Job No: 180132 Rev: Date: 01/11/2018
Job Name: Herbert Road, Newport Design Engineer: AH
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Herbert Road, Newport

200mm/250mm/300mm square precast piles

Piling Contractor:

Van Elle Piling
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

Tel: 01773 580580

Geotechnical Designer:

See Piling Contractor

Main Contractor (Client):

Engie (Bridgend)
Second Floor
31 Bocam Park, Old Field Road
Bridgend
CF35 5LJ

DESIGN STATUS & ISSUE RECORD

Revision	Status	Description	Design		Check	
			Engineer	Date	Engineer	Date
P0		Bearing Pile Design	AH	01/11/18	HAD	01/11/16

1.0 INTRODUCTION

Van Elle Limited has been appointed by Engie to carry out the design and installation of the bearing piles on the above development.

The design calculations are presented under the following headings:

2.0 DOCUMENTATION
3.0 SPECIFCATION
4.0 PILE LOADS
5.0 GROUND CONDITIONS
6.0 OUTLINE OF DESIGN
7.0 PILE DESIGN
8.0 APPENDICES & ATTACHMENTS
Appendix A: Pile Design 'Set' Calculations for Junttan PM16

2.0 DOCUMENTATION

The following documents have been received and relevant:

(i) TERRA FIRMA (WALES) Ltd Job No. 12032/VR1-V3, 12032/P2 & 12032/P3 Boreholes BH2 & BH5

EOS Architects Project No. 3073 Dwg ref. (04)281, (04)261, (04)231, (04)241, (04)201, (04)211, (04)221, (04)291, (04)2211 & (04)100M.

3.0 SPECIFICATION

(i) No site specific specification has been received

(ii) ICE Specification for Piling and Embedded Retaining Walls – 2nd Edition 2007.

(iii) BS8004 – Foundations: 1986.

(iv) BS8110 – Structural Use of Concrete: 1997.

(v) BRE Special Digest 1 – Concrete in Aggressive Ground: 2005

(vi) BS8500-1: 2006 Concrete – Complementary British Standard to BS EN 206-1 – Part 1: Method of specifying and guidance for the specifier.

4.0 PILE LOADS

Working Loads 200mm square:	Compression:	350kN
	Horizontal:	0kN
	Tension & Moment:	0kN
Working Loads 250mm square:	Compression:	600kN
	Horizontal:	0kN
	Tension & Moment:	0kN
Working Loads 300mm square:	Compression:	800kN
	Horizontal:	0kN
	Tension & Moment:	0kN

5.0 GROUND CONDITIONS

While stratigraphy varies across the site, ground conditions at the site are generalised as shown in table 1 and are representative of the ground conditions as given in BH2 & BH5 of the Ground Investigation Reports.

Stratum	Thickness
Made Ground	PPL -1.9m
Soft Clay	-1.9m to -5.2m
Soft Clay/ Silt / Peat Bands	-5.2m to -10.3m
Stiff Clay	-10.3m to -12.7m
Mudstone	-12.7m onwards

6.0 OUTLINE OF DESIGN

The following assumptions have been made in design:

- Piling platform levels (PPL) have not been advised, therefore assumed at borehole level.
- Cut off levels (COL) have not been advised, therefore assumed at no greater than 1m below PPL.
- Design based on a factor of safety of 2.5.
- 3% dynamic load tests are to be completed

- Drawings received state preliminary. If no other drawings are received/advised these will be adopted as construction issue
- If piles cannot penetrate steel tube piles will be utilised. This does not guarantee depths
- Please note that our preliminary design is based on BS8004:1986 as the load information provided is not in line with the current standards BS:EN1997 or BS:8004:2015.
- Longer probes will be initially installed at working pile positions to confirm ground conditions and length. If the required 'Set' is not achieved at the anticipated lengths then alternative lengths will be supplied as available.
- Piles will be installed to a Dynamic 'Set' only and not the theoretical Geotechnical Design (provided for reference purposes only).
- Anticipated settlement is to be no greater than 10mm.
- To ensure lateral stability a minimum effective shaft length of 3m is required. Should this not be achievable then the calculations and technique will need to be reviewed.
- Our design assumes that any bending moments generated due to pile installation tolerances can be accommodated by the sub structure.
- Please note that no calculation has been undertaken in this document for the required projection/anchorage length of reinforcement into the pile caps in order to provide sufficient restraint against tensile strain developed in the reinforcement. This should be carried out by others. They should also check that sufficient length is available in the difference between PPL and COL.
- Any pile breakages due to underground obstructions, such as existing piles, shall incur additional piles (usually one either side of this position) all at extra cost to the contract.

7.0 PILE DESIGN

See Dynamic 'Set' Calculations in Appendix B.

Pile Details:	No. of piles:	454No.
	Size:	200mm/250mm/300mm square
	Lengths:	Anticipated approx. 12-17m (subject to driving experience on site)
	Testing:	3% Dynamic Load Tests to 1.5x working load