

CALCULATIONS		Rhodes &partners	
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Project		Sheet no.	Revision
		C26601/01	
Subject		Date	By
		April 23	PRG
			Checked

STRUCTURAL CALCULATIONS FOR WORK AT

2 Bings Road, Whaley Bridge SK23 7ND

These calculations are based on the architectural arrangement on:

Drawing Nos. 2089/2C

By Barry Bradley (Tel. 01625 858244)

MATERIALS & WORKMANSHIP: These calculations are based on the assumption that the workmanship and materials used on site comply with the latest edition of the Building Regulations directed and undertaken by an experienced, competent building contractor. The building contractor is entirely responsible for the quality of the materials and workmanship used in carrying out the building work. All proprietary products are to be installed in accordance with the manufacturers' instructions.

All roof rafters, walls, floors and ceilings shall be tied together using wall/floor/ceiling and wall/wallplate/rafter ties of galvanised mild steel complying in size, thickness, fixing and spacing etc. with the latest edition of the Building Regulations. Dimensions in these calculations are only approximate and the builder must check the latest architectural drawings and measure up on site before ordering any materials.

CDM REGULATIONS 2015: CDM regulations apply to projects where construction work lasts longer than 30 working days and has more than 20 workers on site together at any point or if the project exceeds 500 person days. Such projects are legally notifiable to HSE. Wherever there is more than one contractor, the client must appoint a Principal Designer to be responsible for the co-ordination of health & safety during the pre-construction and construction phase of the project.

TEMPORARY WORKS: For alteration work requiring new openings in walls or the removal of existing walls, the builder is to follow the guidance in the BRE Good Building Guides Nos. 15 and 20 - "Providing temporary support during work on openings in external walls" and "Removing internal load-bearing walls in older dwellings". We advise against the use of "Strong-Boy" Acrow props where heavy loads are to be supported.

PARTY WALL ETC. ACT 1996: If the building work involves:

- work on an existing wall shared with another property or
- building on the boundary with a neighbouring property or
- excavating near a neighbouring building,

then the client must find out whether the work falls within the Act. If it does, the Act requires the client to notify all affected neighbours. We can if requested by our client, provide additional advice on these matters and if necessary act as **Party Wall Surveyor** for which an additional charge would be made.

EXTENT OF RESPONSIBILITY: Rhodes & Partners' responsibility extends only to the supply of structural calculations and does not include inspection of workmanship or materials on site. The builder is entirely responsible for all temporary works and for maintaining the stability of the new and existing structures during the work on site. We will if requested by our client, additionally provide advice regarding these matters and/or inspection of work on site, for which an additional charge will be made.

