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CASE HISTORY

Rev: 1, Issue Data 09.07.2021

REINFORCED SOIL WALL FOR HIMMATNAGAR ROB

HIMMATNAGAR, GUJARAT, INDIA

Reinforced Soil Walls and Slope Reinforcement

Problem

Railway line between Ahmedabad to Udaipur was facing the problem of traffic congestion and a railway over-bridge (ROB) was planned to resolve the issue. The Roads & Bridges (R&B) department of Govt of Gujarat was looking for a wall system for the approach walls for the ROB that would save space and cost.
Since space constraint was the main problem, R&B division wanted to incorporate reinforced soil wall for the approach road. The in-situ soil was sandy in nature.

Solution

Out of the various alternatives available, reinforced soil (RS) walls with segmental block as facia and geogrid as reinforcement was selected by the R&B department as the solution for the above problem.

The segmental blocks were placed on a levelling pad of PCC in M 20 concrete of 200mm thickness .Segmental blocks of size 450x300x200 mm which are specially shaped with holes for dowels are made of M 35 Grade concrete.
Woven geogrid of required length was provided as the reinforcement. Above the upper unit of segmental block, a coping beam of RCC with M35 Grade Concrete was cast. The crash barrier was placed above the coping beam.

The maximum stretch length is 158.40m and the maximum height of the wall is 5.5m.

The key features of this project can be noted as aesthetics and speed of construction. The project was completed in a span of 8 months with a team of 2 masons and 20 labourers per day. The segmental blocks were made in a casting yard near to the site with specially shaped moulds.

It can be emphasized without doubt that the traffic flow has increased and the congestion has considerably reduced after the construction of ROB. In comparison with the other conventional structures, there was a substantial reduction in cost because of the option of selecting this RS wall system as the cost of geogrids and the manufacturing of segmental blocks was comparatively less. Since the weight of blocks was very less, it could be handled manually and there was no requirement for heavy duty machinery to lift them.

Client: R&B Department, Govt of Gujarat
Designer / Consultant: R&B Department, Govt of Gujarat
Contractor: Rajkamal Builder Infra Pvt. Ltd.
Products used (Qty.)
- MacWall 1,280 sqm

