Combigrid®

Construction of access road across a flood zone

- **Project Name**
  Redlands Farm Solar Park, Somerset, UK
- **Date**
  November 2014
- **Client**
  juwi Renewable Energies Ltd, UK
- **Design consultant**
  Naue GmbH & Co. KG, Espelkamp, Germany
- **Product**
  Combigrid® 40/40 Q1 151 GRK 3

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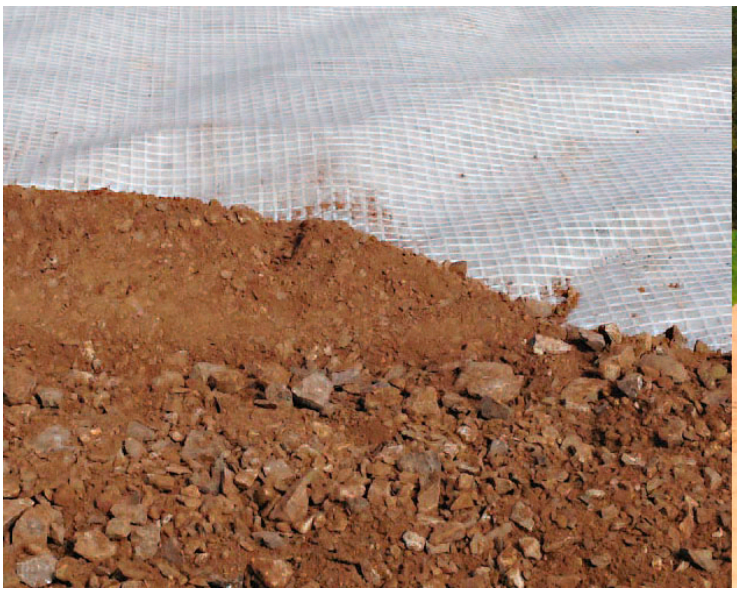

At Pedwell, near Bridgwater, Somerset, juwi Renewable Energies Ltd has completed the construction of a 5.35 MW solar farm, on a 16.5 hectare site, within an area classified as a level 3 flood zone. The Redlands Farm Solar Park will deliver 5.3 GWh of electricity per year, meeting the demand of 1,126 local homes. The project design incorporates solar panels sited on tall posts to ensure the site maintains normal levels of operation – even in times of flooding.

Challenge

Essential to the project was the construction of almost 1,000 metres of unbound access roads. However, juwi's construction team were faced with the challenge of building the roads over a 5 metre deep blanket of soft, wet peat soil, with virtually no bearing capacity. Gary O'Connor, UK Construction Manager for juwi, explains: "Work to construct the 6-metre wide access roads depended on finding a cost-effective way of improving the bearing capacity of the peat soils, without the need to excavate and replace the weak subsoils."

Solution

Naue were brought in, and its design consultants recommended a cost-effective road design using Naue Combigrid® 40/40 Q1 151 GRK 3. Combigrid® combines all the requirements for a variety of properties in one single product. For this reason, the main area of use for Combigrid® is on weak subsoils where, in addition to reinforcement, filter and separating properties are also required. Combigrid® is a combination of a Secugrid® geogrid with a needle-punched Secutex® nonwoven geotextile separation and filtration layer, which is firmly welded between the reinforcement bars.

This unique combination delivers an extremely robust, resistant and durable geogrid. A further benefit of Naue Combigrid® is that it is extremely quick and easy to install, thus reducing installation costs considerably.

Using standard 4.75m wide rolls, at 100m in length, over 7,000m^2 of Combigrid® was successfully installed; providing an immediate and long-term reinforcement, separation and filtration solution. The geogrid was installed directly onto the peat subgrade, followed by a granular fill layer of crushed stone and gravel which created a stabilised roadway to provide access for initial installation of the solar panels, and provided effective access for the long-term maintenance of the solar energy farm.

Naue's Combigrid® interacts with the aggregate course and increases the shear strength and load capacity of the completed access road. The exceptional load resisting properties of Combigrid® allowed juwi to install an aggregate base layer of around 400mm thickness for access roads at Redland – saving an average of 30% when compared to volumes required when no geogrid reinforcement is used.

The resultant savings in transport and material costs, along with reduced labour and time on-site achieved by using Naue's Combigrid® were a key factor in this project, and Gary O'Connor had nothing but praise for Naue, saying: "Naue provided juwi with the best designed solution to build the access roads on a difficult site and we will be specifying Naue products for other projects we have on the horizon."

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