BUILD DESIGN

5 Elmfield Road
Cheltenham
Glos GL51 9JH
01242 693047

DATE		SCALE	REV
10/05/16			
DRAWN	CHECKED	PROJECT No.	SHEET No
ASB		-	04

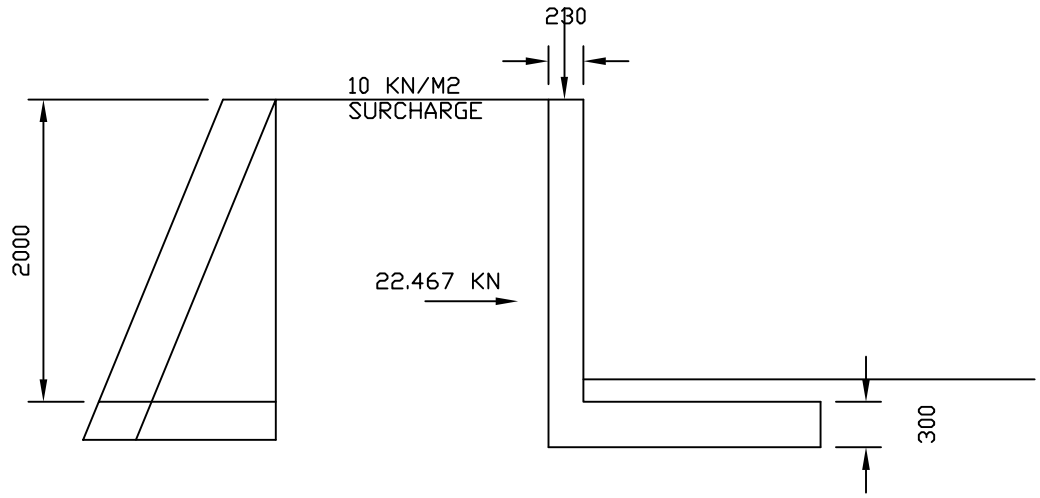
CLIENT

CONTRACT
5A SHEPHERDS HILL
HIGHGATE
LONDON

DESCRIPTION
BASEMENT EXTENSION

STRUCTURAL CALCULATIONS

SIDE BASEMENT WALLS



DESIGN OF WALL STEM

C OF G OF HORIZONTAL LOADS

10 KN/M2 SURCHARGE = 0.33 X 18 X 0.556 X 2 = 6.605 KN @ 2.0/2

RETAINED EARTH = 0.33 X 18 X 2.0 X 2.0/2 = 11.88 KN AT 0.667

ULT BENDING MOMENT = (6.605 X 1 + 11.88 X 2/3) X 1.5= 21.87 KNM

b = 1000, d = 230 - 50 = 1801mm. FK = 460 N/mm2. fcu = 30 N/mm2

k = 21.788 X 1000000/1000 X 180 X 180 X 30 = 0.0192

$z = 0.5 + \sqrt{0.25 - 0.0192/0.9} = 0.95$

Ast = 21.788 X 1000000/460 X 0.95 X 0.95 X 180 = 291.57mm2

PROVIDE T12 @ 200 CRS (565mm2)

DISTRIBUTION = 0.14 X 180 X 1000/100 = 252mm2

PROVIDE T10 BARS @ 200crs (393mm2)