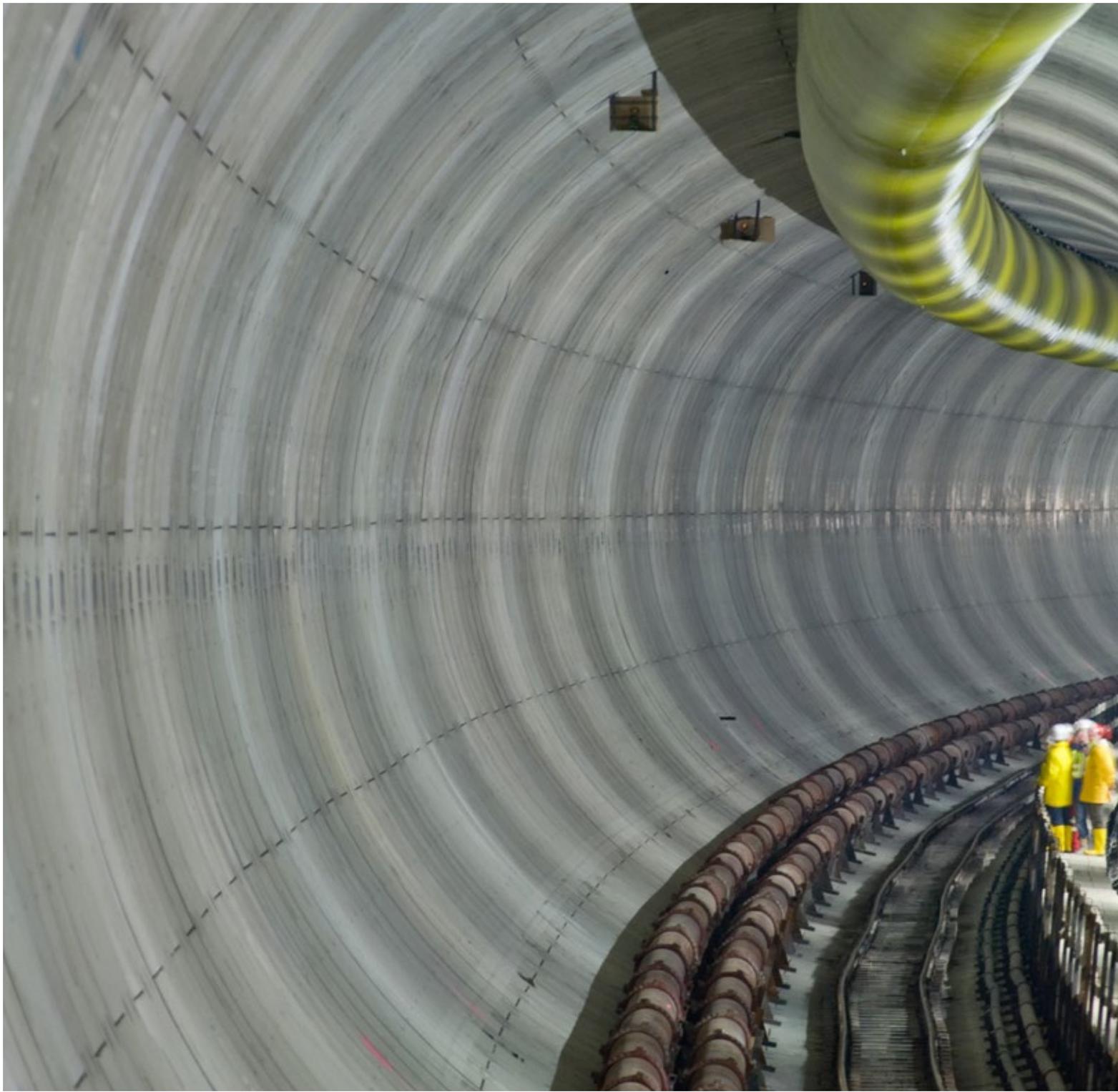
Today, trenchless sewer rehabilitation is an innovative and cost-effective alternative to conventional open construction methods. In addition to hose and short liners as well as remote-controlled robot systems, the rehabilitation specialists at Max Bögl rely on a further liner technology: the repair of damage to defective drinking water and sewage pipes using the close-fit method.

