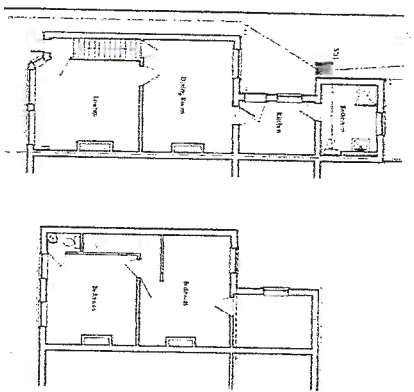
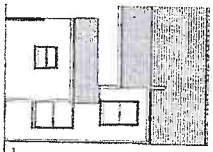


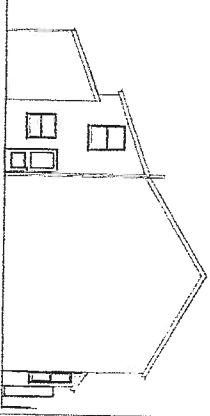
EXISTING PLANS



EXISTING GROUND & FIRST FLOOR LAYOUT 1:100

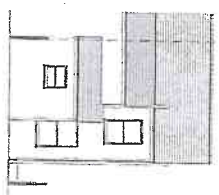


EXISTING SOUTH ELEVATION 1:100

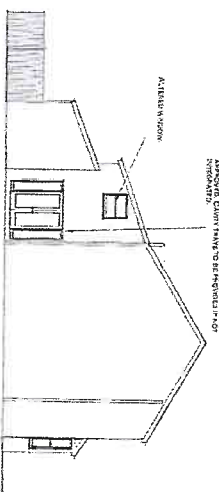


EXISTING EAST ELEVATION 1:100

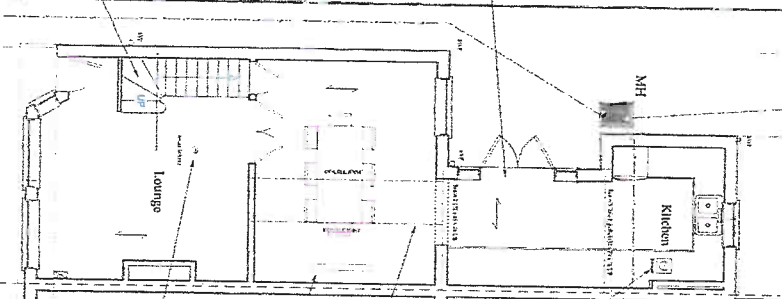
PROPOSED PLANS



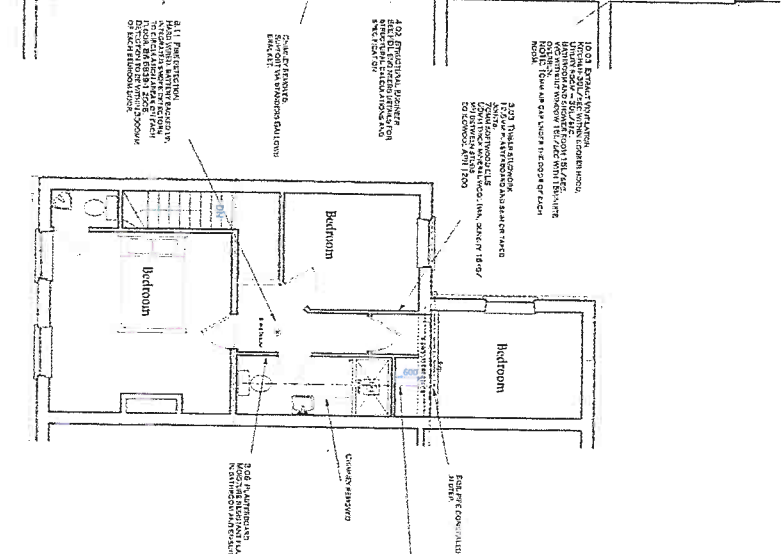
PROPOSED SOUTH ELEVATION 1:100



PROPOSED EAST ELEVATION 1:100



PROPOSED GROUND FLOOR LAYOUT 1:50



PROPOSED FIRST FLOOR LAYOUT 1:50

7.01 GROUND FLOOR
 The ground floor of the proposed development is to be a two-storey building with a total floor area of 1,100 sq m. The ground floor is to be divided into a living room, dining room, kitchen, lounge, and a central hallway. A mechanical room (MH) is also shown.

