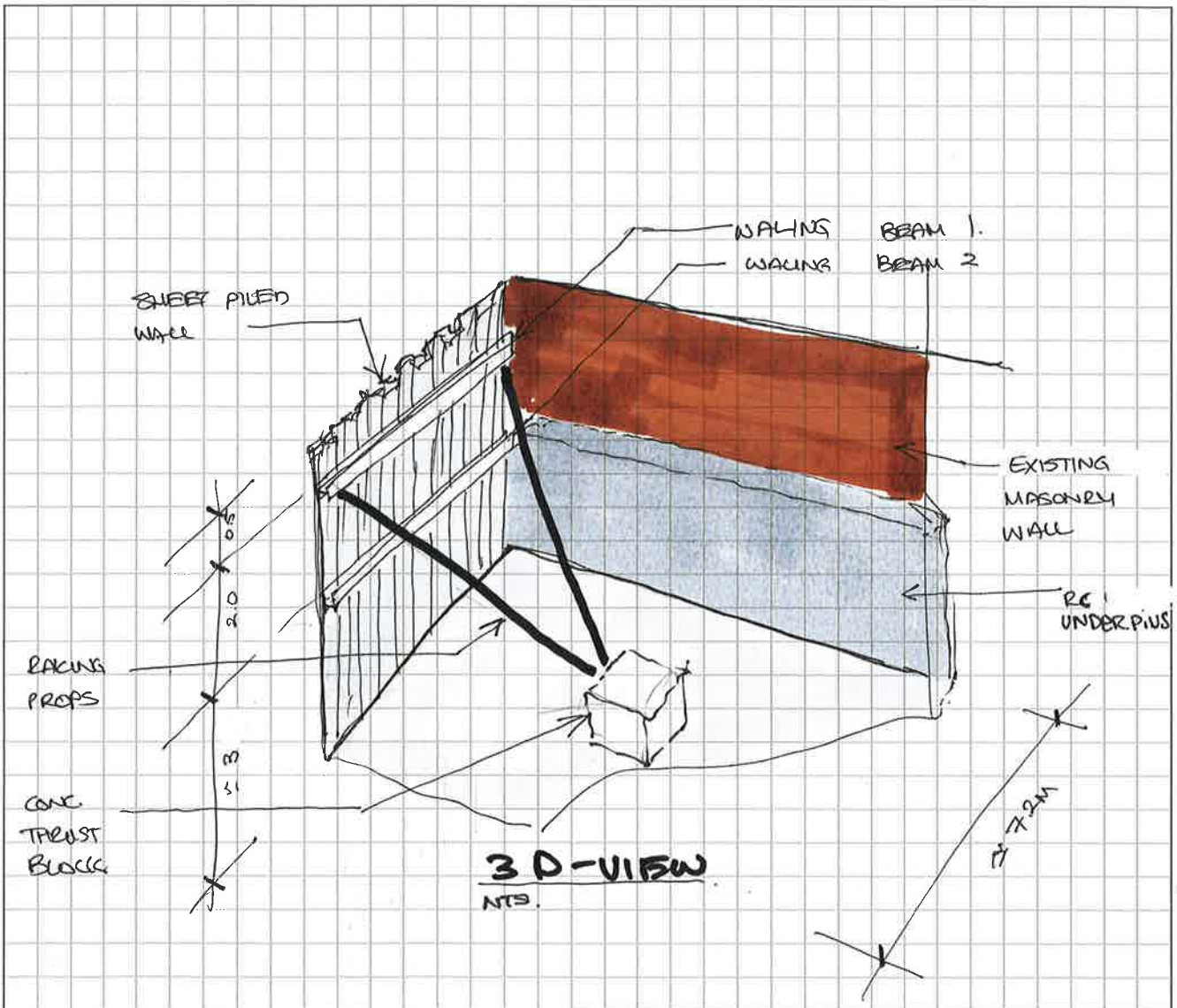
WEBB YATES ENGINEERS
info@webbyates.co.uk
www.webbyates.co.uk

