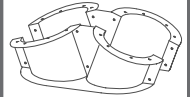
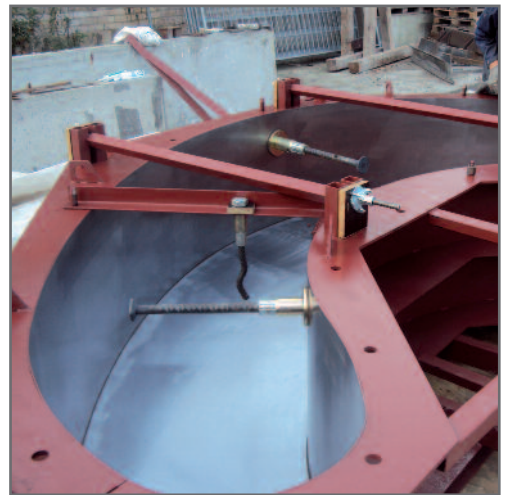


# 4

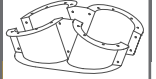
## 4.2. SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS



**FORMWORK SYSTEMS**



**ROBUSTA**  
GAUKEL



## Your benefits at a glance:

- Special formwork and special moulds can be supplied on request according to project
- For concreting objects in facing concrete quality at construction sites and in precast production facilities
- As one off pieces or in combination with standard, wall and floor formwork
- One source planning and manufacturing of the formwork structure
- "Breathable formwork" for jointless concrete components

In addition to the rentable standard round column forms our special formwork offers the possibility to **realize even difficult problems of formwork technology**, which would not be possible when using the standard formwork elements.

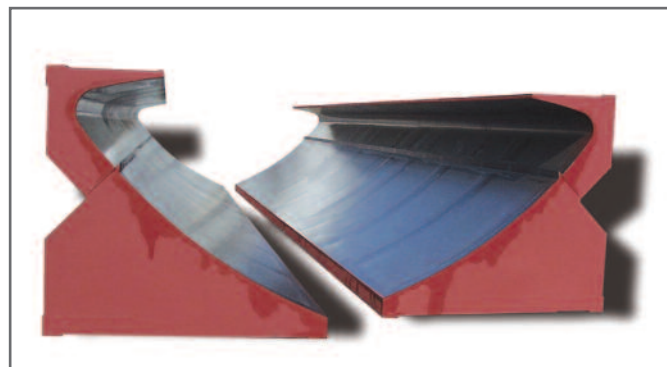
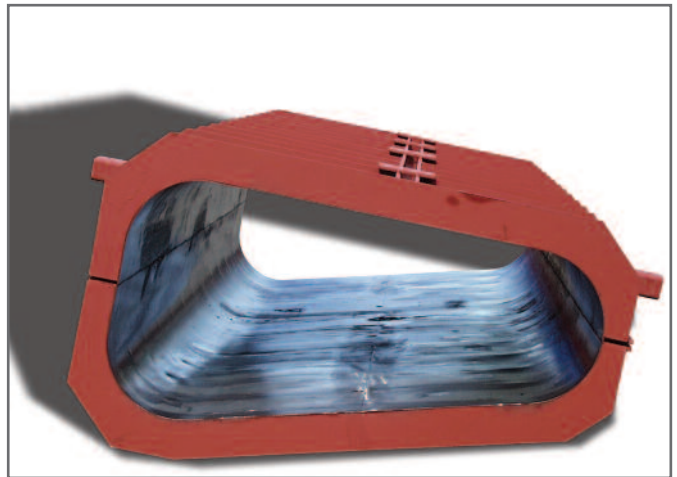
In case of combining with standard forms provided on the part of the builder we will **adapt the coupling profiles** to the according shape.

The **variety of shapes and dimensions is almost indefinite**, the following photos should give a view about projects successfully realized.

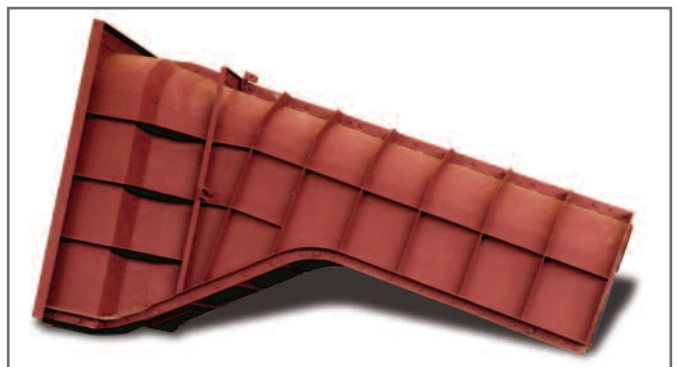
### Examples:



**Special formwork**, consisting of two mirror-image halves

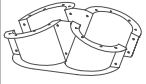


**Steel formwork for parapet beams of bridges**, made as an inlet for wagons. The surface was required jointless in fair face quality. This task was solved elegantly by hiding the joint sensibly behind the welded triangle steel ledge, with the function as a dripping edge.



**Special formwork for air-outlet conduit** in power plants. The special geometrical shape of the pier nose with double bent surfaces had to be achieved as close as possible for aerodynamic reasons.





## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

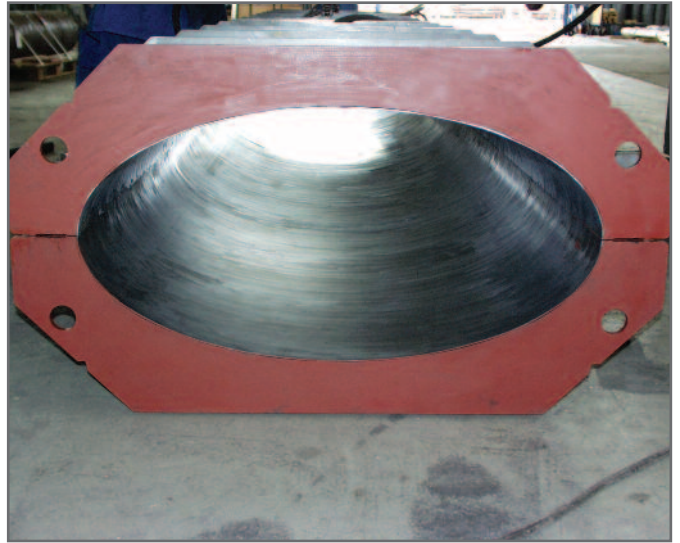
# 4

### BERLIN: ELLIPTICAL FORMWORK FOR REDEVELOPMENT OF COLUMNS

The task was to redevelop an elliptical shaped column underneath an existing slab.

