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CASE HISTORY

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SOUNDSTORM FESTIVAL PROJECT
BANHAN, RIYADH, SAUDI ARABIA

Reinforced Soil Walls and Slope Reinforcement

Problem

The Soundstorm festival project involves transforming a desert landscape 40 km outside of Riyadh into a festival ground for hosting the biggest and boldest music festival in Saudi Arabia. The project includes many structures such as the Big Beast, the VIB Towers, the Dance Tent, walkways, and some bridges. As some of the bridge ramps were expected to reach a height of 6 meters, retaining structures were required rather than conventional slopes. Due to the time constraints, the project stakeholders looked for a Mechanically Stabilized Earth wall system (MSE Wall), that could be constructed quickly, but also minimally interfere with the desert environment. As the time constraints in the project became more severe, it was decided to construct the MSE wall as True Bridge abutment structures, in which the bridge girder will be supported directly within the backfill of the MSE wall through a bank seat. Thanks to the competent foundation soil strata through the presence of highly fractured marly limestone at a shallow depth of 0.5m to 1m, that could support the MSE Wall and the bridge loading, without undergoing excessive settlement.

Solution

Maccaferri's Paramesh wall system (Terramesh facing & Paragrid geogrids) was chosen as the desirable type of MSE wall in the project. The Terramesh facing being robust and flexible, the heavy concentrated bridge loading of 115 kPa could be safely absorbed. Additionally, the Terramesh units meets the architectural requirement as the gabion face could be filled with the local limestone that creates least visual intervention with the desert surroundings. Thanks to the superior quality BBA certified Paragrid geogrid adopted in the bridge abutments to absorb the tensile stresses generated by high concentrated loads. Three bridges in the project were done using Paramesh wall system, namely East Mound, West Mound and BIP Bridge. While Maccaferri's in-house Macstars software was used for stability analysis, Plaxis finite element software was used for wall deformation and settlements analysis. Maccaferri Middle East was subcontracted for design, supply, and construction assistance of the Paramesh MSE true bridge abutment walls in the project.

Client: MDL Beast

Designer / Consultant: Robert Bird Group

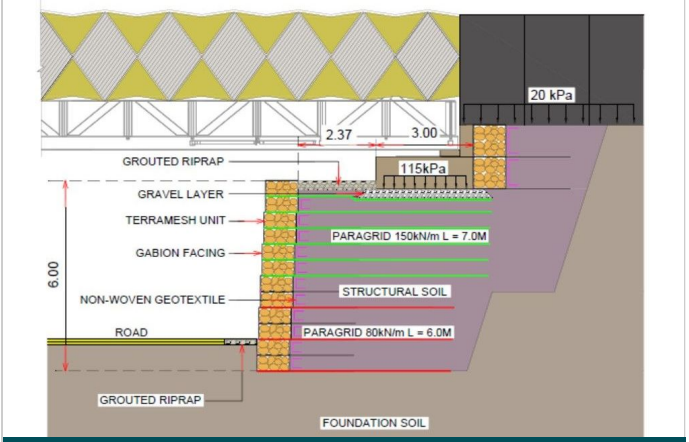
Contractor: Production Glue

Products used (Qty.)

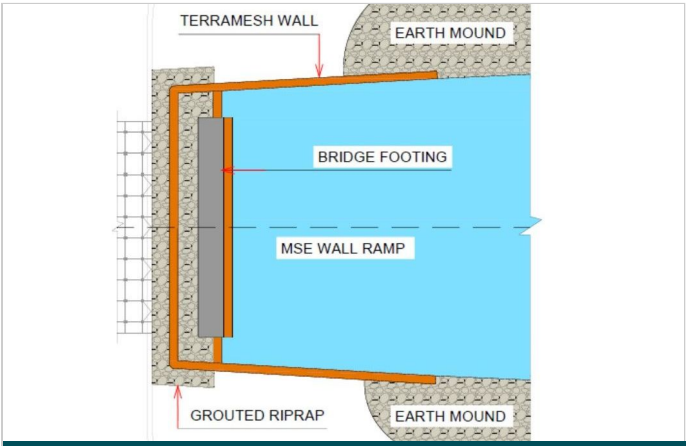
- Terramesh	Terramesh units: 2,150 m2
- MonoAxial GeoGrids	Paragrid geogrid: 12,100 m2

Date of construction: 08/2023 - 03/2024

Google Maps Google Earth



Section of Paramesh True Bridge MSE wall



Plan view of one among the three bridges

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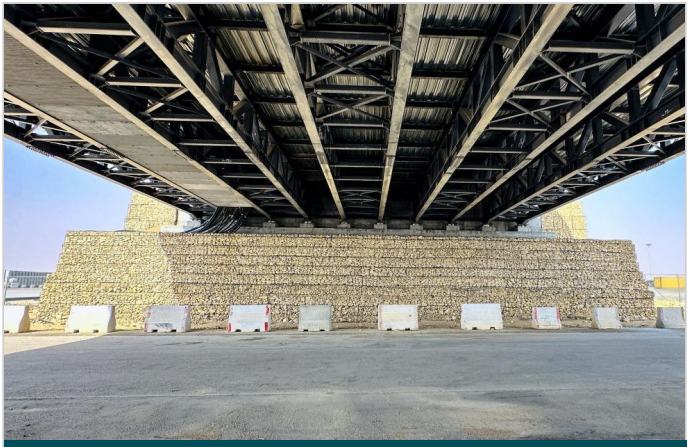
Laying of first layer of Paragrid geogrid

Laying of first layer of Terramesh facia unit

Paramesh wall in progress



Completed: View of Paramesh wall below the bridge

Completed: Side view of Paramesh true bridge abutment MSE wall

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