SIKA AT WORK
CONSTRUCTION SOLUTIONS FOR FRIEDRICH LOEFFLER INSTITUTE IN RIEMS, GERMANY

CONCRETE PRODUCTION: Icoment®
FLOORING: Sikafloor®, Sikalastic®
SEALING: Sikaflex®
WALL COATING: Sikagard®, SikaCor®
WATERPROOFING: Tricoflex®, Sika Funk®
ALL ROUND PROTECTION AND SEALING TO BSL 4

PROJECT DESCRIPTION
The Friedrich Loeffler Institute (FLI) is the German National Research Centre for animal health under the German Ministry of Food, Agriculture and Consumer Protection. The FLI is responsible for the national and international control and research of animal viral disease and other close subjects include molecular biology, virus diagnosis, immunology, and epidemiology. The health of farm animals the research activity is primarily centred on preventing and combatting animal epidemics and protection against zoonoses – infections that can be transferred from animals to humans, plus also developing protective husbandry systems and maintaining the genetic diversity of livestock.

The FLI was originally established in 1910 by the pioneering physician Dr Friedrich Loeffler to investigate Foot and Mouth disease in cattle, and here he discovered that the cause was a virus and not a bacterium. In doing so he had also founded the first virology research facility in the world. The recent redevelopment and extension of the FLI facilities has been undertaken to create one of the most modern animal health research facilities in the world, including one of the few Biosafety Level 4 (BSL 4) research laboratories. Biosafety levels (BSL) are classified from 1 to 4 for areas designed for the handling and use of bio-hazardous materials according to their risk, with BSL4 being the highest possible security for the research and handling of extremely dangerous pathogens and infectious microorganisms with high risk to human life.

PROJECT REQUIREMENTS
The extension building for the new facilities covered a 62,500 m² site and consisted of two long buildings with 89 individual laboratories, plus 163 separate animal housing units. All of these had to be built with the focus on ensuring each of them were designed and completed to meet their defined Biosafety level (BSL) requirement according to their intended use. To prevent dangerous pathogens escaping, the laboratory and animal facility buildings all had to be designed and built within a watertight containment area, plus the building envelopes had to be not only airtight, but also vapour and gas-tight. The defined BSL 4 facilities are in the centre of the complex and these had to be built as additional “box-in-box” structures.

All of the internal surfaces (floors, walls and ceilings) had to be very easy to clean, disinfect and decontaminate, with full resistance to all of the potential cleaning and disinfection chemicals, plus the cleaning methods. The floors also had to be abrasion and impact resistant, including able to withstand heavy point impact from equipment and the farm animals in some of the areas.
SIKA SOLUTIONS
For structural waterproofing solutions in the reinforced concrete foundations and containment area, movement and expansion joints were sealed with the Sika Tricoflex® Membrane Joint Sealing system, plus for sealing the construction and isolation/connection joints, Sika Fuko® injection hoses and injection resins were used for additional future security. The concrete floors in all of the Biosafety areas covering around 6,000 m² were impregnated and sealed with a water, vapour and gas-tight, abrasion and chemically resistant coating system using Sikafloor®-156 primer and a self-smoothening finish and wearing coat of Sikafloor®-381. A further 15,000 m² of the floors outside of the designated biohazard handling areas were protected and sealed with Sikafloor®-2530 W epoxy sealer.

In the large animal husbandry facilities, another 6,000 m² of concrete floors were also sealed with Sikalastic®-821 to form an elastic, crack-bridging sealing layer under the subsequently applied mastic asphalt floor topping. To achieve improved disinfection and cleanability, defined coves were formed at all of the wall-floor, wall-wall and wall-ceiling corners in the laboratories and animal facilities using Sikafloor®-156 epoxy mortar mix. The total length of this coving installed on the project was over 60 kms.

The different laboratories and areas required a total of more than 89,000 m² of Sika wall and ceiling coating system solutions according to their level of design exposure and the BSL required. The concrete surfaces were prepared, levelled and sealed as necessary with Sika cement and epoxy based, thixotropic, sealing mortars including Icoment® 520, SikaCor® 277 and Sikadur®-331 W. Protective top coatings of Sikagard® Wallcoat N and SikaCor® EG 5 were then applied overall to ensure the required protection, ease of cleaning and disinfection in each area.
FRIEDRICH LOEFFLER INSTITUTE IN RIEMS, GERMANY

PROJECT PARTICIPANTS
Client: Friedrich Loeffler Institute
Architect & Design Engineering: General Design Riems
(a consortium of Itten + Brechtbüll AG and Rauh Damm Stiller Partner)
Main Contractor: Joint venture FLI Riems (a consortium of Züblin, Heitkamp, Hochtief, Cofely, YIT Leipziger Säurebau GmbH, Leipzig; Bautenschutz Hinrichshagen GmbH, Hinrichshagen)
Specialist Coatings Contractor: Franz Dietrich Ag, Hanover

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