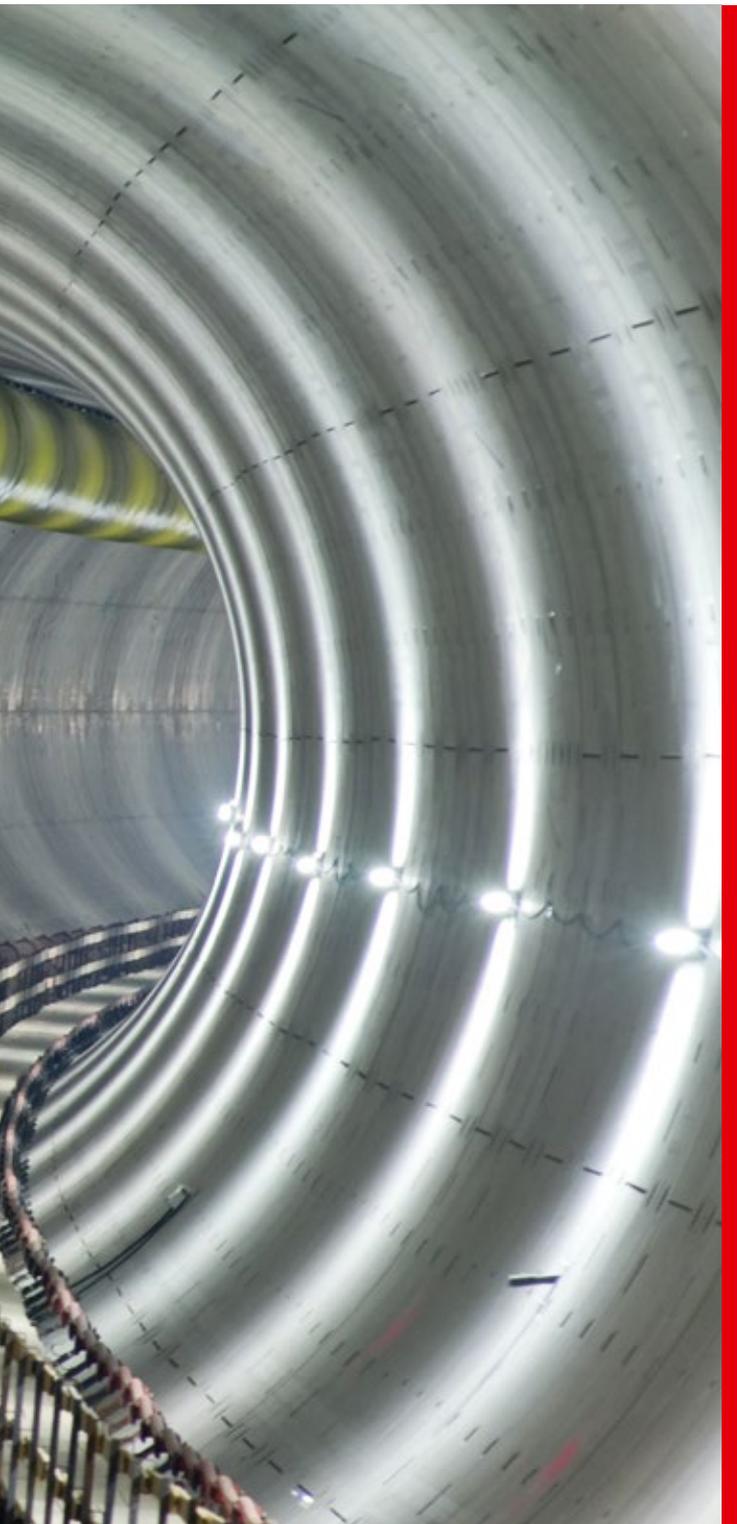
### Range of services:

