Case Study
Tenax LBO 370 Geogrid - Reinforcement
Ekotex® 12 Geotextile - Separation

Location:
St Wilfrid’s School
Castle Bromwich

Client:
ISG PLC

Project:
St Wilfrid’s RC Junior and Infant School.
TR11-187

Contractor:
ISG PLC

Consultant:
R.W. Clarke Ltd

St Wilfrid’s RC Junior and Infant School is located in the Birmingham suburb of Castle Bromwich close to junction 5 of the M6. As part of a £2 million project ISG were contracted to build a one and two storey extension. The associated works included enabling works, infrastructure, sewer systems and landscaping.

As part of a piled foundation solution the site required the use of a Soilmec CM-50 piling rig to operate in areas with very weak soils. The Soilmec CM-50 is a hydraulic CFA Rotary rig weighing 39 tons and capable of installing continuous flight auger (CFA) piles to a depth of 25m at diameters of 900mm.

To keep the use of imported granular materials to a minimum and provide a safe working platform, Geosynthetics were approached to provide a preliminary calculation for reinforcement of a Piling Mat incorporating a Geogrid and Geotextile. The initial proposal consisted of 970mm of class 6F2 material without reinforcement.

Using the Tenax Reinforced soil raft concept and the case loadings according to BRE 470, the following considerations were used for calculations:

### Foundation Soil:
- Average Dynamic Probe test Blows: DPT = 2.0
- Assumed Undrained Shear Strength: Cu = 15kPa
- Unit Weight: 18kN/m3

### Platform materials:
- Capping Class: 6F2 nominal

### Piling Rig bearing pressures:

<table>
<thead>
<tr>
<th>BRE Load Case</th>
<th>Case 1</th>
<th>Case 2</th>
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<tbody>
<tr>
<td>Pressure</td>
<td>150 kPa</td>
<td>218 kPa</td>
</tr>
<tr>
<td>Equivalent length</td>
<td>2.43m</td>
<td>1.45m</td>
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<tr>
<td>Track Width</td>
<td>0.70m</td>
<td>0.70m</td>
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The proposed solution consisted of 2 layers of Tenax LBO 370 Geogrid with 700mm of class 6F2 material. LBO370 was selected due to its large aperture size which provided a positive interaction with the larger particle sizes in the 6F2 material. In addition we recommended a layer of Non-Woven geotextile, Ekotex® 12, to be placed on the formation to prevent the

Geosynthetics have always provided me with an economic design for improving soft ground conditions and often at very short notice “

Rob Clarke, BEng, CEng, MICE, MIStructE, MIDE, R W Clarke Ltd