ENVIROMESH

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WELDED MESH GABION SPECIFICATION
Gabion 39 System - 3.00/4.00mm Wire Diameter - Galfan Coated

Gabions shall comply with the following specifications

MANUFACTURE: Gabions shall be manufactured from a hard drawn steel wire formed into a bi-axial mesh grid by electrically welding the cross wires at every intersection. The weld strength is to be 70% of the ultimate tensile strength of the wire. Gabions are to be factory assembled with stainless steel clips (minimum one every third mesh opening) connecting side panels and diaphragms to the base panel and the lid to the face panel.
Diaphragms to be at nominal 1m centres on the unit length, except for 1.5m long gabions which have no internal diaphragm.

MESH SIZE: The mesh openings shall be square and of a nominal dimension of 76.2mm on the grid.

MESH WIRE: The nominal wire diameter shall be 3.0mm for the lid, base, back and internal panels and from a 4.00mm wire diameter for the face panel, all in accordance with BS EN 10218-2 1997. The tensile strength falls within a range of 540-770 N/mm^2

CORROSION PROTECTION: Wire shall be galfan coated (95% Zn / 5% Al) in accordance with BS EN 10244-2: 2001.

JOINTING: Gabions shall be provided with lacing wire for site assembly. The lacing wire shall be of a nominal wire diameter of 2.2mm (all in accordance with the corrosion protection specified) for final jointing.

ROCKFILL: Gabion fill shall be a hard durable and non frost susceptible (rock or stone type) having a minimum dimension not less than the mesh opening and a maximum dimension of 200mm.

CONSTRUCTION: All rock fill shall be packed tightly to minimize voids and the rock fill on the exposed face of the gabion is to be hand packed. Internal windlass bracing ties are to be incorporated at 2 per 1sqm of face at 1/3rd & 2/3 intervals for 1m high units and 1 placed centrally for 0.5m high units. The adjacent gabion units are to be tied together with continuous lacing on the vertical joints as well as horizontally at the front and rear of coursed joints. The units shall be filled such that the mesh lid bears down onto the rock fill. The lid shall be wired down on all joints and across the diaphragms.

Above jointing and internal bracing is supplied as standard. The following alternatives are also acceptable:

Full height helicals in 3.0mm galfan coated wire for vertical jointing
Pneumatically closed galfan coated "C" rings for vertical and horizontal jointing at 1 ring every other mesh opening.
Galfan coated preformed corner bracing ties 4 per m2 of face.

SPEC 4: 29-01-2007

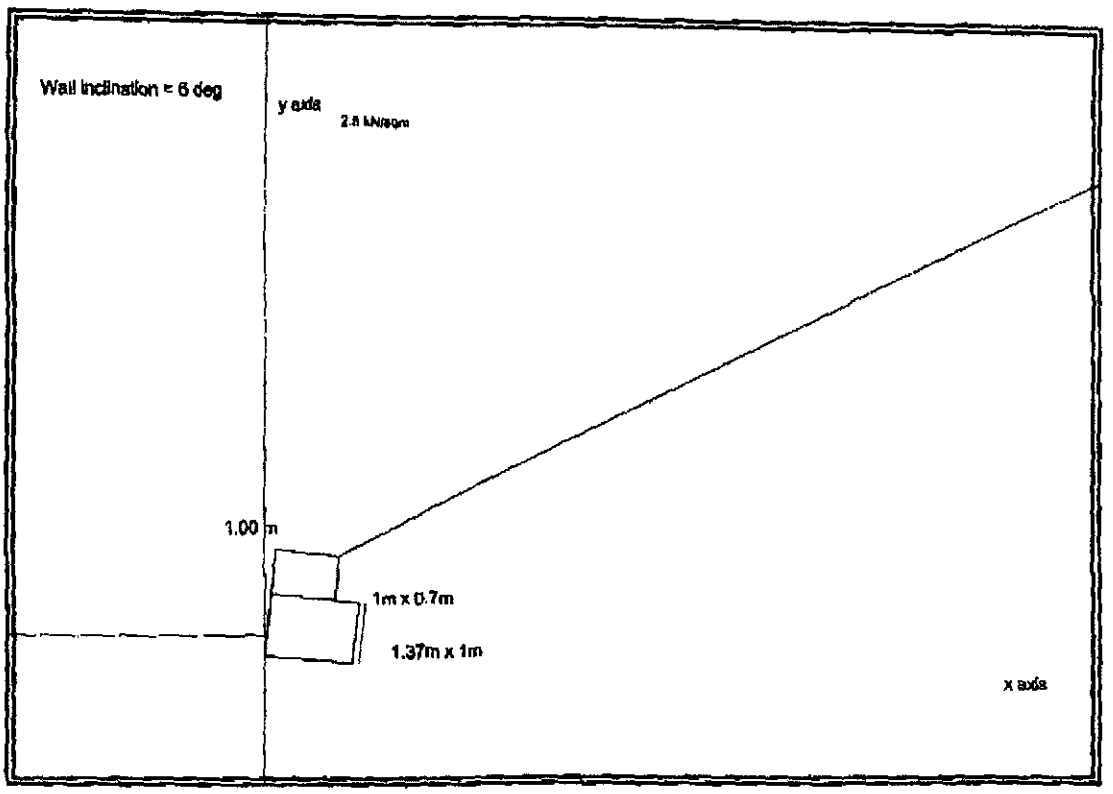
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Retaining Wall Design Proposal