For encasing and striking the connected hinged two halves had consoles on both sides for the transport with a fork lift.

In a first step the ground plate of the formwork was clamped to the square foot of the column, after that the formwork itself was put into place on this base plate. The injection of the fine concrete grout was done subsequently through the short feed pipe at the bottom of the base plate.



# 4

## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS



### HAMBURG: CONSTRUCTION PARK P1, AIRPORT

For the project "new construction car park P1" at the Airport Hamburg we received an inquiry for special formwork in different forms in geometries with special demands for in-situ concrete from the working group HAM NEXT of "Max Bögl Bauunter- nehmen GmbH & Co. KG" and "Hochtief Hamburg GmbH".

The planning guideline was very complex, as the formwork had to be compatible with each other as well as with our rentable formwork.

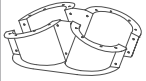
In planning and construction the difficult geometries, sealing and closure have been transferred into practice perfectly.

Our production department has done a perfect job: during operating and concreting as well as encasing and striking an easy processing without any problems on the site was guaranteed.

Even difficult corners and edges are showing a perfect fair face concrete result.

Additionally to the realization of the demanding design the special formwork have been delivered in different colors for a clear assignment to the according axes of building.



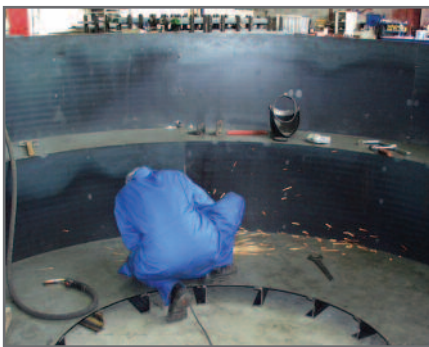


## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

# 4

### BERLIN – TRAIN STATION PAPESTRASSE – MUSHROOM HEADS

At this site additional mushroom heads  $\varnothing$  4.40 m had to be poured in situ onto round columns  $\varnothing$  1.60 m. For quick encasing and striking the formwork consisted of only 2 halves. Each half round did not exceed the width of 2.40 m by its slim stiffening frames, thus a cost effective transport without special truck was possible. Guardrails all around guaranteed a safe edge protection during works for reinforcement and pouring the concrete.



# 4

## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS



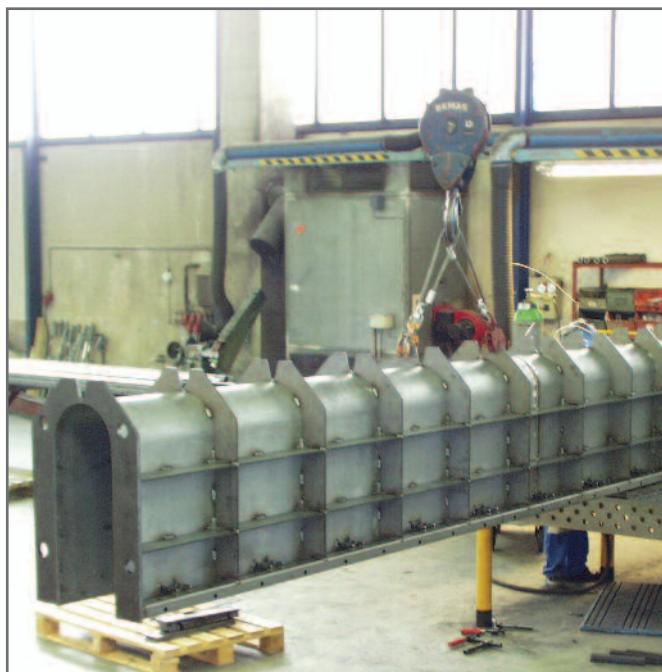
### STUTTGART – OFFICE BUILDING MAIN STATION: BREATHING FORMWORK

The very special demand of the architect was, that it was not allowed to have visible joints on the finished poured column with fair face concrete.

Thus the metal skin, consisting of a half-round with both side panels, was made and bent out of 1 metal sheet to a "U"-shape.

By this the vertical joints were placed in the right-angle corners of the column, the sealing of the joint was guaranteed by the welded triangle profile ledges and the rubber sealing profile G13 behind it.

For striking, in a first step the back wall element was taken away and the "U"-formwork element was bent and widened afterwards with the help of spindle struts, so it was possible to lift the formwork upwards without friction and pressure.





