

Zonnemaat Urban Renovation Sees Flood Reducing Results

Stone wool ensures rainwater management in Zonnemaat neighbourhood



Since 2015, a large scale urban renovation of the Zonnemaat neighbourhood (Zevenaar, the Netherlands) has been underway. In addition to the renewal of paving and addition of more greenspace, works include what is in effect a giant sponge - or Rockflow water management system. This below ground system collects rainwater and allows it to slowly infiltrate back into the earth, thus helping to better manage and infiltrate rainwater.

Case Zevenaar



A large portion of renovation works focus on the public space surrounding Zonnemaat's Jumbo supermarket and a local snackbar. More parking spaces have been added surrounding these uses to accommodate demand. At the same time traffic speed and volume is managed with the narrowing of adjacent streets. New asphalt paving and brick pavers have been installed throughout, complete with new concrete edging.

Rainwater infiltrates through stone wool

We all know however that more paving makes it more difficult for rainwater to penetrate back into the earth, particularly in parking areas as they are subjected to more ground compaction from the weight of parked vehicles. This is particularly the case here at Jumbo and snackbar parking lot where a naturally high water table has left the surrounding land, parking and access plagued by surface water. For this reason, the Rockflow water management system was installed around these areas. The system, which is made from 100% recyclable stone wool is installed beneath the parking lot of Jumbo supermarket. The system acts to effectively store rainwater underground during extreme rainstorms. After buffering the rainwater, it will be infiltrated into the subsoil. Groundwater is thus recharged naturally, rather than placing pressure on the sewer system. Here the system buffer measures 12 m x 28,8 m, with a height of 0,5m. The system is equipped with sensors to measure and monitor the system's operation.

The Rockflow water management system has been designed to buffer a rainshower of 35,7mm per hour. The total paved surface (the roof of the Jumbo supermarket, the parking lot and a part of the street) that has been disconnected from the mixed sewer system (and that has been connected to the Rockflow system) is around 4.500 m². Due to high infiltration rates of the subsoil, the buffer will be empty and available for the next rainshower within 24 hours (according to water management legislation the system has to be available again within 24 hours).

Attractive redesign and less maintenance

Jan Heemskerk from Jumbo supermarket is enthusiastic about the redesign as the front entrance with additional parking spaces makes the entrance a lot bigger and nicer for patrons as well as the local fishmonger. And certainly, reducing flood and clean-up time and costs is an added bonus for the businesses.



The project attracted significant interest and cooperation from residents. Approximately 220 residents were present at the first walk-in sounding board meeting. Zonnemaat has since become a pilot project that is used to encourage other projects of the like.
