


150x90x24 PFC OVER TO
SUPPORT STAIRCASE PARTITION ABOVE
POSITIONED BELOW EXISTING TIMBER JOIST

330x100x150 DEEP PADSTONES



	PROJECT 5 ARCHITECTURE LLP 8 Waterson Street London E2 8HL T: +44 (0)20 7739 9131 F: +44 (0)20 7739 3887 E: info@p5a.co.uk	job title 56-58 FREDERICK STREET, LONDON WC1X 0ND drawing BASEMENT PLAN - PROPOSED
	Ellis and Moore Ltd CONSULTING ENGINEERS	

Drawing No 16262 / Sk01

SUPPORT TO STAIRCASE WALL OVER BASEMENT

Span of beam = 3.4m. (use blockwork wall as support)

Load from stairs at 2nd & 1st = $2 \times 2 = 4 \text{ kN/m}$
 ground floor = 2 kN/m
 wall ground to 3rd = $9 \times 0.75 = 7$
 $\underline{13 \text{ kN/m}}$

$$\therefore M_u = 1.5 \times 13 \times \frac{3.4^2}{8} = 28.2 \text{ kN.m}$$

$$150 \times 90 \times 24 \text{ PFC } M_b = 34.2 \text{ kN.m} - \text{OK}$$

$$\text{Reactions} = 13 \times 3.5/2 = 22.75 \text{ kN}$$

$$\begin{aligned} \text{Area of padstone on } 3.5 \text{ N/mm}^2 \text{ blockwork} \\ = \frac{22.75 \times 1.5 \times 3.5 \times 10^3}{1.5 \times 3.5} = 22750 \text{ mm}^2 \\ 330 \times 100 \times 150 \text{ deep} \end{aligned}$$

$$\begin{aligned} \text{Area of padstone in original brickwork} \\ = \frac{22.75 \times 1.5 \times 3.5 \times 10^3}{1.5 \times 4.1} = 19420 \end{aligned}$$

150 x 90 x 24
PFC

330 x 100 x 150
deep padstones

Check bearing pressure under blockwork.

wall is 2.5m long ; 2.5m high

$$\therefore \text{total load is } 2.5 \times 2.5 \times 1 + 22.75 = 28 \text{ kN}$$

concrete minimum basement slab is 100 deep

$$\therefore \text{max bearing stress} = \frac{28}{2.5 \times 0.3} = 37.3 \text{ kN/m}^2 - \text{OK}$$