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100 m of flood protection in just two days – simple, reliable and fast

Also climate changes are causing rivers and streams to burst their banks almost on a regular basis and destroy the possessions of many residents. Many still remember the images of the great floods in Central Europe in 2002 and 2013. At the latest following these flood catastrophes it became apparent in many places that the flood protection would have to be fundamentally improved.

Reliable protection of people and nature against recurring flood events

Dykes are simple flood protection installations and are often implemented in particular in rural areas. However, their planning and erection frequently take a long time. Not only that, dykes require a great deal of space and must be renovated regularly.

For this reason solid flood protection walls made of steel reinforced concrete are used with increasing frequency - be it as extensions to or even replacements for dykes. These protective installations require much less space than dykes and can be erected much more quickly. The maintenance expenditure is reduced to a minimum. Furthermore, such flood protection walls can be delivered as precast concrete elements and quickly mounted at the destination. The advantages of a precast construction are obvious: prefabrication independent of the weather, fast assembly and visual design possibilities speak for a flood protection wall made of precast concrete elements.

The patented flood protection system from B.T. innovation GmbH, consisting of a dry fastener for precast concrete elements, the BT turnbuckle® and the RubberElast® sealing tape, is suitable for the fast and reliable connection of the precast elements to one another with leak-tight joints.

RubberElast is delivered to the building site in handy rolls and simply adhered to the component to be sealed. Due to the material properties, light pressure is enough to adhere the sealing tape to the precast concrete element entirely without primer or other preparatory work. After removing the protective strip, the adjacent structural element is positioned, connected with the help of the BT-Spannschloss turnbuckle and aligned. In doing so, the sealing tape is highly compressed. The structural joint that this creates is thus permanently sealed against the ingress of water.

The BT-Spannschloss is a fastener for precast concrete elements approved by the German Institute of Building Technology and is available in three sizes - M12, M16 and M20 - each in two materials: galvanised malleable cast iron and high-quality stainless steel. Joint grouting is not necessary with a BT turnbuckle. As a result, the structure can be loaded immediately after bolting. In addition to that, assembly can take place at low temperatures or in rain and snow. The RubberElast sealing tape can also be mounted in unfavourable weather conditions down to -10 °C. It offers reliable protection up to 5 m water column. Up to 50 m of flood protection wall can be erected in a day with this convenient flood protection system.



Placement of L-shaped retaining walls in Wittenberge

References

Numerous reference structures prove that this system works well. In 2012 about 1500 m of flood protection wall were erected to protect an industrial estate in Wittenberge in Brandenburg. It wasn't long before it was put to the test when the levels of the adjacent tributaries of the Elbe rose at a rapid rate the following year. The flood protection wall fulfilled its purpose and the flood protection system remained intact as expected.

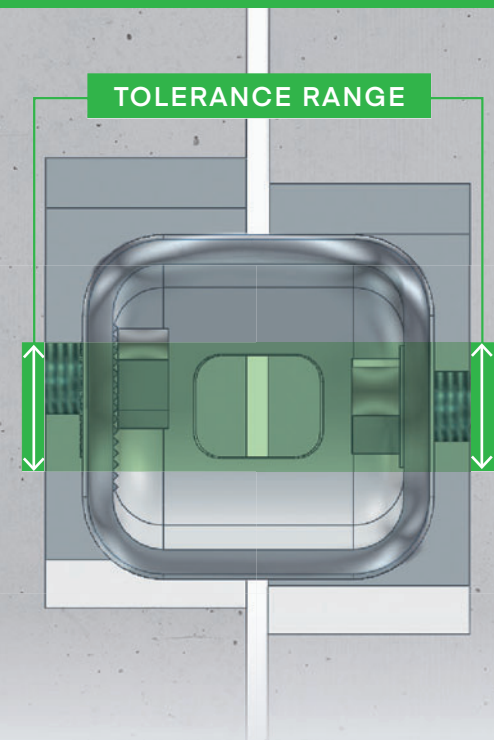
In the seaside resort of Heiligenhafen in Schleswig-Holstein, a very popular tourist destination, the decision was taken in 2014 to build a flood protection wall made of precast concrete elements with connection and sealing technology from BT innovation to protect a high-class holiday complex that was under construction at the time. In order to meet the visual requirements and to adapt the flood protection wall to blend into the overall image of the idyllic area, colour pigments were mixed into the concrete, dyeing it permanently. The result can be seen there - a visually attractive and reliable flood protection wall.

