

CANAL LINING IN HARYANA
BADLI, HARYANA, INDIA**Waterproofing of Reservoirs, Lakes and Channels****Problem**

Haryana Irrigation department had taken up construction work of canal with concrete lining. The canal section had a cross sectional length of about 16m and the total length of the canal was about 65 km. A major portion of the canal, around 30 km, existed in a cut section where high level of pore water pressure is expected to act on the proposed concrete lining. The expected uplift pressure on concrete lining necessitated provision of elaborate drainage arrangement underneath the lining and as a safeguard, an additional thickness for the lining.

Haryana Irrigation department was looking for alternatives solutions which will be technically better and cost effective to overcome from problem. Permeability of soil is approximately 2×10^{-4} cm/sec.

Solution

The client was looking for a product which can replace the conventional granular gravel layer & arrangement of network of perforated pipe provided underneath the lining system.

Due to the technical features of geocomposite, it was decided to place the drainage composite beneath the concrete lining. By ensuring consistent quality and proper drainage function, the proposed geocomposite takes out lots of uncertainties of conventional solution and hence the concrete lining thickness can be reduced to minimum stipulated in codes i.e. 3 to 4 inches. The geocomposite performs filtration, drainage and impermeability function, all at the same time.

Solution with geocomposite:

- Geotextile layer at the base acts as filter.
- The drainage net will do the function of draining off the water with geotextile layer acting as a filter which will not allow clogging to occur.
- Improved impermeability will be achieved due to presence of geomembranes which will act as second layer of impermeable barrier below concrete lining.
- High level of consistency in quality is maintained, • Construction is simple as it is very easy to lay the geocomposite along the beds and banks.
- Lower cost of construction • Proper bonding and sealing shall be ensured between the pressure release valves and the geocomposite, especially with geomembranes to prevent any water escape • Permeability of Geotextile is 5 to 10 times the permeability of soil.

Client: Haryana Irrigation Department

Designer / Consultant: Maccaferri Environmental Solutions Pvt Ltd

Contractor: Mehta Construction Co & Ved Prakash Contractor

Products used (Qty.)

- MacDrain N

3,49,000 sqm,
MacDrain N 105
M

Date of construction: 02/2009 - 02/2010



Photo 1: Before construction



Photo 2: Levelling of surface before laying drainage composite



Photo 3: Laying of concrete



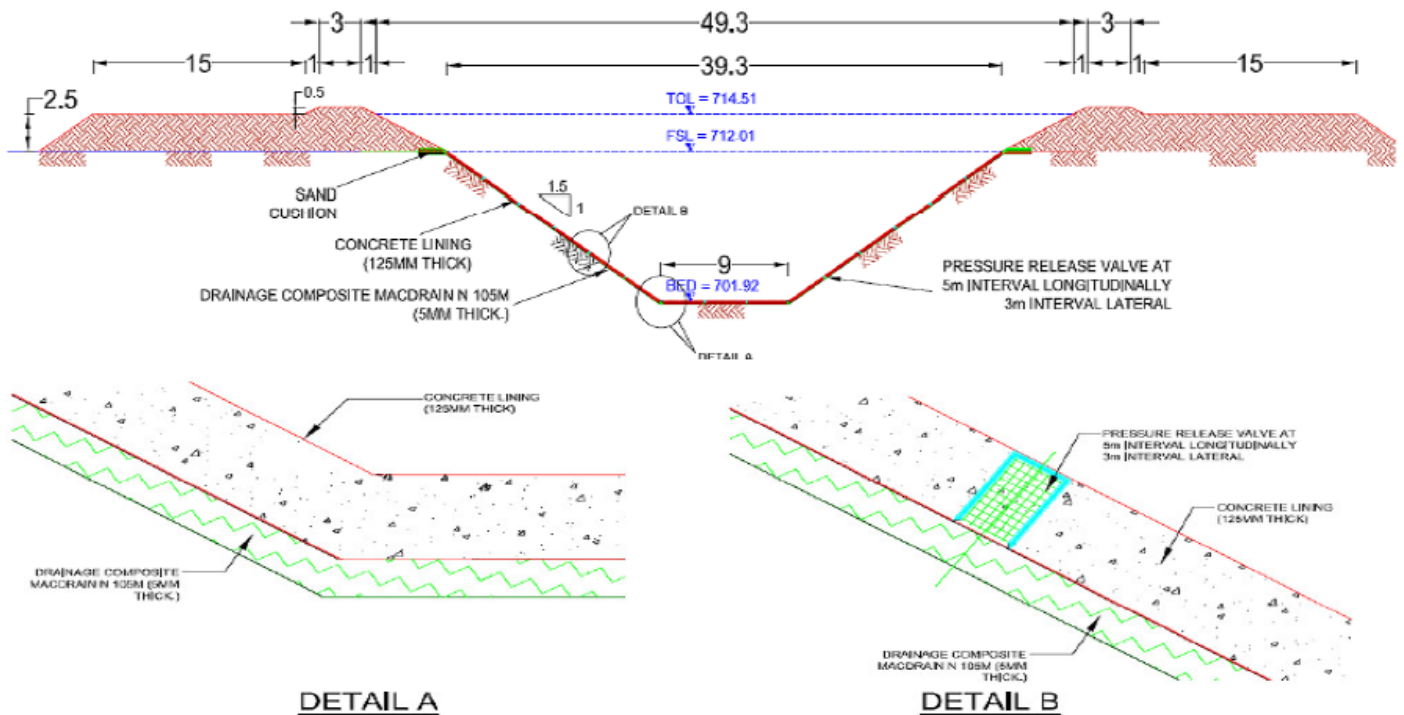
Photo 4: Finished Lining



Photo 5: Completed structure after 4 years



Photo 6: Completed structure after 4 years



Cross sectional drawing