MACCAFERRI

CASE HISTORY

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REINFORCED SOIL WALL FOR VUP AT KEMPEGOWDA INTERNATIONAL AIRPORT

BANGALORE, KARNATAKA, INDIA

Vertical Walls with Concrete Facing Panels

Problem

Kempegowda International Airport is the third busiest airport by passenger traffic in India. The airport was initially designed with one passenger terminal of design capacity 11 Million Passengers Per Annum (MPPA) in 2008 and the first phase of expansion of airport was done in 2013 with a capacity of 25 MPPA. In 2017-2018, the airport reached it's built-up capacity of 25 MPPA and hence BIAL proposed for the second phase of expansion with construction of a second runway and passenger terminal of 55 MPPA capacity. BIAL also proposed for the expansion of existing main access road for easing out traffic flow.

As a part of expansion, a Vehicular Under Pass which has its approaches with free slope embankment was also to be widened on both sides. Due to limited right of way, free slope embankment was not possible throughout the length and hence BIAL thought of using reinforced soil wall for expansion of existing VUP along with plantation over RS Wall for greenery and beautification purpose.

Solution

Compared to conventional structures, RS Wall system with precast concrete panels as facia and Paraweb as reinforcement was selected as the best solution due to its economy, flexibility, speed of construction, aesthetic finish and long term performance.

Cruciform shaped panels with corrugations were used as fascia. Green space for plantation was also proposed over the RS Wall at few locations. As watering would be done for the growth of these plants, MacLine layer below vegetative soil was proposed to avoid movement of water into the reinforced zone. Drain of depths varying from 0.7 to 1.8m was proposed over RS Wall as a part of surface drainage arrangements. These drains were located at different offsets from the face of RS wall along the stretch. For portions where drains were near to the face of facia panels, the top panels with steel anchor rods inserted on the face towards soil fill side were connected to the steel reinforcement of side face of the drain during its in-situ casting.

The main highlight of this project was to overcome the difficulties in removing existing embankment & constructing the RS Wall without disturbing the traffic passing over existing road.

Client: Bengaluru International Airport Ltd (BIAL)
Designer / Consultant: STUP Consultants Pvt Ltd
Contractor: Balajee Infratech & Construction Pvt Ltd
Products used (Qty.)

- MacRes 7,897 sqm.
- ParaWeb 1,08,360 RM
- MacTex N 2,835 sqm
- MacLine W 1,500 sqm

Date of construction: 12/2018 - 12/2019

Photo 1: Arrangement for drainage purposes

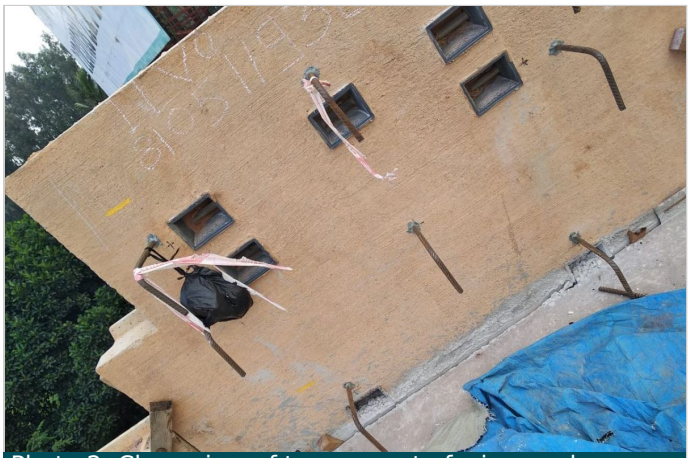
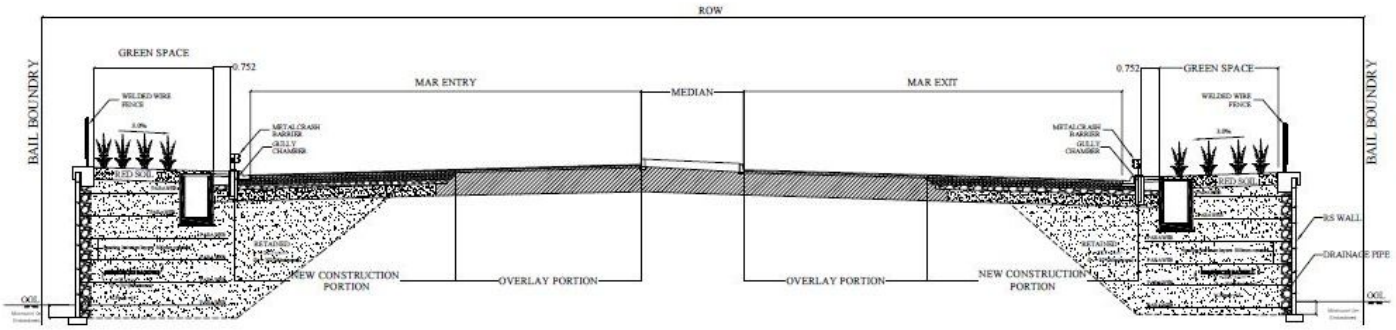


Photo 2: Close view of top concrete facia panels

Photo 3: Construction of drainage at top of the wall

Photo 4: Merging Portion of newly constructed RS wall with existing structure

Photo 5: After completion of RS wall and fencing over it



Typical cross-sectional drawing

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