A few metres further along, also at the yacht harbour in Heiligenhafen, a similar solution was chosen a year later. This protective wall was also connected with the BT-Spannschloss and sealed with RubberElast. Only the dyeing of the concrete was unnecessary here, because the concrete elements blended perfectly into the overall image on account of their high-quality production. The structure was erected within a very short time using the innovative flood protection system, allowing the rather ugly construction machines to be quickly removed again from the idyllic scene.



Anthracite-coloured flood protection wall in Heiligenhafen

**Compensates
structural
element
tolerances**



BT-Spannschloss®
Dry connection of precast
concrete elements

- ::: INSTANTLY LOADABLE
- ::: SHORT ASSEMBLY TIMES
- ::: INSTANTLY WATERTIGHT WITH RUBBERELAST®
- ::: ETA* APPROVAL FROM APRIL 2019
- *EUROPEAN TECHNICAL ASSESSMENT

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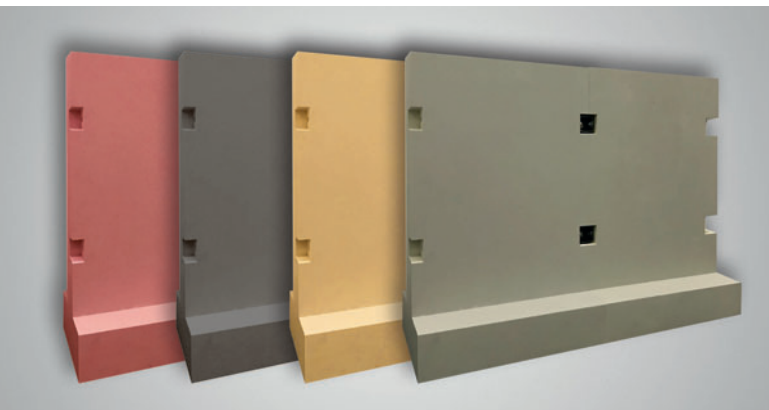


Finished flood protection wall with the BT-Spannschloss in Heiligenhafen

The flood protection was also upgraded in 2017 in a small community in Saxony-Anhalt after the river flowing through it had burst its banks several times and caused chaos. The preferred option was to erect dykes there in harmony with nature, but that wasn't readily possible in all places. Therefore the newly erected dykes were supplemented by flood protection walls made of precast concrete elements. A total of almost 1,000 m were necessary there. The client - the state of Saxony-Anhalt - and the residents of the community are very satisfied with the result, because the project easily kept within the tight schedule and budget through the use of the flood protection system and a reliable flood-protection installation was built.

Protection can be as beautiful as this - dyeing of concrete with colour pigments from Lanxess

Concrete doesn't always have to be grey. Precast concrete elements can be visually enhanced with inorganic colour pigments. Their manufacture is uncomplicated and need not necessarily be associated with higher costs. Since it is becoming



Selection of colour variants for precast concrete elements with Bayferrox (Lanxess)



Recess for a BT-Spannschloss in the Klein Schierstedt project

increasingly necessary to erect flood protection walls in inner-city areas, this refinement method lends itself. BT innovation presented its permanent flood protection system at the aqua alta flood protection trade fair, which took place in Essen in January of this year. As a cooperation partner, Lanxess was also represented at the booth with its Bayferrox®-brand iron oxide pigments. Interested customers were therefore able to get advice not only on the technical implementation, but also on the visual enhancement. The systems can thus be adapted individually to match the urban architecture and no longer have to be inevitably regarded as disruptive elements. Effective protection thus becomes an architecturally appealing overall concept. ■

FURTHER INFORMATION



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