



Electric Vehicle Charging

Frankham were commissioned to carry out the design of essential foundation structures for electric vehicle charging points, feeder pillar cabinets and ancillary elements.

Overview

Frankham Consultancy Group were appointed by BAM Nuttall Ltd to carry out the design of essential foundation structures for electric vehicle charging points, feeder pillar cabinets and ancillary elements, to enable the introduction of electric vehicles at designated Network Rail Depots.

Frankham were also tasked with producing detailed general arrangement drawings for each site, which will outline the layout and configuration of components.

The design process was focused on seamlessly integrating the foundation structures into different sites, including Taunton, Fleckney and Doncaster. Therefore, enhancing suitability and accessibility for Network Rail's fleet of new electric vehicles, as part of the Network Rail decarbonisation programme.

Client:
BAM Nuttall Ltd

Value:
£20k

Services:
Infrastructure Engineering

Start and End Dates:
January 2024 - April 2024



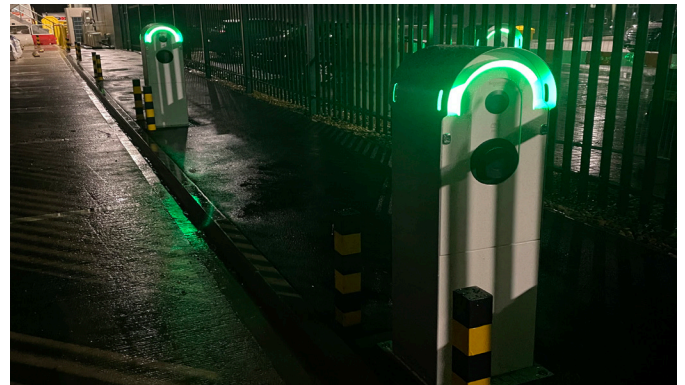
Innovation and Added Value

Pre-cast concrete EV blocks were used for charging stations which offer significant sustainability advantages over in-situ concrete construction methods, including reduced material waste, lower carbon emissions, faster installation, enhanced quality control, reuse and recyclability, and improved durability.

A two output charging station was proposed which resulted in cost savings compared to installing single output stations. This was due to the installation, maintenance and operational costs associated with two-output stations are often lower on a per-charging-point basis, leading to overall cost-effectiveness.

Part of the services provided by Frankham included the development of standard detail drawings for buried cable routes, chambers, and above-ground cable tray systems utilising pre-fabricated solutions. Leveraging existing products offers numerous benefits in terms of cost-effectiveness, efficiency, and quality assurance.

Armco barriers were implemented to provide protection for the feeder pillars, safeguarding against accidental damage from vehicles within the car park. This contributed to the safety of both drivers and pedestrians by reducing the risk of electrical hazards and accidents caused by collisions with exposed infrastructure.



Challenges

One challenge faced by the project was the development of standard designs to suit a range of sites experiencing differing ground and weather conditions. To ensure the structural integrity of the foundation solutions, the designs accounted for a variety of loading applications and ground conditions, to ensure the standard designs were suitable and effective across the range of sites considered, and also applicable to future sites if required.

Additionally, the project faced the challenge of working to a very tight programme to meet construction deadlines. To overcome this, Frankham worked closely with the client and Network Rail, to develop a risk assessment and obtain acceptance for works to commence ahead of the final Approved for Construction (AFC) issue. This required the production of high level drawings at an early stage in the project to illustrate the proposed solutions, and close communication with the client throughout the construction phase.



Knowledge Sharing

Pre-cast concrete blocks typically require less energy for production compared to in-situ concrete, which involves mixing, pouring, and curing on-site.

As a result, prefabricated blocks generally have a lower carbon footprint, contributing to reduced greenhouse gas emissions and reducing the environmental impact of construction activities.