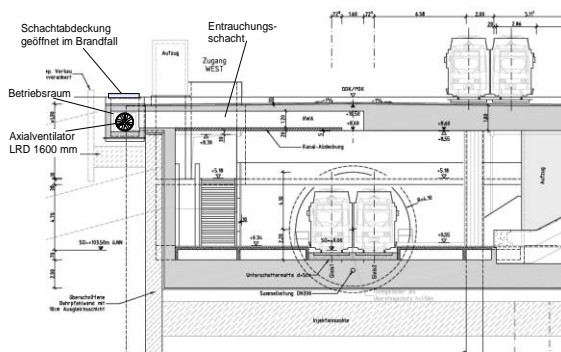
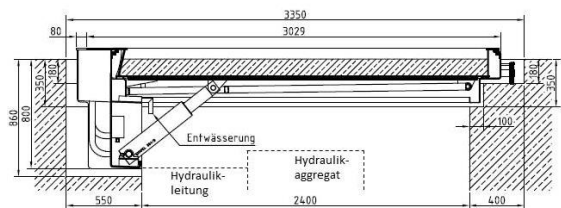


Smoke and heat extraction system at the "Marktplatz" stop



Smoke and heat extraction system at the "Durlacher Tor" stop



Hydraulically actuated shaft cover flap assembly in the tunnel ceiling at the platform



Shaft cover flap assembly ready to be installed in the recessed area in the tunnel ceiling at the platform

Description

The light rail tunnel is part of the combination traffic project solution engineered for Karlsruhe and comprises a 2.7 kilometer east-west tunnel section as well as a 1 kilometer south tunnel section in the downtown area. As part of this project, a mechanical smoke extraction facility and a platform with a passive smoke extraction system are envisaged as suitable fire protection measures for four of the eleven underground stops.

To protect passengers waiting on the platform in the event of a fire outbreak, smoke is extracted into smoke extraction orifices in the platform ceiling using axial fans. The smoke is then released into the open air through exhaust air ducts or is channeled there directly by the fans. At the respective shaft exit, a hydraulic shaft cover flap assembly is installed as a closure mechanism that opens automatically in the event of a fire emergency. During normal operation, the flap assembly is closed to protect the axial fans from external contamination as well as prevent people from accidentally falling in.

In the planning phase, HBI defined the technical requirement specifications for the axial fans, the cross-section areas of the smoke extraction ducts and the design configuration of the fan structures. The following assemblies were planned in total:

- 12 axial fans
- 18 hydraulically actuated shaft cover flap assemblies

Services

HBI Haerter Consulting Engineers rendered the following services for each of the five stops:

- Basic evaluation and conceptual preliminary planning
- Preparation of design planning
- Verification and acknowledgment of formwork drawings for compliance with planning requirements
- Realization of implementation planning, including preparation of the control requirement specifications for the control system
- Involvement in the awarding process
- Verification of plant and assembly planning for the implementing company
- Factory acceptance testing of axial fans