

Understanding the concreting results.

Experience the fascination.

doka



The Formwork Experts.

Concrete expression of **individuality**

With system and project-based formwork

A clear trend is 'surfacing' in the language of architecture, towards concepts that are as individual as they are unique. Buildings convey interesting forms of expression to both the inside and outside. Cast-in-place concrete creates extra leeway for architecture. We work with our customers to develop holistic solutions for concrete technology, formwork technology, concrete installation and compaction - all customized to the requirements of the structure. We offer proven modular systems and project-based formwork for various surface design elements such as increment-grids, joints and texture.



Find out more on
our website:

www.doka.com/sichtbeton



Project success assured

With active support throughout all project stages

The experience gathered from hundreds of fair-faced concrete projects taught us: Each construction project is unique! The know-how of the Competence Center Fair-Faced Concrete is your reliable resource for achieving a construction process that is smooth and economical. From planning through to completion – we are by your side to ensure your project success.



Early involvement of formwork experts in your project is advantageous:

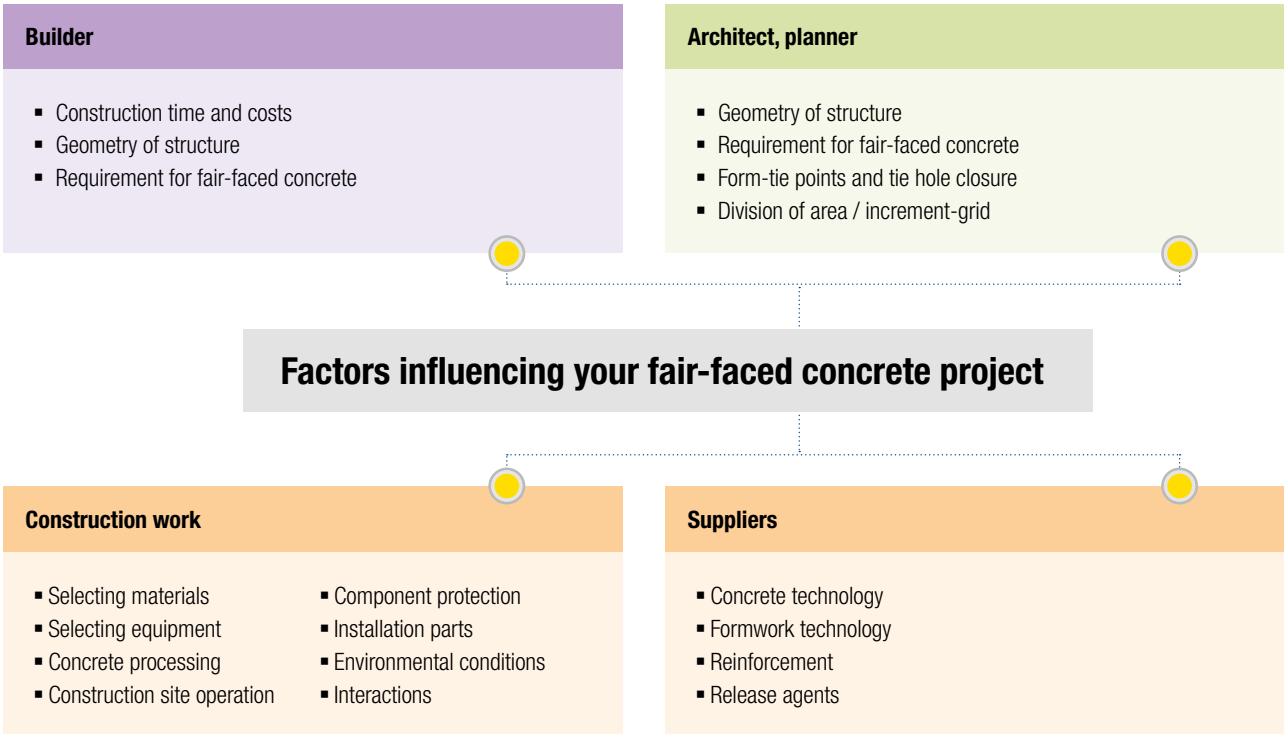
- Certainty in planning costs, time and quality
- Risk reduction through competent and experienced experts
- Optimised (construction) workflows
- Fair-faced concrete solutions even for particularly elaborate requirements

Important information: Always observe all relevant safety regulations (e.g. as issued by construction-industry employee safety organisations) applying to the use of our products in the country in which you are operating. In addition, the User Information booklets (Instructions for Assembly and Use), which contain information on standard system set-up and on compliant utilisation of Doka formwork systems, must also be observed. The illustrations in this brochure show the situation during formwork assembly and are therefore incomplete from the safety aspect. It could be dangerous to combine our formwork equipment with equipment from other manufacturers. If you intend combining different systems, please contact Doka for advice first. Subject to change without notice in the course of technological development.
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Architectural **interplay**

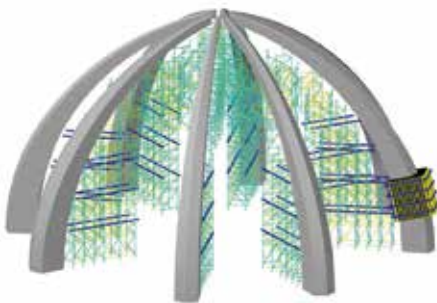
Exceptional structures through constructive collaboration

We recommend drafting as detail-oriented a project specification as possible so that together with your suppliers you will be able to plan, coordinate and ultimately meet the desired requirements.



Team success is evident in the concrete results.

Create a circle of experts including people in charge at the construction company, specialist planners and builders as well as representatives from the primary equipment and materials suppliers. Together you will ensure that you will achieve the desired quality of your construction project.



