

## JAIPUR-KISHANGARH EXPRESSWAY RAJASTHAN, INDIA

### ENVIRONMENTAL/ SLOPE PROTECTION/ Product: Paraweb & Geotextile

#### Problem

During the construction of Jaipur-Kishangarh Expressway, National Highway Authority identified some very busy intersections where 3 flyovers had to be constructed. Totally there were 12 approach walls and 6 crosswalls for the above 3 flyovers and NHAI decided to construct vertical walls where the maximum height was up to 12.2 metres. The embedment depth provided is about 3 meter below ground level in some stretches. The foundation soil was silty sand upto 3 meter depth. In order to avoid extensive foundation improvement schemes, Reinforced soil wall was selected as the solution in stead of conventional Reinforced concrete solutions. The cost of the conventional solution considered was very high and the authorities wanted to have a system which is very flexible and simple to construct and to achieve overall economy.

#### Solution

Reinforced Earth Wall with concrete panels as fascia and Paraweb as reinforcement was selected as the best solution for the above problem. Basically 3 types of panels were used as fascia. The Standard Panels were T shaped, some of the top panels cruciform shaped of varying height and the bottom panels used were half panels. Some special end panels and corner panels were also used. The connection between the panels & fascia was done by galvanized toggles and loops. Polypropylene dowels were used to connect different types of panels. Pure frictional soil with angle of internal friction 30 degrees were used as structural fill. The project was completed 3 months ahead of schedule.

The structure is well aligned and has withstood 3 monsoons.



Fig 1. Construction of levelling pad

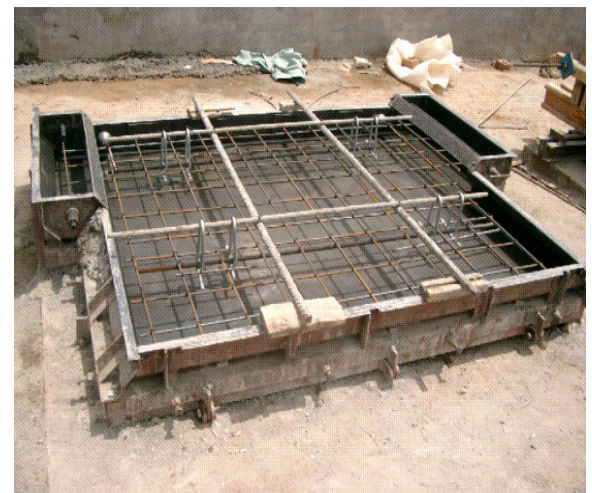


Fig 2 .Concreting of Fascia Panels



Fig 3. Concreted Panels ready for construction

Client name:

NATIONAL HIGHWAYS AUTHORITY OF INDIA

Main contractor name:

GVK EXPRESSWAY, L&T

Consultant:

BCEOM,LASA

Product used:

PARAWEB & GEOTEXTILE(WALL AREA-30,000 SQM)

