



CASE STUDY

THE PROJECT

DOGS TRUST REHOMING CENTRE

APPLICATION

POST SUPPORTED GABION RETAINING WALLS & BALUSTRADING

LOCATION

SHREWSBURY, SHROPSHIRE

DATE

NOVEMBER 2010

CLIENT

DOGS TRUST

SURVEYORS

PETER NAPIER & CO.

CONTRACTOR

MCPHILLIPS (WELLINGTON) LTD

SERVICES PROVIDED BY ENVIROMESH

- Preliminary discussions and consultation
- Full detailed designs taking account of supporting steel work and gabion layouts
- Manufacture and material supply
- On-site technical support during construction

PROJECT BUILD COMPONENTS, SUPPLIED BY ENVIROMESH

- Gabion 39 System: bi-axial welded mesh gabions
- Gabion carcasses: manufactured from 75mm × 75mm mesh (using 5.00mm diameter galvanized coated wire)
- Supporting wind posts & fixings

PROJECT BACKGROUND

This new build animal retraining and rehoming project is considered “the best animal welfare centre in the world” in what is a cutting edge, £5.25 million eco-friendly re-development for Dogs Trust—the largest dog welfare charity in the UK.

The world beating construction project on the site of the existing Canine Rehoming Centre at Roden, near Shrewsbury, has been designed to be carbon neutral and is the first building of its kind to achieve BREEAM Outstanding and has achieved the world’s highest BREEAM post construction score of 94.44%. Innovative energy saving features have reduced energy consumption by 70 per cent over a traditional rehoming facility and the Centre has achieved an A+ rating for energy efficiency under the UK Building Regulations.



THE CHALLENGE

As the main contractor for this show case scheme, McPhillips (Wellington) Limited invited Enviromesh to look at the design and supply elements for the retaining wing walls to either side of the intake kennels as well as connecting these via a length of balustrading along the roof’s lead edge.

Key to the challenge was to ensure that the mass gravity retaining walls were designed both to retain the imposed forces from the soils as well as to introduce a suitable gabion up-stand—capable of protecting and withstanding loads from wind, grounds personnel and cutting equipment operating immediately to their rear.

Finally and in keeping with a prestigious project of this nature, attention to detail and the highest quality standards (including uniform visual aesthetics) were determined from the outset and indeed proved to be very much an enduring feature of the final completed structure.



THE SOLUTION

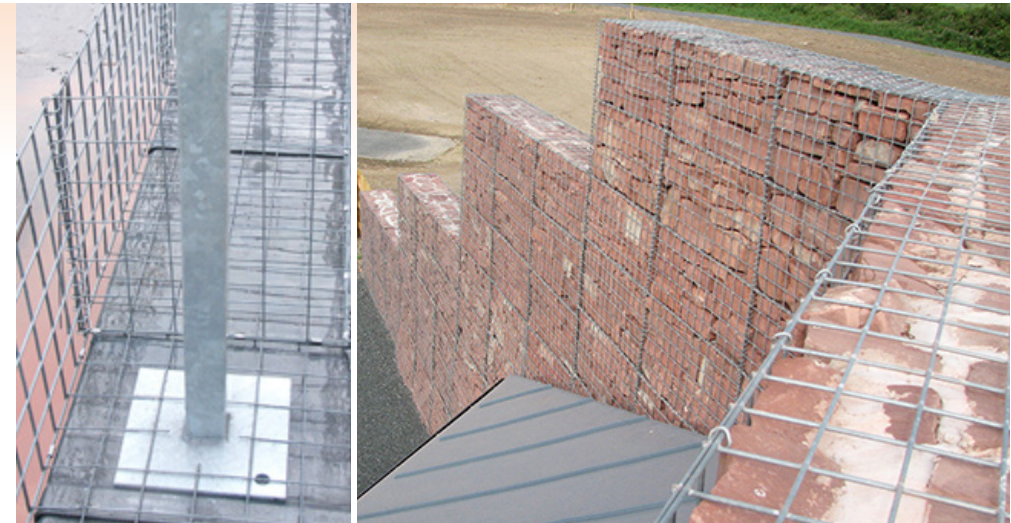
1. STRUCTURE

After due consideration, the technical department of Enviromesh designed the wing walls as mass gravity gabion structures whilst introducing SHS wind posts constructed from 150mm × 150mm steel sections and in suitable lengths buried within the gabion wall to provide additional stability for the gabion balustrade. All posts were fitted with 300mm square base plates having full fillet welds and supplied hot dip galvanised with relevant clamp bars, nuts and bolts for internal restraint and clamping.

2. GABION MESH SPECIFICATION

In order to meet the necessary aesthetic requirements, material durability and method of installation for these retaining walls – the gabion mesh fabric was manufactured and supplied from welded steel wire mesh having an aperture of 75mm x 75mm and a hard drawn steel wire diameter of 5mm with a tensile strength falling within a range of 540 to 770N/mm². Confidence on durability was provided through coating the steel wire mesh with Galfan (95% Zn / 5% Al), a process that was first introduced for gabion applications in the UK in 1994. All Enviromesh gabions having been previously and rigorously tested by the BBA (British Board of Agrément) for a design life of up to 80 years in this inland environment.

- **Fabric type**
Bi-axial welded mesh
- **BS EN 10218-2**
Steel wire and wire products
(general wire dimensions and tolerances)
- **Tensile strength (wire)**
540 to 770 N/mm²
- **Weld strength**
75% of the minimum ultimate tensile strength of the wire
- **BS EN 10244-2 (Class A)**
Zinc and zinc alloy coatings on steel wire
- **BBA certification**
Design lifespan up to 80 years in a mild environment



Internally positioned wind posts and the retaining 'wing wall' / adjoining balustrade detail, Dogs Trust Shrewsbury

3. CONSTRUCTION

The construction detailing on this project required the placement of wind posts within the gabion structure. Enviromesh manufactured the tailor-made, modular, pre-assembled baskets at their Garner Street facility in Stoke-on-Trent and then delivered these on-site (with end panels left off such that the base mesh could be cut on-site to receive the vertically positioned posts). Loosely supplied mesh panels to the same specification were also supplied for fitting on-site to terminate the gabion baskets at the exposed ends of the wall. In addition, helical spirals were used to join the gabions vertically, having the advantage of enclosing the cut ends of mesh. Lacing wire to join the gabions horizontally being supplied so as to produce one homogenous mass.

4. AESTHETICS

Finally, and of key importance to the scheme was its overall visual appearance. To achieve this, the gabions were filled with a reddish, dense, hard and blocky iron stone; which gives the wall its distinctive appearance and colour hue.