Criteria for success when planning fair-faced concrete projects

The standards set forth by builder and architect are crucial

A clear and detailed invitation to bid is a crucial contribution to your individual project result. We support you in considering all criteria relevant to quality costs.



Construction time and costs

Compliance with the completion date in agreed quality at calculated costs is of immense importance. We successfully accompany you through planning and processing the materials. This is how you get to the goal swiftly.

Geometry of structure

There is virtually no limit to individuality in fair-faced concrete projects. Even with highly complex structures we support you in keeping your costs as well as construction time within limits.

Fair-faced concrete requirements

Depending on their purpose, structures must meet certain requirements in terms of design, durability or sustainability. Doka's fair-faced concrete experts provide you with advice regarding specific rules and standards as well as options for implementing individual requirements.

Tip:

We recommend: sample surfaces

Undesirable side effects caused by chemical and physical interactions (e.g. release agents, concrete additives) between individual material components during construction can be avoided. Conduct advance testing of interactions between the materials to be processed on sample surfaces and under local conditions. This way you ensure the quality of your individual fair-faced concrete.

Division of area / increment-grid

In addition to the specified form tie arrangement, your visible surface is influenced by the formwork panel formats and/or frame imprints on panel joints. We support you when you select the right formwork system for your fair-faced concrete requirements.

Type of edge

Concrete edges are mostly formed using triangular ledges to produce chamfered edges. Forming arrises requires a high level of craftsmanship. It must be taken into account that a structural edge is equivalent to a 'formwork panel joint' and is subject to the relevant criteria of the rules.

Geometry of structure

Characteristics and complexity of structures impact project costs. We provide you with consultation regarding costeffective methods of execution.

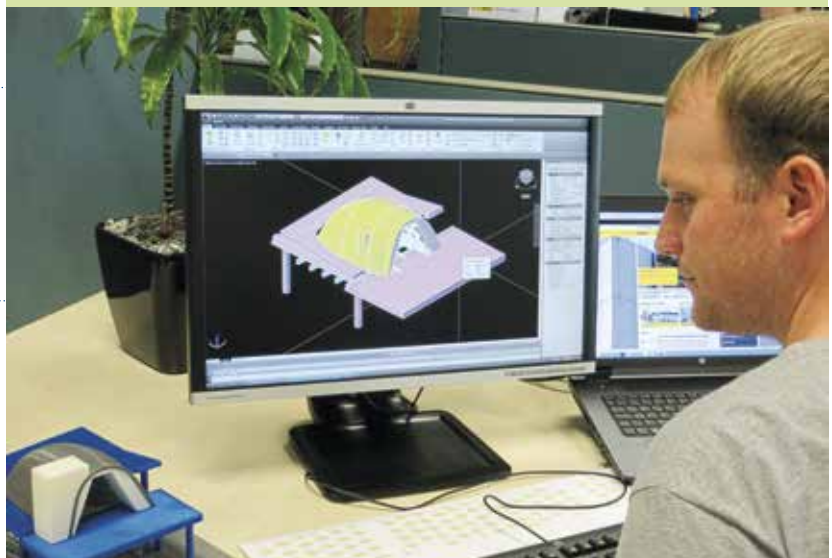
Surface texture

The surface structure is substantially influenced by your choice of form-facing ('imprint'), the formwork system (thus, with framed formwork the form-facing is predetermined) or by various rework methods.

Box-outs

Form tie arrangement must be coordinated with wall openings (doors, windows etc.).

As the architect and planner, you pay particular attention to



Fair-faced concrete requirements

Doka's fair-faced concrete experts advise you in formulating individual requirements consistent with building codes and standards in your requests for tenders.

Form-tie points and tie hole closure

Form-tie point positioning and their closure will impact the appearance of your fair-faced concrete. By working with us you can exhaust all available creative options.

Casting sections

Dividing the area into pouring sections significantly impacts its organization. This task is best coordinated with the superstructure planner.

Added value thanks to system

The right formwork for your requirements

Certainty of quality and costs are key factors in any building project. As a competent partner, Doka offers cost-efficient solutions for all design challenges. Costs of the formwork systems to be utilised depend on the desired added value.

With increased desire for quality and flexibility comes an increase in expenditures of material and time.

	Standard Rental yard formwork		Fair-faced concrete formwork		
	Framed formwork Framax Xlife	Framed formwork Framax Xlife plus	Framax Xlife doubled up	Large-area formwork Top 50	Large-area formwork Top 100 tec
Flexible joint pattern	***	***	****	*****	*****
Flexible form-tie pattern	*	*	**	*****	*****
Form-facing as desired	*	*	*****	*****	*****
Number of form-tie points	***	***	***	***	*****
Cost for 2 months, formwork used 5 times	100 %	110 %	226 %	237 %	259 %

Cost comparison of formwork systems using a fictitious project with 2-month rental period and formwork being used 5 times. Framed formwork is equal to a standard rental formwork unit without change of form-facing.



Factors influencing formwork costs:

- Rental costs: The proportion of framed formwork that can be rented is frequently greater than with timber-beam formwork.
- Operations scheduling: Formwork for special projects require longer planning and production times
- Freight: The volume of timber-beam formwork is generally larger than that of framed formwork
- Reconditioning: High demands for quality generate high costs for maintenance and care
- Assembly/disassembly: Unlike formwork for special projects, system formwork for rent is pre-assembled
- Form-facing: Using new form-facing will result in added costs

A question of arrangement

The path to a one-of-a-kind surface appearance begins with a plan for formwork samples

In the formwork sample schedule we are planning how to perfectly divide the area so you can achieve a unique fair-faced concrete result. The organization of visible surfaces refers to the arrangement of casting section seams, structural connection between forming elements, formwork sheets and form ties in wall formwork.