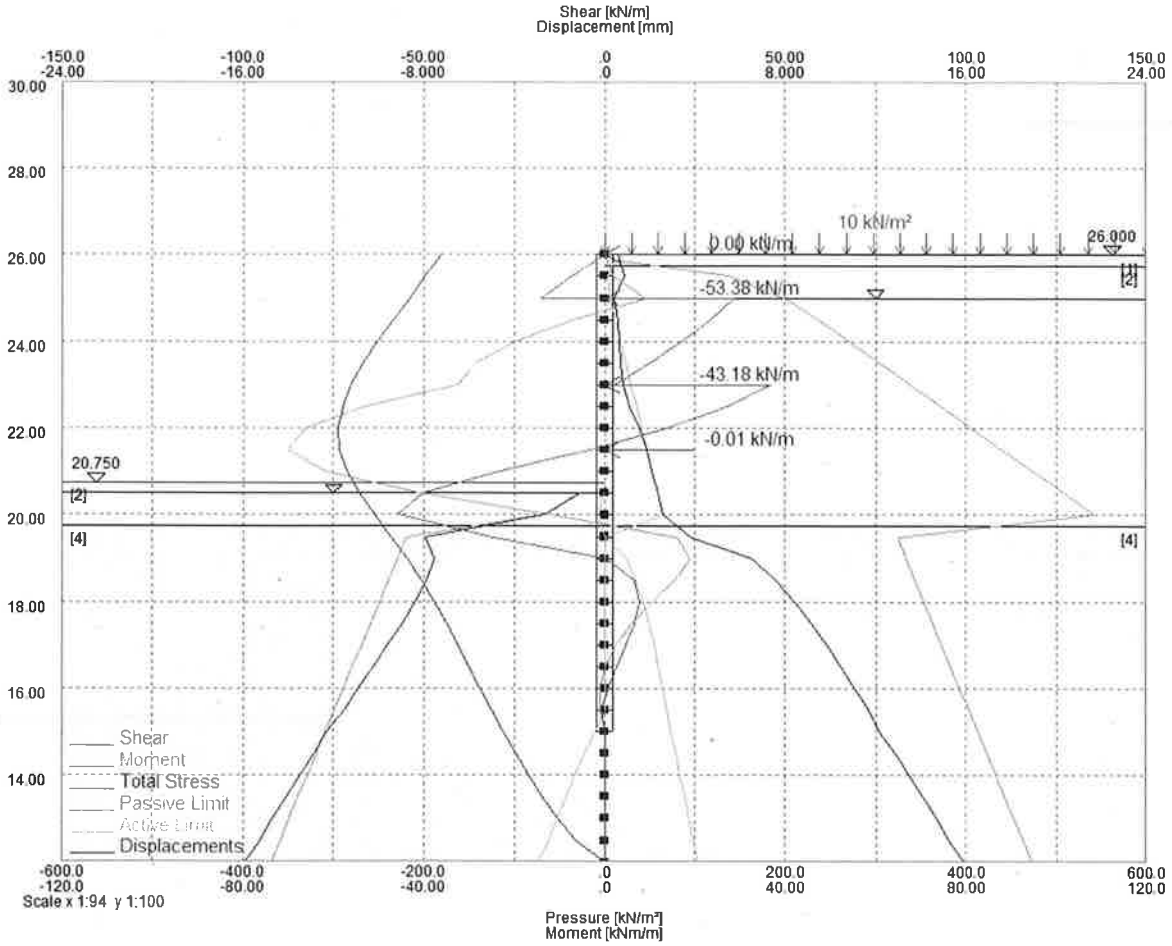
Project	TORRINGTON SQ.		
Part of structure	TEMP. PROPS FOR SHEET PILE		
Date	JUL 17	Job number	J28889
Engineer: BM	Checked by: CP	Checked date: 21.07.2017	Sheet number: 1



NOTE: WALING BEAM 2 RESIN ANCHORED TO ADJACENT RC PINS

WALING BEAM 1 FIXED TO THRUST BLOCK.

THRUST BLOCK CAST INTO GROUND @ FORMATION LEVEL



STAGE 7 : Install basement box (permanent props)

TEMP PROP FORCES 1 — 53.38 kN/m (SLS)

2 — 43.18 kN/m (SLS)

WEBB YATES ENGINEERS
info@webbyates.co.uk
www.webbyates.co.uk

Project	TORRINGTON SQ.		
Part of structure	TEMP. PROP SHEET PILE		
Date	Jul 17	Job number	J0889
Engineer: BM	Checked by: CP	Checked date: 21.07.2017	Sheet number: 3

WALING BEAM 1

UDL = 53.38 kNM

$M = wL^2/8 = (53.38)(7.2)^2/8 \quad (1.5)$

$= 518.85$ NM

PROVIDE 457 x 191 x 133 UB. (S355)

Leff = 7.0

$M_B = 521$ kNM $> M_D$ 518.85 kNM

DEFLECTION CHECK

$\delta = \frac{5wL^4}{384EI} = \frac{(5)(53.38)(7200)^4}{384\,(205000)(63800 \times 10^4)}$

$= 14.3$ MM. $= SPAN/503.$

FREE DISPLACENT DUE TO PROP STIFFNESS

$\leq$ 15MM $<$ δ_{BEAM} 14.3 MM ∴ OKAY

BEAM REACTION $= (53.38)(7.2)/2$

$= 192.17$ KN (SLS)

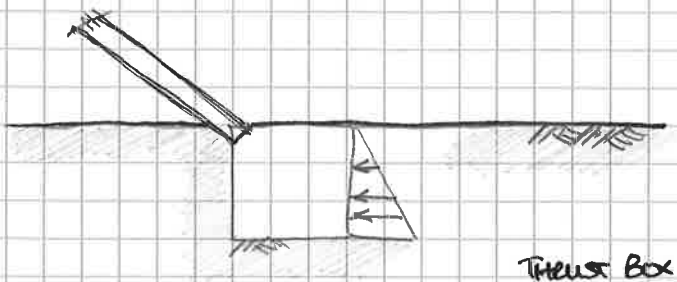
WEBB YATES ENGINEERS
info@webbyates.co.uk
www.webbyates.co.uk

Project	TORRINGTON SQ.		
Part of structure	THRUST BLOCK		
Date	JUL 17	Job number	J2889
Engineer: BM.	Checked by: CP	Checked date: 21.07.2017.	Sheet number: 4

THRUST BOX

→ F_H 384.34 kN (2 PROPS).

