Case Study

Hydro International

South Wales car park uses pioneering biofiltration system for stormwater pollution protection

Project profile

Objective

To meet Sustainable Drainage Systems (SuDS) standards and provide urban planting and landscaping as part of the construction of a new car park.

Solution

Three Hydro Biofilter units were sized and installed to ensure that the drainage and treatment requirements were met at each point, providing an attractive solution that was sympathetic to the need to improve the landscaping and amenity of the area.

Product profile

- High quality biofiltration and bioretention in an attractive, small-footprint system
- Versatile design options
- Simple, low-cost maintenance
- Easy and cost-effective installation
- Proven track record - over 4,000 units installed and operating successfully

One of the first UK installations of the innovative new Hydro Biofilter™ bioretention and biofiltration system has brought amenity and stringent stormwater quality control to a sensitive location in Barry, South Wales.

Vale of Glamorgan Council installed three Hydro Biofilter™ units at the Business Service Centre (BSC) car park to meet Sustainable Drainage Systems (SuDS) standards and provide urban planting and landscaping within construction of a new car park.

The Hydro Biofilter™ bioretention and biofiltration system is a self-contained unit with high retention rate for solids, heavy metals and oils and grease, thanks to the vegetation and special growing medium.

Its footprint is typically up to 50 times smaller than other standard bioretention systems, and requires little maintenance.

The system looks like a normal tree box from the surface, with suitable shrubs or a tree protruding through a decorative grating in a typical concrete slab at pavement level.

Underneath, a concrete container with a mulch layer and soil filter medium provide effective and consistent stormwater treatment and attenuation.

Each unit is connected to a surface water drain, infiltration or soakaway system via an underdrain system.

"Features like swales and reedbeds were not feasible to introducing more biodiversity, as there was not enough room in this typical urban location which is surrounded by buildings and infrastructure.

The three Hydro Biofilter™ units enabled us to meet Environment Agency requirements for removing pollutants from stormwater runoff before discharge via the storm sewer into the adjacent docks.

Hydro Biofilter™ combined several different SuDS features within one system, which was not met by any other solution the council looked at."

- Keith Sulsh, Drainage Engineer, Vale of Glamorgan Council

The council decided to review surface water drainage at the BSC Car Park when a previous design using porous paving was proving unsatisfactory. The Hydro Biofilter™ units provided an attractive solution that was sympathetic to the need to improve the landscaping and amenity of the area.

As the overall parking is for 63 cars, Environment Agency requirements on pollution are strict, so water quality treatment must be very effective. The BSC car park is divided into three connected areas, which added complexity to the falls required for drainage.

Final discharge from the car park is via the surface water drainage system into Barry Dock. Requirements from the Association of British Ports, who are responsible for the marine environment of the docks, were that no additional pollution should be allowed to jeopardise the marine ecosystems.

"We had several different elements to take into the equation, including the cost. Within this type of project, landscaping should not be treated as a separate budget; with Hydro Biofilter™ units, tree containment is integral. With a traditional landscape design cast iron grilles and the plastic root barriers for root growth containment to prevent future damage to surrounding construction would have added to the costs of the whole installation.

However, when we factored in these elements, even with additional hydrocarbon interceptors for 'belt and braces' pollution control for water discharged into the harbour, the difference in costs between a standard storage attenuation unit with high performance silt and hydrocarbon interceptors and the three Hydro Biofilter™ units was negligible.

What really swung the deal was the committed approach of the Hydro International design team. They sized the units to ensure that the drainage and treatment requirements were met at each point; it was effectively a bespoke installation."

Surface drainage had to be more efficient than it was previously, so we had to adjust the falls a little. The lowest unit was specially adapted so that it performed as an attenuation storage unit as well, by repositioning the outlet to slow down discharge. The modular units were quite simple to install and, although it was not the best season for starting tree growth, after a year they are fine."

- Keith Sulsh

The Business Service Centre was completed in the early 2000s, as part of a redevelopment and regeneration initiative for the whole Barry Waterfront Development and harbour areas after the demise of local industry.

Currently the Barry Waterfront Development drainage is being assessed by Welsh Water with a view to adoption. Hydro Biofilter™ units are being considered for other locations in Barry.

The Vale of Glamorgan Council is committed to explore SuDS solutions wherever drainage projects occur. Each location is assessed on its merits and requirements to enable the most effective options to be chosen from a range of SuDS techniques, against available budgets.

Learn more

To learn more about how Hydro Biofilter™ can help you to manage water more effectively, visit **hydro-int.com**, search **Hydro Biofilter** online or contact us:

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