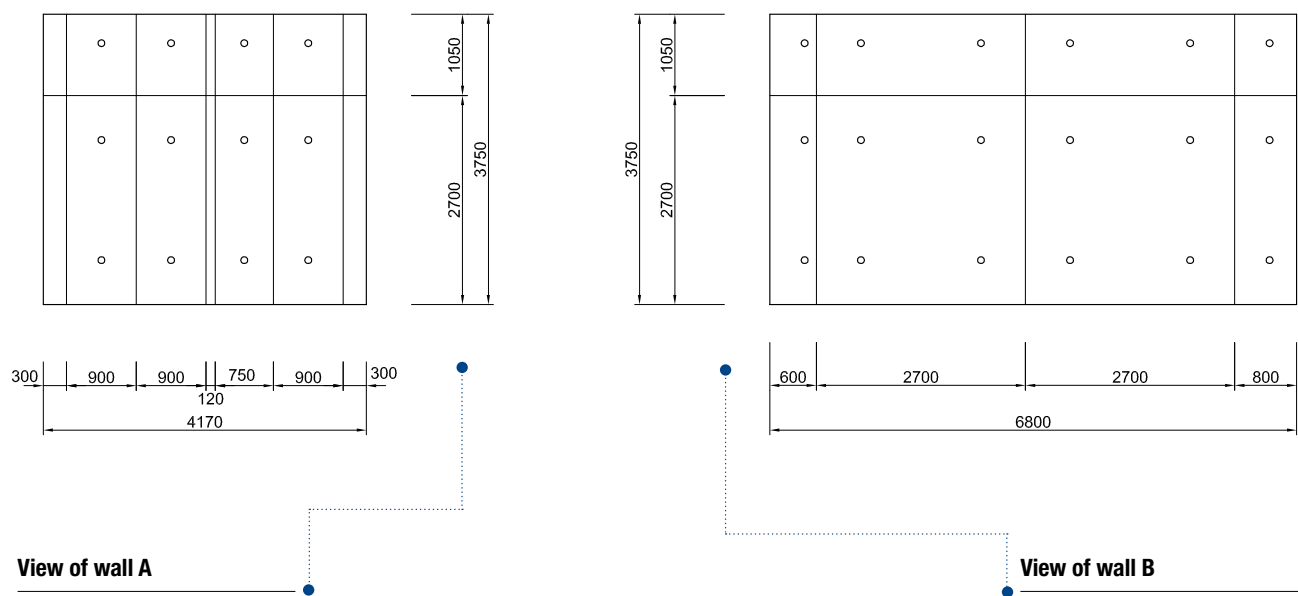


Tips:

- **Casting section joints** are the same as structural connections between formwork elements that are even more clearly visible and must be coordinated with the planner of the superstructure. In the case of horizontal construction joints, use of trapezoidal strips will result in neat connections and reduced cement paste bleeding.
- **Structural connections of formwork elements** are the result of the formwork systems selected.
- **Structural connections of formwork sheets** depend on the formwork the chosen supplier is able to deliver. The most often used format of plywood sheets with smooth coating is 1.25 / 1.50 x 2.50 / 3.00 m, the 3-ply sheet 3-SO can be delivered in sizes up to 1.50 x 6.00 m. Include formats of max. 2.0 x 5.0 m in your plans - they will provide an adequate product selection (e.g. Doka fair-faced concrete formwork sheet Xface). Selection of larger formats significantly impacts price and delivery time.
- **Formwork boards** come in nominal widths (e.g. 100 mm). However, the actual width may deviate by several millimetres from the nominal width as a result of different production and storage conditions. This means that a forming element that is 2.50 m wide is not comprised of exactly 25 boards of equal width. For this reason, the precise arrangement of form-tie points at the centre of the board entails very high expenditures for assembly and logistics.
- **Form ties**, in terms of their area of influence, must be limited for reasons of statics (e.g. systems with a Tie rod system 15.0 mm have approx. 1.0-1.5 m² area of influence per form tie, in systems with Tie rod system 20.0 mm the area of influence per form tie is approx. 2.0-2.5 m²); when arranging the form ties it is important to keep in mind the distance to wall openings, built-in components, component corners etc., to prevent them from colliding with box-outs.

Sample formwork plan

Framed formwork Framax Xlife plus



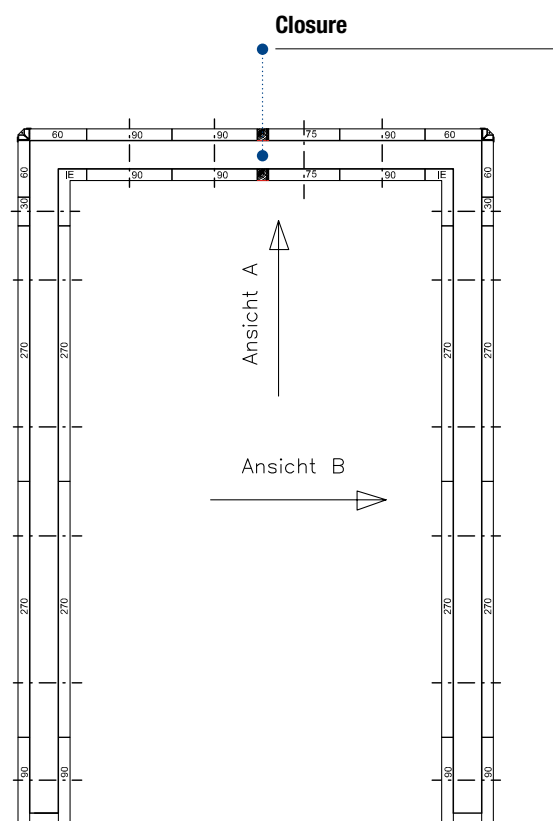
Tip:

Uniform colouring

To achieve uniform colouring, we recommend selecting fitting timber for fillers of the same form-ply and/or timber quality as the forming sheets.