- Pipe rehabilitation
- Shaft renovation
- Close-fit process
- GFK pipe liner
- Sewer rehabilitation with KA-TE robot systems
- Rehabilitation of private and industrial drainage pipelines









Everything from a single source

# Civil Engineering and Construction Technologies

Today more than ever, the worldwide, extensive changes and the demand for diverse and intelligent infrastructure in the urban environment require new ways for the construction of infrastructure projects. In tunnel construction, in pipe jacking or in pipe rehabilitation, in the foundation of bridges or buildings and in the securing of excavations – in all these tasks the Max Bögl Group contributes its high level of expertise to the construction tasks set and thus ensures the maintenance and development of a new location or even an entire region. The complexity of these often enormous infrastructure projects requires good planning as well as a close integration of the different divisions of our group of companies in order to achieve the goals set by our customers with regard to quality, economic efficiency and adherence to schedules to their complete satisfaction.

## Tunnel construction

Tunnel construction is one of the most fascinating, but also one of the most demanding tasks in the construction sector. Numerous projects within Europe, such as the tunnels of the new Deutsche Bahn AG lines, the road tunnels for motorways and bypasses, the tunnel renovations in existing tunnels and the inner-city underground and suburban railways of the transport companies demonstrate the versatility and complexity of modern tunnel construction.

### Safely through the mountain

The Max Bögl Group has a competent and efficient construction department in the tunnel construction sector, which implements customer-oriented projects from the processing of quotations through execution to successful handover. Supported by modern digital applications, lean construction methods and an established continuous improvement process, a standardized and quality-assured project management is realized.

The basis of our success are our motivated employees in the office and in the field with the necessary expertise also from our own geotechnical department as well as the possibilities of our transport and equipment, formwork technology and the technical planning in our group of companies. Memberships in the "STUVA", the "DAUB", the Federal Department for "Underground Construction" of the German Construction Industry Association and the Austrian Society for Geomechanics underline the recognition of Max Bögl's tunnelling division among experts.

### Range of services:

- Mining tunnelling
- Road tunnels
- Railway tunnels
- Underground tunnels
- S-Bahn tunnels
- Water supply plants



## Special foundation engineering

Although in most construction projects the performance of special foundation engineering is no longer visible once the construction work has been completed, these measures are indispensable for later construction progress. After all, special foundation engineering forms the basis for many structures associated with building construction and civil engineering, such as excavation pits, tunnels, bridges and much more. The application of complex techniques and the selection of suitable equipment require increasingly specialised knowledge and practical experience.





## Safe and profound

In more than 25 years of specialisation in the field of special foundation engineering, Max Bögl has continuously expanded its range of services and adapted to the changing requirements of the construction market. Today the Max Bögl Group has at its disposal a powerful combination of state-of-the-art machine technology and highly qualified employees who take on every challenge in specialist foundation engineering at home and abroad. With a wide range of services, including excavation pit shoring, foundations, safety devices, injections, dewatering and special construction methods such as jet and vibration tamping, Max Bögl implements projects of all sizes and degrees of difficulty as a general contractor or subcontractor.

## Range of services:

- Drilled piles
- Building pits
- Deep compaction
- Vibration tamping method
- Letting

## Pipe jacking

The underground excavation of pipelines is an increasingly important part of modern sewer, pipeline and pipeline construction. Partly dilapidated sewer and pipe systems in the cities and a denser development of our urban settlements increasingly demand intelligent and sustainable construction methods.

### Environmentally friendly construction methods

With technical know-how and its own mechanical engineering, the pipe jacking division at Max Bögl, a specialist in the field of closed construction methods, offers technical, economical and environmentally friendly solutions in all areas of modern pipe jacking.

The entire required machine technology, from simple manual dismantling to highly technical full cutting technology, is developed, designed and manufactured in-house or adapted and rebuilt to the project-specific conditions on site.

