

ASH POND LINING WITH GEOMEMBRANE AT NELLORE NELLORE, ANDHRA PRADESH, INDIA

Lining Systems - Base

Problem

Thermal Powertech Corporation India Ltd. (TPCIL), a wholly-owned subsidiary of Sembcorp Industries Ltd, had to build, own and operate a 1320-megawatt (2x660 MW units) coal-fired coastal power-plant in India. The power-plant's construction was expected to be implemented in two phases- building of units 660 and 600 megawatts.

Thermal Power stations using pulverized coal as fuel generate large quantities of ash as a by-product, which is then transported as slurry through pipe and disposed off in an impoundment called ash pond.

In this project, three ash ponds of 2000 m length and 4.5 m height were constructed, namely, Lagoon A, Over flow lagoon and Lagoon B.

Thermal Powertech Corporation India Ltd. decided to protect the slopes and bottom of ash ponds by providing a liner packing to prevent the infiltration of the slurry and approached Maccaferri for supply and installation of base and side liners.

Solution

Considering the importance of the project and protection of the environment, Maccaferri suggested the use of geomembrane MacLine® SDH HDPE 1.0 mm thick, at the slopes as well as the bed of ash ponds, which will act as an impermeable liner. Maccaferri supplied and installed the geomembrane.

Before laying the membrane, the side slopes of the pond were dressed to a stable inclination of 1V : 2H. To ensure the stability of liner, safe anchoring was done at the top by providing anchor trenches and a 200mm thick brick liner was provided at the slopes above the geomembrane liner.

The joining of adjacent membranes was done by wedge welding and two Leister Comet wedge welding machines were used at the site. The geomembrane used contains 97% of polyethylene and 3% of carbon black content. This membrane has good environmental crack resistance and UV resistance made it possible to lay it in exposed conditions.

During construction, there was more seepage in the pond area. Therefore, more de-watering pumps were provided for pumping out water continuously to reduce the water-table/seepage. Also, cut piece of geomembrane was placed below the welding portion during welding time to avoid direct contact of seepage or moisture in order to get proper welding of geomembrane.

Client: Thermal Powertech Corporation India Limited

Contractor: Gayatri Projects Limited

Products used (Qty.)

- MacLine Smooth 10,08,000 sqm

Date of construction: 12/2014 - 11/2016



Photo 1: Dressing of slopes of the pond



Photo 2: Unrolling of geomembrane



Photo 3: Joining of membranes by wedge welding machine



Photo 4: Pumping water from pond area



Photo 5: Laying geomembrane at the slope



Photo 6: Laying of geomembrane at the base

Sección A-A (Detalle da Trinchera Drenante) ***Sin escala***

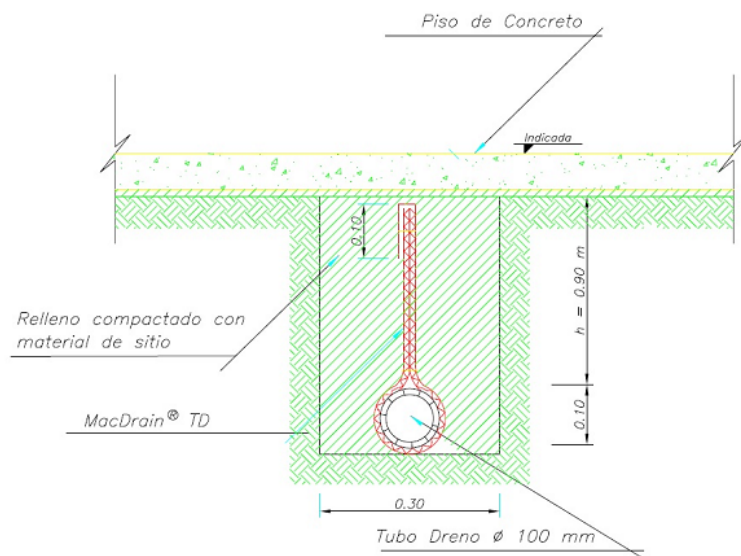


Photo 7: Brick lining over geomembrane