7.02 FIRST FLOOR
 The first floor of the proposed development is to be a two-storey building with a total floor area of 1,100 sq m. The first floor is to be divided into three bedrooms, a bathroom, and a central hallway. A staircase is also shown.

7.03 EXISTING BUILDING
 The existing building is a two-storey building with a total floor area of 1,100 sq m. The existing building is to be demolished and replaced by the proposed development.

7.04 EXISTING SOUTH ELEVATION
 The existing south elevation of the building is shown in the drawing. The proposed south elevation is shown in the drawing.

7.05 EXISTING EAST ELEVATION
 The existing east elevation of the building is shown in the drawing. The proposed east elevation is shown in the drawing.

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.

2. THE PROPOSED DEVELOPMENT IS TO BE A TWO-STOREY BUILDING WITH A TOTAL FLOOR AREA OF 1,100 SQ M.

3. THE PROPOSED DEVELOPMENT IS TO BE DEMOLISHED AND REPLACED BY THE PROPOSED DEVELOPMENT.

4. THE PROPOSED DEVELOPMENT IS TO BE DIVIDED INTO A LIVING ROOM, DINING ROOM, KITCHEN, LOUNGE, AND A CENTRAL HALLWAY.

5. THE PROPOSED DEVELOPMENT IS TO BE DIVIDED INTO THREE BEDROOMS, A BATHROOM, AND A CENTRAL HALLWAY.

6. A MECHANICAL ROOM (MH) IS ALSO SHOWN.

7. A STAIRCASE IS ALSO SHOWN.

8. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.

9. THE PROPOSED DEVELOPMENT IS TO BE A TWO-STOREY BUILDING WITH A TOTAL FLOOR AREA OF 1,100 SQ M.

10. THE PROPOSED DEVELOPMENT IS TO BE DEMOLISHED AND REPLACED BY THE PROPOSED DEVELOPMENT.

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.

2. THE PROPOSED DEVELOPMENT IS TO BE A TWO-STOREY BUILDING WITH A TOTAL FLOOR AREA OF 1,100 SQ M.

3. THE PROPOSED DEVELOPMENT IS TO BE DEMOLISHED AND REPLACED BY THE PROPOSED DEVELOPMENT.

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5. THE PROPOSED DEVELOPMENT IS TO BE DIVIDED INTO THREE BEDROOMS, A BATHROOM, AND A CENTRAL HALLWAY.

6. A MECHANICAL ROOM (MH) IS ALSO SHOWN.

7. A STAIRCASE IS ALSO SHOWN.

8. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.

9. THE PROPOSED DEVELOPMENT IS TO BE A TWO-STOREY BUILDING WITH A TOTAL FLOOR AREA OF 1,100 SQ M.

10. THE PROPOSED DEVELOPMENT IS TO BE DEMOLISHED AND REPLACED BY THE PROPOSED DEVELOPMENT.

SCALE 1:50 & 1:100

PLANNING PERMISSION

THE DRAUGHTSMAN ARCHITECTURAL

EMAIL: INFO@THE-DRAUGHTSMAN.CO.UK
 WWW.THE-DRAUGHTSMAN.CO.UK

DRAWN BY: N. KENNEY

CURT: 01702 295653

MR. J. BELL

26 CAULFIELD ROAD
 SHOEBURNESS
 ESSEX S53 9LA

DATE: 3/12/2015

SCALE SHEET A1
 1:500, 1:50 & 1:100

DRIVING TITLE: EXISTING & PROPOSED LAYOUT & ELEVATIONS

CRINA/KI/OI

NO. 485

LAABC

Building Consistency



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07775 865883

Project		26 Caulfield Road		Job Ref. 15991	
Section		Internal Alterations		Sheet no./rev. CR 1	
Calc. by K. Leach	Date 12/03/2015	Chk'd by	Date	App'd by	Date

Calculations for:
26 Caulfield Road
Internal Alterations

Calculations for:
The Draughtsman

12th March 2015



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Project		26 Caulfield Road		Job Ref.		15991	
Section		Internal Alterations		Sheet no./rev.		CR 2	
Calc. by	Date	Chk'd by	Date	App'd by	Date		
K. Leach	12/03/2015						

