

SKYSCRAPER „DB TOWER“ WITH PERIMETER BLOCK BUILDING Frankfurt am Main (Germany)

NEW BUILDING

Client: Aurelis 15. Objektgesellschaft,
Eschborn, Germany

Architects: Schmidtplecker Planungsgesellschaft mbH,
Frankfurt am Main, Germany

Our services:
■ Structural design
■ Partial approval documentation
■ Execution drawings

Brief description: Construction of a new city-centre building complex (high-rise and perimeter block development) with offices, conference and meeting rooms, plant and ancillary rooms, catering and a multi-storey underground car park with 213 parking spaces.

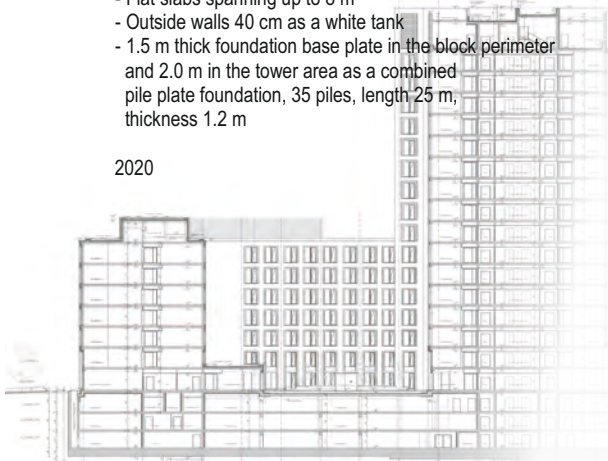
Building

- building complex in solid construction, consisting of tower (17 storeys) and perimeter block development (7 storeys) as well as 3 shared basement levels
- 48,000 m² (gross floor area)
- bracing via slabs and walls
- flat slabs spanning up to 8 m
- flat slabs partially pre-stressed to limit deformation with mono strands in a free tendon layout
- external load transfer via façade columns
- number of columns reduced to half with double the spacing on the ground floor
- load-bearing concrete structure of the façades using prefabricated elements
- large-format precast elements as "comb construction" consisting of three columns with transom, middle column gouged, thus non-load-bearing
- support above the entrance area using a reinforced construction with Vierendeel action
- large two-storey entrance area in the high-rise building, enclosed by storey-high wall-type joists
- complicated load transfer due to irregular floor plan and columns not standing on top of each other
- highly loaded wall-like joists and wide-span bearers spanning 10.50 m each above the 1st basement level
- re-concreted outer basement walls designed for high water pressure
- façades as post-and-beam construction, perforated facade with windows
- prefabricated, curtain wall façade with clinker trim
- new underground connecting tunnel to the adjacent building (DB The Brick), box-shaped cross-section 3 m x 3 m, 7 m long (part of the planning)
- new underground rainwater retention basin, 5 m x 26 m, next to the building complex (part of planning)

Underground car park

- Flat slabs spanning up to 8 m
- Outside walls 40 cm as a white tank
- 1.5 m thick foundation base plate in the block perimeter and 2.0 m in the tower area as a combined pile plate foundation, 35 piles, length 25 m, thickness 1.2 m

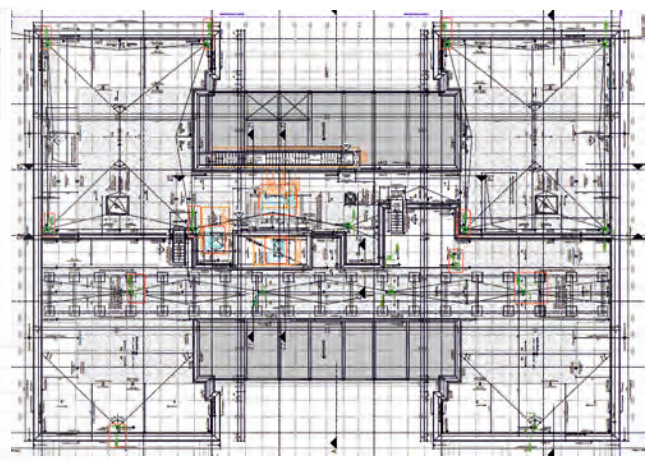
Completion: 2020



DB Tower after construction



DB Tower (left), picture with adjoining DB The Brick building (right, not part of this project)



Floor plan

Pictures / Illustrations: ProfessorPfeiferundPartner PartGmbH, Schmidtplecker Planungsgesellschaft mbH,
Lars Gruber Architektur fotografie

■ ProfessorPfeiferundPartner PartGmbH Tragwerksplanung Bauphysik Brandschutz Gutachten
PfeiferINTERPLAN is a registered trade mark