

REINFORCED SOIL WALL FOR ARRIVAL & DEPARTURE RAMPS AT RGI AIRPORT HYDERABAD, TELANGANA, INDIA

Vertical Walls with Concrete Facing Panels

Problem

Rajiv Gandhi International Airport serves Hyderabad Metropolitan Region and is the sixth busiest airport by passenger traffic in India. The airport had started its operations with one passenger terminal with a design capacity of around 12 million passengers per Annum (MPPA). As the airport reached its design capacity in 2015-2016, GMR Hyderabad International Airport Limited (GHIAL) decided to go for an expansion since operations and passenger experience was impacted by passenger throughput during peak hours (PHP). As a part of airport expansion, GHIAL proposed the widening of existing departure and arrival ramps formed over embankments for better vehicular movement and passenger experience. Since space constraint was the main problem to go for a free slope embankment for the proposed widening, GHIAL wanted to incorporate reinforced soil wall system for the retention purpose of departure and arrival ramps. The maximum height of the proposed ramps was 6.0 m.

Solution

Out of the various alternatives available, reinforced soil (RS) wall system (MacRes) with precast concrete panels as fascia and Paraweb as reinforcement was selected by authorities as the solution for the above problem due to its economy, flexibility, speed of construction, aesthetic finish and long term performance.

Cruciform shaped fascia panels with corrugations and Paraweb of strengths varying from 30kN to 75kN are used. The connection between the panels and paraweb was done by cavity connector. Cohesionless fill with angle of internal friction of 32 degrees was used as reinforced and retained fill.

The key feature of this project can be noted as speed of construction. This project was successfully completed within a span of eight months. This can be marked as an achievement because of the construction complexity of dismantling the existing embankment with proper care without damaging major portion of the existing ramp.

Client: GMR Hyderabad International Airport Limited

Designer / Consultant: Maccaferri Environmental Solutions Pvt. Ltd.

Contractor: Vijay Nirman Construction Company Pvt. Ltd.

Products used (Qty.)

- MacRes	3,880 sqm
- ParaWeb	43,700 RM

Date of construction: 11/2017 - 06/2018

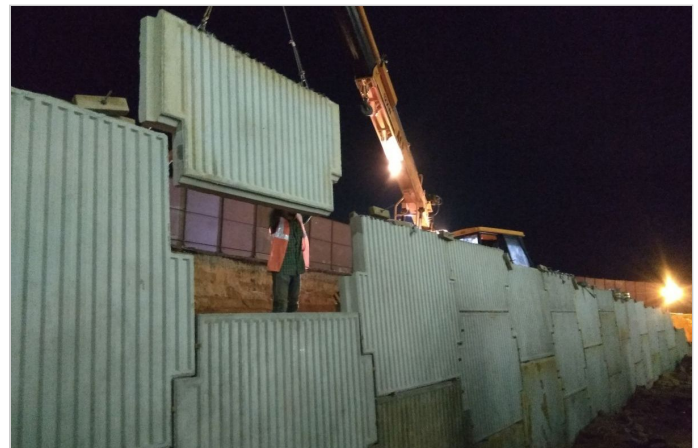


Photo 1: Placing of top concrete fascia panels with crane



Photo 2: Ramps in curved portion



Photo 3: Connecting Paraweb to cavity-connector & fixing with J-hooks on rear end



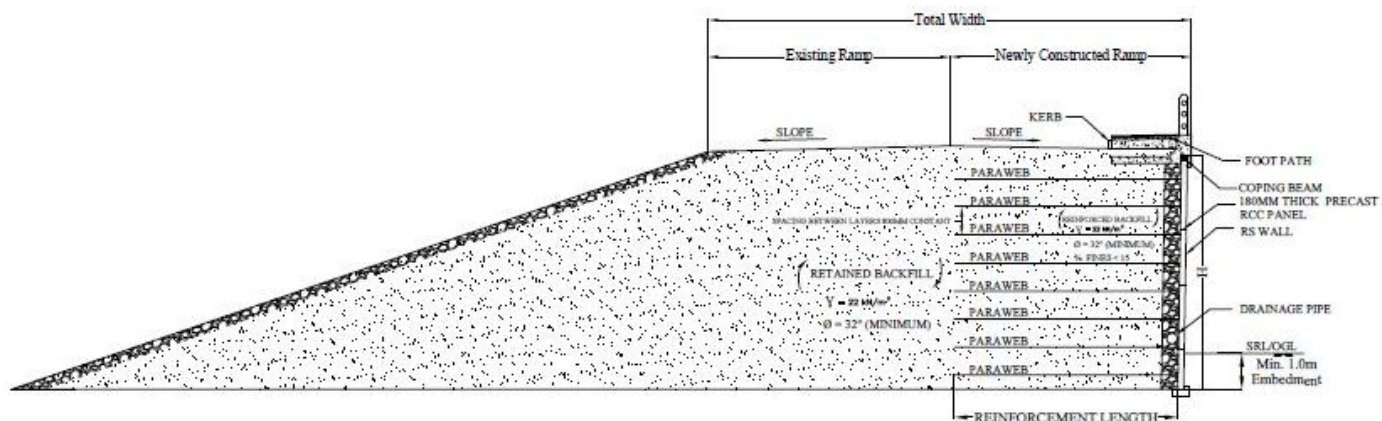
Photo 4: Corner facia panels joining longitudinal wall & cross wall



Photo 1: After completion of up ramp



Photo 6: Completed RS wall structure



TYPICAL CROSS SECTION FOR REINFORCED SOIL WALL

Typical cross-sectional drawing

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