LOADING

Roof

Permanent

$$R_p = 0.85 \text{ kN/m}^2$$

Variable

$$R_v = 0.625 \text{ kN/m}^2$$

Floors

Permanent

$$F_p = 0.5 \text{ kN/m}^2$$

Variable

$$F_v = 1.5 \text{ kN/m}^2$$

External wall

$$EW_p = 4.5 \text{ kN/m}^2$$

BEAM 1 - SUPPORTING ROOF

Loading

Roof

Permanent

$$R_1 = R_p * 3.55\text{m} = \underline{3.02} \text{ kN/m}$$

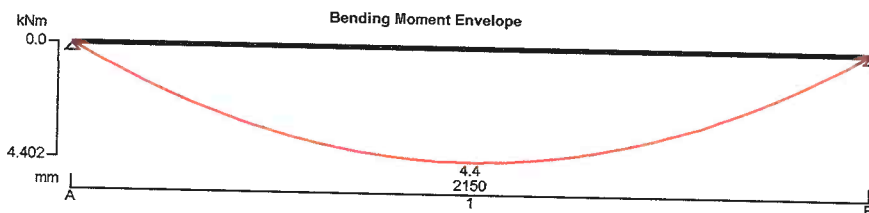
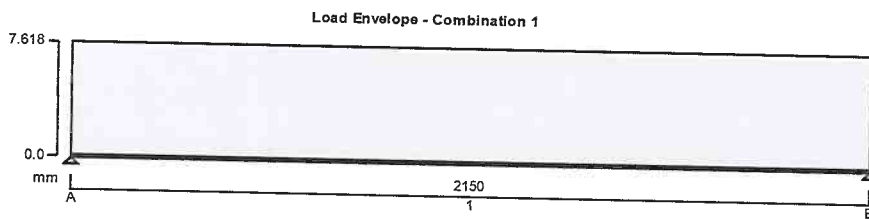
Variable

$$R_2 = R_v * 3.55\text{m} = \underline{2.22} \text{ kN/m}$$

STEEL BEAM ANALYSIS & DESIGN (EN1993-1-1:2005)

In accordance with EN1993-1-1:2005 incorporating Corrigenda February 2006 and April 2009 and the UK national annex

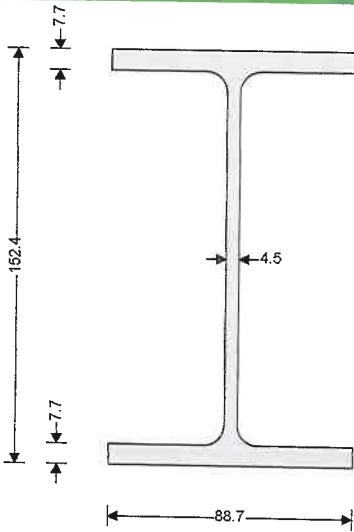
TEDDS calculation version 3.0.13





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Project		26 Caulfield Road		Job Ref.		15991	
Section				Internal Alterations			
Sheet no./rev.				CR 4			
Calc. by	Date	Chk'd by	Date	App'd by	Date		
K. Leach	12/03/2015						



Section classification **Class 1**

Check shear - Section 6.2.6

Design shear force $V_{Ed} = 8$ kN

Design shear resistance $V_{c,Rd} = 167.6$ kN

PASS - Design shear resistance exceeds design shear force

Check bending moment - Section 6.2.5

Design bending moment $M_{Ed} = 4.4$ kNm

Des. bending resist. moment $M_{c,Rd} = 43.8$ kNm

Slenderness ratio for lateral torsional buckling

LTB slenderness ratio $\bar{\lambda}_{LT} = 1.102$

Limiting slenderness ratio $\bar{\lambda}_{LT,0} = 0.400$

$\bar{\lambda}_{LT} > \bar{\lambda}_{LT,0}$ - Lateral torsional buckling cannot be ignored

