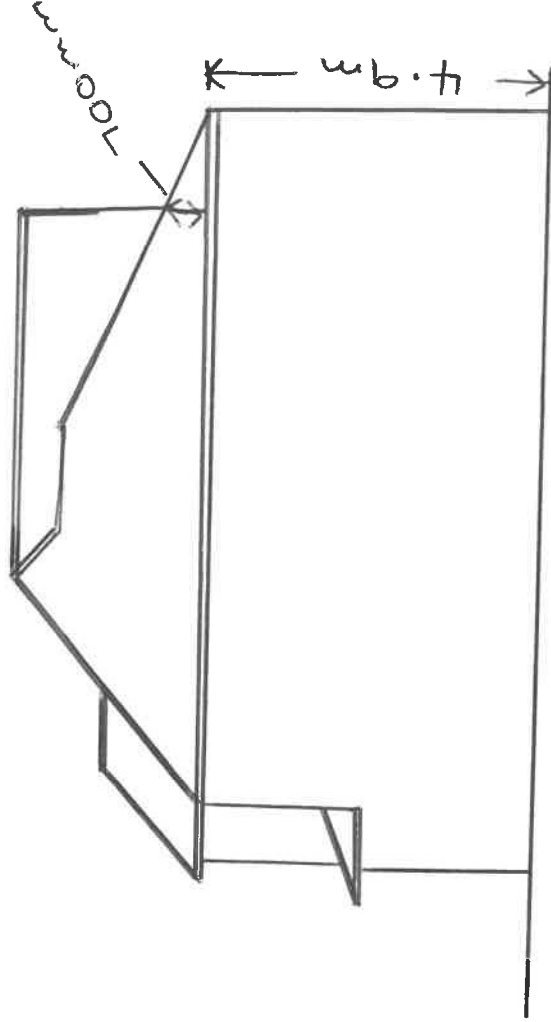
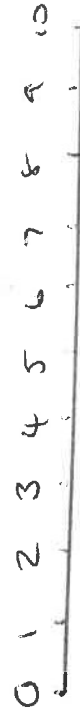


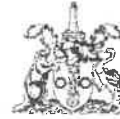
10 Brady" Cart,
Brockhall village.



side elevation



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Date :

JUNE 2021.

Scheme BRADYLL COURT, BROCKHALL.

Technical Ref:

ADDITIONAL FOUNDATION LOADS FOR FIRST FLOOR CONSTRUCTION OVER EXISTING GROUND FLOOR

REFER TO STRUCTURAL CALCULATIONS BY DJ LUGGARD AND
 ASSOCIATES DATED NOVEMBER 2017.

EXISTING EXTENSION IS BUILT ON A RAFT FOUNDATION
 WITH A STIFF EDGE BEAM OF 1200mm BEARING WIDTH.

PREVIOUS UNFACTORED LOADS ARE 28.5 k/m.

ADDITIONAL LOADS ARE:

FLOOR AT MAX. 1.8m @ 2.0 k/m² = 3.6 k/m.

WALL OVER 3.0m @ 4.5 k/m² = 13.5 k/m.

$\Sigma = 17.1 \text{ k/m.}$

ADDITIONAL LOAD = 17.1 k/m RESPECTING 1.2m

ADDITIONAL BEARING PRESSURE OF $17.1 / 1.2 = 14.3 \text{ k/m}^2$.

TOTAL BEARING PRESSURE = $28.5 + 14.3 = 42.8 \text{ k/m}^2$

Scheme _____

Calcs By: _____

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Date: _____

BEAMS SUPPORTING FIRST FLOOR ELEVATION OVER THE GARAGE.

SPAN 5.2m.

INNER LEAF:

$$\text{FLOOR OVER } 1.0\text{m} @ 2.0\text{kN/m}^2 = 10.4\text{kN}$$

$$\text{WALL OVER } 3.0\text{m} @ 2.0\text{kN/m}^2 = 31.2\text{kN}$$

$$\text{ROOF OVER } 2.0\text{m} @ 2.0\text{kN/m}^2 = 20.8\text{kN}$$

$$\Sigma = 62.4\text{kN}$$

OUTER LEAF:

$$\text{WALL OVER } 3.0\text{m} @ 2.5\text{kN/m}^2 = 39.0\text{kN}$$

$$\text{ROOF OVER } 0.8\text{m} @ 2.0\text{kN/m}^2 = 8.3\text{kN}$$

$$\Sigma = 47.3\text{kN}$$

$$\text{MAX. FACTORED LOAD SAY } 1.5 \times 62.4 = 93.6\text{kN}$$

$$\text{BM} = 93.6 \times 5.2 / 8 = 60.86\text{m}$$

for max. deflection of 10.0mm, $I_{xx} < \text{REQD}$

$$= \frac{5}{384} \times \frac{93.6 \times 10^3 \times 5200^3}{205 \times 10^3 \times 10.0 \times 10^4} = 5573\text{cm}^4$$

TRY 254 x 146 x 37 UB.

$$M_b = 62.0\text{kNm}, I_{xx} = 55600\text{cm}^4 \sim \text{ASSUME OK}$$

$$\text{Nominal reaction of BOTH BEAMS} = 54.9\text{kN}$$

$$= (62.4 + 47.3) / 2$$

$$\text{FACTORED REACTION} = 1.5 \times 54.9 = 82.3\text{kN}$$

TRY 330 x 330 SOLID 7.5/mm² CONCRETE BLOCK PIERS

$$h_{ef}/k_{ef} = 2750/330 = 8.35$$

$$e_k \leq 0.25$$

$$\beta = 0.6f$$

$$\text{SMALL PLAIN AREA FACTOR} = 0.86$$

$$f_k = 8.40\text{N/mm}^2$$

$$\gamma_m = 3.1$$

$$\text{DVL} = \frac{0.66 \times 0.86 \times 330^2 \times 6.4}{3.1 \times 10^3} = 127.6\text{kN}$$

Scheme _____

Calcs By: _____

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$$\text{MAX. FACTORED BEAM REACTION} = \frac{1.5 \times 62.4}{2} = 46.8 \text{ kN}$$

$$\text{STIFF BEARING AREA} = 600 \times 76.1 = 7610 \text{ mm}^2$$

$$\text{DIRECT BEARING STRESS} = 46.8 \times 10^3 / 7610 = 6.15 \text{ N/mm}^2$$

$$\text{Fcu REDD. FOR BEARING PAD} = 2.5 \times 6.1 = 15.3 \text{ N/mm}^2$$

USE 2 NO 254 x 146 x 37 GB'S

ON 330 x 330 x 225 C30 CONCRETE

PADSTONES ON 330 x 330 SOLID

7.0 N/mm² CONCRETE BLOCK PERS

BUILT OFF EXISTING RAFT FOUNDATION

(ADD DEEPS WOODS BEHIND THE BEAMS TO ALLOW FOR 10.0mm CENTRAL DEFLECTION OF THE BEAMS)

Scheme

Calcs By:

Date:

Technical Ref:

Roof Slope to eave

SECTION THROUGH AT 25° AND 40°

