APPENDIX A

SET CALC PM16

Head Office Tel: 01773 580580
Eastern Office Tel: 01362 697097
Smartfoot Office Tel: 01773 580580
Northern Office Tel: 0191 4178332

VAN ELLE
TOTAL FOUNDATION SOLUTIONS

QAP 4A/2
Calculation Sheet No 6
Date: 1-11-18
Job No: 180132
Calcs By: AH
Review By:

Calculation Sheet

Reference	Contract	Output

VAN ELLE
TOTAL FOUNDATION SOLUTIONS

Negative Skin Friction Calculation

Strata 1 = Made Ground **0 to 5.2 m below cut-off level**

ρ0′	=	5.2 m	x	16.0 kN/m³	=	83.2 kN/m²	
TNSF	=	0.25	x	83.2 kN/m²	=	20.8 kN/m²	

Strata 2 = PEAT **5.2 to 10.3 m below cut-off level**

ρ0′	=	5.1 m	x	12.0	+	83.2 kN/m²	=	144 kN/m²
TNSF	=	0.25	x	144.4	=	36.1 kN/m²		

$$\text{TOTAL NSF} = \pi \times \text{pile dia.} \times \sum_{i=2}^{i=1} \left(\left[\frac{\tau_{NSF\,i-1} + \tau_{NSF\,i}}{2} \right] \times l_i \right)$$

TOTAL NSF = π x 0.20 x 199.2

TOTAL NSF = 125 kN

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VAN ELLE
TOTAL FOUNDATION SOLUTIONS

QAP 4A/2
Calculation Sheet No 7
Date: 1-11-18
Job No: 180132
Calcs By: AH
Review By:

Calculation Sheet

Reference	Contract	Output

180132 Herbert Road, Newport

PILE SIZE — Precast Concrete Driven Piles - 200mm
RIG TYPE — **Junttan PM16**

Maximum Pile Load	350	kN
Factor of Safety	2.50	
Hammer Weight	40	kN
Drop height	400	mm
Efficiency %	100	%
NSF	250	kN (ULT) F.O.S 2.0

from top 10m (ignored)

BASED UPON THE MODIFIED HILEY FORMULA

which states

$$Ru = \frac{E}{S + C/2} \quad \text{and thus,} \quad S = \frac{E}{Ru} - \frac{C}{2}$$

where,
Ru = Ultimate Load Incorporating Factor of Safety (kN)
E = Actual Transferred Energy from Hammer (kNmm)
C = Total Temporary Compression of Pile and Ground (mm)
S = Set per Blow (mm)

hence,
Ru = 350 kN x 2.50 = 875 + 250 = 1125 kN
E = 40 kN x 400 mm 1.00 = 16000 kNmm
C = 10 mm (to be measured on site)

Therefore

$$S = \frac{16000}{1125} - \frac{10}{2} \qquad S = 9.22 \text{ mm/Blow}$$

			Output
Therefore, Set for 10 Blows to achieve	350 kN =		92 mm
and thus, Set for 10 Blows to achieve	325 kN =		100 mm
and thus, Set for 10 Blows to achieve	300 kN =		110 mm
and thus, Set for 10 Blows to achieve	275 kN =		120 mm
and thus, Set for 10 Blows to achieve	250 kN =		132 mm
and thus, Set for 10 Blows to achieve	225 kN =		146 mm
and thus, Set for 10 Blows to achieve	200 kN =		163 mm
and thus, Set for 10 Blows to achieve	175 kN =		182 mm

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VAN ELLE
TOTAL FOUNDATION SOLUTIONS

QAP 4A/2
Calculation Sheet No 8
Date: 1-11-18
Job No: 180132
Calcs By: AH
Review By:

Calculation Sheet

Reference	Contract	Output

VAN ELLE
TOTAL FOUNDATION SOLUTIONS

Negative Skin Friction Calculation

Strata 1 = Made Ground **0 to 5.2 m below cut-off level**

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Strata 2 = PEAT **5.2 to 10.3 m below cut-off level**

ρ0′	=	5.1 m	x	12.0	+	83.2 kN/m²	=	144 kN/m²
TNSF	=	0.25	x	144.4	=	36.1 kN/m²		

$$\text{TOTAL NSF} = \pi \times \text{pile dia.} \times \sum_{i=2}^{i=1} \left(\left[\frac{\tau_{NSF\,i-1} + \tau_{NSF\,i}}{2} \right] \times l \right)$$

TOTAL NSF = π x 0.25 x 199.2

TOTAL NSF = 156 kN