Please note

For fair-faced concrete quality with Framax Xlife plus, use the proper fair-faced concrete plugs, fair-faced concrete cones and cone spanners.



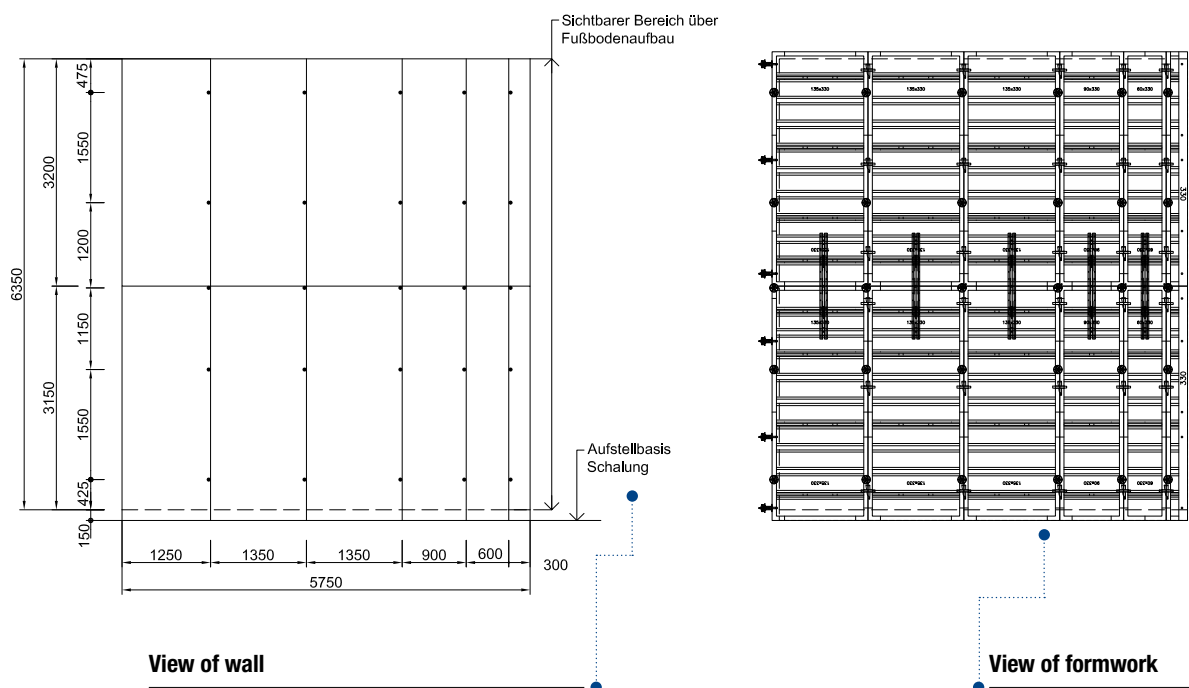
A large, light-colored concrete wall is shown under construction. The wall is composed of several vertical panels separated by thin lines. A regular grid of small, dark, circular form-tie points is visible across the entire surface of the wall. The wall is set against a blue sky with white clouds. In the background, a brick building is partially visible on the left side. The foreground shows some construction materials and a dirt ground.

▼ Attractive concrete finish

with a regular form-tie and joint pattern and
form-tie points on the inside only

Sample formwork plan

Framed formwork Framax Xlife



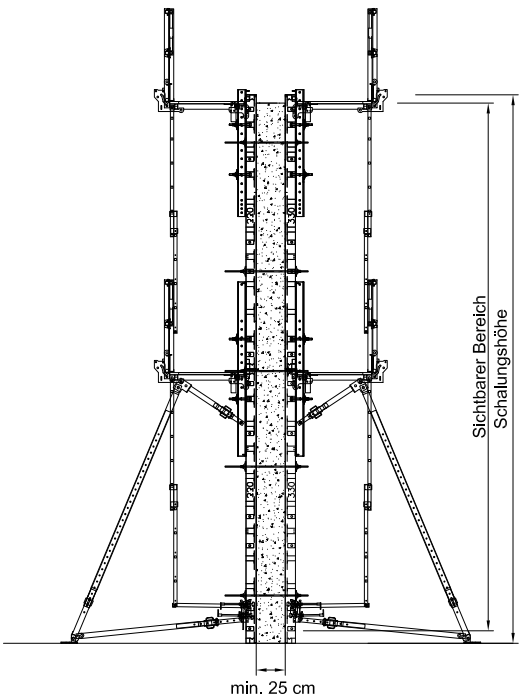
Please note

When using framed formwork, the pronounced imprint of the steel frame at the panel joints will remain visible.

