

German development provides rainwater relief

● A new decentralized rainwater management project in Schörzingen, Germany, provides a valuable practical reference for such approaches. Report by **KLAUS KONIG**.

The community of Schörzingen (population 1400), a suburb of Schömberg, Baden-Württemberg, Germany, could well become a leading example of how to achieve decentralized rainwater management. Yet prospects for a cost-effective, sustainable solution were not good when the new Lehenbrunnen housing site was first developed: there is no hope for percolating rainwater as the impermeable subsoil in Schörzingen is oil shale, which occurs at a depth of 1-4 metres.

City architect Ralf Allgaier arranged for investigation of several alternatives to meet the requirement of German water legislation that rainwater is managed close to nature. It became clear that a conventional water retention pond would occupy an entire lot and, at a depth of more than three metres, would be regarded as a building. This meant it would require



the formation of equalization areas such as the conversion of farmland into a wild flower reserve to compensate, as defined in the Nature Protection Act.

Instead, a solution was sought in which rainwater could be purified as much as possible, and its flow delayed with gradual release into the local watercourse, Sulzbach Creek. This needed the hydraulic effect of a delayed runoff to be calculated in advance, so that the rainwater channel can be of small size and inexpensive.

The decisive idea came from Bernhard Helle, District Building Officer at the local water management authority, the Office for Water and Soil Preservation at the District

Administration of the Zollernalbkreis region: 'Each of the 40 lots should have its own rainwater tank with a retention effect, with the special feature that the rainwater collected from the roof surfaces will first percolate through a vegetated soil zone, where it is purified.' This stored water can then be recycled to be used on the garden, flushing the toilet or washing clothing.

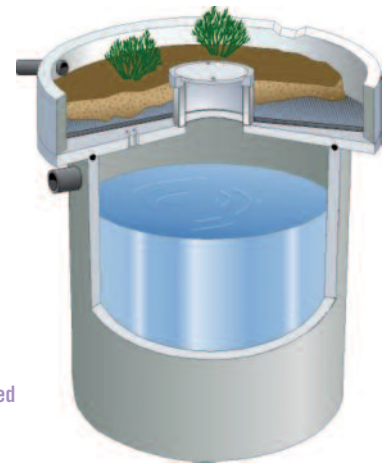
Rainwater filter on private property

The 'Terra' system meets this requirement. Assembled from pre-fabricated components, it can be installed as the land is developed. 33 lots on the Lehenbrunnen site were equipped simultaneously and uniformly. Seven others are to follow in private developments. The system features a vegetated soil zone, which delays runoff by percolation. In addition, retention space can be created by setting the open filter head slightly lower than the terrain, with the

adjacent soil formed like a funnel. This further delays runoff, reducing the dimensions of the rainwater channel in the road and thus further reducing development costs.

Percolation beds in the road area

To purify water running off the road and to retain it on the development for as long as possible, 'Innodrain' percolation beds, some with French drains, were installed at suitable locations in the roadway. The external frame for the functional elements (deep bed, French drain and pipe network) is provided by prefabricated concrete components. Built into the street space, 'Innodrain' also helps to slow down



'Terra' rainwater tank with vegetated filling in the inlet, used for filtering the water.

traffic. The 12 prefabricated deep beds which serve as green areas were installed 20-30 cm below the road surface and drain about 4000 square metres of road surface.

In Schörzingen, a subterranean discharge system was installed, since percolation is hardly possible, and also to protect the subsurface roadbed. The pipe network connects several French drains with control and connection shafts equipped with throttles and overflows. Together with the discharge from the 'Terra' rainwater tanks, it empties into Sulzbach Creek. A special software called Innosoft was used to calculate the 'Innodrain' and to ensure the mathematical accuracy of the drainage plan.

Aerial view showing 'Innodrain' percolation beds with subterranean French drain in the street area, and a 'Terra' rainwater tank with earth filter on every lot.

Diagram and photo: Mall

Recognition as an equalization measure

Furthermore, the surfaces of the percolation beds in the road area and the surfaces of the vegetated earth filters over the rainwater tanks have been accepted as equalization areas. The system has therefore provided a means for minimising the costs of providing decentralised rainwater management. ●

About the author

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