

Roger F Marsden MSc Ceng MIStructE		consulting engineer	
4 Manston way Gateford Park Worksop S81 7NX Notts S81 7NX	tel/fax 01909 478001 mobile 07703 140188	job:	Hawthornes, Manchester Rd, Thurlston
		client:	Lindrick Construction
		date:	16th November 2018
		page No:	2

Factored Pressures

Gf = **1.4**

o/a wall height = 3.425 m
act press @ base of wall = 24.689 kN/sq.m
wall ht below GL = 0.300 m
pas press @ base of wall = 6.384 kN/sq.m
surch press @ wall base = 12.994 kN/sq.m
Mwall @ base = 124.387 kN.m

Base Design

soil width, w1 = 1.660 mm
maxM top steel = 33.541 kN.m
maxM bott steel = 53.160 kN.m
cover = **40** mm
bar dia = **10** mm
effective depth, d = 255 mm
fcu = **35** N/sq.mm
Mu = 355.04 kN.m
fst = **460** N/sq.mm

k (top)= 0.0147
lever arm factor = 0.98 (limit is 0.95)
la factor to use = 0.95
z top = 242.25 mm
Ast req'd (top) = 345.97 sq.mm

k (bottom)= 0.0234
lever arm factor = 0.97 (limit is 0.95)
la factor to use = 0.95
z top = 242.25 mm
Ast req'd (bottom) = 548.34 sq.mm

min % reinf = 390 sq.mm

Reinforced Blockwork Wall Design

Gms = **1.15**
fy = **460** N/sq.mm

Wall Design

o/a wall thickness = 540
ext leaf = 102.5 mm
internal leaf = 100 mm
o/a wall conc thickness : 337.5 mm

Mwall @ base = 124.387 kN.m
cover = **35** mm
bar dia = **12** mm
effective depth, d = 296.5 mm
fcu = **35** N/sq.mm
Mu = 480.001 kN.m
fst = **460** N/sq.mm
k = 0.040
z = 282.523

Ast req'd (face) = 1100.1 sq.mm
min % reinf = 438.75 sq.mm

bar centres = **100** mm
bar diameter = **12** mm
area/m = 1130.97 sq.mm

Summary

Wall

o/a concrete thickness = 337.5 mm
concrete strength = 35 N
wall bar diameter = 12 mm
bar type = twisted high yield
bar centres = 100 mm
maximum aggregate size = 10 mm

Base

concrete strength = 35 N
maximum aggregate size = 10 mm
base thickness = 300 mm
base mesh Bottom = B785 mm
base mesh Top = B503 mm