

# 13 PRINCE ALBERT ROAD.

intended for  
 drainage from  
 small footpath  
 750 by 300 surface  
 450 wide

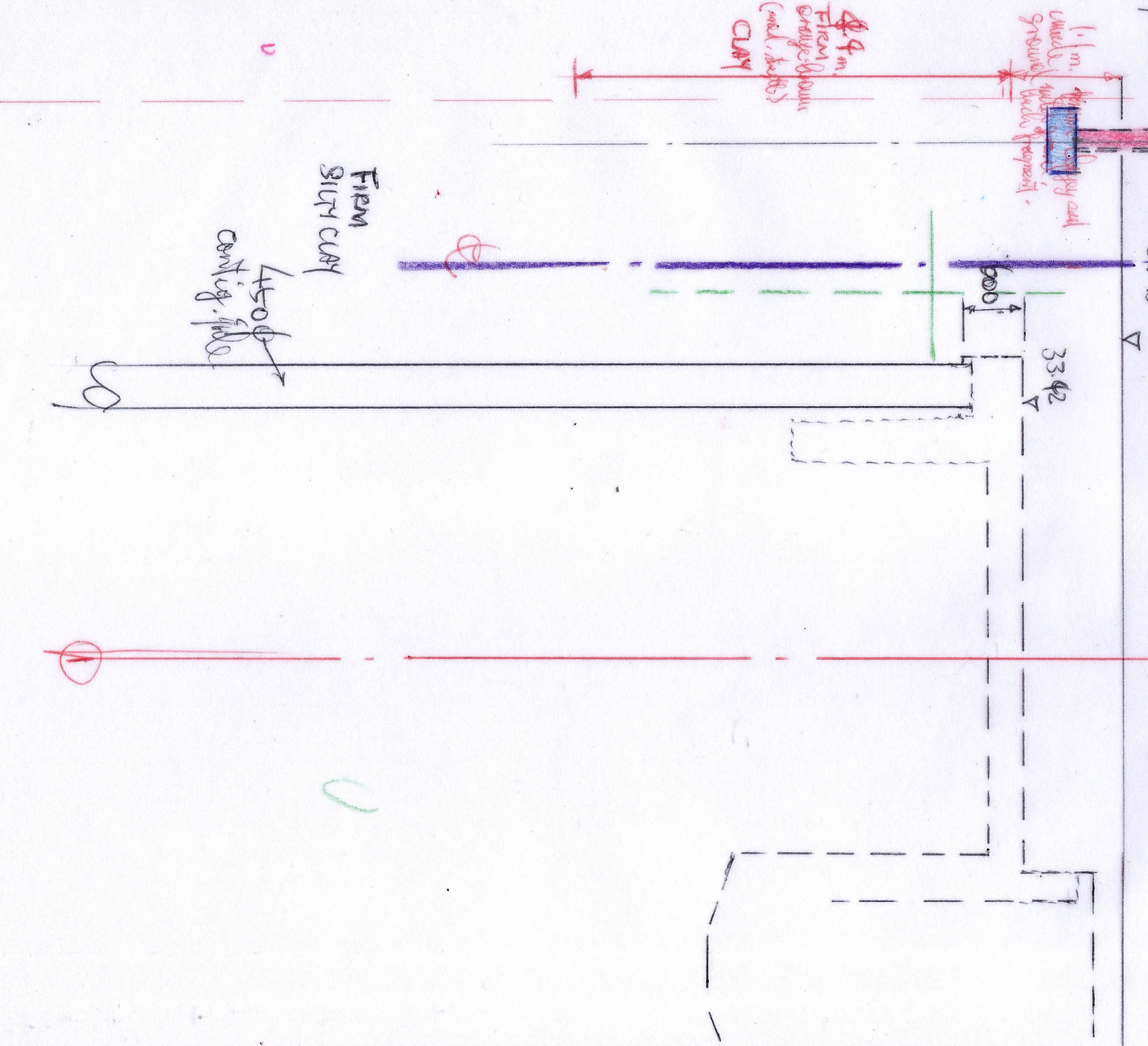
EXISTING  
 100 BRICK WIDEN  
 NEW WITH  
 LUTHERAN  
 STONE

1.1 m.  
 unexcavated  
 ground  
 level  
 of  
 pavement

approx. 1:5.2.3 on this extract

allow 2.2 thick pavement  
 75 bottom/side  
 450 working space.

