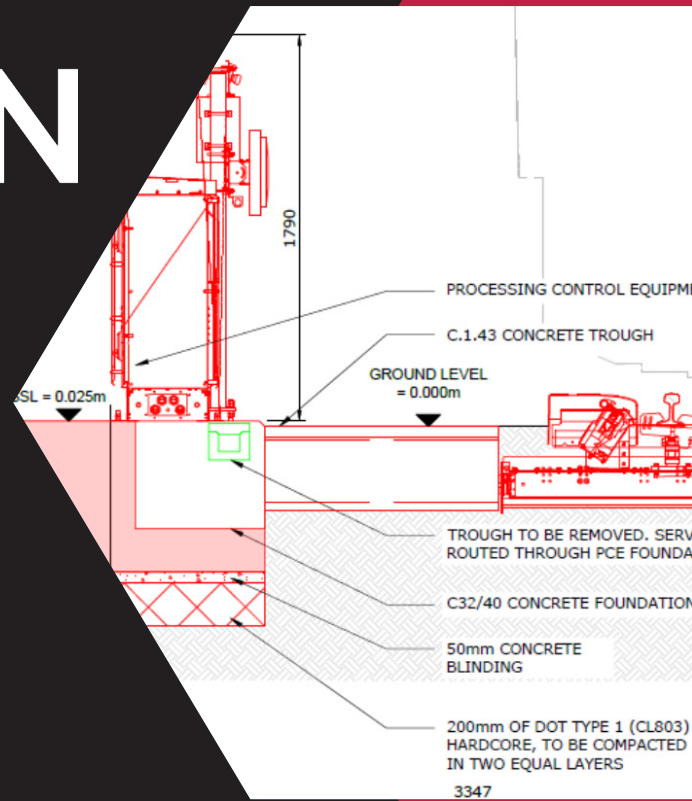


# HEXAGON

## Case Study

# Canton VEMS

Hexagon Design Consultancy was appointed to deliver the civil, structural, mechanical, and electrical design required to facilitate the installation of a new Vehicle Equipment Measurement System (VEMS) at Canton Depot, Cardiff.



Customer  
**Transport For Wales (TFW)**

Completion Date  
**March 2026**

Location  
**Canton, Cardiff**

## ABOUT US

HEXAGON is a design consultancy providing engineering expertise and services, specialising in rail depots and designs relating to train facility infrastructure works.

Working closely with developers, contractors, and other stakeholders to ensure that your project's structures are safe, stable, and structurally sound.

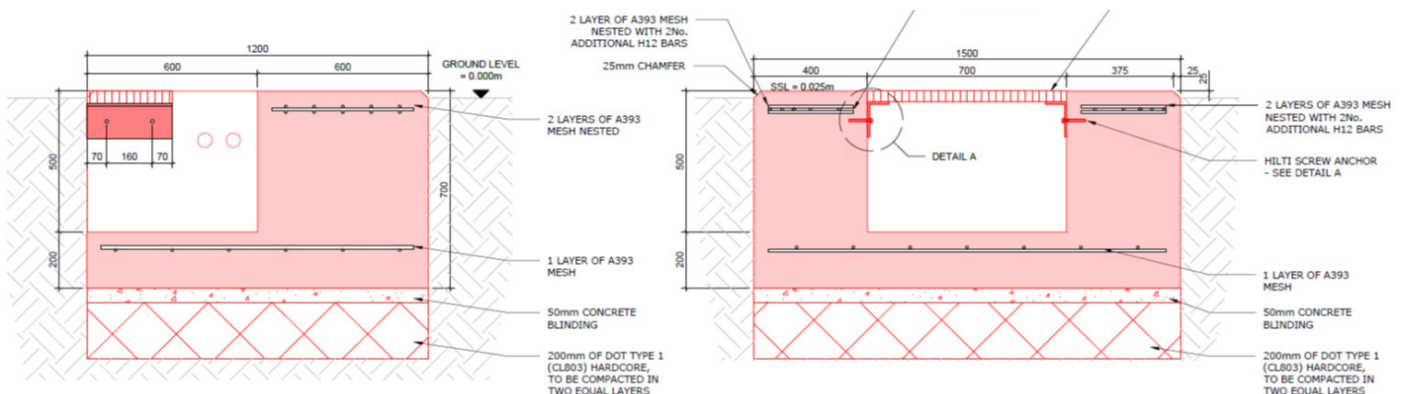
Hexagon's construction heritage ensures that they understand construction compliance and real-world situations to provide you with trusted, reliable and workable designs.

