MACCAFERRI

CASE HISTORY

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SOUTHAM ROAD ACOUSIC BARRIER
BANBURY, OXFORDSHIRE, UNITED KINGDOM

Noise Barriers

Problem

Noise modelling of the site showed sound levels exceeding the threshold specified within the planning condition across a large portion of the site, due to its proximity to the motorway. Iterative rounds of modelling were then undertaken, incorporating the developing masterplan, to examine various mitigation options and develop a feasible strategy. This included a bund and fence barrier which would run the site's boundary along with the motorway. The M40 motorway runs along the northeast boundary of the site. It is proposed to construct an earthen noise bund along this boundary.

Solution

The Client, Bellway Homes, preference was to maximise the use of normally unwanted site fill as much as possible. The material used was marginal and would have had to be removed from the site as waste or mixed with lime to increase the strength. Maccaferri provided a more cost-effective alternative to lime stabilization using the Paradrain geogrid reinforcement and so avoid any disposal of material to a landfill.

Using the combined Green Terramesh and Paradrain system, Maccaferri developed a detailed design for the construction of the acoustic barrier.

This noise bund is in total 1,300m long (varying in height from 2 m to a maximum of 9m above existing ground level). The geometry of the bund consists of a 70-degree steep reinforced slope on the motorway side of the bund and a 1:3 slope on the housing side. The top of the bund is 2m wide and a close-boarded fence runs along the crest. The construction of the Phase 1 (around 550m) started in April 2016 and finished in September 2016.

The design, approved by Highway England, was done using the software MacStars W (Rel. 4.0) for stability analysis and the Giroud et al. (2014) design method for pore water pressure dissipation and hydraulic transmissivity in the fill during construction.

Client: Bellway Homes
Designer / Consultant: Hydrock and M-EC
Contractor: M Lambe
Products used (Qty.)
Date of construction: 04/2016 - 09/2016
Google Maps Google Earth



View of the site in April 2016 - M40 just metres away



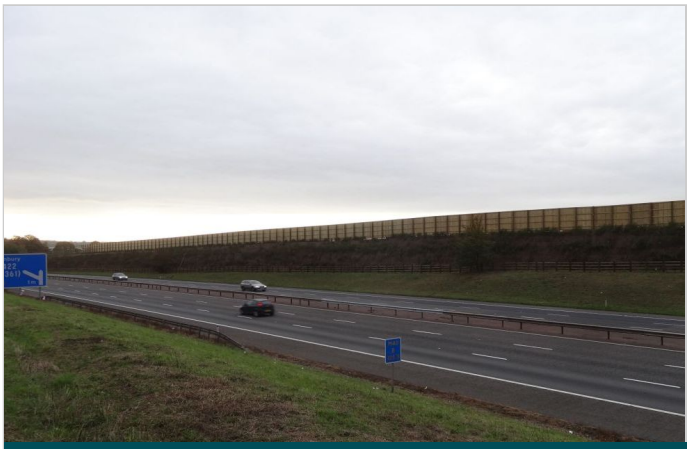
Site won-fill material stockpiled - view of the site in April 2016



Green Terramesh, Paradrain and Macdrain - initial



Rear of the bund with 1:3 slope allowing landscaping



View of the acoustic barrier facing the M40 - October

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