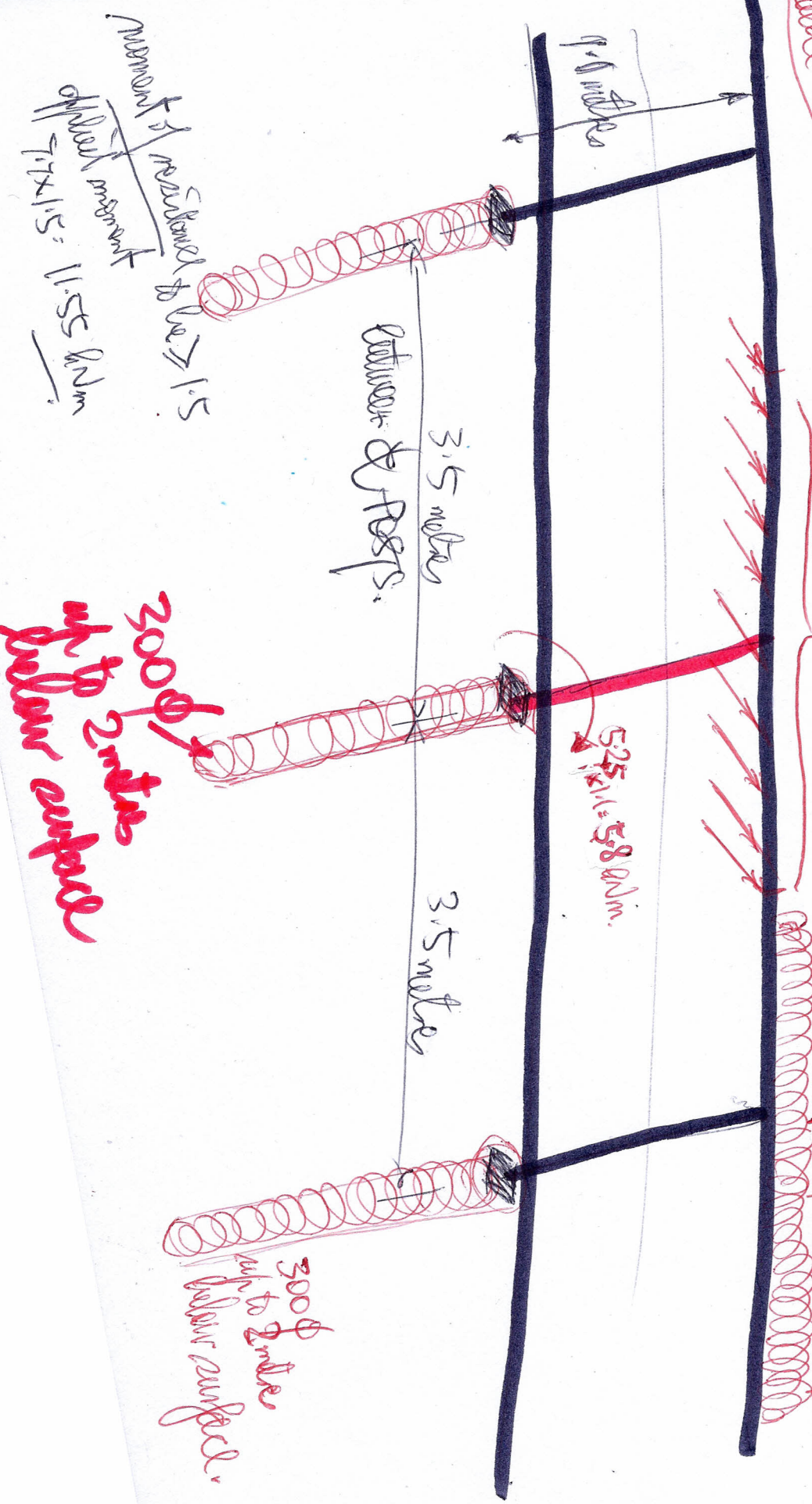
1



the least favourable situation of 80 kg force every 600 mm  
 800 newtons  $\times \frac{1000}{600} = 1333$  newtons per metre or mm  
 not less than 1.5 kN per metre

BS 6399  
 Table 4

total horizontal force at top of Post  
 $3.5 \text{ m} \times 1.5 \text{ kN/m} = 5.25 \text{ kN}$  per Post  
 1 on each post.  
 DOWNWARD  
 1 kN per metre MIN VERTICAL