Tip:

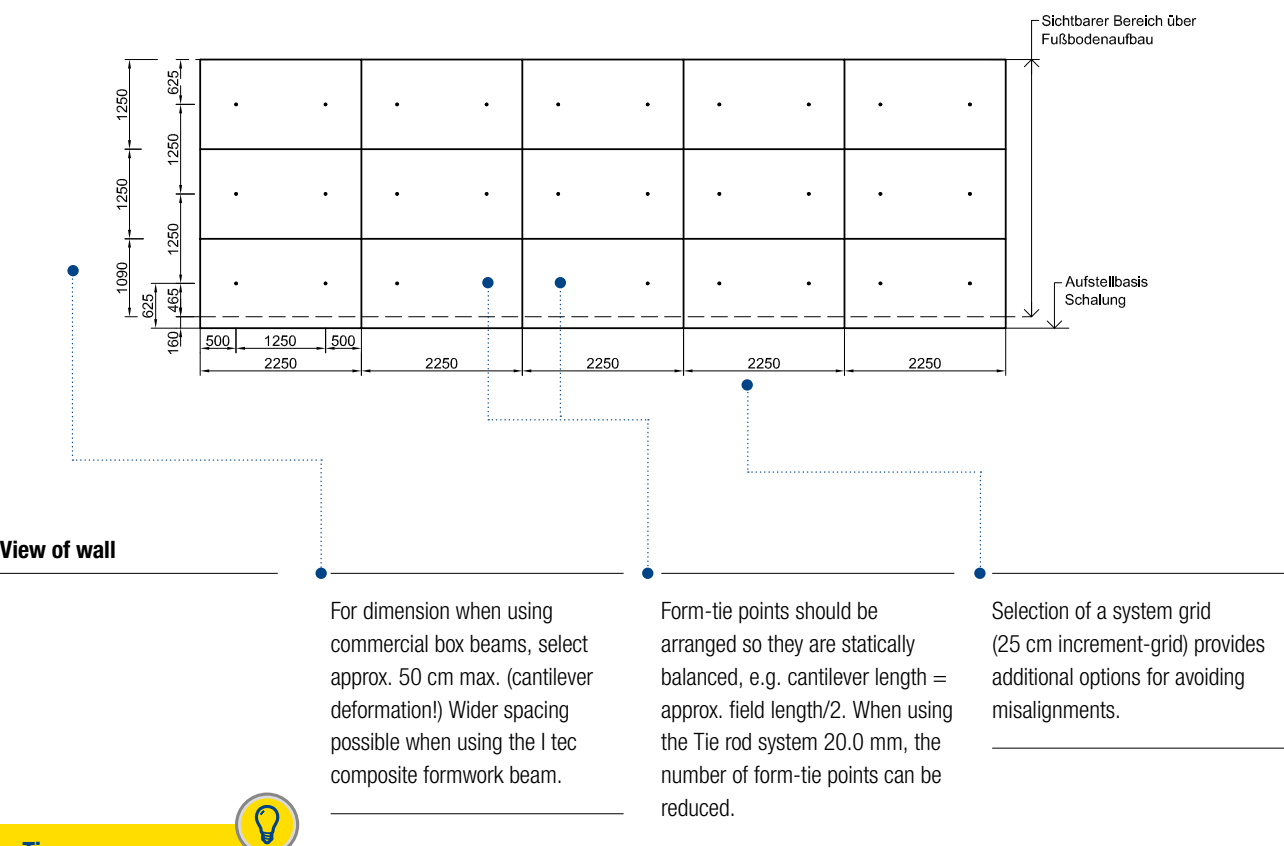
Premium concrete surfaces


Our recommendation is to fix the formwork sheets from the back. Galvanised steel frames reduce the risk of rust stains.



Sample formwork plan

Large-area formwork Top 100 tec



**Tips:**

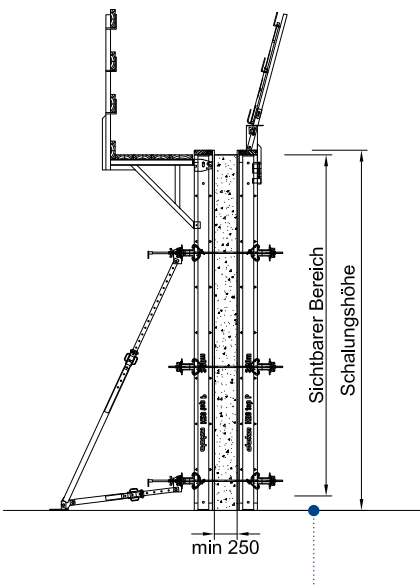
Great forming heights:

Use of additional measures will allow for great forming heights. However, planning of structural framework, concrete installation and concrete compaction must be coordinated with experts.

Selecting proper increment-grid:

Sufficient storage options on the construction site need be considered when using large formwork panels (city centre sites), and/or in the case of tight spaces selection of smaller grid dimensions.