### Range of services:

- Full and partial cut technology
  - Microtunnelling
  - Horizontal well construction
  - Injections
  - Compressed air works
  - Special mechanical engineering
-





## Soil freezing technology

In all freezing projects, the engineers take advantage of the fact that the frozen soil has a significantly higher strength and is at the same time impermeable to water. Soil freezing technology is characterized by a high safety standard and thus by high reliability. No residues remain in the soil after the freezing process, so that the process is considered to be groundwater and environmentally friendly.

### Protected by ice

The Max Bögl Group has at its disposal modern and tried and tested plant technology as well as specialist personnel with many years of experience in the handling of complex ground freezing projects.

The interdisciplinary cooperation of the various specialist areas such as refrigeration technology, plant construction, tunnel construction, civil engineering and special foundation engineering enables us to develop and implement innovative solutions. As a result, ground freezing is increasingly becoming a flexible and economically interesting construction method for our group of companies.

### Range of services:

- Planning of icing projects
- Freezing bores
- Static and thermal calculation
- Installation of icing in brine and/or nitrogen process
- Support of soil freezing plants up to frost body monitoring





## Building repair and mastic asphalt waterproofing

Our infrastructure consists of a large number of buildings made of concrete or steel. These materials are exposed to constant environmental influences or external mechanical influences and are therefore not permanently durable.

Recurring maintenance or extensive preservation of the traffic structures is therefore the rule. Maintenance considerably extends the service life of buildings. We take care of these concerns with a competent and experienced team.

## Investment in the future

The Max Bögl Group has over 40 years of experience as well as the necessary specialists and expertise to correctly identify, assess and repair the complex interrelationships between the causes of damage. Our employees have the necessary competence and qualifications to carry out repair work with high-quality material and machine technology on schedule and professionally. We advise clients and architects on the development of suitable concepts, procedures and techniques for repair.

## Range of services:

- Repair of bridges
- Repair of hydraulic structures
- Repair of locks
- Repair of underground stations
- Repair of multi-storey car parks
- Repair of underground garages
- Repair of balconies
- Sealings
- Coatings
- Mastic asphalt







Directly

# Bridge construction

For thousands of years, bridges have helped man to overcome his natural limitations. In the beginning it was only a tree that was laid over a stream, or stones laid into the water to cross smaller rivers. Later, simple hanging constructions made of natural materials followed, up to large stone bridges to cross large rivers and deep valleys. Today, bridges are masterpieces of modern construction technology and inspire the imagination of great engineers and architects as well as the admiration of the people who use them every day.

With well over 1,000 completed bridge structures, the specialists at Max Bögl prove their extensive know-how in the field of modern bridge construction. In the beginning, these were road and railway bridges made of precast concrete elements, but today buildings of all sizes are being constructed – from in-situ concrete to steel composites to pure steel construction. Another speciality of our company is the replacement of railway bridges under “rolling wheel”.

We carry out all common construction methods such as formwork carriage and incremental launching methods, feed scaffolding and load-bearing scaffolds. Quality and adherence to delivery dates always have top priority for all buildings of the group of companies. Safety, robustness, durability and nature-compatible design are further standards by which we are measured in the supreme discipline of modern civil engineering.

## Range of services:

- Incremental launching method
- Formwork carriage
- Composite Precast Girders
- Thick sheet metal bridges
- Modul bridges
- Hybrid railway bridges
- New construction under rolling wheel

