

SADLER'S FARM JUNCTION IMPROVEMENT WORKS
 BASILDON, ESSEX

MSE WALL

Product: MacRes® & Paraweb™ reinforcement

Problem

The Sadlers Farm Junction near Basildon is a notorious congestion black-spot with over 8000 vehicles per hour negotiating the gyratory system between the A13 from London and the A130 route into north Essex.

To relieve congestion and improve traffic flow, Essex County Council commissioned a £63m interchange to bypass the busy "magic roundabout" as it had become known. The scheme included upgrades from dual two-lane to dual-four lane carriageways and the creation of four new composite bridges and the extension of two existing subways.

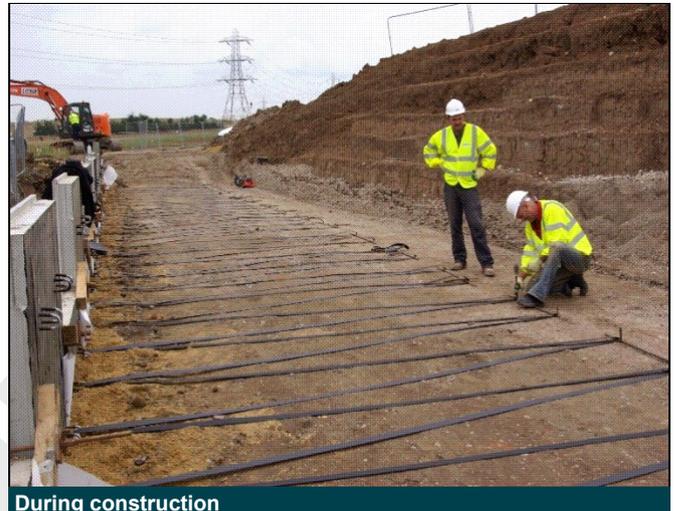
Mouchel devised a scheme comprising vertical, concrete panel reinforced soil retaining walls for bridge wingwalls and abutments. Contiguous piled walls were installed where space for more cost effective solutions was not available. The contiguous walls were blockwork faced, and Essex County Council also required that a blockwork style finish be incorporated in the concrete panel walls.

Solution

Main contractor Birse Civils brought in Maccaferri who proposed the use of its MacRes® concrete panel-based reinforced soil system, which they were able to supply with a bespoke blockwork face design to provide a cost effective engineering solution to meet the client's aesthetic requirements.

MacRes® is only available through entering into a Design and Construct contract with Maccaferri's specialist sister company, Maccaferri Construction. Birse Civils were particularly keen to enter into such a contract to reduce the risk and cost of managing separate suppliers and contractors. MacRes® incorporates the use of Linear Composites BBA Certified ParaWeb geosynthetic to reinforce the retained soil, creating vertical retaining walls with a 120 year design life. The MacRes®/ParaWeb solution has been used extensively outside the UK with over 500,000sqm of walls completed worldwide, but was used for the first time in over 30 years in this country, at Sadlers Farm.

The strength of the ParaWeb reinforcement is adjusted to suit required design loads. This makes the system simple to



During construction



During construction



During construction

Client:

ESSEX COUNTY COUNCIL

Main contractor:

BIRSE CIVILS

Designer:

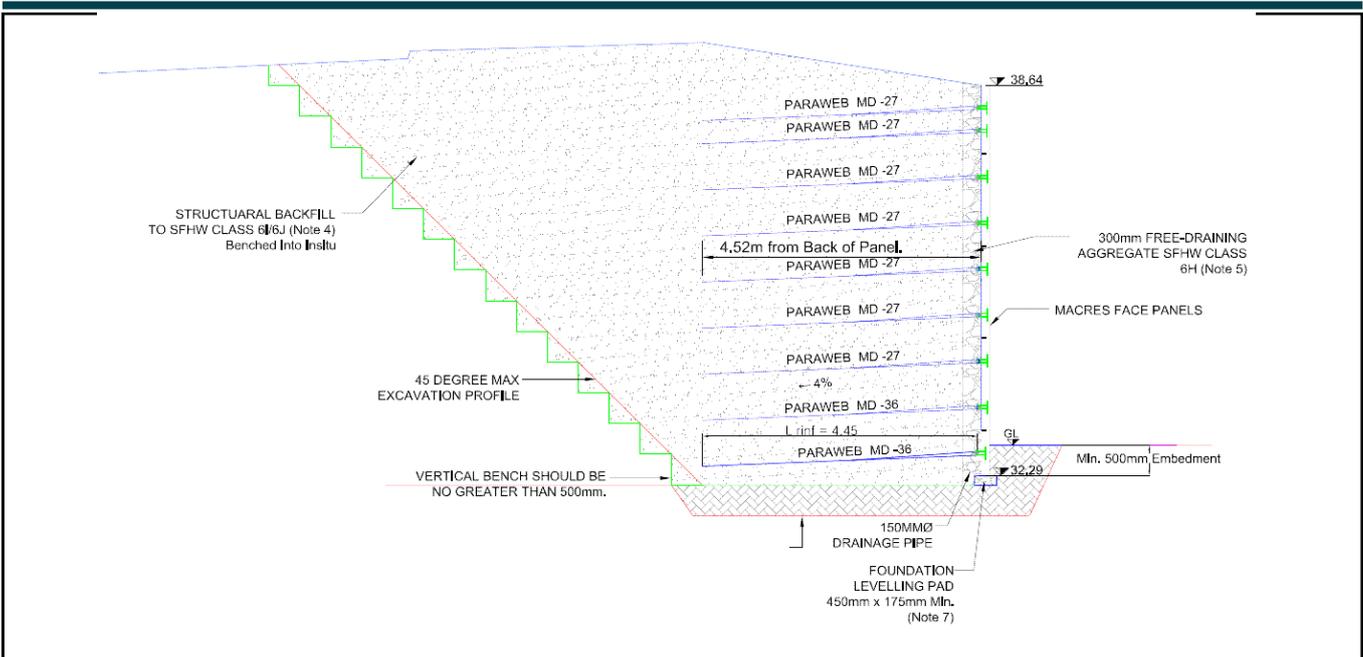
MOUCHEL

Products used:

MACRES

Date of construction

2011-2012



Project section

construct as the standard concrete panels all have the same number of connection points. This optimises the efficiency of the structure and allows the construction of very tall walls capable of withstanding high loads.

There are clear engineering benefits in the use of polymer reinforcement over traditional steel strapping. Rather than increasing or reducing the spacing to change the reinforcement strength as would be required with steel, different strengths of polymer strapping can be incorporated to increase the capacity. At Sadlers Farm the strapping strengths vary from 27kN to 45kN.

The MacRes® concrete facing panels are 1500mm x 1500mm x 170mm thick and are factory cast in polymer-lined steel moulds. The un-pigmented panels are steel reinforced and have integral lifting eyes and strapping loops cast into each unit.

The ParaWeb strapping is looped through special attaching points cast into the reverse face of each panel at 750mm centres; four to each panel.

Strapping is installed as a continuous loop laid into the backfill in lengths varying from 3.5m to 7.2m and held in position with steel pins to remove any slack. Strapping is supplied in lengths of 100m which can be linked together with a bespoke buckle arrangement.

A total area of approximately 2,700sqm of MacRes® walls was constructed, at a maximum retained height of approximately 9 metres.



During construction



During construction

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