Formwork footprint = unfinished floor



Sample formwork plan

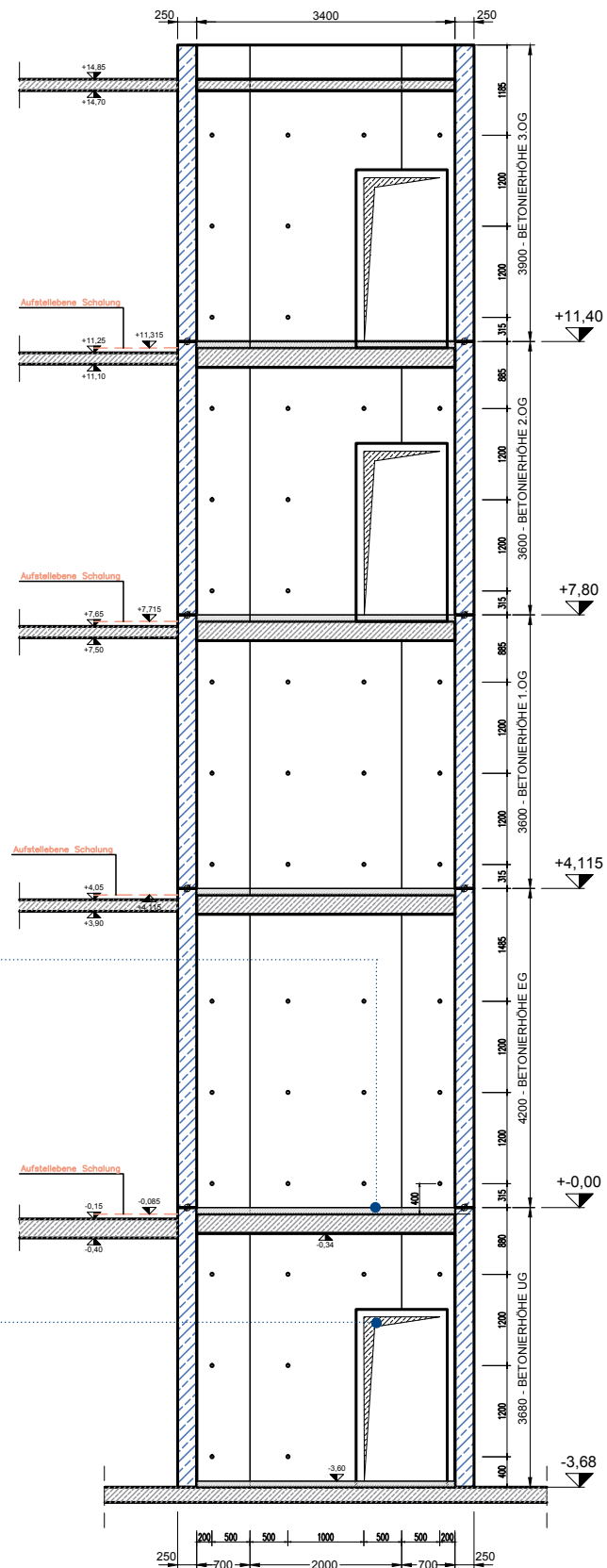
Large-area formwork Top 50

View of wall

Formwork view plan for Large-area formwork Top 50 produced specifically for project.

The formwork unit's set-up level equals top of unfinished concrete slab / floor plate. This may influence the visible level of form tie positions when building up the floor.

Arrange form ties that are passed through the box-outs of doors at least 5 cm from the concrete edge.



Monuments for generations

Making an impression with concrete

Fair-faced concrete offers architects and construction firms the leeway to realise even the most eccentric ideas and shapes. It is the high-quality products and outstanding specialist knowledge in particular that turn unique projects into monuments for generations. From useful and beautiful structures through to artistically designed architecture with whimsical details – fair-faced concrete always leaves a lasting impression.



Form-facing – for visual impact of the fair-faced concrete surface

Influencing surface structure and colouring by means of form-facing

In its visibly most beautiful form, fair-faced concrete is a challenge for formwork technology. Reliably casting concrete surfaces in the desired fairfaced concrete category requires a great deal of experience in handling suitable formwork materials. If the goal is to create the perfect appearance, the right formwork sheets are required to achieve premium concrete surfaces.



◀ Xface sheet

Features:

- Nordic birch plywood, crosswise glued
- concrete side with durable synthetic resin coating, the back coated with phenolic resin
- non-absorbent surface
- sheet for smooth concrete surfaces
- normal pore formation
- light concrete colour

Tip: Its fibre-reinforced synthetic resin coating delivers premium concrete surfaces that are stain-free and highly resistant to scratching.

Formats:

- Lengths: 302, 402 and 502 cm
- Widths: 202 cm
- Thickness: 21 mm



◀ Dokaplex formwork sheet

Features:

- Nordic birch plywood, crosswise glued
- same phenolic resin coating on both sides
- used in wall and floor formwork
- sheet for smooth fair-faced concrete surfaces
- cut edge sealed
- very low absorbency
- surface without texture
- normal pore formation
- light concrete colour

Formats:

- Lengths: 250 to 300 cm
- Widths: 125/150 cm
- Thicknesses: 9/18/21 mm

Find out more on
our website:
www.doka.com/xface





◀ Formwork sheet 3S top

Features:

- high-quality, 3-ply formwork sheet made of spruce, cross-wise glued
- selected timber quality, main boards only
- manufactured in accordance with Austrian standard ÖNORM B 3023
- closed surface on both sides with melamine resin coating and varnish sealant, sanded with corundum particles
- all-round, coated edge strip, grey edge coating



Formats:

- Lengths: 150 to 300 cm
- Widths: 50/100 cm
- Thicknesses: 21 to 27 mm



◀ Formwork sheet 3-S0

Features:



- 3-ply sheet (spruce) crosswise glued
- minimal tendency for cracking due to thinner cover layers
- surface coated with glue
- slight board-type structure (depending on timber moisture)
- used in wall and floor formwork
- high-quality, consistent timber quality
- smooth concrete finish
- even concrete finish
- slightly absorbent surface
- low pore formation



Formats:

- Lengths: 100 to 600 cm
- Widths: 50/100/150 cm
- Thicknesses: 21 and 27 mm



◀ Boards, rough-cut

Features:

- rough, board-type surface structure with dark concrete colour
- lighter after several reuses
- extremely absorbent
- hardly any pores on visible surface
- variations in absorbency due to knots, resin pockets, etc.
- wood sugar prevents some of the concrete from setting
- wood fibres might adhere to the surface



◀ Boards, planed

Features:

- smooth concrete finish with distinct wood texture
- dark concrete colour – lighter after several reuses
- low pore formation
- variations in absorbency due to knots, resin pockets, etc.
- wood sugar prevents some of the concrete from setting
- sanding on surface



Great looking surfaces. The systematic Doka way.

Solutions for simple and complex components

With its modular formwork systems, Doka has the right solution for the entire spectrum of architectural requirements. The range is oriented to be comprehensive and scores with convincing arguments: high standard of safety, excellent cost-efficiency, and great ease of handling.



