

Bentofix[®] Lining for attenuation pond

The second phase of Bedford's Western Bypass will provide the final link between the A421 in the south of Bedford through to the A6 heading north of the town. When completed the bypass will reduce the volume of traffic travelling through the town centre by redirecting traffic around its peripheries, and allowing drivers to access the A421, A6 and A428 more directly.

CASE STUDY

Project Name:	Bedford Western Bypass Phase 2
Date:	May/June 2015
Client:	Bedford Borough Council
Contractor:	Breheny Civil Engineering
Consultant:	Waterman Group plc.
Product:	Bentofix[®] NSP4900



As part of drainage works for the Bedford Western Bypass Scheme, a Bentofix[®] geosynthetic clay liner system has provided an effective water barrier in the construction of a rainwater attenuation pond.





A key element of the multi-million pound road building project, carried out by main contractor Breheny Civil Engineering, is the provision of an effective rainwater drainage system for the bypass scheme which fully meets the requirements of both the Environment Agency and Bedford Borough Council.

Drainage for the bypass is provided by a piped system which connects to a series of attenuation ponds which are designed to slow the passage of water from surface run-off by storing the water during heavy rainfall, and slowly releasing it at a controlled rate.

The largest pond covers an area of 16,000m² and is designed to carry a water level of 1 metre. Water from the pond then passes through a series of ditches to feed existing sedge beds – all designed to environmentally enhance and further attenuate the pond's operation.

To provide the pond with an economic and environmentally advantageous water barrier, a Bentofix[®] NSP4900 geosynthetic clay liner system (GCL) has been incorporated in its construction.

The Bentofix[®] GCL is a cost-efficient replacement for very thick layers of compacted clay, and consists of a layer of sodium bentonite encapsulated between two layers of needle-punched geotextile material. When hydrated, the natural sodium bentonite expands to form an impermeable barrier against water, with virtually unlimited lifespan, whilst the reinforcement layers ensure that the geotextile retains its integrity during laying and overfilling.

For the project, Bentofix[®] NSP4900 was

supplied in 5 metre wide rolls and transported in full truck loads of 4,600m², with deliveries staggered over a 3-week period. With limited storage space on site, this fully met the contractors needs for just-in-time delivery. The Bentofix[®] GCL was installed to form a base lining to the pond, including bank slopes of as much as 1 in 3, by simply unrolling and overlapping the Bentofix[®] at the joints. Following the successful installation of the GCL, a cover layer of imported sand was overlaid to a depth of 300mm.

