



## CASE STUDY

# HIGH VOLTAGE SWITCHGEAR BUILDING

**CLIENT: FABRI CONSULTING ENGINEERS**

**LOCATION: UK**

### Highlights:

- Civil & Structural Design
- Ground Investigation
- Geotechnical Foundation Design

## THE CHALLENGE

Arthian was appointed to undertake the civil and structural engineering design of a new high voltage switchgear building support frame and associated infrastructure. The new infrastructure was to be located on a brownfield site in Stanford-le-Hope. The switchgear building was a modular prefabricated unit, designed by others.

Arthian's scope included design of the following:

- Reinforced concrete foundations,
- Steel frame to support the building and allow cables to be fed into the building from the floor,
- Surface water drainage,
- Access platforms,
- Cable duct under road crossing,
- Cable ladder supports.

The challenges associated with this project included poor ground conditions, existing buried services, proximity to existing infrastructure, and constructability in a high hazard environment.



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## THE SOLUTION

Arthian undertook a desk study to review available information and identified that an intrusive Ground Investigation (GI) would be required to verify the ground conditions and understand any health and safety issues arising from contaminated ground at the proposed site.

Arthian assisted in the procurement of the GI including preparing specification and bill of quantity documents. The GI provided the necessary data to inform the design of appropriate foundations.

As part of the design development process, Arthian completed a comprehensive Designer's Risk Assessment to identify, evaluate and mitigate potential hazards associated with the proposed design. This looked at the entire life cycle of the project.

Arthian carried out a swept path analysis to ensure the modular building could be transported to the site.

Arthian liaised with the electrical designer to design the new steel support frame and concrete pad foundations ensuring specific clearances were met between electrical cables and equipment.

Deliverables including construction drawings, specifications, civil scope of works document and designer's risk assessment.



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