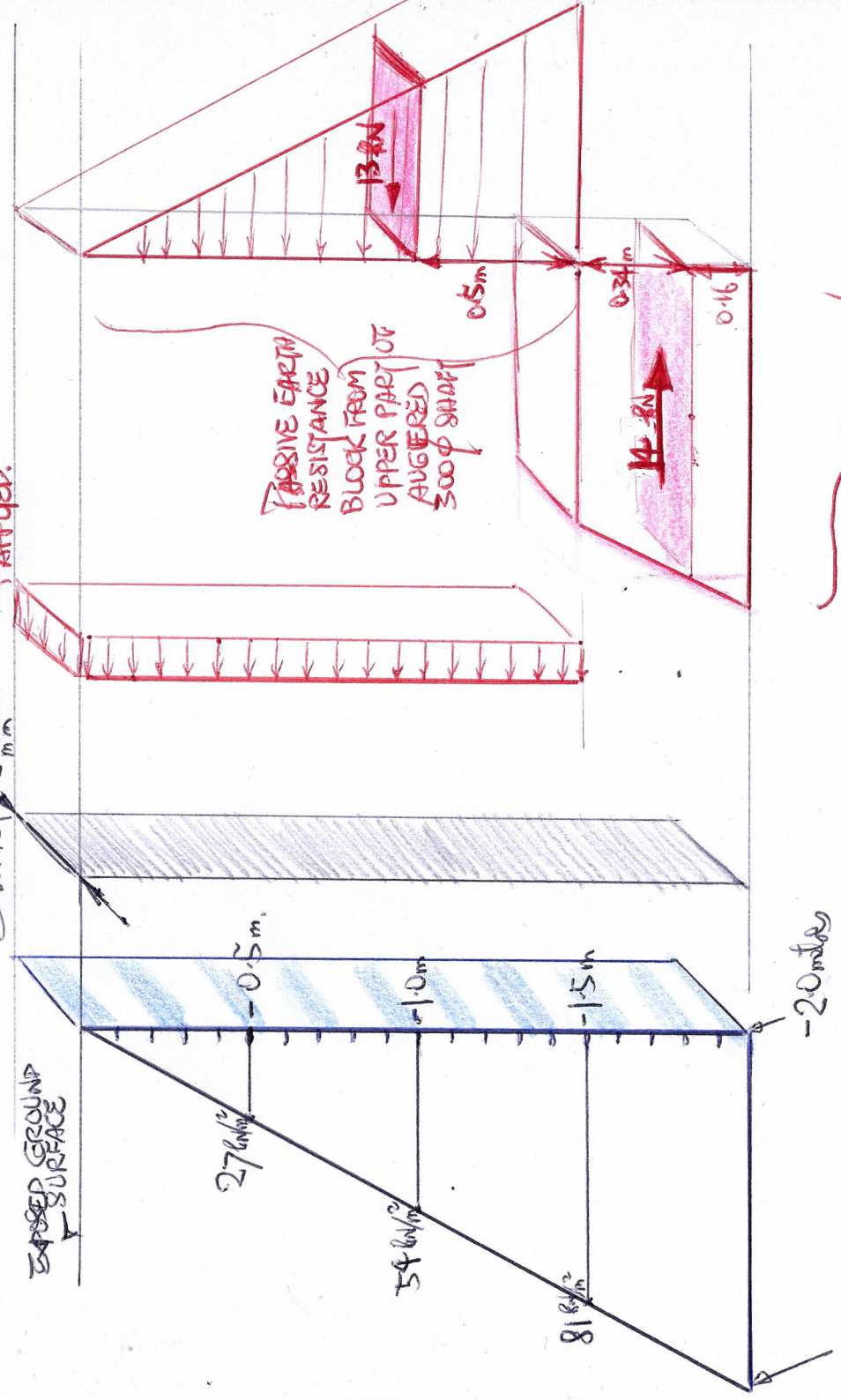
3 of 4

FORCE BLOCK  
 $40.5 \text{ kN/m}^2 \times (1.5 \times 0.3) \text{ m}^2$   
 $= 5.2 \text{ kN}$

RESISTANCE FORCE BLOCK  
 $5.2 \text{ kN}$  ORIGINAL HORIZONTAL FORCE APPLIED.