Design resistance for buckling - Section 6.3.2.1

Des. buckling resist. moment

$M_{b,Rd} = 28.6$ kNm

PASS - Design buckling resistance moment exceeds design bending moment

Check vertical deflection - Section 7.2.1

Consider deflection due to permanent and variable loads

Limiting deflection $\delta_{im} = 6$ mm

Maximum deflection $\delta = 0.857$ mm

PASS - Maximum deflection does not exceed deflection limit

BEAM 2 - SUPPORTING REAR WALL

Loading

Floor

Permanent

$$F1 = F_p * 2m = 1.00 \text{ kN/m}$$

Variable

$$F2 = F_v * 2m = 3.00 \text{ kN/m}$$

Partitions

$$P1 = 0.4 \text{ kN/m}^2 * 2.4m * 2m = 1.92 \text{ kN}$$



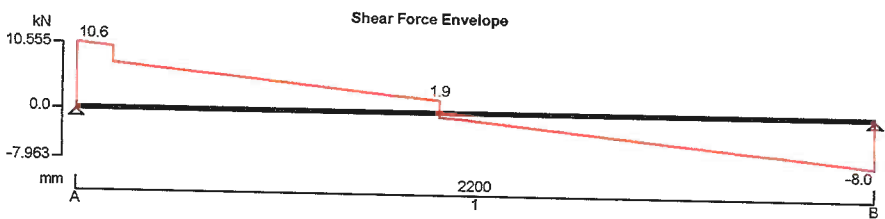
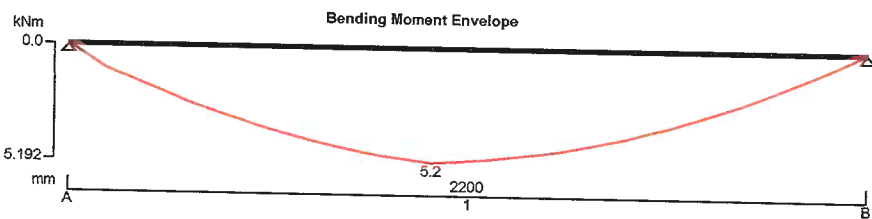
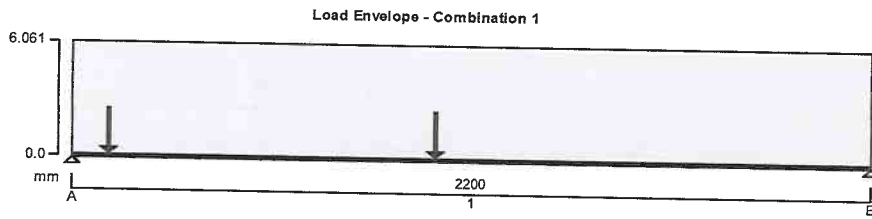
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Project		26 Caulfield Road		Job Ref.		15991	
Section				Internal Alterations			
Calc. by		Date		Chk'd by		Date	
K. Leach		12/03/2015				App'd by	
						Date	

STEEL BEAM ANALYSIS & DESIGN (EN1993-1-1:2005)

In accordance with EN1993-1-1:2005 incorporating Corrigenda February 2006 and April 2009 and the UK national annex

TEDDS calculation version 3.0.13



Support conditions

Support A

Vertically restrained
 Rotationally free

Support B

Vertically restrained
 Rotationally free

Applied loading

Beam loads

Permanent self weight of beam $\times 1$
 Permanent full UDL 1 kN/m
 Variable full UDL 3 kN/m



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Project		26 Caulfield Road		Job Ref. 15991	
Section		Internal Alterations		Sheet no./rev. CR 6	
Calc. by K. Leach	Date 12/03/2015	Chk'd by	Date	App'd by	Date

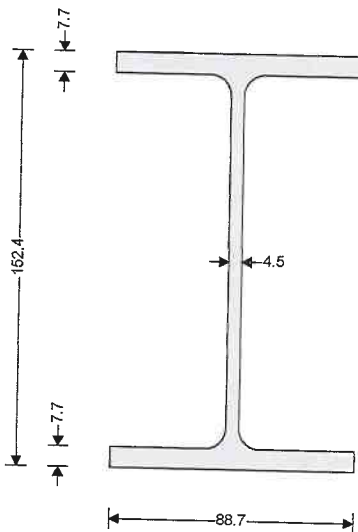
Permanent point load 1.92 kN at 100 mm
 Permanent point load 1.92 kN at 1000 mm

Analysis results

Maximum moment	$M_{max} = 5.2$ kNm	$M_{min} = 0$ kNm
Maximum shear	$V_{max} = 10.6$ kN	$V_{min} = -8$ kN
Deflection	$\delta_{max} = 1$ mm	$\delta_{min} = 0$ mm
Maximum reaction at support A	$R_{A,max} = 10.6$ kN	$R_{A,min} = 10.6$ kN
Unfactored permanent load reaction at support A	$R_{A,Permanent} = 4.2$ kN	
Unfactored variable load reaction at support A	$R_{A,Variable} = 3.3$ kN	
Maximum reaction at support B	$R_{B,max} = 8$ kN	$R_{B,min} = 8$ kN
Unfactored permanent load reaction at support B	$R_{B,Permanent} = 2.2$ kN	
Unfactored variable load reaction at support B	$R_{B,Variable} = 3.3$ kN	