Modular system

# Hybrid Railway Bridge Bögl

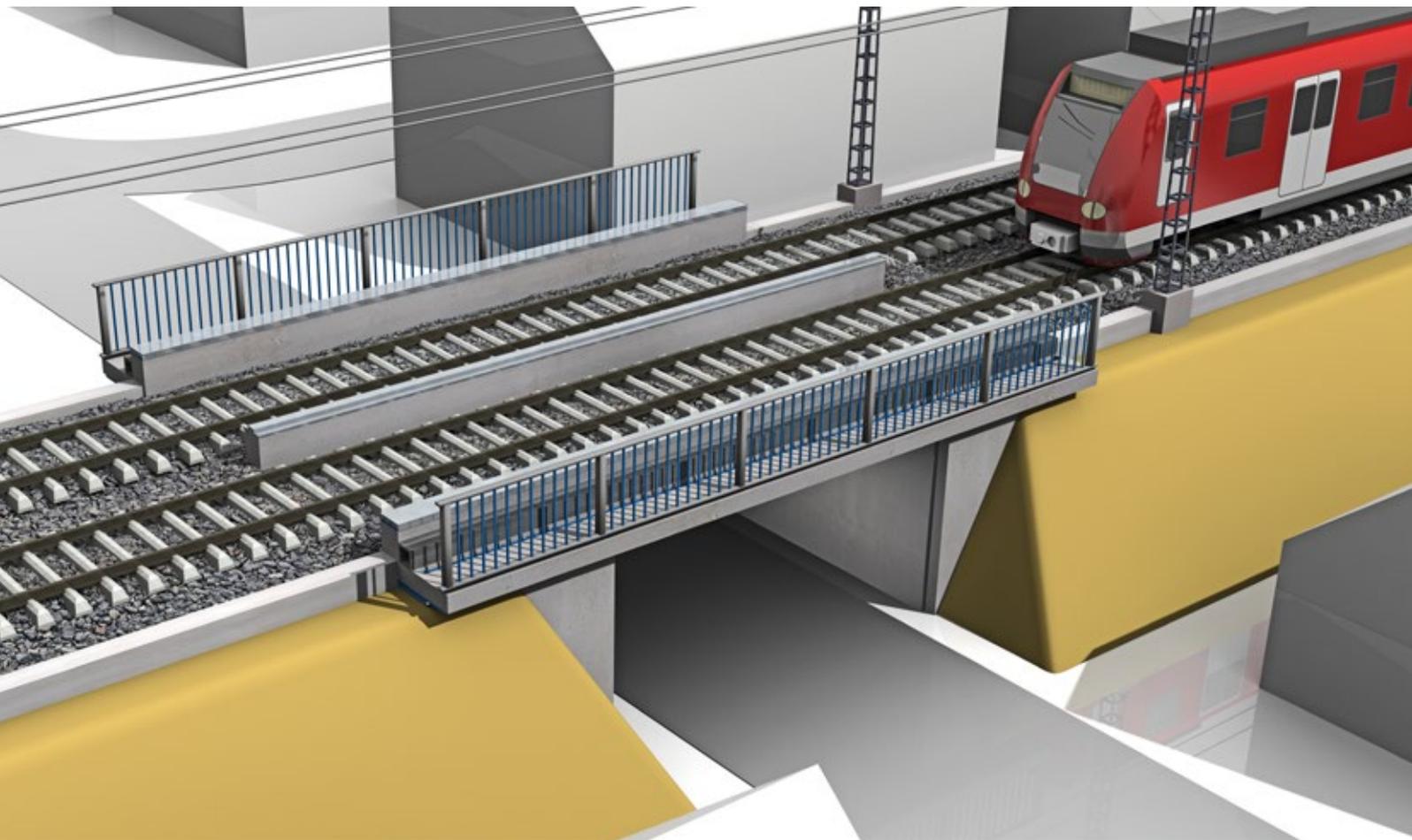
There are more than 25,000 railway bridges in Germany. Around one third of these are in poor condition, and 1,100 bridges are so badly damaged that instead of being rehabilitated only demolition and new construction are acceptable. For the replacement of new structures with short spans, Max Bögl now offers a modular system with the Hybrid Railway Bridge that fully exploits the advantages of serial production in terms of construction time, quality and cost-effectiveness.

