ENVIROMESH®

CASE STUDY SERIES #5

THE PROJECT	THE FARMYARD, LONGCROFT HOUSE	**APPLICATION**	MASS GRAVITY RETAINING WALL
LOCATION	YEOVIL, SOMERSET	**DATE**	JUNE 2007

CLIENT	THE FARMYARD
ARCHITECTS	BOON BROWN ARCHITECTS
CONTRACTOR	FLINTSTONE CONTRACTORS

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LONGCROFT HOUSE HOLIDAY APARTMENTS. YEOVIL. SOMERSET.

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SERVICES PROVIDED BY ENVIROMESH

- Initial site visit to discuss scheme requirements at the request of the contractor
- Detailed designed proposals and construction drawings
- Material supply
- On-site technical support during the construction programme

PROJECT BUILD COMPONENTS, SUPPLIED BY ENVIROMESH

- Welded steel wire mesh gabions (Gabion 27 system)
- 75mm × 75mm mesh × 3mm / 4mm wire diameters, galfan coated
- Complete fixing accessories including: helical spirals, pre-formed corner bracing ties and lacing wire

PROJECT BACKGROUND

This was a private project financed by The Farmyard at Longcroft House in Yeovil as part of a luxury development of holiday accommodation apartments within the boundary of the existing property.

The scope of the project took into account careful excavation of the existing hillside and the construction of a mass gravity gabion retaining wall structure to create sufficient space for access adjacent to the apartments.

Flintstone Contractors Limited were tasked with the full site development and procurement of a suitable retention system. Enviromesh were one of the companies approached to provide technical assistance and initial on-site advice for a gabion solution option. Following submission of the costs schedule and approval of the budget, Enviromesh were appointed to prepare a detailed design proposal and specification, supply the gabions and accessories and to provide on-site technical advice during the construction phase.

THE CHALLENGE

The key criteria were to deliver on the following basis:

- A technical solution for a mass gravity gabion wall that overcame the site parameters and stayed within the limitations of the overall budget
- As part of a prestigious, luxury development, the high standards of finish to the wall face would require careful consideration and implementation throughout construction in order that the visual aesthetic remained in keeping with the contemporary feel and clean lines of the project as a whole
- Utmost consideration would need to be made for the health and safety implications of the structure – to ensure the well-being of the public and of young children who were likely to come into close proximity with the gabions

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THE SOLUTION

1. GABION STRUCTURE

The nature of the existing saturated soils meant that a free draining gabion structure was the ideal solution in this location. Enviromesh designed the walls using their Gabion 27 System. This modular concept benefitted from the following features:

- Gabions supplied in lifts of 675mm high with internal partitioning diaphragms set at 675mm centres that provide a maximum contained face area for the stone of 675mm^2.
- Gabions supplied with combined lids and bases such that the extended base of the gabion basket above forms the lid to the gabion below – reducing the steel content and therefore the overall cost of the wall.
- Baskets supplied with a combination of 4mm wire diameter panels (front and rear faces) and 3mm wire diameter panels for the internal partitions. This enables the designer to incline the wall back at some 10 degrees from the vertical, improving stability and cost effectiveness by reducing the wall section.
- A complete fixing accessory pack including full length helical spirals to join the gabions vertically together whilst encompassing the cut end of mesh and pre formed corner bracing ties to restrain the face. These easy to install face restraints along with the smaller cell sizes that the 27 System benefit from provides much improved distribution of steel within the wall and a high level of visual aesthetics.

- **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/mm^2
- **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 70 years in a mild environment

2. STANDARDS vs FUNCTIONALITY

The wall was designed in accordance with BS 8002: 1994, Code of Practice for Earth Retaining Structures using Enviromesh's in house software. Each gabion was filled with a 6G graded gabion stone 100 to 150mm in diameter. Additionally a non-woven geotextile membrane was incorporated and placed immediately behind the rear of the gabions to prevent leaching of the granular particles through the free-draining structure.

A follow-up site visit in May 2008 revealed a fully functioning gabion installation that met the project's objectives: a practical and financially viable, aesthetically pleasing structure that our client was particularly pleased with.