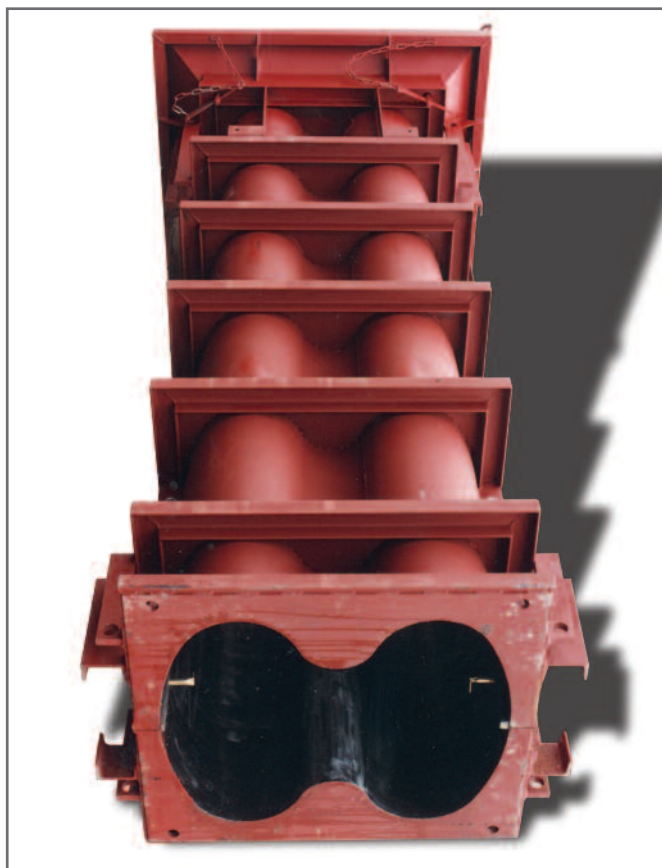
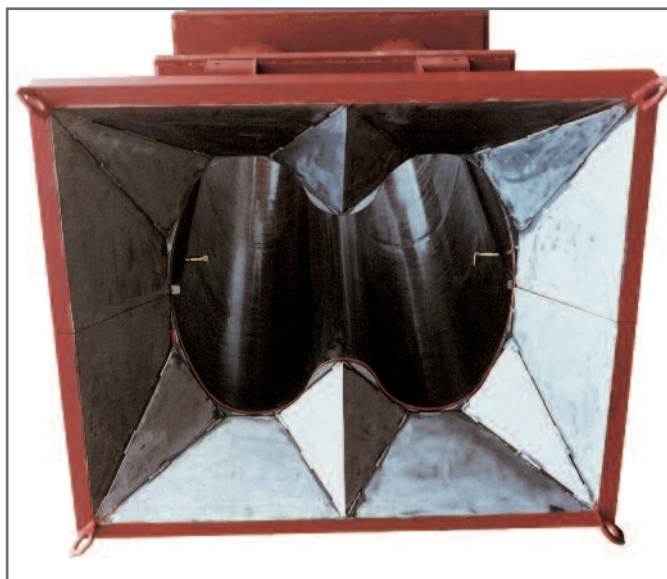
## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

# 4

### BERLIN – GSW KOCHSTRASSE: 8-SHAPE FORMWORK

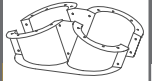
The special shape of this column was made to encase a loadbearing inner core of a welded steel profile for fire protection reasons.

In this special contour were integrated 6 different curve radii. For a safe pouring of the concrete into the formwork, which was located directly at the edge of the building slab, there was mounted an additional pouring funnel.



# 4

## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

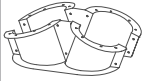


### FRANKFURT – PALAIS QUARTIER: V-FORMWORK

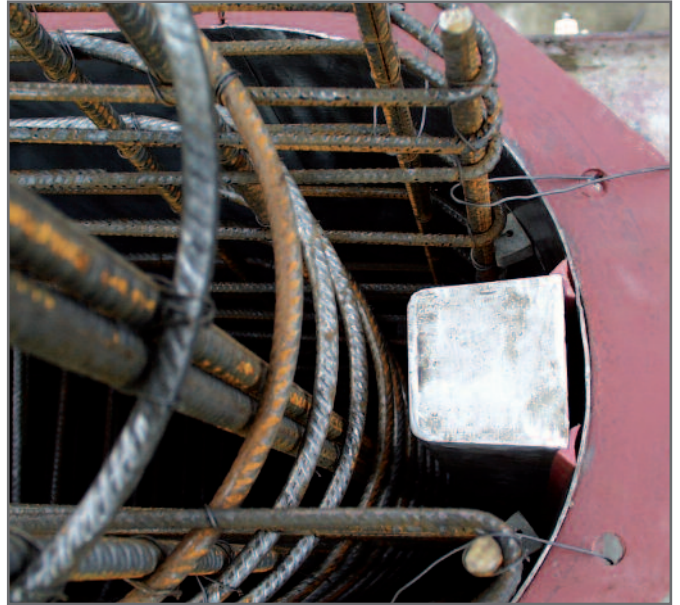
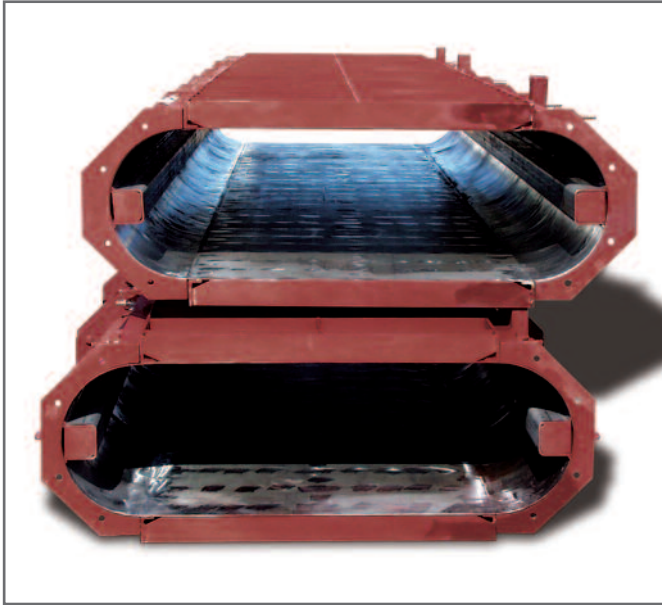
Special formwork for V-shaped columns beginning with diameter 700 mm at the bottom, then diverting to 2 Ø 700 mm. Combination of special formwork and rental formwork which was mounted on top. The 11 m high column was filled in 1 pouring step.





