

IAIPUR-KISHANGARH EXPRESSWAY JAIPUR, RAJASTHAN, INDIA

Vertical Walls with Concrete Facing Panels

Problem

During the construction of Jaipur-Kishangarh Expressway, National Highway Authority of India (NHAI) identified some very busy intersections where three flyovers had to be constructed. In total, there were twelve approach walls and six crosswalls for the above three flyovers and NHAI decided to construct vertical walls where the maximum height was up to 12.2m.

The embedment depth provided is about 3m below ground level in some stretches. The foundation soil was silty sand upto 3m depth. In order to avoid extensive foundation improvement schemes, reinforced soil wall was selected as the solution instead 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 soil wall with concrete panels as facia and Paraweb® as reinforcement was selected as the best solution. Three types of panels were used as facia- the standard panels were T-shaped, some of the top panels were cruciform-shaped of varying height and the bottom panels used were half panels. Some special end panels and corner panels were also utilized. The connection between the panels & facia 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 three months ahead of schedule. The structure is well aligned.

ParaWeb® strips are planar structures consisting of a core of high tenacity polyester yarn tendons encased in a polyethylene sheath. It is one of the first ever soil reinforcing material used in the world market and came into use from 1977. Paraweb® is available in different grades of strength varying from 30 KN to 100 KN and the roll lengths are of 100m.

Client: NATIONAL HIGHWAYS AUTHORITY OF INDIA Designer / Consultant: BCEOM and LASA Contractor: GVK EXPRESSWAY and L&T Products used (Qty.)

30,000 sqm wall - MacRes area

Date of construction: 04/2004 - 12/2004



Photo-1: Construction of levelling pad



Photo 2:Concrete panels ready for construction





Photo 3: Erection of fascia panels



Photo 4 :Laying of ParaWeb®



Photo 5: Connection between fascia panels and ParaWeb®



Typical section drawing

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Photo-6:Completed structure