The Bögl Hybrid Railway Bridge allows the group of companies to be part of the solution even during the planning phase. Designed for single and double-track railway bridges with spans of up to 15 metres and low overall height, the hybrid construction of the railway bridge combines the classic advantages of steel and concrete. Industrial production in the factory means that the individual system components can be continuously prefabricated, stored in a building yard and combined on site to form various individual structures in the shortest possible construction time.

## Advantages:

- Segmented system: transport by road or rail
- Industrial prefabrication: high quality and accuracy of components
- Standardized assemblies, production and construction: controlled production process, short construction time, delivery and assembly just in time
- Compliance with the standard track superstructure: simple maintenance and servicing
- BIM-based process: efficient utilization of the digital value chain during the entire building life cycle
- Production and assembly also by license partner







Serial production

# Modul Bridge Bögl

For more than ten years Max Bögl has been engaged in future-oriented further developments in bridge construction. The Max Bögl Group not only develops innovative construction methods, but also optimises the necessary building materials and production methods.

The use of self-compacting concretes, which are extremely resistant and dense, offers completely new application and construction possibilities in bridge construction. The company group's extensive experience in CNC-controlled grinding of concrete components also plays an important role. This know-how means that even complex prefabricated parts can be produced simply and economically - individually adapted to the architectural and technical requirements of each individual structure. With the new Modul Bridge Bögl – a bridge structure with separate load-bearing system – the company

group offers you an innovative way of building bridges. The prefabricated bridge in steel composite construction is convincing due to its modul construction consisting of prefabricated composite girders and pre-stressed precast concrete slabs made of high-performance concrete, which can be driven on directly without sealing and covering.

## Advantages:

- Very short construction time – bridge construction in less than 100 days
- Cost-effective production due to serial factory production
- Quick exchange of individual bridge elements
- Low maintenance costs



Environmental technology made to measure

# Landfill construction

In the field of landfill and environmental technology, the Max Bögl Group has guaranteed a high standard of safety technology for more than 25 years and contributes to further development with innovative ideas. Experience and reliability, the use of resource-conserving building materials from the material cycles and the provision of state-of-the-art working technology guarantee the conscientious fulfilment of the tasks set.

Waste disposal has been subject to the Closed Substance Cycle and Waste Management Act since 1996. In order to prevent impairments to the welfare of the general public, the Landfill Ordinance regulates supplementary regulations for the disposal of residual materials and the design of sealing systems. In the interest of an intact environment, technically demanding structures are required that meet the strict requirements of quality assurance and occupational health and safety.

### Range of services:

- Deposit construction
- Environmental technology
- Surface sealing
- Base sealing
- Renovation of leachate pipe
- Deaeration
- Material flow management







Roads for railway systems

# Track technology

The development of transport, which to this day has been driven by uninterrupted growth, is increasingly reaching the limits of ecological compatibility, the capacity of transport networks, affordability and acceptance among the population. In the future, it will not only be necessary to further improve the technologies for routes, vehicles and operations. The worldwide expansion of transport networks and the sensible transfer of passenger and transport traffic to rail are also indispensable for the economic development of any country.

For more than two decades, the Max Bögl Group has been engaged in the trend-setting development and construction of modern tracks for high-speed rail traffic. With innovative products such as the Bögl slab track system, our group of companies pushes the latest technologies on many levels and puts them seamlessly into practice. We are thus making an important contribution to mobility in the new millennium.