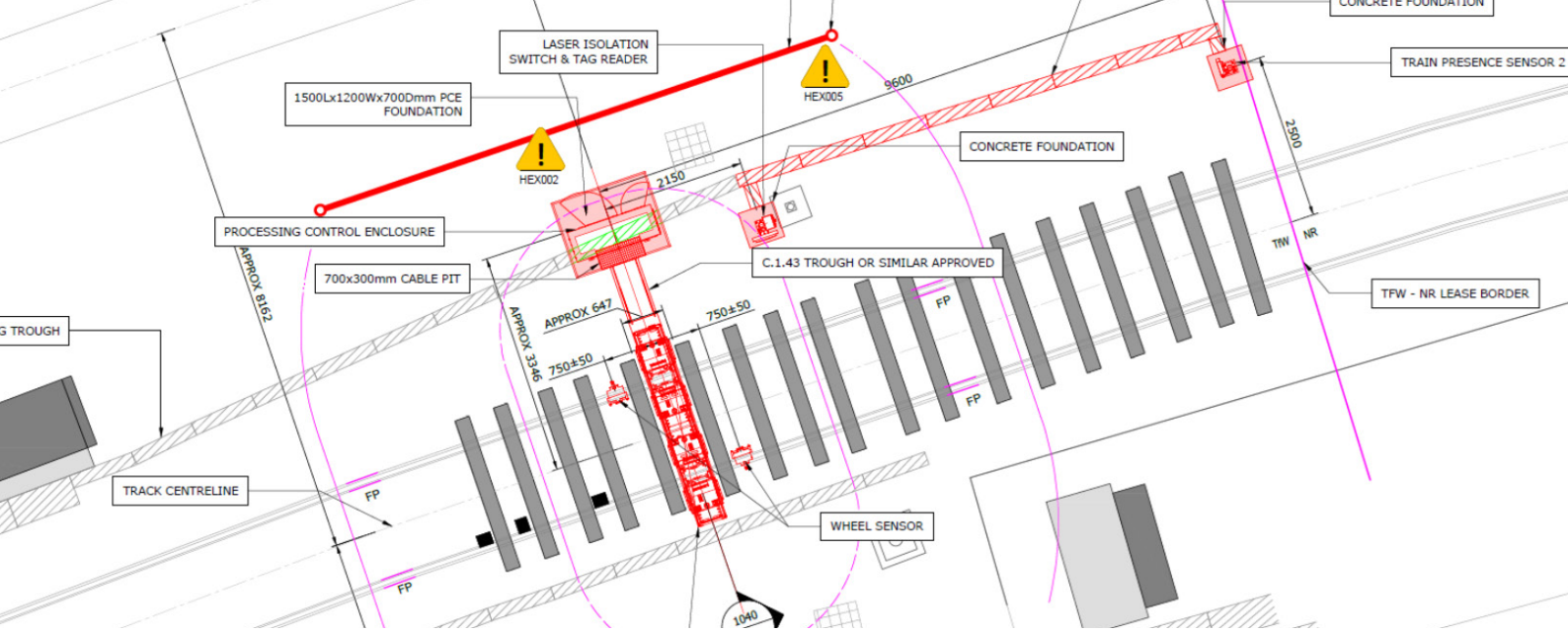
## DESCRIPTION

The commission involved the design of specialist equipment foundations, together with the associated power supply and communications infrastructure necessary to support the operation of the system.

Working in collaboration with Siemens, the specialist supplier of the VEMS technology, Hexagon ensured the civil and M&E designs were fully integrated with the operational requirements of the equipment.

The completed design provided a robust and coordinated solution, enabling the successful installation of the VEMS facility and supporting enhanced rolling stock inspection, monitoring, and maintenance activities within the depot environment.





**Outline & Detailed Design**

**Calculation & Temp Works Design Package**

**Typographic & Point Cloud Surveys**

## REQUIREMENTS

Working closely with depot management, Hexagon Design Consultancy identified and assessed a suitable location within Canton Depot for the installation of the Vehicle Equipment Measurement System (VEMS). The design was developed in collaboration with the client, contractor, and Siemens to ensure the system could be safely installed and integrated with minimal disruption to depot operations.

The scope of the design commission included:

- Principal Designer Services, coordinating with the client, contractor, and specialist supplier to ensure safe design and construction practices throughout the project lifecycle.
- Topographical and Point Cloud Surveys, undertaken using Hexagon’s in-house survey equipment to accurately capture existing site conditions and infrastructure constraints.
- Permanent Way Assessment, reviewing the existing track and rail infrastructure to confirm its suitability for the installation and operation of the VEMS equipment.
- System Integration and Layout Optimisation, determining the most effective locations for the primary measurement equipment, processing control enclosure, train presence sensors, brake pad measurement systems, and under-track equipment.
- Scheme Layout Development, producing detailed design drawings and undertaking clash detection reviews to ensure compatibility with existing depot infrastructure and services.
- Reinforced Concrete Foundation Design, providing robust structural solutions to support the specialist VEMS equipment and associated installations.
- Mechanical, Electrical and Communications Design, including power cable specifications, troughing routes, and service layouts required to support the operation and connectivity of the measurement system.

## OUTCOME

- **Successful Project Delivery:** The design was successfully completed and implemented, providing the infrastructure required for the installation and operation of the Vehicle Equipment Measurement System (VEMS) at Canton Depot.
- **Stakeholder Acceptance:** All design deliverables were reviewed and accepted by the client and relevant third-party stakeholders, ensuring full compliance with project and operational requirements.
- **Collaborative Project Success:** Close collaboration between Hexagon Design Consultancy, the client, contractor, and Siemens ensured a coordinated and efficient delivery process.
- **Integrated Design Solution:** Civil, structural, mechanical, electrical, communications, and permanent way considerations were successfully integrated into a single coordinated design package
- **Operational Continuity Maintained:** The design facilitated installation with minimal disruption to depot operations, supporting safe and efficient project delivery within a live maintenance environment.
- **Enhanced Depot Capability:** The completed VEMS facility provides advanced rolling stock measurement and monitoring capabilities, supporting improved maintenance planning, asset management, and operational performance.
- **Demonstrated Technical Expertise:** The project showcased Hexagon Design Consultancy’s ability to deliver complex multidisciplinary rail infrastructure designs through effective stakeholder engagement and technical coordination.

**This coordinated design approach ensured the VEMS facility could be successfully integrated into the operational depot environment while maintaining safety, functionality, and long-term reliability.**

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