

## VADODARA-MUMBAI EXPRESSWAY - TWO TIERED WALL VADODARA, GUJARAT, INDIA

### Vertical Walls with Concrete Facing Panels

#### Problem

The existing six lane highway between Delhi-Mumbai (NH-48) is the most busiest highway which has reached it's max. Traffic limit and is also anticipated that the traffic would increase significantly in next 2-3 years and to over come the issue, NHAI proposed to Construct a eight lane access controlled expressway from National capital New Delhi to Mumbai passing through 5 states which is 1,350 km long, which will reduce the 24 hours travel time to 12 hours from Delhi to Mumbai and extra 4 lanes on either side will be reserved for future expansion and in which Vadodara-Mumbai Expressway is a part of it. This section is awarded to EPC Contractor IRB Infrastructures Developers Ltd. And IRB awarded the same to L&T Constructions Ltd. For Design & Construction. L&T wanted to incorporate Reinforced soil wall system as return wall at all the Structure(ROB, Flyover, MJB, MNB, VUP, LVUP) portions to retain the fill and rest of the portion as free slope embankment.

#### Solution

Out of the various alternatives, Reinforced Soil (RS) Wall system MacRes with precast concrete panels as fascia and BBA certified ParaWeb geostrip as reinforcement was selected as the solution for the above problem due to its economy, flexibility, speed of construction and long term performance. Galvanized steel loop and toggle was adopted as connection between the panels and ParaWeb. Designs were carried out as per IRC SP 102.

One of the main challenges at ROB 373+589 was higher heights varying from 16.8m to 19.2m with additional strip load due to sleeper slab over cross wall. Since the height of RS Wall is more than 15m, an intermediate berm is provided as per IRC SP 102. The upper tier wall height was kept as 7.2m and bottom tier wall height varying from 4.8m to 12m based on the actual ground levels. Structure was built in a span of 6 months. Maccaferri provided technical assistance for construction of the structure.

**Client:** NATIONAL HIGHWAYS AUTHORITY OF INDIA

**Designer / Consultant:** Aarvee Associates

**Contractor:** IRB INFRASTRUCTURES DEVELOPERS LTD.

#### Products used (Qty.)

- MacRes	4800 sq.m.
- ParaWeb	2,41,073 R.Mt.
- MacDrain N	4,800 sq.m

**Date of construction:** 09/2021 - 03/2022



PARAWEB LAYING IS IN PROGRESS



ERECTION OF LOWER TIERED WALL IN PROGRESS





CROSS WALL AS TWO-TIERED WALL



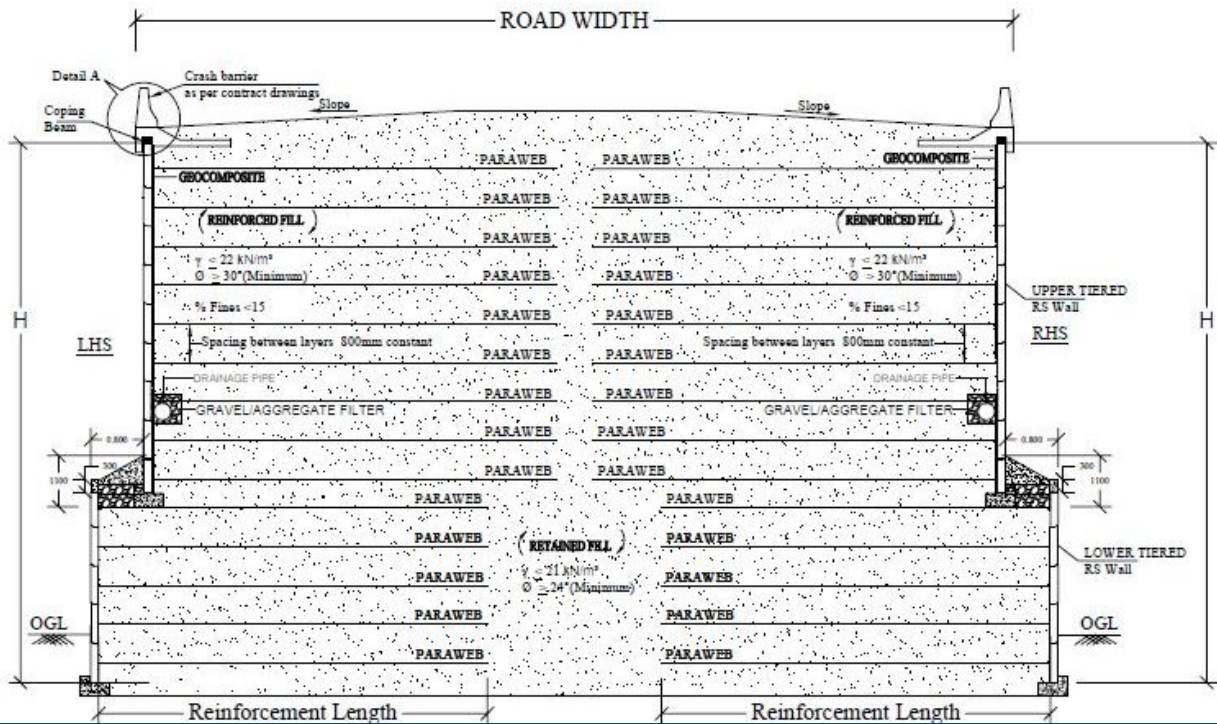
AT THE JOINING OF CROSS WALL & LONGITUDINAL WALL



LONGITUDINAL TIERED WALL



COMPLETED STRUCTURE



TYPICAL CROSS SECTION OF RS WALL