

AQUA PARK NORDBAD Darmstadt (Germany)

NEW BUILDING

Client: Der Magistrat der Wissenschaftsstadt Darmstadt
Eigenbetrieb Bäder

Projectmanagement: Darmstädter Stadtentwicklungs GmbH & Co. KG

Architects: Sacker Architekten, Freiburg

Our services: Full structural design building
Fire protection
Earthquake engineering
Subsoil planning
Fire protection concept
Structural design for steel and glass facade

Brief description: Construction of a new sports and leisure aqua park with several swimming pools and two indoor diving platforms as well as integration of existing pools worth preserving in the outdoor area, and construction of all necessary new functional and ancillary rooms

Indoor Area

- wood-hybrid-construction using reinforced concrete (forming of space) and wood (roof construction)
- highly architecturally aesthetic extensive room-high steel/glass façade, i.e. without disruption through bracing surrounding the building
- predominantly single-storey construction with basement
- floor area 92 m x 62 m
- large indoor swimming hall with competition pool (50 m x 21 m), aquatic therapy pool (12.5 m x 8 m), children's paddling pool (5 m x 8 m), multi-purpose pool (16.5 m x 25 m) with diving platforms (1 m and 3 m), training pool (20 m x 12 m)
- two-storey section of building constructed purely using reinforced concrete (core of building) for functional and administration rooms, e.g. changing rooms and showers, administration and ticket office, ventilation system
- full basement area utilised for staff rooms and swimming pool utilities, e.g. splash water tanks
- "White tank" construction with extensive use of fresh concrete composite film for external sealing of moisture on the areas of service class A (highest level – no moisture on internal surface)
- shallow foundations with floor slabs having a thickness of 50 cm in a jointless construction, but a competition pool with a circumferential movement joint and floating, constraint-free support
- swimming pool constructed using in-situ concrete with sophisticated drainage channel construction (Finnish and Wiesbaden systems)
- slender reinforced concrete columns for roof construction load transfer, height approx. 8.2 m, base area 30 cm x 30 cm
- main supporting structure of the roof construction made of glulam beams spanning up to 30 m and cantilevers in the outdoor area of approx. 2 m, construction height 1.70 m, at intervals of 5.60 m
- secondary supporting structure using prefabricated wooden element ceilings with acoustic dampening on the underside
- glulam timber truss with concealed steel connections supported and fixed on the reinforced concrete columns
- bracing of the building using the reinforced concrete core and connected "roof disc" formed by prefabricated wooden element ceilings
- all reinforced concrete construction of the concourse and swimming pool hall in fair-faced concrete style (béton brut)
- flat roof, roof coated using a thin film technology.

Outdoors

- two existing swimming pools refurbished 50 m x 21 m and 25 m x 17 m
- construction of new facilities without basement using reinforced concrete, 80 m x 15 m, divided into two areas, a building closed on all four sides for functional rooms, kiosk and elongated, covered walkway open on both sides
- the walkway roof made out of prefabricated wooden element ceiling, mounted on beams with load transfer through six slender steel columns
- a further new building without basement, 34 m x 7.0 m, constructed using reinforced concrete, containing a depot with workshop and office area
- construction carried out during operation time, i.e. execution of all construction measures also during opening hours of the outdoor pool

Completion: 2021



Ground plan