Tensar geogrid was incorporated into the aggregate used for 22km of unpaved roads and 33 working platforms at wind turbine locations

Tensar®

ROADS AND PLATFORMS

Answers blowing in the wind

Mechanically stabilised layers incorporating Tensar geogrids not only enabled access roads and working platforms for a new wind farm to be built over weak ground but also meant significantly less imported aggregate was needed.

Oweninny Windfarm

Subgrade Stabilisation Windfarm

Oweninny, Ireland

CLIENT'S CHALLENGE

Phase one of the Oweninny Wind Farm involved building 25km of 4m wide unpaved access roads and temporary working platforms at 29 wind turbine locations. The wind farm was constructed on challenging ground, so roads and platforms had to be able to support heavy construction traffic over weak and saturated ground but also be economical to build.

TENSAR SOLUTION

Upon review of the original design proposal, Tensar provided a value engineered solution which maximised the performance of the working platforms and access roads mechanically stabilised by Tensar geogrids. The increased efficiency reduced the working platform thickness by 40% to 50% (depending on ground conditions) while still meeting the loading requirements. The volume of aggregate required was reduced by 50% and thus a substantial savings in time and money. Consequently, CO2 emissions were reduced by 50% due to less quarrying, truck movement and placing/compaction activities on-site.

BENEFITS

40% - 50% thinner roads and platforms

50% less imported fill

50% reduction in CO2 emissions

REF TEN415

Tensar reduced working platform thickness by up to 50%, while ensuring structures were capable of supporting heavy construction traffic on weak and saturated ground

PROJECT BACKGROUND

Oweninny Wind Farm, in County Mayo, is a major onshore wind farm scheme in Ireland. Oweninny Power (a joint venture of ESB International and Bord na Móna) plans to build 61 turbines, with a capacity of 200MW, enough to meet the needs of 100,000 homes.

Phase one of the project involved construction of 29 turbines on the site, which is underlain by weak ground. Contractor Roadbridge began work in May 2017, building 25km of access roads and 45m by 25m working platforms at each of the turbine locations. As well as allowing construction traffic (including turbine deliveries) to reach the site over the soft, saturated ground, the roads had to provide permanent access for maintenance vehicles.

Digging out and replacing the variable ground with imported aggregate to form stable road foundations and safe working platforms would have been time-consuming and expensive.

Instead, Roadbridge, consultant Sweco and geotechnical consultant Agec Ireland proposed using Tensar geogrid incorporated within the aggregate, to form mechanically stabilised layers. These mechanically stabilised roads and platforms would be capable of supporting the heavy construction traffic and would also continue to perform throughout the wind farm's operational life.

Working with the project team, Tensar were able to optimise the road and platform layer thickness designs to reduce the construction requirements in terms of imported stone and construction operations. These optimised designs also helped to reduce the carbon footprint for the wind farm construction phase which is an important feature for a renewable energy scheme.

Client:
ESB International/ Bord Na Mona

Contractor:
Road Bridge

Civil Engineering Consultant:
Sweco

Geotechnical Consultant:
Agec Ireland

"Tensar's approach minimised the use of imported aggregate through a mechanically stabilised road and hardstand to design to optimise construction depths ensuring that critical project elements could be completed quickly, safely and with reduced overall environmental impact compared with generic design"

Brendan Boyce
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