RBA Engineering Consultancy

Client: Balfour Beatty / TfW
Location: Canton Depot, Cardiff
Role: Designer - Civils
Completed: October 2023

CASE STUDY

CIVIL ENGINEERING

Canton Depot Energisation
HV Cable Route Design

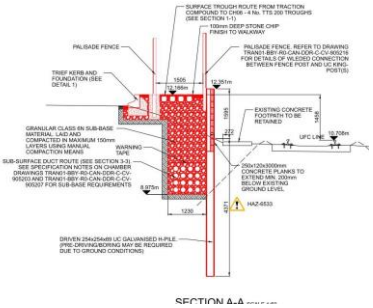
PROJECT OVERVIEW

RBA were commissioned by the client to provide all Civils ancillary design solutions for HV cable routing through Ninian Park on the Core Valley Line Project, to ensure a connection was established between the existing ATFS substation, the new Ninian (TPS) compound and the termination switch at the existing Canton Depot, as part of a wider energisation project.

The scope included review of ground investigation data and specification of further GI works to inform the design, all route alignment, clash detection, detailing, URX/UTXs design, and specifications.

HV route alignment and design

RBA advanced a GRIP3 design into a set of approved AFC drawings following consultation with all associated project stakeholders. Our design achieved the most practical and efficient route through a congested depot site to minimise excavations within track support zones (TSZs) through a reduction in UTXs and rationalisation of turning points; to minimise the number of required chambers and associated excavations within the lineside environment. RBA designed and specified a range of composite chambers to suit the envisaged active ground pressures and meet the requirements for cable turning radii.

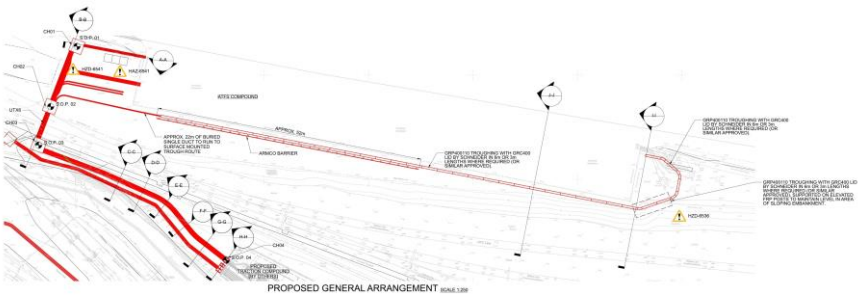


Retaining Wall Design

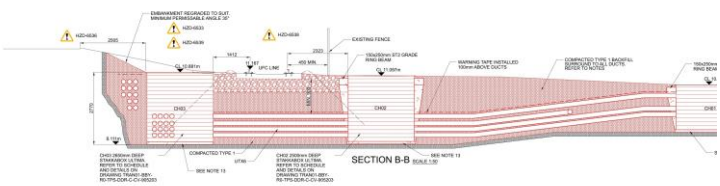
We designed a ~45m long king-post retaining wall confined between an existing access road and rail siding to improve buildability by reducing the extend of excavation required for HV cable requirements. All design in accordance with current Eurocode and Rail industry standards.

Technical Assurance and Co-ordination

RBA provided Civils attendance at all associated project site walk-outs, optioneering reviews, HAZOPs and IDC/R design review meetings to support the co-ordination of all design disciplines to achieve an efficient and compliant design.



PROPOSED GENERAL ARRANGEMENT



SECTION B-B

Services Snapshot

- CRE-D (Civils)
- Ground Investigation Spec
- BIM Level 2 co-ordination via ProjectWise
- UTX / Chamber Design
- Retaining Wall Design
- Temporary Works