

# ACO civil engineering at work

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## Fraport AG Frankfurt / Airport ACO DRAIN® Monoblock – Durability, Safety, Environmental Protection

High numbers of passengers at Frankfurt Airport


The founding of the "Südwestdeutsche Luftverkehrs AG" (meaning the south-west German air travel company) in 1924 marks the beginning of what is today the largest airport in Germany, Frankfurt Airport. Only a few years later, the airport known as „Rhein-Main“ airport commenced its operations. In being renamed as "Fraport AG" in 2001, one of the world's most significant air travel hubs acquired the name which today stands for international air travel. Each week over 120 airlines, with around 4,650 direct connections to 307 flight destinations in 109 countries, fly from Europe's third-largest airport, conveying an annual total of 53.5 million flight passengers (2008).

In order for the airport to continue holding its own in the face of international competition, Germany's largest project in the private sec-

tor – the extension of Frankfurt Airport – has been in progress since 2006, involving a total volume of around four billion euros. To reach the targeted capacity goal of 126 departures and arrivals per hour, and thus the conveying of an additional 25 million flight passengers annually, the project entails the building of a new landing runway in the airport's north-west section, as well as a third terminal, additional taxiways and new apron areas. A sub-project, within the overall construction measures devised by the planners at Fraport AG, is the erection of the new pier A 0, including the apron area with positions for seven wide-body aircraft. To guarantee the subsequent smooth running of flight operations, it is particularly important, firstly, to equip the apron areas with particularly high load-bearing capacity – as they are subjected to the wheel loads of the large aircraft

(up to 30 t), in addition to lower but more frequent loads, in the form of lifting trucks and supply vehicles – and, secondly, to ensure safe and rapid water drainage.

Due to the monolithic mode of construction and the extremely high durability, the planners decided in favour of the drainage system ACO DRAIN® Monoblock RD 300 V (load class F 900). Using these channels, made of polymer concrete from a single cast part, means that one can avoid dangerous and very costly accidents caused by loose components, such as floor grids used for covering, screws, etc. A further advantage of the channels, shaped in the well-proven V-profile, is the hydraulic values of the system. Thus the Monoblocks, installed over

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ACO DRAIN® Monoblock RD 300 V in the area of the A West apron

a total area of 95,000 m<sup>2</sup>, can take ca. 1,700 litres of water per second and safely drain it away. Also with regard to environmental protection, the planners have made the right decision in choosing the ACO DRAIN® Monoblock RD 300 V: the building material, polymer concrete, due to the fact that it is composed of mineral filling materials and reaction resin, is impermeable to fluids without it needing an additional coating; it is also resistant to aggressive media such as kerosene and de-icing agent.

In installing what are in any case extremely durable channel elements, a special design was selected. The levelled-out elements were linked up with one another on a freely suspended basis, forming a force-fit unit with the foundation after the concrete has been put into place. That way, an additional load transfer and the absorption of lateral shearing forces are guaranteed.



Prepared foundation ditch with steel reinforcement



Suspending the ACO DRAIN® Monoblock RD 300 V as it is put into place



Levelling of the channel elements to a length of ca. 200 metres

### Information at a glance

**Project:** Project: Apron - A West, Frankfurt Airport

**Client:** Fraport AG, Frankfurt am Main

**Planning:** Fraport AG, Frankfurt am Main

**Building company:** Bilfinger Berger AG, Verkehrswegebau, Frankfurt am Main (construction of transport infrastructure)

**Construction dates:** 01/2006-10/2009

#### ACO Products:

ACO DRAIN® Monoblock line drainage system; channel bodies of polymer concrete construction:

– 1,680 m ACO DRAIN® Monoblock RD 300 V, load class: F 900

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