

Project Report

CONTRACTOR

Balfour Beatty

CLIENT

Balfour Beatty

PRODUCT USED

17 X AS-120 Galvanised Vulcan Earth Anchor

INSTALLER

Site7 Construction

Requirement

The refurbishment of the 400kV overhead line from Bramford to Norwich required temporary anchoring solutions at a location near Yaxley. The project aimed to support conductors related to two transmission towers while also securing a temporary pylon through backstay anchors. Traditional concrete ballasted sleds were not viable due to site constraints, necessitating an alternative anchoring system.

Soil conditions presented a significant challenge, with borehole logs (BHL) indicating firm clays at depths of 4m and beyond. While some loads were relatively low, ground conditions at locations Gnd2 and Gnd3 required additional considerations to ensure stability. Site suitability testing was imperative to confirm the required anchor installation depth and load-bearing capacity.

Testing

Prior to full-scale installation, site suitability testing was conducted at the temporary mast locations to determine the feasibility of the anchoring solution. Load tests were planned specifically for locations Gnd2 and Gnd3, where two anchors per stay were considered necessary. The testing phase confirmed that Vulcan Earth Anchors could achieve the required stability. The anchors were locked in place effectively, ensuring they could bear the designated loads. While most locations met performance expectations with ease, Gnd2 and Gnd3 required further validation to confirm load-bearing capacity.



Solution

To meet the structural requirements, AS-120 Vulcan Earth Anchors with 25mm diameter tendons were selected. The anchors were constructed from galvanised steel, ensuring durability and resistance to environmental conditions.

A total of 17 Vulcan Earth Anchors were installed, with an initial planned depth of 12m. However, based on soil suitability results, certain installations were reduced to 6m where conditions permitted. The engineering specifications included a load requirement of up to 60kN with a safety factor of 1.6. The installation process was carried out by Balfour Beatty's subcontractor using a JCB fitted with a hydraulic breaker. This method ensured efficient and secure anchor placement.

Result

The Vulcan Earth Anchors met all performance criteria, achieving the required load capacities and ensuring stability. Depth reductions from 12m to 6m optimised material use without compromising strength.

Challenges at Gnd2 and Gnd3 were addressed through additional load validation. The Vulcan Earth Anchor system provided a cost-effective, time-efficient, and structurally sound solution, supporting the 400kV overhead line refurbishment successfully.

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Securing Overhead Power Lines