Project Reference:- 0835-05

Project Title:- Barnsley

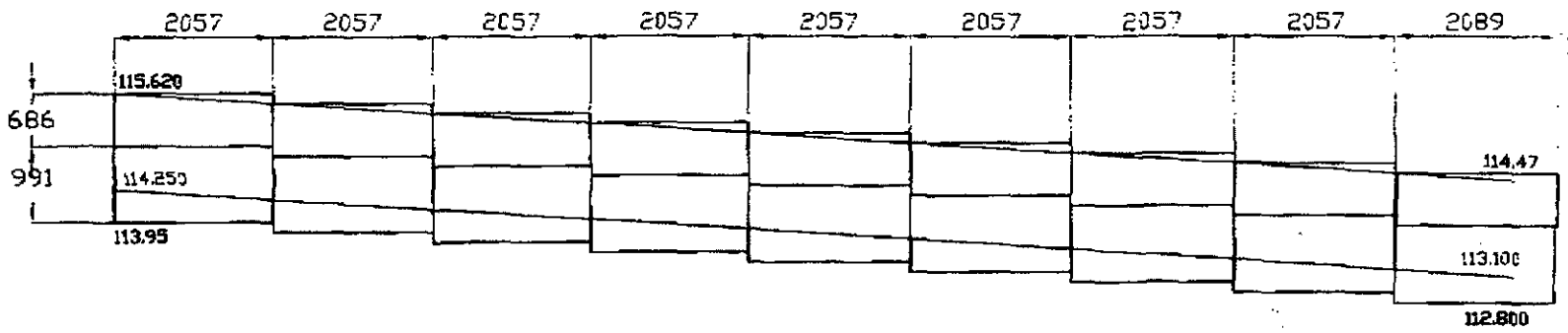


This design proposal is based exclusively on the use of ENVIROMESH'S materials installed in accordance with the manufacturer's instructions.

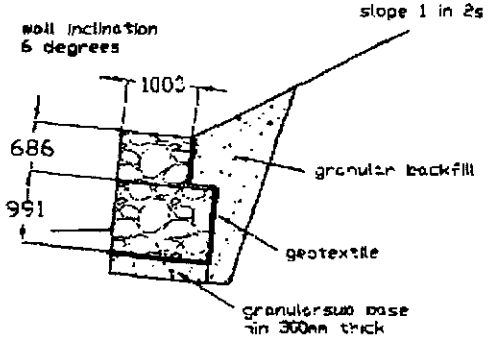
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PROFILE OF WALL



SECTION

DRAWN	REF	SCALE	NOT TO SCALE
REVISIONS			DATE

PROJECT TITLE
GATEWAY PLAZA
BARNSLEY

PROJECT NUMBER
0835-01

DATE
06-01-10

ENVIR

28-JAN-10 09:04

Design Data

Foundation Type :- Sub Soil

Geotextile Requirements
Placement Behind & Below Wall

Soil Parameters:-

Soil Ref	Density (kN/cum)	Friction (deg)	Cohesion (kN/sqm)
Retained soil	19	28	0
Backfill soil	18	34	
Foundation soil	19	28	0
Toe soil	19	28	0
Gabion	16 based on gritstone fill		

Loading Conditions:-

Load Type	Intensity	Start (m)	End (m)
Uniformly distributed load 1	2.5	0	10
Uniformly distributed load 2			
Line Load 1			
Line Load 2			
Horizontal Load			

General Wall Details :-

Wall height	1.7 m
Wall Inclination	6 deg
Exposed crest width	1 m
Depth of Toe in (base course)	0.3 m

Sectional Details

Course	Offset	Unit width	Unit depth
1	0	1.37	1
2	0	1	0.7

Soil Profiles:-

Slope	Angle (deg)	Stretch (m)
1	26.6	3
2	26.6	
Toe Slope	0	

Stability Computations

Ultimate Limit State

Gabion Wall Analysis

Design requirements

The minimum acceptable Factor of Safety against Sliding must be greater than 1.5
The minimum acceptable Factor of Safety against Overturning must be greater than 2.0
The eccentricity of the resultant force on the base must lie within the mid third of the base.
The maximum bearing value must not exceed the allowable bearing for the foundation soil.

