

Combigrid® - Well Pad Construction - Canada

Base course reinforcement

- **Project Name**
Well Pad Construction, Hudson Hope, British Columbia, Canada
- **Client**
Canadian Energy Company, BC, Canada
- **Supplier**
Brock White, BC, Canada
- **Product**
Combigrid® 30/30 Q1 151 GRK 3





Challenge

Often in remote locations, far from populated areas, shale gas developers are faced with the challenge of constructing sizeable, self-contained well pad sites which incorporate large surface impoundments. Here, the requirement is to construct a safe and stable unbound worksite which has sufficient bearing capacity to withstand the weight of large drill rigs, storage tanks and other heavy plant and equipment. Frequently faced with poor or wet subgrade ground conditions, one of the most challenging engineering aspects is to stabilize the well pad area to make it suitable for construction and heavy traffic. At one such well pad construction site, near Hudson's Hope in the north Motney area of British Columbia, Naue distributor Brock White was called in to review the surface and subsurface conditions, and to provide recommendations to mechanically stabilize large areas of the site.

Solution

The unbound well pad was to be built over soft clay subsoils, and initial designs called for a conventional build comprising: 250mm (10") of compacted levels of aggregate, 600mm (24") of shale, a geocomposite drainage layer, and a top layer of highly plastic blue clay. However, as Jeremy Whalen of Brock White explains: "The site was experiencing considerable problems with surface water pooling and rutting. We travelled to site to review the surface and subsurface conditions, and the client provided us with geotechnical data for the site. In conjunction with Naue we were able to put forward a geosynthetic solution which would create a mechanically stabilized base course incorporating Combigrid® geogrids. We were confident that a design utilizing Combigrid® geogrids would sufficiently improve the ground bearing capacity, as well as solve the surface water problem. Our design also reduced the amount of shale required by 50% – providing the operator with a considerable cost saving in material, time and transportation."

Combigrid® 30/30 Q1 151 GRK 3 was specified for the project, a rigid, multi-directional composite geogrid that combines the reinforcing properties of Secugrid® geogrids, with the separation and filtration properties of Secutex® nonwoven geotextiles. Combining all the requirements for a variety of properties into a single product, Combigrid® is ideal for use on weak subsoils.

A total of 36,575m² of Combigrid® was successfully installed between the in-situ wet clay subgrade and a 300mm (12") layer of shale. A further 200mm (8") layer of 40mm (1 1/2") crushed aggregate was then laid, followed by a top course of 20mm (3/4") aggregate across the pad.

Early inspection of the completed works showed that Combigrid® had achieved the required interlocking of the base course, allowing fully loaded trucks to drive over the site without any rutting or aggregate movement.

The unpaved pad held up well throughout the harsh Canadian winter, and coped well with a rig move/set-up and rig release during the spring break-up. Combigrid® performed as expected, contributing significantly to a safe and stable worksite that meets the extreme day-to-day operational demands of a shale gas drilling site.