Date of construction: 02/2007 - 11/2007

Photo 1: During construction- Placement of segmental blocks

Photo 2: Compaction of soil over geogrid as reinforcement

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Photo 3: Segmental block

Photo 4: Completed structure

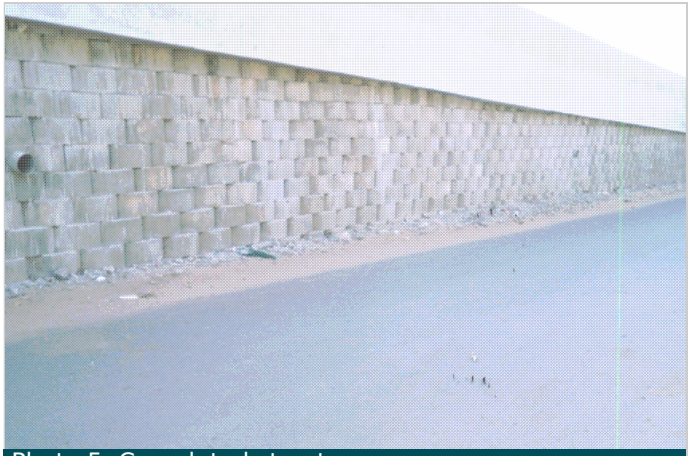
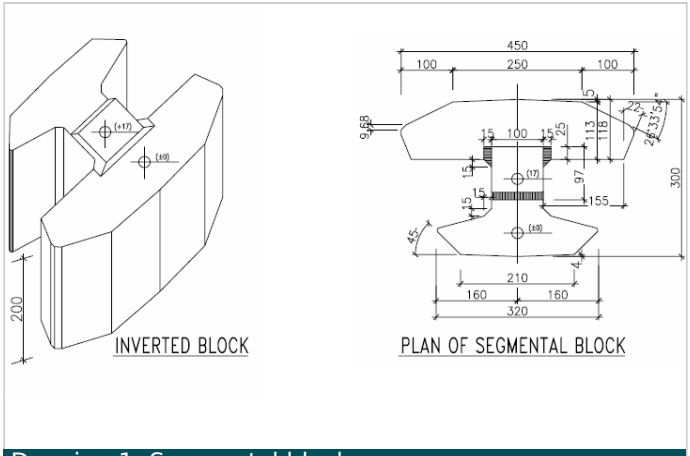
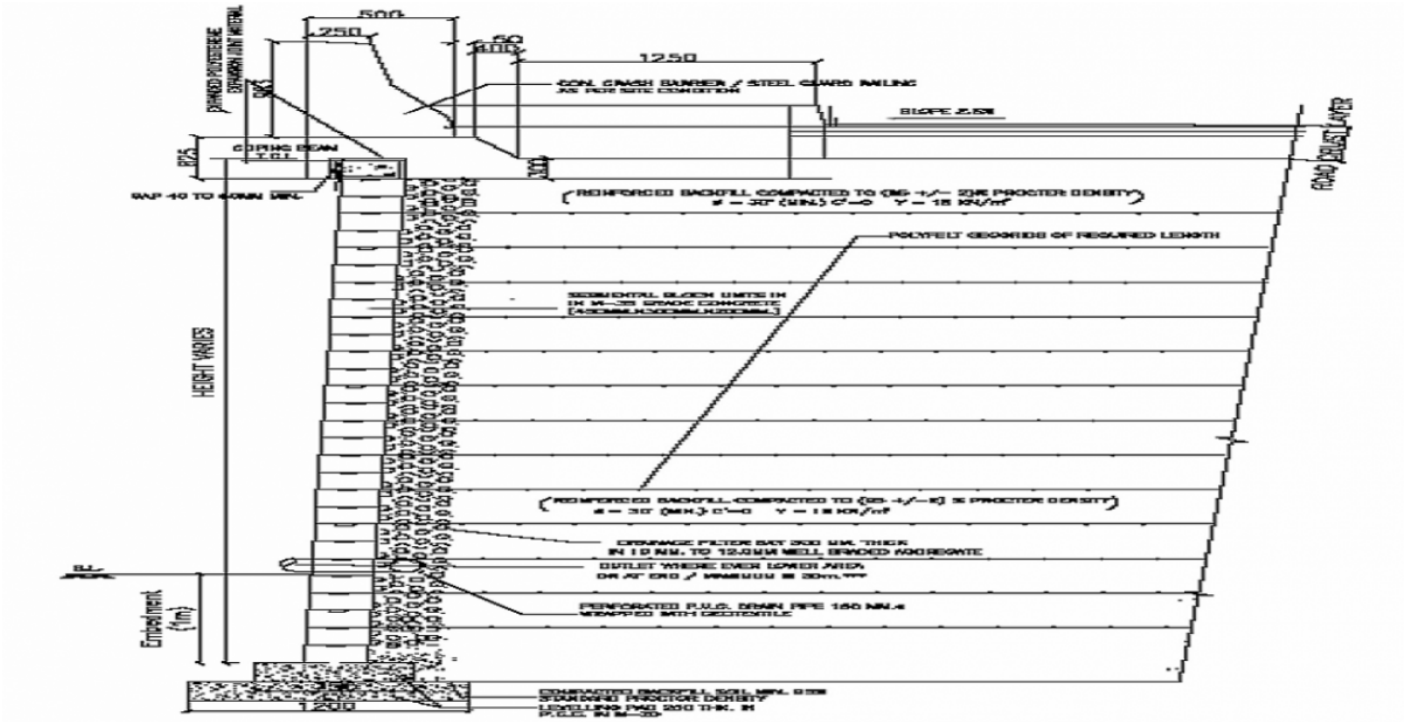


Photo 5: Completed structure



Drawing 1: Segmental block



Drawing 2: Cross section of RS wall

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