Critical wedge details;

Critical wedge angle =	35.87 deg
Weight of Soil wedge =	145.61 kN
Total Active Thrust	26.08 kN/m run

Force	Horizontal Component	Lever arm about toe	Moment due to Horizontal component	Vertical Component	Lever arm about toe	Moment due to Vertical component
	kN	m	kNm	kN	m	kNm
Soil	20.86	0.43	8.97	15.65	1.3	20.35
UDL1	2.63	0.72	1.89	1.97	1.27	2.5
UDL2						
LL1						
LL2						
HL						
Gabion				33.12	.7	23.18
Sum Total	23.49		10.86	50.74		46.03

Factors of Safety

Overturning	4.23
Sliding	1.56

Eccentricity and Bearing

Eccentricity (m)	-0.01 < 1.37 / 6
Bearing (kN/sqm)	37.36 39.90

Design notes

The stability calculations are carried out by a wedge analysis.
The Gabion wall is to be inclined at 6 degrees to the vertical.
The Gabion wall is be toed into the existing ground a minimum of 0.3 m below exiting ground level.
The gabion wall should be founded a minimum thickness of 75mm of type 1 as a blinding layer.

THE DESIGN IS BASED ON THE SOIL PARAMETERS AND GEOMETRIC PROFILE STATED. IF SOIL CONDITIONS DIFFER OR GEOMETRIC PROFILES DIFFER TO THAT IN THE DESIGN THE DESIGN MUST BE RE-EVALUATED
THE DESIGN IS BASED ON THE STRENGTH PROPERTIES, DURABILITY AND BEHAVIOUR OF ENVIROMESH WELDED MESH GABIONS AND THE RELEVANT GEOTEXTILE SPECIFICATION STATED,

DEPARTURE FROM THE SPECIFIED MATERIALS WILL NULIFY THIS DESIGN PROPOSAL

Stability Computations

Ultimate Limit State

Internal Stability

The internal stability design checks are carried out at every gabion course

for Factor of Safety on Overturning :-Fo

for Factor of Safety on Sliding :- Fs

for Eccentricity :- e

for outer bearing (toe)

for inner bearing (heel)

The Factor of Safety against Sliding at each course is computed considering the effective frictional angle on gabion to gabion interface is 35 degrees.

The minimum acceptable Factor of Safety against Sliding between courses ignoring any contribution of the wire is 1.3

The minimum acceptable Factor of Safety against Overturning at each course is 2.0 excluding any contribution of the mesh or joint strength.

The eccentricity at each level must lie within the mid third, in the case of a flush faced vertical wall the eccentricity should be proportioned between 0m at the top of the wall to within the mid third at the base. In both cases if value is negative and outside the mid third the value is acceptable.

The bearing value at the back face must be positive.

Course	Factors of Safety		Eccentricity	Bearing	
	Overturning	Sliding		toe	heel
			(m)	(kN/sqm)	(kN/sqm)
2	6.86	2.50	-0.05	12.48	









Steve Burlaga

From: Steve Burlaga

Sent: 04 February 2010 11:32

To: 'Jenkinson , Joe'

Cc: Wyatt , Chris; George , Claire; Parks , Allen; Moralee , Stephen; Gosse , Ann; Winnard , Martin; Matthew Stephens

Subject: RE: Gateway Plaza & Pinfold Steps

Attachments: Enviromesh Gabion Wall Specification.pdf; 22058_CP_P114_k.pdf; IMG_0643_1.jpg; IMG_0644_1.jpg; IMG_0645_1.jpg; IMG_0646_1.jpg

Morning Joe - thank you for your email and apolgies for the delay in formalising the details, to enable condition 32 of the office consent to be varied - a copy of the updated terrace drawing is attached together with calculations for your approval.

With regard to your / Highways corncerns regarding the provision of a filter drain, we consider it not to be necessary for the following reasons:

- *The final gradient of the grass embankment will not generally be 1:2, it will in actual fact vary from 1:5, where it follows the profile of Pinfold Steps, up to a maximum of 1:2 for a very short area immediately to the side of our new terrace.*
- *There is no drainage behind the existing retaining wall which was constructed with a blockwork retaining wall, cavity and stone facing - the blockwork retaining remains in a good condition as can be seen on the attached photographs, the outer stone facing as you are aware has been taken down failed as a result of the lack of cavity wall ties and the dpc acting as a slip plane.*
- *We have retained more of the existing retaining wall than was initially envisaged, approximately 20% more with the gabion wall reduced by the same amount.*
- *The gabion wall construction extends into the ground by approx 600mm and is backfilled with granular material to an overall width of approximately 2m together with a geo-textile filter medium and will function effectively as a big soakaway.*
- *We have not experienced any problems recently with water run off given all the recent rain and snow and are not aware that ground water or surface water has been a problem in the past and is unlikely to be in the future given the improvements we are making*

I trust this deals with your concerns

Let me know if you require anything further at this stage

Steve Burlaga
director

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