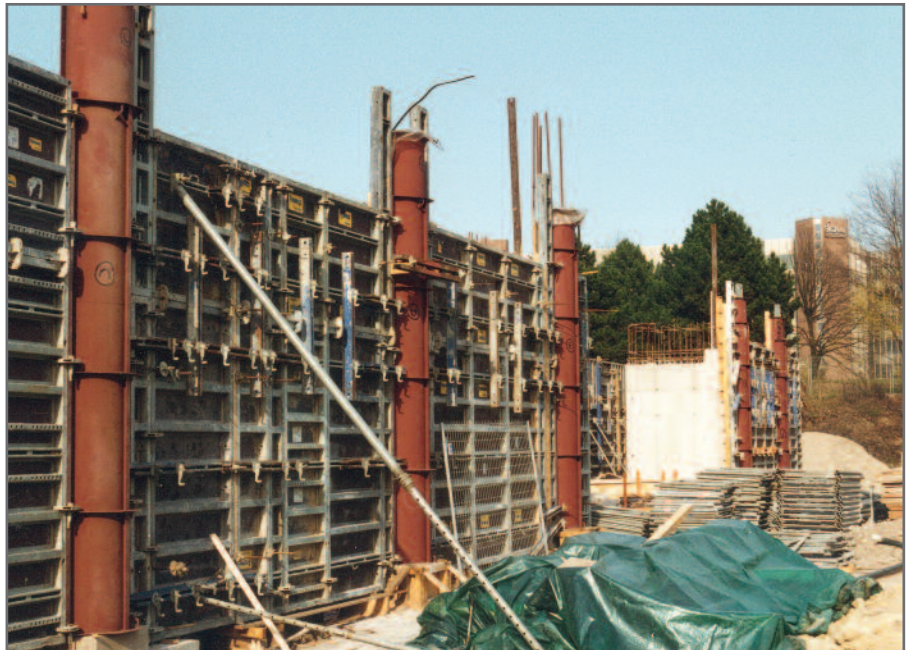


Half rounds in rent, combined with straight intermediate wall panels as special production. Additionally with inserted profiles to produce a vertical recess groove for water piping. It was required a column without any anchoring marks. For this reason the straight panels were backstiffened with the help of additional U-girders which were connected externally of the formwork with anchor ties.



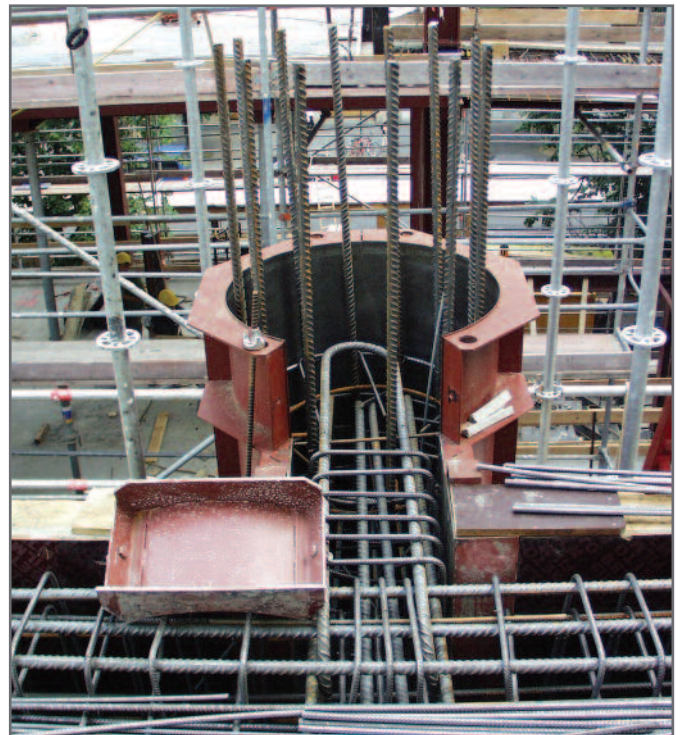
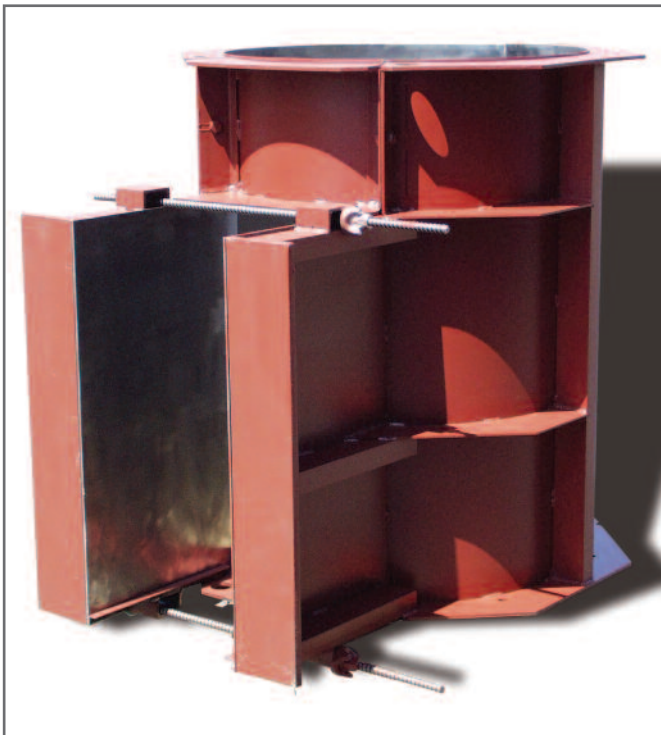


### Dortmund – Stadtbahn: halfround formwork in combination with DOKA-framax wall formwork



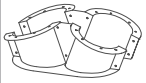
Wall with high requirements from the architect for fairface concrete quality with half round column protrusions. The standard-halves in rent were produced with special intermediate connecting profiles fitting to the wall formwork.

### Frankfurt-Main – Gallileo: console formwork



Round column formwork  $\varnothing$  800mm in rent, combined on top with a special add-on-element in purchase. The protruding console was made with special intermediate connecting profiles for a perfect connection to the slab formwork. Thus the round column with console and the slab were poured in one cast very economically. Simultaneously the "starter" piece could also be poured for clamping the formwork in the next level of the building.





# SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

# 4

BIETIGHEIM – SKY: FA. ED. ZÜBLIN AG – SPECIAL WORKING PLATFORMS

The building with a total height of 67 meters comprises 18 floors, which are housing flats and offices.

The architectural characteristic is represented by the circular balconies which are placed outside of the floor plan. They have a rounded, not symmetrical outer edge, also the height of the railing elements are varying above and below of the slab. The balconies made of in-situ concrete are turned by 90° from floor to floor and are thermally separated from the slab.