◀ Framed formwork Framax Xlife

- frame imprint in concrete
- form-facing screwed on from back (no attachment of form-facing visible on concrete)
- neat horizontal and vertical joint pattern
- neat, fixed form-tie pattern



◀ Framed formwork Framax Xlife plus

- form-tie and joint pattern with form-tie points on the inside
- frame imprint in concrete
- form-facing screwed on from back (no attachment of form-facing visible on concrete)
- shorter forming times with a tie-rod system that can be operated from one side



◀ Large-area formwork Top 50

- timber-beam formwork assembled based on the project
- choice of form-facing
- no frame imprint
- for structures of any shape
- adaptable to formwork pressure
- choice of form-tie and joint pattern



◀ Large-area formwork Top 100 tec

- timber-beam formwork assembled based on the project
- choice of form-facing
- no frame imprint
- minor deflections
- few form-tie points thanks to strong components
- choice of form-tie and joint pattern



◀ **Dokaflex 30 tec and Dokaflex**

- shoring heights up to 5.50 m
- infill zones by telescoping the system beams
- no frame imprint in concrete
- choice of form-facing



◀ **Dokadek 30**

- shoring heights up to 4.50 m
- basic structure of elements from below
- infill zones through seamless interlocking with Dokaflex
- imprint of Dokadek panel frame on concrete
- dimensions of Dokadek panels: 1.22 x 2.44 m, 0.81 x 2.44 m



◀ **Special shapes**

- formwork customized for complex component geometries
- unusual shapes realized easily and precisely
- uniform concreting surfaces of the formwork mould

Residential building

For visibly beautiful living spaces

Model housing development
Hadersdorf House 6 ▶

Location:
Vienna, Austria

Construction work by:
Strabag AG, Vienna

Architect:
Roger Diener, Basel

Challenge:
Form-tie and suspension points
for platforms in pre-defined
increment-grid

Solution:
Wall formwork FF20 with special
form-facing screw-fixed from the
back





◀ Single family residence

Location:

St. Johann in Tyrol, Austria

Construction work by:

EMPL BAU GmbH

Architect:

Stefan Metzner

Challenge:

Fair-faced concrete curtain walling to be poured subsequently with a uniform form-tie pattern without frame imprints, in case of sharp-edged corners with utmost dimensional precision

Solution:

Planking with Dokaplex formwork sheets, approx. 350 m² fair-faced concrete curtain walling (max. height approx. 9 m)

High-rise and commercial construction

For buildings that are useful as well as aesthetically pleasing

Commercial Park Schlitters ▶

Location:
Schlitters, Austria

Construction work by:
Rieder GmbH & Co KG

Challenge:
Demanding fair-faced concrete surfaces with vertical longitudinal stripes at regular intervals for prestigious business buildings. Hidden form-tie points in texture grooves.

Solution:
Framed formwork Framax Xlife, Folding platforms, Framax Xlife doubled up with Doka Xface Trapezoidal strips made of Xface sheets for longitudinal stripes





◀ New Port House, Antwerp

Location:

Antwerp, Belgium

Construction work by:

Interbuild

Architect:

Zaha Hadid Architects

Challenge:

Asymmetrical column made of self-compacting concrete with 12 lateral surfaces at different angles and special form-tie positions

Solution:

Large-area formwork Top 50 covered with 3-SO and doubled up on-site with Dokaplex sheets. Flexural rigidity, special walings, multi-ply formwork sheets for an exceptional fair-faced concrete result, Load-bearing tower Staxo 100, Formwork planning in 3D, Dokadek 30 for cast-in-place works in underground garage



**Exhibition and Training Facility
Brunner GmbH ▶**

Location:
Eggenfelden, Germany

Construction work by:
Kellhuber GmbH

Architect:
Markus Frank

Challenge:

Presentation room having the cross-section of a European sacred building with vault in fair-faced concrete and back wall in black fair-faced concrete the texture of charred timber

Solution:

A type of tunnel formwork traveller with pre-assembled vault-shaped elements for quick forming and stripping as well as precise adjustments to the camber. Doka Wall formwork FF100 tec, Load-bearing tower Staxo 100 and Large-area formwork Top 50





◀ **New Merck factory canteen
Building R40**

Location:
Darmstadt, Germany

Construction work by:
Diringer & Scheidel
Bauunternehmung

Architect:
Neumann Architekten GmbH
Frankfurt

Challenge:
Two-storey company restaurant
with basement and mechanical
equipment room on the roof with
exterior wall in category 4 fair-
faced concrete with neat form-tie
and joint pattern as well as a
circular wall opening incl. handrail
for stairs

Solution:
Pre-assembled fair-faced concrete
formwork to reduce assembly
time while ensuring high quality
Large-area formwork Top 50



Széchenyi István University ▶

Location:

Győr, Hungary

Construction work by:

Záév Zrt.

Architect:

Gelesz és Lenzsér Építészeti,
Mérnöki és Szolgáltató Kft.

Challenge:

Two new structures connected to existing university buildings. Fair-faced concrete on the building inside and out

Solution:

Timber beam formwork Top 50 based on the project for several reuses and reduced assembly effort on the site



◀ Palace Narodni

Location:

Prague, Czech Republic

Construction work by:

Terracon a.s.

Architect:

Ing. Arch. Stanislav Fiala

Challenge:

Concrete architecture and art of imprint impressively combined when forming walls and floors.

Solution:

Special formwork with individually created surfaces where positive imprints of e.g. ropes, soles, tools or even hands are implemented.



◀ Pharmapolis Research Centre

Location:

Debrecen, Hungary

Construction work by:

Társ '95 Kft.

Architect:

Pitvar Építettervező és Szervező Kft. Pitvar Kft.