Date: 24/4/23

No. of sheets: 3

Author: Peter Graham

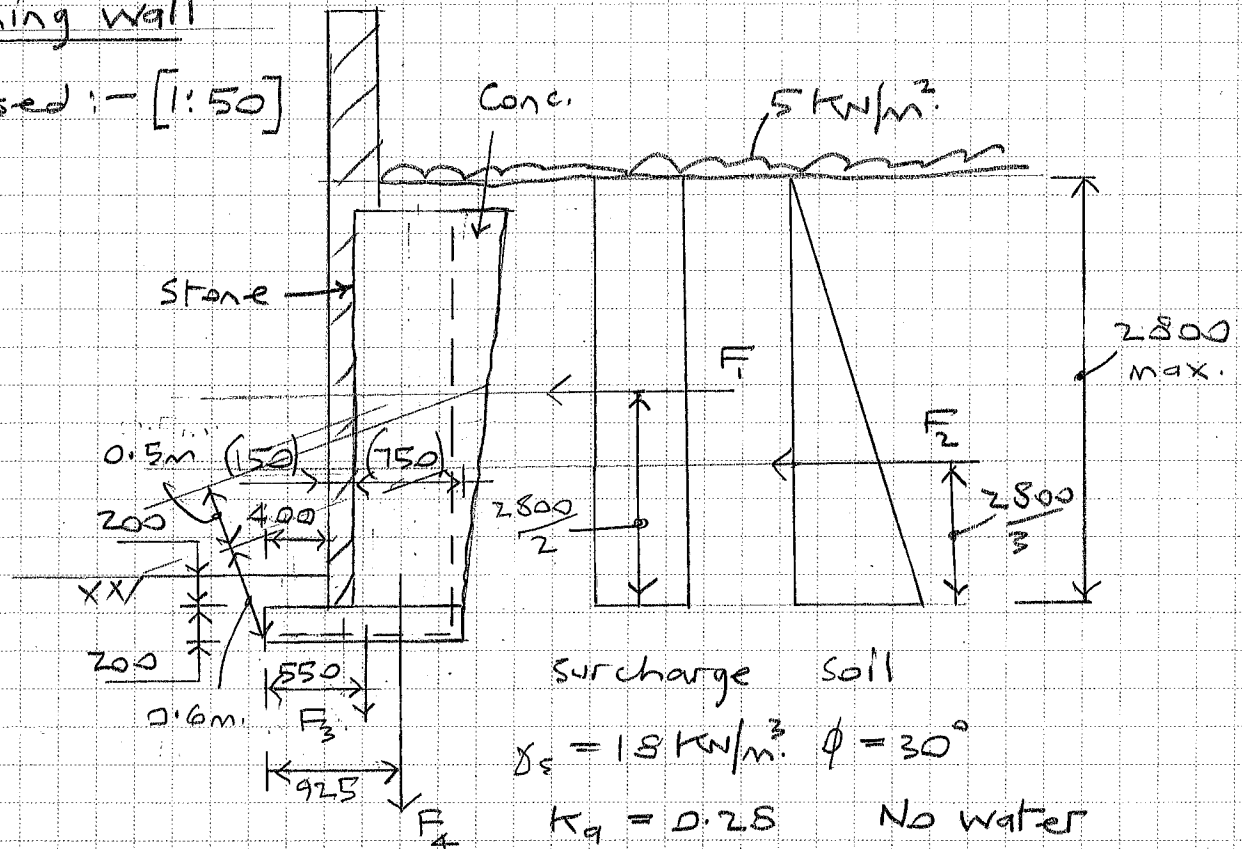
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Project <u>2 Bings Road, Whaley Bridge</u>	Sheet No. <u>C26601/02</u>	Rev
Subject <u>House extension</u>	Date <u>April 23</u>	Calcs. By <u>PRG</u>
		Chkd.

Retaining wall

Proposed: - [1:50]



$$F_1 = 5.0 \times 0.28 \times 2.8 = 3.9 \text{ kN}$$

$$F_2 = 18 \times 0.28 \times \frac{2.8^2}{2} = 19.8 \text{ kN}$$

$$F_3 = 24 \times 0.2 \times 1.3 = 6.2 \text{ kN}$$

$$F_4 = 24 \times 0.90 \times 2.8 = 60.5 \text{ kN}$$

$$M_A \text{ F. of } F_s \text{ against overturning} = \frac{(6.2)0.55 + (60.5)0.925}{(3.9)1.1 + (19.8)0.6} = \frac{59.4}{16.2} = 3.7 > 2.0 \therefore \text{O.K.}$$

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Check grd. bearing pressure

$$P = 60.2 + 60.5 = 66.7 \text{ kN} \quad M = (3.9 \times 1.3 + (19.8 \times 0.9 - (60.5 \times 0.375))) = 0.2 \text{ kN.m}$$

$$\therefore \text{Max. g.b.p.} = \frac{66.7}{1.3} = 51 \text{ kN/m}^2 < 200 \text{ kN/m}^2 \therefore \text{O.K.}$$

$$M_{\text{ult}}^{\text{max}} = (3.9 \times \frac{2.8}{2} \times 1.6) + (19.8 \times \frac{2.8}{3} \times 1.4) = 34.6 \text{ kN.m}$$

$$d = 750 - 50 - 10 - \frac{10}{2} = 685 \text{ mm}$$

$$\therefore \frac{M}{bd^2} = \frac{34.6 \times 10^6}{10^3 \times 685^2} = 0.07$$

$$A_s = 6850 \times 0.04 = 274 \text{ mm}^2$$

Use A393 mesh