The railing is made of prefab elements with an own weight of 8 tons and length of more than 10 meters.

The task how to realize the method of production of the free cantilever balconies has been stated more precisely in close cooperation with the responsible and performing personnel of ZÜBLIN. In cooperation with planners, technical authorities and inspectors the realization of the support construction has been put into practice step by step. We produced large working platform units with a length of more than 8 m, thus only 2 working platform units at each building front were necessary besides the corner platforms.

This meant a considerable reducing of moving operations to the next floor and thus a great time relief for the only crane.



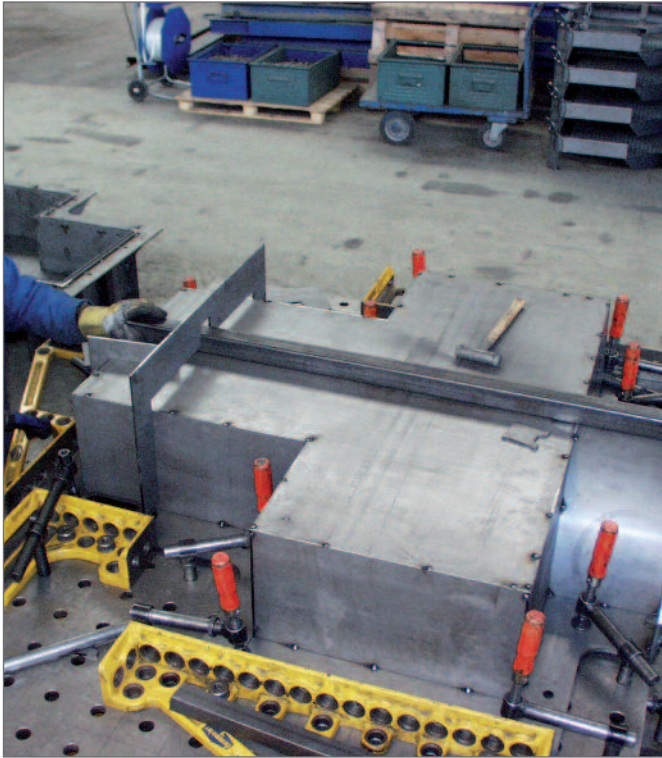
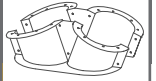
©Arnim Kilgus



# 4

## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

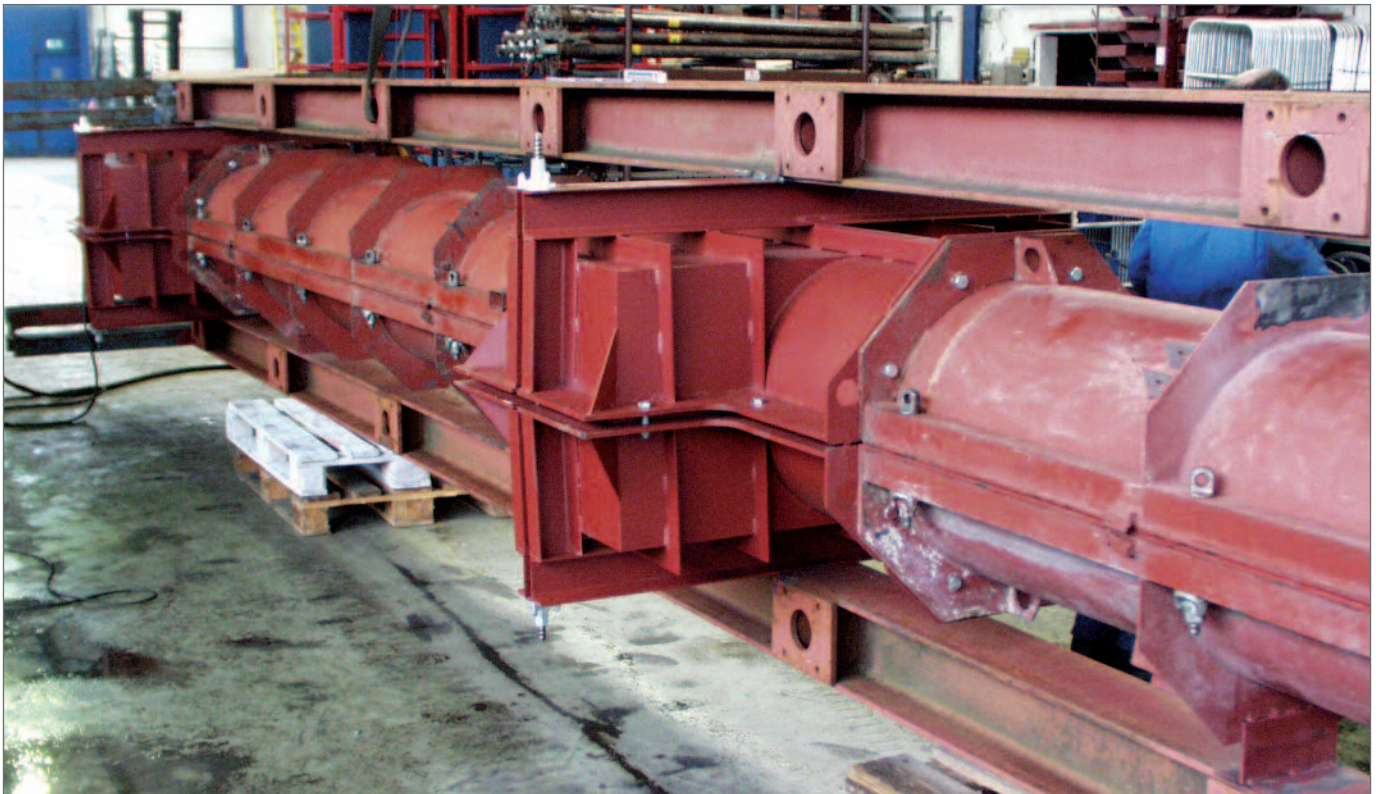
### PADERBORN: COLUMN FORMWORK WITH CONSOLES



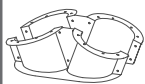
Exact pre-assembly of the rounded and laser-cut single parts on the welding table.



