MACCAFERRI

CASE HISTORY

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LINCOLNSHIRE EFW

NORTH HYKEHAM, LINCOLNSHIRE, UNITED KINGDOM

Waterproofing of Reservoirs, Lakes and Channels

Problem

Lincolnshire's new state of the art Energy from Waste recycling plant at North Hykeham, Lincoln is built on a low lying brown-field site with a high local water table.
This high ground-water level and limited availability of space ruled out the use of a conventional SUDS-style system of large ground-level attenuation ponds. These would normally be used to allow return of surface water run-off from the buildings and surrounding hard-standing to the sub-soil mainly through natural percolation and managed discharge to water courses. The construction of above-ground ponds to promote gravity assisted percolation was also rejected on cost grounds.

Solution

Consulting engineers, Arup, devised a two stage system of ground level wet and dry holding lagoons. These were impermeably lined with Maccaferri MacLine®, a reinforced geosynthetic clay liner and surrounded by 2.0m high stone filled gabion retaining walls. The connected lagoons take advantage of slight falls in levels. The higher and smaller wet lagoon accepting initial storm surge before gravity discharge through pipework to the much larger and lower dry lagoon. The high capacity dry lagoon then allows managed return of captured surface water to nearby water courses.

MacLine® GCL is a geosynthetic clay liner specfically designed for landfill and lagoon lining. It consists of a layer of natural Wyoming Granular Sodium Bentonite sandwiched between a woven and non-woven geotextile. It is self-sealing if punctured, has excellent slope stability and climatic resistance, together with a hich chemical resistance. MacLine® is supplied on 5.0m wide rolls and is straightforward to install using readily available plant.

At the Lincolnshire Energy from Waste site the MacLine® liner was overlain with a 300mm layer of sharp sand followed by a 200mm layer of compacted site won fill to limit overswell in the geocomposite as it hydrates. These layers give added protection to the liner and furthermore, reduce the risk of it floating due to back pressure of ground water. Lagoon walls were constructed using Maccaferri's BBA Certified double twist wire mesh gabions which were filled with locally sourced stone.

Client: Lincolnshire County Council
Designer / Consultant: ARUP
Contractor: CNIM/Clugston Joint Venture
Products used (Qty.)
- Gabions N/A

Date of construction: 07/2013 - 10/2013

Google Maps Google Earth

MacLine® during installation


MacLine® and Gabion installation

Installation of double twist gabions

Completed Pond

Completed Pond

Completed Pond

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