## Range of services:

- Slab Track Bögl
- Light Rail Bögl
- Concrete Sleeper Bögl

Test tracks at the highest level

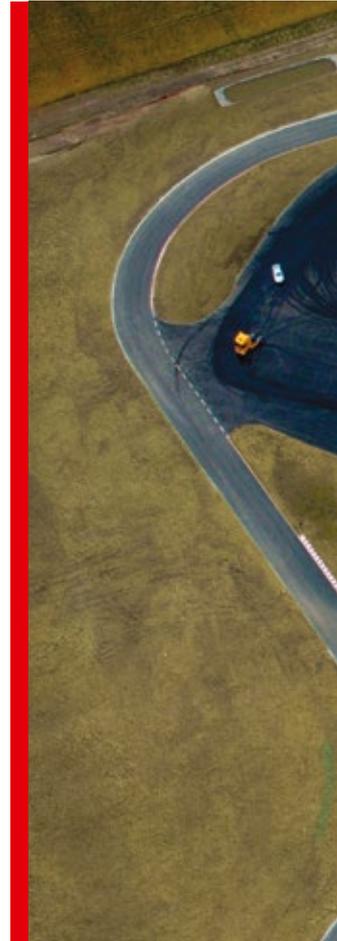
# Automotive test site

The company SMB Construction International GmbH has emerged through the construction and execution of in-house test centres and steep curves for automotive development, as well as years of trusting cooperation with a partner. In this special segment of road construction, sophisticated construction techniques and innovative equipment are used to meet the high demands of the automotive industry.

Especially in the construction of high-speed railways with elevated curves, SMB has done pioneering work with the use of the "steep curve paver". A technically well trained and highly motivated team of employees as well as the meticulous preparation of the individual projects are among our outstanding strengths. The early and competent consulting of clients and planners is an integral part of our service package. A further building block in the SMB business is the construction of driving safety centres whose extreme routes and unusual road design with difficult surfaces and controllable obstacles test and train driving skills. SMB has a wealth of know-how and experience in this field, gained from a large number of projects that have been successfully implemented for renowned customers worldwide.

## Range of services:

- Planning and consulting
- Construction of test and race tracks
- Construction of driving safety centres
- Construction of round and oval tracks
- Construction of state sections
- Construction of parabolically shaped steep curves
- Machine technology: bridge paver / steep curve paver







## Max Bögl Group

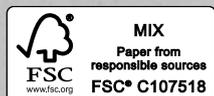
With over 6,500 highly qualified employees at 40 locations worldwide and an annual turnover of over 2 billion euros, Max Bögl is one of the largest construction companies in the German construction industry. Since its foundation in 1929, the company's history has been characterised by innovative strength in research and technology - from tailor-made individual solutions to constructionally and ecologically sustainable overall solutions.

With forward-looking in-house developments on topics of our time, such as renewable energies, urbanisation, mobility and infrastructure, the Max Bögl Group is already realising solutions for the megatrends of our globalised world. Based on many years of experience and competence in high-prec-

sion precast concrete construction, Max Bögl is also positioning itself as an important driving force in the development of innovative products, technologies and construction processes.

The wide range of services and the high level of vertical integration with our own steel construction, our own precast plants, the most modern fleet of vehicles and equipment as well as our own raw materials and building materials guarantee the highest quality. The use of BIM, lean management/ production and standardised project management ensures adherence to schedules and cost-effectiveness from the initial concept idea to the finished building product.

**Max Bögl Group** 02/21; Photo credits: Bischof und Broel (title); Reinhard Mederer (p. 2, 4/5, 6, 20, 21, 22/23, 26, 28, 29); Firma Brandenburger (p. 9); Kitzbüheler Fotohaus (p. 10/11); ARGE Silberberg Ilmenau (p. 13); Andreas Zierhut (p. 14); Fotostudio Brandt, Wesel (p. 15); Wolfgang Seitz (p. 17, 30/31); Michael Stibitz (p. 19); DACHER Design & Technik (p. 25); Christian Brinkmann (p. 33); Nürnberg Luftbild, Hajo Dietz (p. 34)

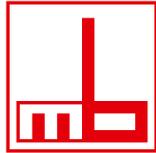


**Max Bögl Group**  
Max-Bögl-Strasse 1  
D-92369 Sengenthal  
Germany

Postal address:  
P. O. Box 1120  
D-92301 Neumarkt i. d. OPf.  
Germany

P +49 9181 909-0

info@max-boegl.com  
max-boegl.com



**MAX BÖGL**

Progress is built on ideas.