Section details

Section type UKB_152x89x16 (Tata Steel Advance) Steel grade S355



Section classification Class 1

Check shear - Section 6.2.6

Design shear force $V_{Ed} = 11$ kN

Design shear resistance $V_{c,Rd} = 167.6$ kN

PASS - Design shear resistance exceeds design shear force

Check bending moment - Section 6.2.5

Design bending moment $M_{Ed} = 5.2$ kNm

Des. bending resist. moment $M_{c,Rd} = 43.8$ kNm

Slenderness ratio for lateral torsional buckling

LTB slenderness ratio $\bar{\lambda}_{LT} = 1.117$

Limiting slenderness ratio $\bar{\lambda}_{LT,0} = 0.400$

$\bar{\lambda}_{LT} > \bar{\lambda}_{LT,0}$ - Lateral torsional buckling cannot be ignored



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Project		26 Caulfield Road		Job Ref.		15991	
Section				Internal Alterations			
Sheet no./rev.				CR 7			
Calc. by	Date	Chk'd by	Date	App'd by	Date		
K. Leach	12/03/2015						

Design resistance for buckling - Section 6.3.2.1

Des. buckling resist. moment $M_{b,Rd} = 28.2$ kNm

PASS - Design buckling resistance moment exceeds design bending moment

Check vertical deflection - Section 7.2.1

Consider deflection due to permanent and variable loads

Limiting deflection $\delta_{lim} = 6.1$ mm Maximum deflection $\delta = 0.997$ mm

PASS - Maximum deflection does not exceed deflection limit

BEAM 3 - BEAM OVER KITCHEN

Loading

Roof

Permanent

$$R1 = Rp * 2.8m = 2.38 \text{ kN/m}$$

Variable

$$R2 = Rv * 2.8m = 1.75 \text{ kN/m}$$

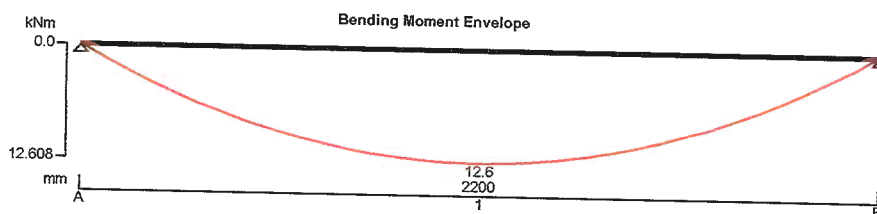
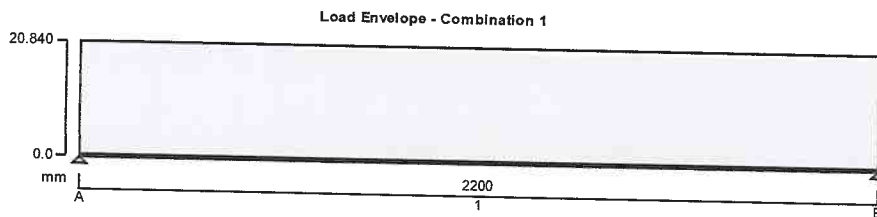
Wall

$$EW1 = EWp * 2.4m = 10.80 \text{ kN/m}$$

STEEL BEAM ANALYSIS & DESIGN (EN1993-1-1:2005)

In accordance with EN1993-1-1:2005 incorporating Corrigenda February 2006 and April 2009 and the UK national annex

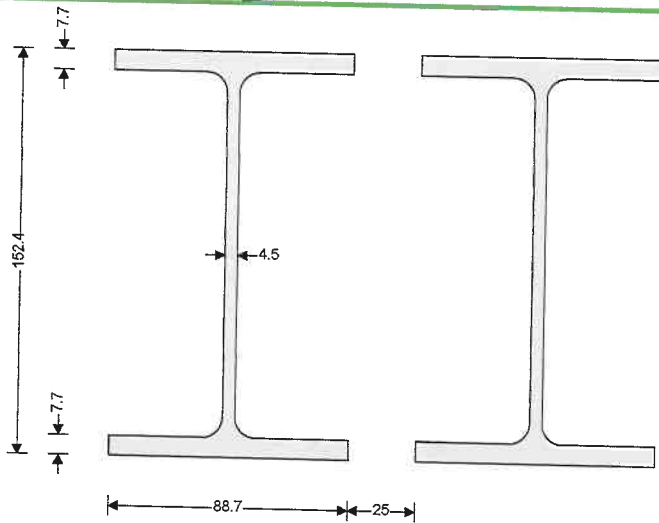
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Project 26 Caulfield Road		Job Ref. 15991	
Section Internal Alterations		Sheet no./rev. CR 9	
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Section classification **Class 1**