↓ $F_V = F_H$



THRUST BOX SECTION
NTS

BLOCK DIMENSION

2 × 2 × 1.5 MASS CONC.

WT = (1.5)(4)(24) = 144 kN

TOTAL BEARING PRESSURE = F_V + WT

= (384.34) + 144

= 528.34 kN

AREA = 4 m^2

BEARING PRESSURE = 528.34/4.

= 132.1 N/m^2.

ALLOWABLE BEARING PRESSURE OF GRAVEL LAYER FROM SI REPORT

ABP = 180 kN/m^2 > 132.1 kN/m^2 ∴ OKAY

WEBB YATES ENGINEERS
info@webbyates.co.uk
www.webbyates.co.uk

Project	TORRINGTON SQ.		
Part of structure	THRUST BLOCK		
Date	Jul 17	Job number	328899
Engineer	Checked by	Checked date	Sheet number
BM	CP	21.07.2017	5

THRUST BLOCK AGAINST SLIDING

F_H = 384.34 kN

$W_T + F_V$ = 528.34 kN

FRICTION COEFFICIENT BETWEEN CONCRETE AND GRAVEL

μ = 0.6

F_H RESISTANCE FROM FRICTION = (528.34)(0.6)

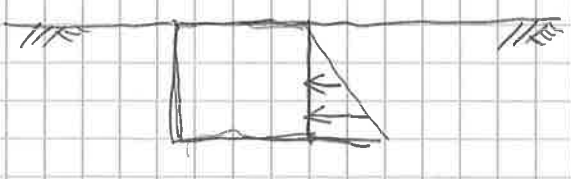
= 317 kN

REQUIRED F_H RESISTANCE WITH FACTOR OF SAFETY

= 1.2

$(F_H)(FOS)$ = 461.2 kN

PASSIVE PRESSURE FROM GRAVEL



γ GRAVEL = 20 kN/m^3

ϕ GRAVEL = 35°

$K_p = \frac{1 + \sin\phi}{1 - \sin\phi}$ = 3.69

$P_S = \gamma h K_p$ = 110.7 kN/m^2

$F_S = (P_S)(h)/2 \times$ WIDTH = 166.05kN

WEBB YATES ENGINEERS
info@webbyates.co.uk
www.webbyates.co.uk

Project	TORRINGTON 3Q.		
Part of structure	THRUST BLOCK		
Date	JUL 17	Job number	J2889
Engineer: BM.	Checked by: CP	Checked date: 21.07.2017	Sheet number: 6.

TOTAL SLIDING RESISTANCE

$= F_V \mu + F_S$

$= 317 + 166.05$

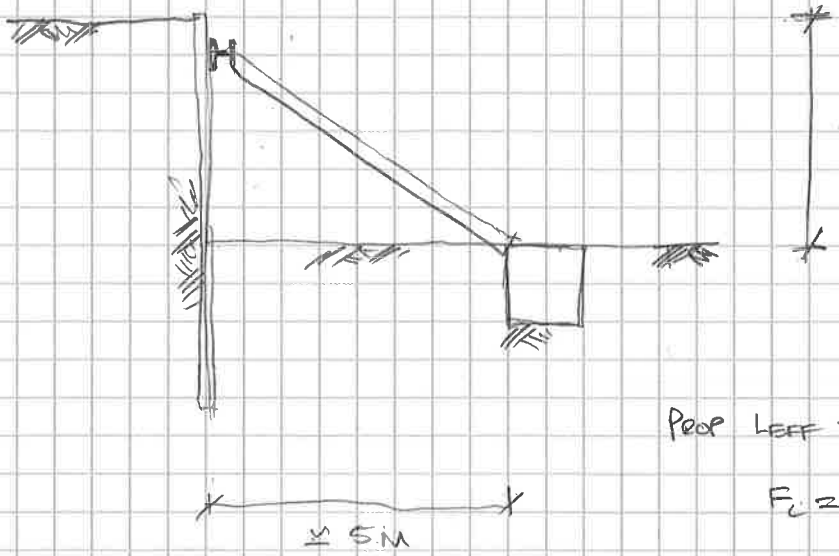
$= 483.05$ kN $>$ F_H (FOS) $= 461.2$ kN ∴ OKAY

PROP DESIGN

$F_c = \sqrt{F_V^2 + F_H^2}$

$= 543.54$ kN (SLS)

$\simeq 815.31$ kN (ULS) SPANNED BETWEEN 2 PROPS



PROP LEFF = 7M.

F_c = 407.66 kN (ULS)

SECTION – TAKEN PARRALLEL TO PROP

NTS

PROVIDE 193.7 CHS 6.3

Leff = 7M , Pc = 578 kN > Fc=407 kN

∴ OKAY