Formwork combined of rent and purchase parts for concreting at the prefab plant. Open round column formwork with a special attachment for 2 brackets.



The formwork halves have been additional stiffened with HEB-girders because of the formwork length of 10.50 m.



## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

# 4

### TEARDROP-SHAPED SPECIAL FORMWORK, BABELSBERG

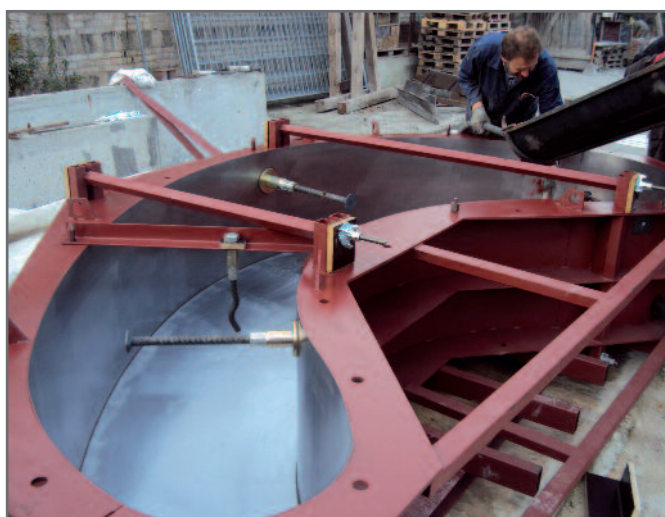


For BNB Beton- und Naturstein GmbH in Babelsberg we made a formwork to produce a teardrop-shaped bench made of colored concrete.

The bent side formwork has been completed with a plurality of different radiuses. A high precision was guaranteed because of the laser stiffening ribs.

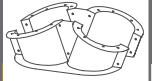
When planning the fixing points for the anchors also the centers of gravity had to be determined in order to place the lift-off anchors and the transport anchors correctly.

Approx. 40 concrete units have been casted with this formwork for the Jugendwerk Landau.



# 4

## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS



### THYSSENKRUPP-TESTTURM ROTTWEIL, VARIOUS

For this tower we delivered several scaffolds and working platforms, among other things a telescopic walkway access in a height of 233m above ground.

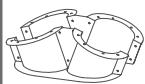
In den lift shafts steel angle profiles had to be fixed to the walls every 10 meters for the filigree slabs.

For this we developed and planned together with the site managers in total 3 mounting platforms with scaffolds 8.50 m high as save working platform.

After fixing all angles in 1 complete level, the towers will be lifted upwards with the crane, while passing the angles the ends of the bearing girders fold inwards. In the next step the towers will be settled onto the angles that were fixed just before.

The different sizes and shapes of the lift shafts afforded 3 types of towers. The geometry of the platforms could be adapted to the several widths by adjustable platforms.

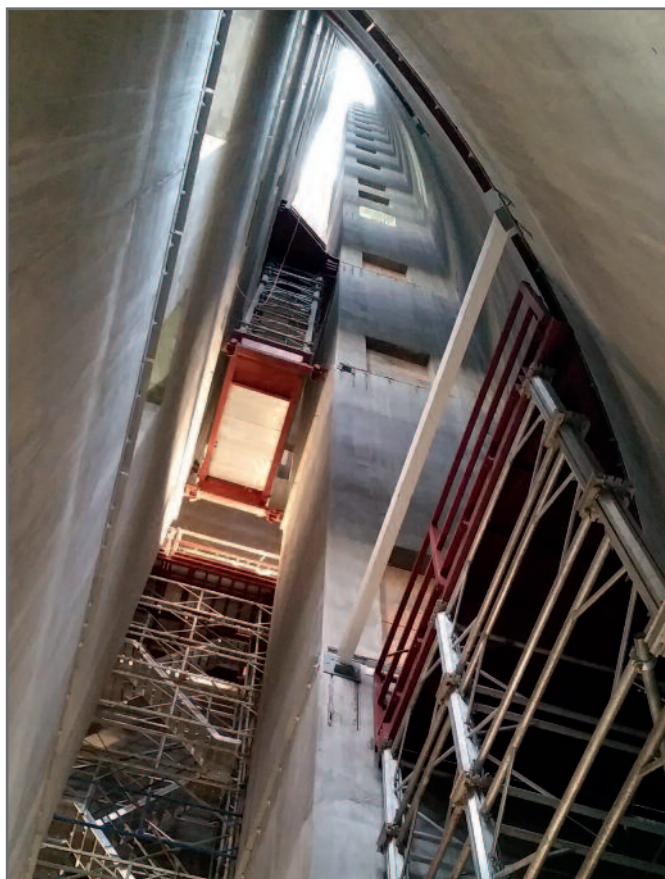




## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

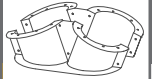
# 4

### THYSSENKRUPP-TESTTURM ROTTWEIL, VARIOUS



# 4

## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS



### MUSHROOM-HEAD

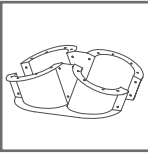
#### In co-operation with ULMA and MÜLLER Sonderbau e.K.

We produced a special mushroom head formwork with very big dimensions for the erection of numerous water reservoirs by MÜLLER Sonderbau e.K. and ULMA. The diameter of the core at the upper end was 3500 mm at a total height of 1500 mm. The diameter of the column is 600 mm.

This formwork has been in use already more than 30 times. It still guarantees a very high accuracy of fit and an excellent fair face result.







## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

# 4

### MUNICH – IBIS-NOVOTEL, V-FORMWORK

The entrance hall of the hotel is architectural revaluated by two round columns in V-form made of in-situ concrete.

For this demanding task we developed an economical solution by combining purchase and rent formwork.

The dimensions of the V-formed special formwork have been determined in that way so that the standard rent formwork with a length of 2,50 m and 3,00 m can be used as end pieces.

