

Combigrid® Secugrid®

Base course reinforcement

Project name
Lancaster University, Lancashire, UK

Client
BAM Construction Ltd, UK

Installer
George Cox & Sons Ltd, UK

Consultant
WYG, UK

Product
Secugrid® 30/30 Q1
Combigrid® 40/40 Q1 GRK 4 C





Naue's Combigrid® and Secugrid® products have been used successfully to significantly improve the bearing capacity of the sub-base prior to construction commencing on site infrastructure for Lancaster University's new £14m Health Innovation Campus.

In 2017, Lancaster University announced plans for a £41 million investment in construction of The Health Innovation Campus (HIC). Work on the project got underway in August 2018, and the first phase of the new building, adjacent to the main campus, is due to open in early 2020.

The focus of the new facility will be innovative research into ways of helping the population enjoy longer, healthier lives. Health innovation at Lancaster will adopt a focussed, multi-disciplinary and multi-stakeholder approach to developing new health solutions which generate impact at scale.

The campus will act as a focal point, allowing researchers, healthcare professionals, businesses, local authorities and policy-makers, to focus on a systems approach to improving health, in line with the aims of the UK's Industrial Strategy and the NHS long-term plan.

Situated around 3.5 miles out of the city centre, and originally conceived during the 1960's as an abstraction of a walled city within a hillside landscape, Lancaster University campus stands on an extensive area of Millstone Grit, between landscape areas of outstanding beauty and the River Lune.

Development of the University's new Health Innovation Campus building, along with the necessary infrastructure, has been supported with funding from the Lancashire Enterprise Partnership Growth Deal, as well as the European Regional Development Fund.

The first phase of the construction is an 80,000 square foot building, designed by John McAslan & Partners, located to the north of Bailrigg Campus on a previously undeveloped plot. Several departments from the University's Faculty of Health and Medicine will relocate to the new building as part of phase one, with the remainder being rehoused in phase two.

Challenge

Planned infrastructure to support the new development included the construction of a highway junction to the A6, an attenuation tank, internal access roads, plus car parking area with turning space. However, before any construction work got underway, engineering design consultants from WYG had to investigate options for an effective and economically viable solution to overcome the very poor ground conditions.

With CBR values as low as 0.5% being recorded in some areas, actual site conditions were proving to be much worse than had been anticipated and, with a planned target CBR of 30%, the construction schedule was in danger of slipping at the first hurdle. However, WYG approached Naue to devise a specification for a geotextile solution that would dramatically improve the bearing capacity of the sub-base.

Solution

Naue's design team proposed a two-layer scheme which required the installation of an initial layer of Combigrid® 40/40 Q1 GRK 4 C across the excavated site, followed by a 300mm layer of Class 6G crushed rock. A layer of Secugrid® 30/30 Q1 would then be laid, and finally a capping layer of 6F5 aggregate to a depth of 200mm. Naue's design proposal was adopted by WYG and subsequently included in the construction drawings.

When reinforcing large areas of very soft subsoils, the engineering challenge is to make the area suitable for traffic and construction. Combigrid® is a composite product which combines the reinforcing properties of a Secugrid® geogrid with the separation and filtration properties of Naue's nonwoven Secutex® geotextile. This combination offers the advantages of two separate materials, but with the simplicity of installing a single product; Secugrid® provides excellent load distribution, and the integrated Secutex® geotextile prevents intermixing of the subsoil with the aggregate layer.

Naue's rapid input to the design process, and the capacity to supply materials to site on time were critical factors in keeping this project on schedule, but key to the success of the design was the quality-controlled manufacture of Naue's geotextile products.