PROTECTED WIDTH FROM PILE SHAFT DIAMETER  $300 \text{ mm}$

$(8 \times 2 \times 3) = 108 \text{ kN/m}^2$



$18 \times 2 \times 3 = 108 \text{ kN/m}^2$   
 PASSIVE EARTH PRESSURE

PASSIVE EARTH RESISTANCE BLOCK FROM LOWER PART OF AUGERED  $300 \phi$  SHAFT

MOMENT OF RESISTANCE AGAINST OVERTURNING, FROM PASSIVE EARTH RESISTANCE BLOCKS

$(13 \text{ kN} \times 0.5 \text{ m} + 0.34 \text{ m}) = 10.9 \text{ kNm}$

RESISTANCE MOMENT IS LARGER THAN APPLIED OVERTURNING MOMENT

RATIO OF RESISTANCE MOMENT TO APPLIED OVERTURNING MOMENT:  $\frac{10.9}{5.8} = 1.88$  OK.

# Calculations



CHARTERED ENGINEERS  
BUILDING  
DESIGN  
CONSULTANTS

4 of 4

Job Ref:

Calc By:

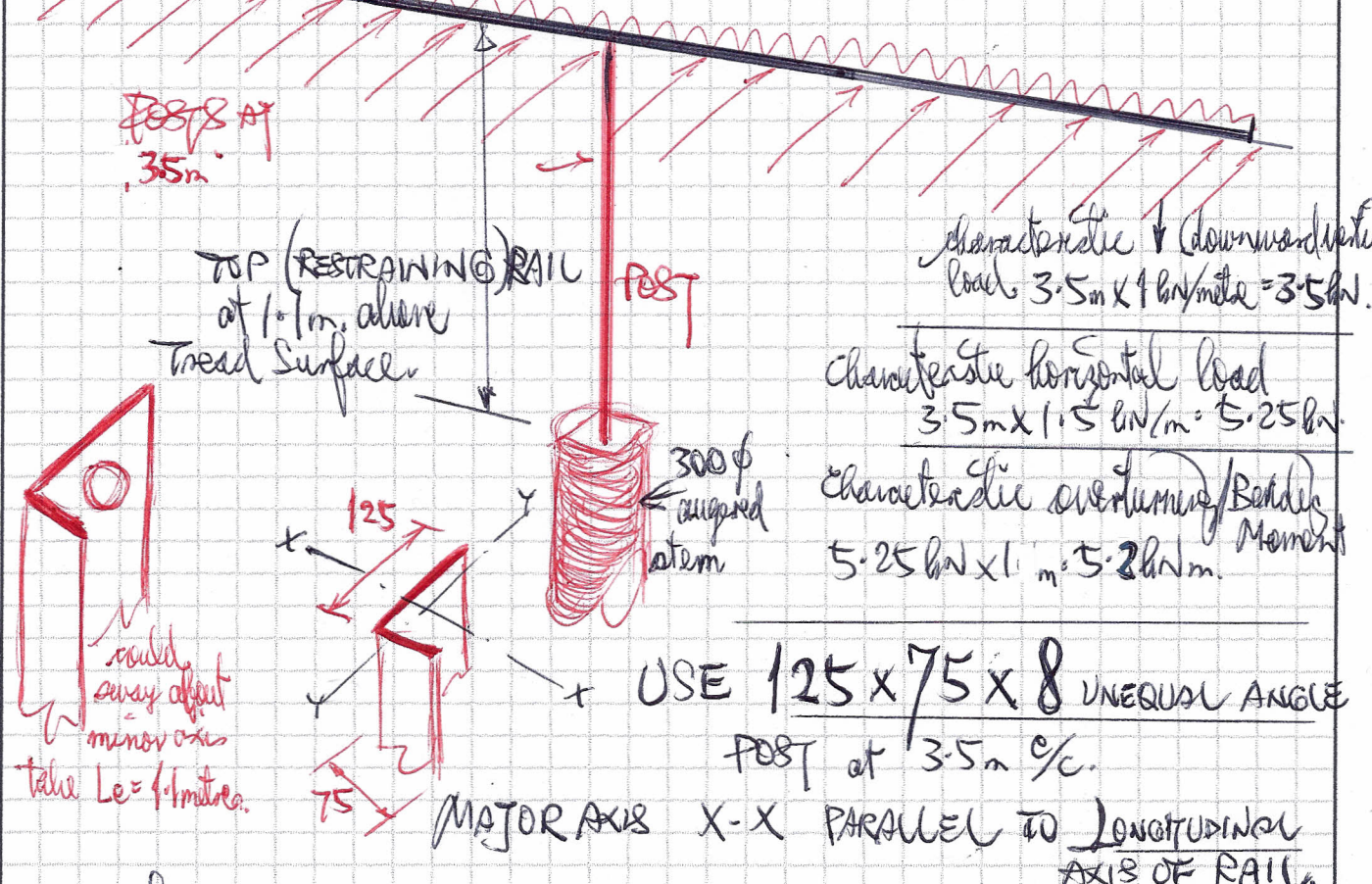
Checked:

Date May/June 2015

Project PRINCE ALBERT ROAD NW1 7SR

Page No

PARAPET SAFETY FENCE IMMEDIATELY ADJACENT TO, & PARALLEL TO FRONT MASONRY FENCE & FRONT CONTIGUOUS PILE WALL TO PROPOSED BASEMENT.



characteristic ↓ (downward vertical) load  $3.5m \times 1kn/m^2 = 3.5kn$

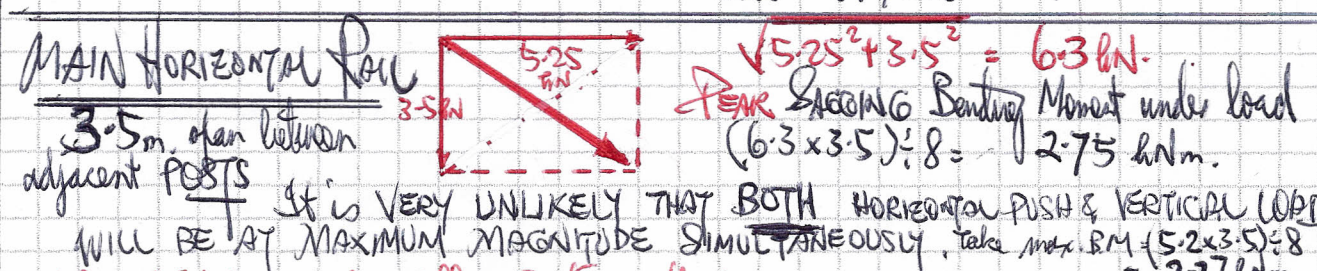
characteristic horizontal load  $3.5m \times 1.5kn/m = 5.25kn$

characteristic overturning/Bending Moment  $5.25kn \times 1m = 5.25knm$

could sway about minor axis take  $L_e = 1.1m$

\*  $\frac{L_e}{r_{yy}} = \frac{1100}{21} = 52$  ;  $\frac{D}{T} = \frac{125}{8} = 15.6$  ;  $P_c = 132N/mm^2$  ;  $P_{bc} = 180N/mm^2$

$\frac{P}{A} = \frac{3500N}{1550mm^2} = 2.2N/mm^2$  NEGLIGIBLY SMALL ;  $\frac{M}{Z_{xx}} = \frac{5.2 \times 10^6}{29.7 \times 10^3} = \pm 175N/mm^2$  OK



USE 76.1 Circular Hollow Section with 5mm WALL THICKNESS

$\frac{L_e}{r_o} = \frac{3500}{25.2} = 139$  ;  $\frac{P}{T} = \frac{76}{5} = 15$  ;  $P_{bc} = 122N/mm^2$  ;  $\frac{M}{Z} = \frac{2.27 \times 10^6}{18.6 \times 10^3} = \pm 122N/mm^2$  OK

ALTERNATIVE SECTION 90x90x8 EQUAL ANGLE OR 100x75x8 UNEQUAL ANGLE 75°

$\frac{L_e}{r} = \frac{3500}{27.5} = 127$  ;  $\frac{P}{T} = \frac{96}{8} = 11$  ;  $P_{bc} = 147N/mm^2$

$\frac{M}{Z_{xx}} = \frac{2.27 \times 10^6}{16.2 \times 10^3} = \pm 140N/mm^2$

$\frac{M}{Z_{xx}} = \frac{2.27 \times 10^6}{11.4 \times 10^3} = \pm 199N/mm^2$  OK

8.7kN/m

10.9 kN/m

10.6kN/m