Check shear - Section 6.2.6

Design shear force $V_{Ed} = 23$ kN

Design shear resistance $V_{c,Rd} = 335.2$ kN

PASS - Design shear resistance exceeds design shear force

Check bending moment - Section 6.2.5

Design bending moment $M_{Ed} = 12.6$ kNm

Des. bending resist. moment $M_{c,Rd} = 87.5$ kNm

Slenderness ratio for lateral torsional buckling

LTB slenderness ratio $\bar{\lambda}_{LT} = 1.117$

Limiting slenderness ratio $\bar{\lambda}_{LT,0} = 0.400$

$\bar{\lambda}_{LT} > \bar{\lambda}_{LT,0}$ - Lateral torsional buckling cannot be ignored

Design resistance for buckling - Section 6.3.2.1

Des. buckling resist. moment

$M_{b,Rd} = 56.3$ kNm

PASS - Design buckling resistance moment exceeds design bending moment

Check vertical deflection - Section 7.2.1

Consider deflection due to permanent and variable loads

Limiting deflection $\delta_{lim} = 6.1$ mm

Maximum deflection $\delta = 1.327$ mm

PASS - Maximum deflection does not exceed deflection limit

MASONRY BEARING DESIGN (BS5628)

Try 250x100x20 spreader plates under all beams

MASONRY BEARING DESIGN TO BS5628-1:2005

Masonry details

Masonry type

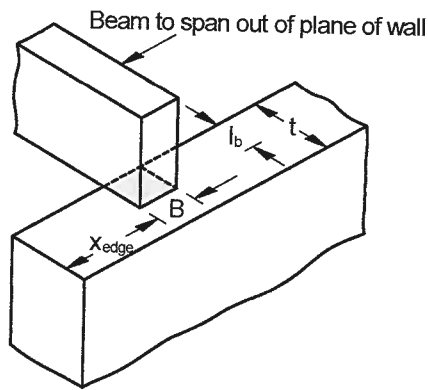
Clay or calcium silicate bricks



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Project 26 Caulfield Road			Job Ref. 15991		
Section Internal Alterations			Sheet no./rev. CR 10		
Calc. by K. Leach	Date 12/03/2015	Chk'd by	Date	App'd by	Date

Compressive strength	$p_{unit} = \underline{10.0} \text{ N/mm}^2$	Mortar designation	<u>ii</u>
Masonry units	<u>Category II</u>	Construction control	<u>Normal</u>
Partial safety factor	$\gamma_m = \underline{3.5}$	Characteristic strength	$f_k = \underline{3.8} \text{ N/mm}^2$
Leaf thickness	$t = \underline{100} \text{ mm}$	Effective wall thickness	$t_{ef} = \underline{215} \text{ mm}$
Wall height	$h = \underline{2400} \text{ mm}$	Effective height of wall	$h_{ef} = \underline{1800} \text{ mm}$



Bearing details

Beam spanning out of plane of wall

Width of bearing $B = \underline{250} \text{ mm}$

Edge distance $x_{edge} = \underline{0} \text{ mm}$

Length of bearing $l_b = \underline{100} \text{ mm}$

Loading details

Concentrated dead load $G_k = \underline{15} \text{ kN}$

Concentrated imposed load $Q_k = \underline{2} \text{ kN}$

Design concentrated load

$F = \underline{23.8} \text{ kN}$

Distributed dead load $g_k = \underline{0.0} \text{ kN/m}$

Distributed imposed load $q_k = \underline{0.0} \text{ kN/m}$

Design distributed load $f = \underline{0.0} \text{ kN/m}$

Masonry bearing type

Bearing type Not applicable

Bearing safety factor $\gamma_{bear} = \underline{1.00}$

Check design bearing without a spreader

Design bearing stress $f_{ca} = \underline{0.950} \text{ N/mm}^2$

Allowable bearing stress $f_{cp} = \underline{1.086} \text{ N/mm}^2$

PASS - Allowable bearing stress exceeds design bearing stress

Check design bearing at $0.4 \times h$ below the bearing level

Design bearing stress $f_{ca} = \underline{0.196} \text{ N/mm}^2$

Allowable bearing stress $f_{cp} = \underline{1.075} \text{ N/mm}^2$

PASS - Allowable bearing stress at $0.4 \times h$ below bearing level exceeds design bearing stress