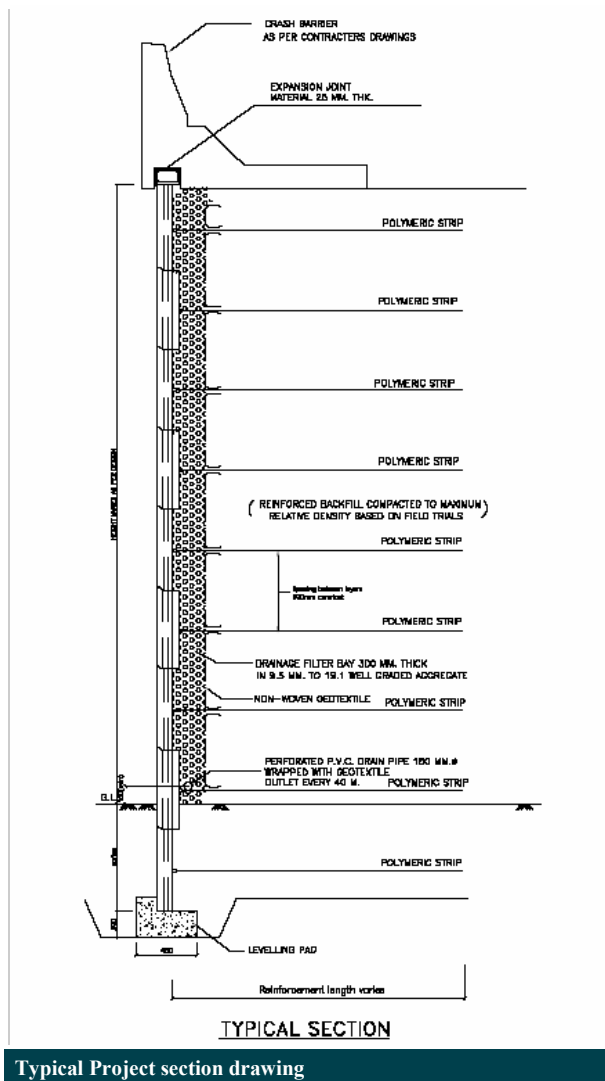
Construction info

Construction date:	APRIL 2004
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Construction info:	DEC 2004
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Fig 4,5.Erection & laying of facia Panels



Typical Project section drawing



Fig 6.Connection between facia panel & Paraweb



Fig 7. Laying of Paraweb



Fig 8. Detail Showing the rear anchor bar



Fig 9,10. Laying of Paraweb at the corners

Paraweb is a flat strip version of a high strength, low weight, non-corrodible cable called Parafil. It is one of the first ever soil reinforcing material used in the world market and came into use from 1977. It comprises polyester yarn encased in tough and durable polyethylene sheath. Paraweb is available in different grades of strength varying from 30 KN to 100 KN and the roll lengths are of 100m.



Fig 11. Completed Structure

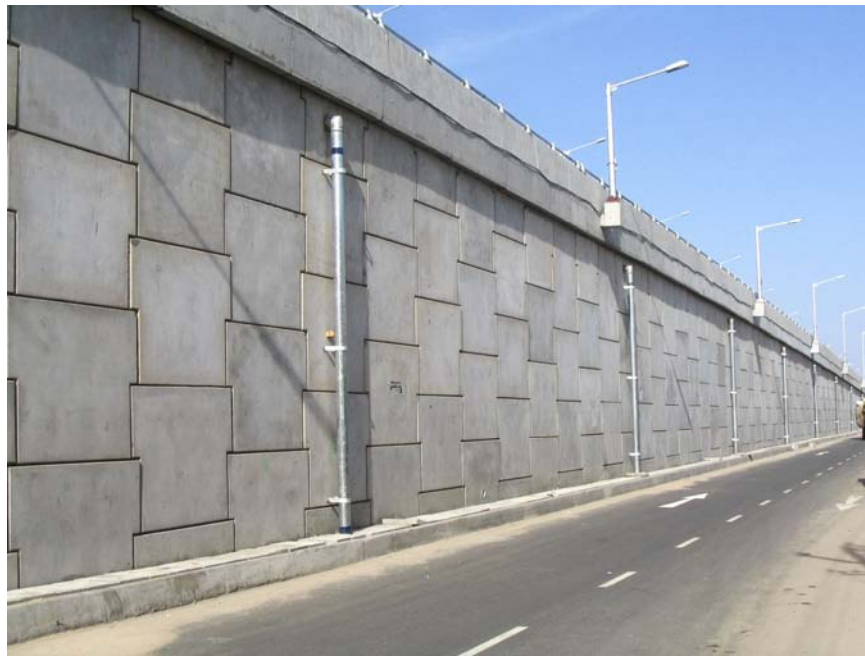


Fig 12. Completed Structure

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