Challenge:

Front desk and entrance areas in fair-faced concrete look featuring sloping columns measuring 3 m in height and built without form ties

Solution:

Non-tied Large-area formwork
Top 50

Sites of cultural interest

For artistically expressive architecture

KTM museum Mattighofen >

Location:
Mattighofen, Austria

Construction work by:
HABAU Hoch- und Tiefbaugesellschaft m.b.H.

Architect:
HOFBAUER:ARCHITECT

Challenge:
Cast curved walls and sloping slabs in outstanding fair-faced concrete quality, despite rapidly changing climatic conditions

Solution:
Concremote for measuring concrete maturity so that the formwork is stripped at exactly the right time, ensuring the perfectly uniform colour of the finished concrete. Facing of the wall and slab formwork with 3-SO formwork sheets for attractive structuring of the concrete surface.



< Beach Resort Kaltern (Lido di Caldaro)

Location:
Kaltern, Italy

Construction work by:
Zimmerhofer, Campo Tures

Architect:
Ernst J. Fuchs, Wien the next ENTERprise – architects

Challenge:
complex geometry of structure

Solution:
Customized formwork with supporting structure, Formwork sheet 3-SO



ARKKITEHDITNRT ©

◀ Sibelius Akatemian laajennus

Location:

Helsinki, Finland

Construction work by:

Skanska

Architect:

ARKKITEHDITNRT

Challenge:

Sophisticated free-form surface shaped with the use of selfcompacting concrete

Solution:

Pre-assembly service for dealing with the complex geometry, preassembled elements for quick use on-site, Top 50, Load-bearing tower Staxo 100, 3D planning



Infrastructure

For functional and perfectly shaped designs

Power Station Lehen ▶

Location:
Salzburg, Austria

Construction work by:
G. Hinteregger & Söhne, Porr Bau GmbH und Teerag Asdag AG

Architect:
Architektenarge maxRIEDER and Erich Wagner

Challenge:
An extraordinary feat of architecture featuring 2.5 m wide and up to 50 m long swan-neckshaped weir piers was realised on a site with limited space.

Solution:
Flawless fair-faced concrete surface by covering Dokaplex formwork sheets. Wall formwork FF20 combined with preassembled standard panels and special FF20 panel connectors in 4 sections. Safe working conditions thanks to folding platform K.





◀ **Arnhem Central Transfer Terminal, Arnhem, Netherlands**

Location:
Arnhem, Netherlands

Construction work by:
BAM Ballast Arnhem
Centrum VOF

Architect:
UN Studio / Ben van Berkel

Challenge:
A train station building with sophisticated geometry in fairfaced concrete with inclined walls

Solution:
3D planning as well as a combination of steel-framed formwork and Large-area formwork Top 50 elements for an outstanding fair-faced concrete look





S0 212 Bridge across D1 ►

Location:
Mengusovce – Jánovce, Slovakia

Challenge:
A bridge across a motorway section featuring a sophisticated design in terms of engineering as well as form

Solution:
Combination of Large-area formwork Top 50, Framed formwork Framax Xlife and Load-bearing tower Staxo 100





◀ Troja Bridge

Location:

Prague, Czech Republic

Construction work by:

Metrostav

Challenge:

The most stringent criteria for fair-faced concrete and accuracy had to be met for the high-tech concept of the Troja Bridge that extends along 262 m with maximum spans of 200.4 m and the innovative structure.

Solution:

Tailor-made Dokamatic tables covered by 3-S eco formwork sheets

Fair-faced concrete **check list**

The most important criteria for project success

For high-quality production of fair-faced concrete surfaces we recommend that builders and architects in particular consider the following criteria early on.

Criterion for success	Tip	<input checked="" type="checkbox"/>
Fair-faced concrete team	Form a core team across the disciplines that is familiar with the requirements for fair-faced concrete structures (standards, specifications, etc.).	
Division and texture of the concrete surface	Use the support of Doka experts to select the right formwork system and ideal form-facing for your fair-faced concrete project.	
Sample formwork plan	Doka fair-faced concrete experts are happy to support you when planning construction joints, pouring lanes, form-tie increment grids, and more.	
Workflow	From installing the concrete to stripping time through to protection of fair-faced concrete surfaces: You can count on Doka to be at your side in the early planning stages.	
Form-tie points, form-tie hole and type of edge	Determine the form-tie point design, form-tie hole closure and type of edge. Doka has the answer to your individual requests.	
Release agents	Your release agent may strongly influence concrete porosity. For this reason you should test it on test surfaces and/or use Doka Optix for exceptionally low-porous concrete surfaces of homogeneous colouring.	
Concrete selection and processing	The right concrete recipe plays a significant part in concrete surface quality. You will find information in country-specific guidelines.	
Weather	Adapt the concrete recipe to weather conditions and note the following: Production of premium-grade fair-faced concrete is subject to limitations at ambient temperatures <10°C.	
Follow-up treatment	Start follow-up treatment immediately after stripping and protect your concrete surface with foil that will not come in contact with it. Avoid any draught between concrete surface and covering.	
Evaluation of fair-faced concrete surfaces	Determine the criteria for evaluating your surface before implementation woks get under way. Do not evaluate immediately after stripping as the fresh concrete surface may still change.	

Information is available through your Doka adviser as part of the Doka fair-faced concrete training and/or at www.doka.com/sichtbeton. Also request our practical information booklet 'Forming fair-faced concrete' via e-mail to fairfaced-concrete@doka.com.

Focused capabilities

Fair-faced concrete expertise at Doka

With our Doka Competence Center Fair-Faced Concrete, we can rely on comprehensive know-how and will support you in planning and execution of any type of fair-faced concrete project. We understand what is important for our customers – this is how we overcome challenges successfully.