For an optimized working process one half of the complete V-formed formwork has been placed and supported first.

At the upper formwork end a girder was mounted as a crane support, which was used as stiffening at the same time. Thus it was guaranteed, that during mounting the angle of the V-formed formwork did not change which made an adjusting unnecessary.

With the help of the detailed planning it was possible, to secure the whole formwork unit with standard push-pull-props during mounting and dismounting and to guarantee for the safety precautions.

At this building project the short ways from construction to production in our own company proved useful and also the in this way guaranteed precision of the formwork.

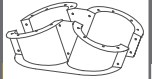
The used round column formwork with integrated sealing profiles at the longitudinal joint in combination with the delivered special formwork guarantees an excellent fair face concrete quality also at this building project.



# 4

## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

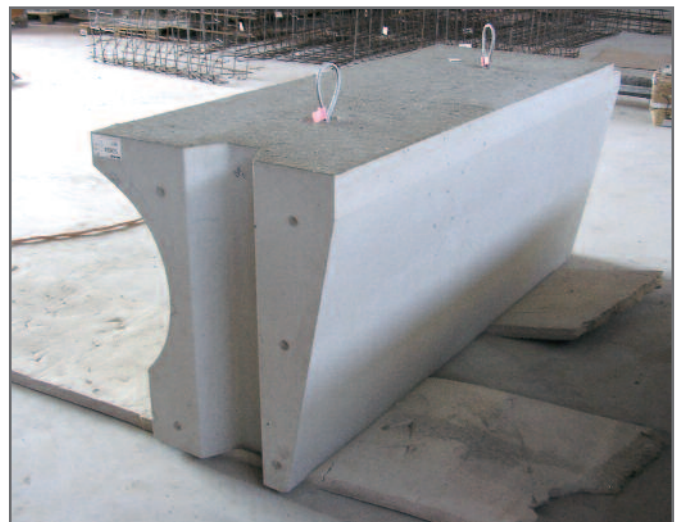
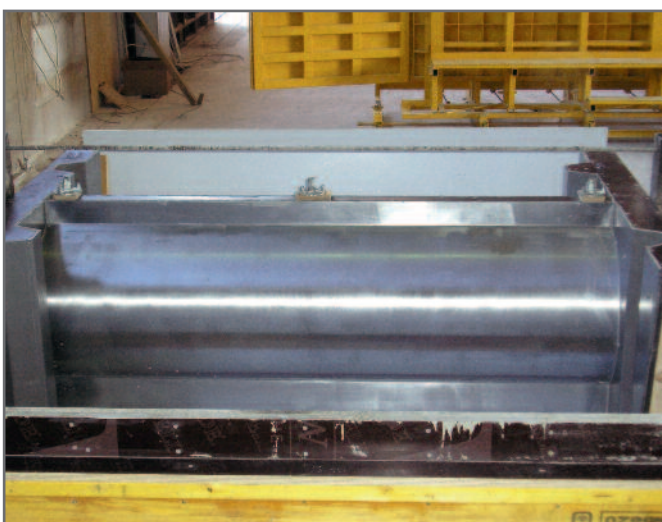
### SPECIAL FORMWORK FA. BÜRKLE BETONFERTIGTEILE

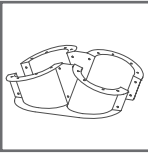


This formwork has been produced as a combination solution. The complicated round inner core and the front plate were manufactured in steel, the straight side walls and the floor have been produced in wood by the client.

With this double formwork 2 prefab parts have been produced at the same time.

They are used for the elevation of the embankment of a basin for a pump storage station.





## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

# 4

### TÜBINGEN – HEALTH CENTER: V-COLUMN-FORMWORK

This nine stories high building has a very special architecture, looking from the top it has the shape of a pebble, which consists of two different alternating circle segments.

The outer walls are supported by round columns arranged in V-shape, which are connected on the base and on top.

The lengths of the V – shaped base and top elements were adjusted in that symmetrical way, that it was possible to use standard rental circular forms with a length of 2.50 m in between.

Hence it was possible to use the V- elements as well on the base as on the top.

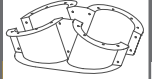
The inclined columns following the rounded shape of the building caused multiple different angles in the V-shaped elements. This concerned the inner angles as well in the horizontal view as in the view from the top.

In addition to this there were special V-elements necessary at the junction points from the big to the small radius.

These elements could only be used 1 time.

The column forms with integrated sealing profiles in combination with the special forms delivered by us delivered also on this site a perfect fine fair concrete finish.





A brief overview since the start of construction until march 2019

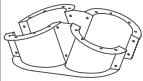


Picture above:  
Imposing sight: One of the four formwork elements for the highest cup foot

Picture right side:  
After completion of the reinforcement work, the formwork elements for the foot of the goblet (4 units in total) are slotted one after the other around the reinforcement cage.

Picture above:  
Preparing for the reinforcement work on the cup base: Several layers of reinforcement templates made of laser-cut sheet metal. This ensures the dimensionally accurate installation of the complex 3-dimensional reinforcement with the exact concrete cover.





## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

# 4

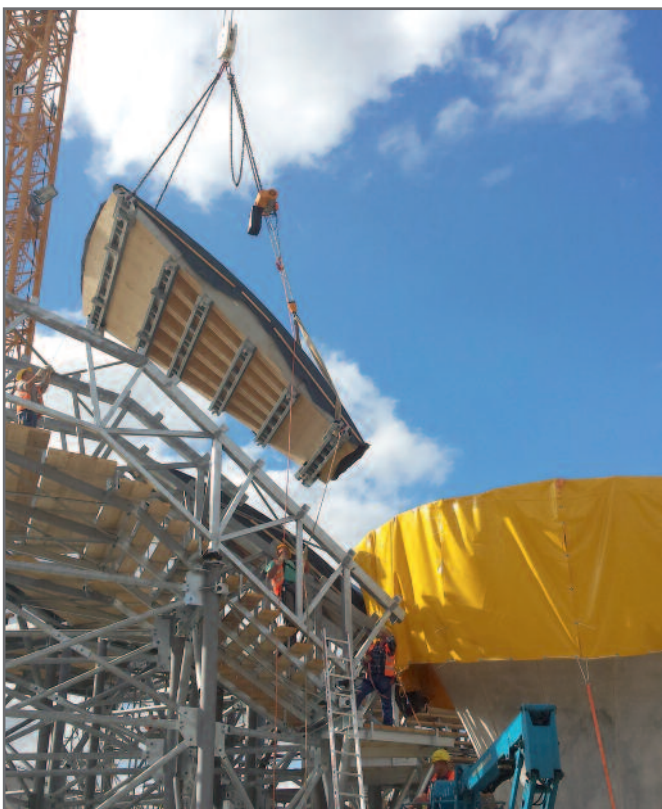
FA. ED. ZÜBLIN AG – CONSTRUCTION PROJECT LOW STATION S21



Picture left side and below:

The crane-free displacement of the heavy elements under the overhanging reinforcement was carried out with the heavy duty platform wagon. For this purpose, the car was supplemented with a specially developed special mast.

ROBUSTA-GAUKEL planned and produced special straps for the stiffening and connection of the 4 formwork elements.



Picture left side: After the towers "below" were supplemented with the wood covering as a work surface, the next step was to erect the towers "above" and to install the first timber formwork elements. Exciting moment: the first "wedding" of Tower and framework.

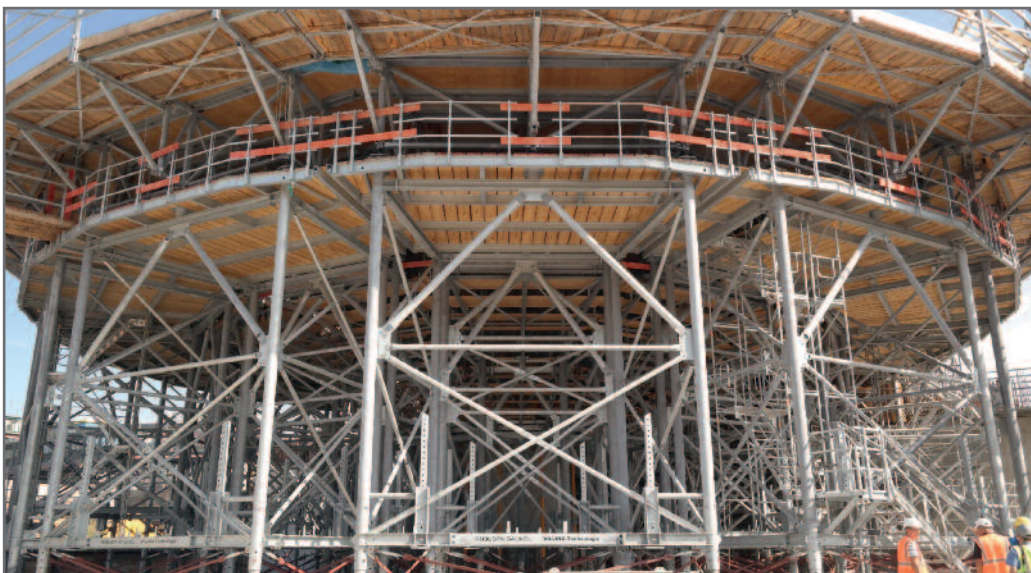
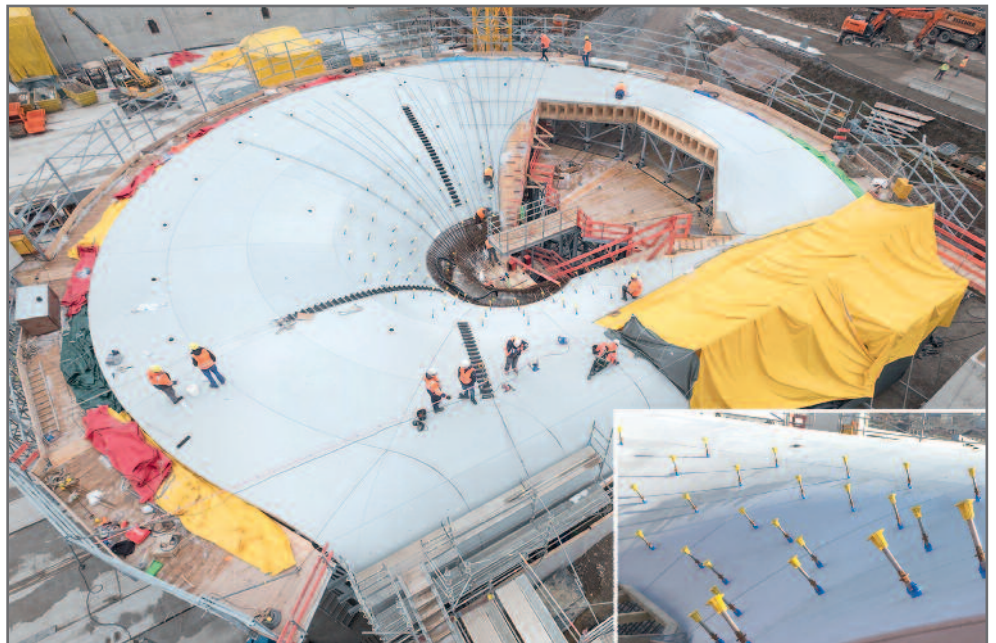
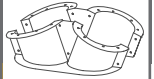
Picture right side: One of the formwork elements for the transition from the cup to the side wall.



# 4

## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

FA. ED. ZÜBLIN AG – CONSTRUCTION PROJECT LOW STATION S21





## SPECIAL FORMWORK AND SPECIAL CONSTRUCTIONS

# 4

FA. ED. ZÜBLIN AG – CONSTRUCTION PROJECT LOW STATION S21



Picture left side: Reinforcement work in the goblet

Picture right side: Completely installed deck formwork with the ring-shaped straps.



On the right side you can see the finished goblet, on the left side the work on the scoop of the goblet is in full swing, on the right side a second goblet is reinforced. In the middle, the scarfing work for the rule goblet begins.



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