Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 12 of
Project:	Designed by:	Date:
Title:	Checked by:	Date:
Subject:		

Reference:

6.0 Designing Pad stone : To BS 5628-Pt1

$F_{max} = 83\ kN$ ULS from B2

$\gamma_m = 3.5$ worst case

$b = 100\ mm$ half of party wall

BS5628 Table 2 $f_{lc} = 4.1\ N/mm^2$ for brick of $10\ N/mm^2$

$$l_b = \frac{F_{ULS}\,\gamma_m}{f_{lc}\,b} = \frac{83000 \times 3.5}{4.1 \times 100} = 709\ mm$$

L th w

∴ USG $720 \times 20 \times 100$ steel plates on bearing pads.

Calculation Sheet		
Project:	CSDS Civil and Structural Design Solutions Limited	Sh 11 of
Title:	Designed by: Date:	
Subject:	Checked by: Date:	
Reference:		

5.0 Designing Lintels: TO BS 5628 - Pt 1

6.0.1 Designing lintel Mark L1+L2 Marked up Drawing.

- Load calculation from Roof

P1P02 DL+LL+WL = 1.68/0.4 = 4.2 KN/m

- wt of bifold door can assume = 1.00 KN/m
- wt of wall on top. 3.3 x 0.6 = 1.98 KN/m
- Sw of lintel assumed = 0.25 KN/m

Total UDL = 7.2 KN/m

$l_T = 4.0 + 2 \times 0.15 = 4.3$ m

∴ Total load/lintel = 7.2 x 4.3 = 31 KN

USG CX 90/100. Extra Heavy Duty Catnic Lintel for lintel Mark L1 — 1

+ USG CG-90/100 Standard Duty Catnic Lintel for Lintel Mark L2+L3+L4

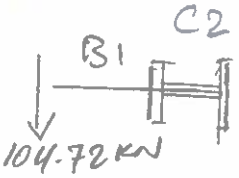
Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 10 of
Project:	Designed by: Date:	
Title:	Checked by: Date:	
Subject:		

Reference: 4-0

Designing Steel Columns: To BS5950-Pt 1

x Using BS 5950-Pt 1 Columns in simple Construction

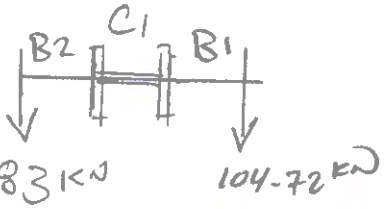
LOAD CALCULATIONS



Max Axial = 104.72 + 83 = 187.72 KN

$M_{x①}$ = 0.2 x 104.72 = 20.95 KN.m

$M_{x②}$ = 0.2 x (104.72 − 83/2) (DL only) = 12.64 KN.m



$M_{y\ for\ stability}$ = 2.5% Fx h =

$M_{y\ max}$ = 2.5/100 x 187.72 x 2.4 = 11.27 KN.m (Con)

TRY 152 x 152 x 37 Kg/m UKC

A_{xx} = 47.1 Cm^2, r_y = 3.87 Cm, S_{xx} = 309 Cm^3, Z_{yy} = 91.5 Cm^3

$\lambda = l_e/r_y$ = 2400/38.7 = 62

$\lambda_L = 0.5\lambda = 0.5 \times 62 = 31$

BS5950 Table 24: P_c = 197 N/mm² ⇒ $F_c = P_c A_g$ = 197 x 47.1/10 = 927 KN

BS5950 Table 16: P_b = 274 N/mm² ⇒ $M_b = P_b S_x$ = 274 x 309/10^3 = 84.6 KN.m

$M_{cy} = P_y Z_y$ = 275 x 91.5/10^3 = 25.1 KN.m

o Overall buckling check

$$\frac{F_x}{F_c} + \frac{M_x}{M_b} + \frac{M_y}{M_{cy}} \leq 1.0$$

$$\frac{187.72}{927} + \frac{20.95}{84.6} + \frac{11.27}{25.1} = 0.90 < 1.0 \therefore OK$$

∴ USE 152 x 152 x 37 Kg/m UKC for Column Mark C1+C2

Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 09 of
Project:	Designed by: Date:	
Title:	Checked by: Date:	
Subject:		

Reference:

D = 206.2 mm, t_w = 7.9 mm, r_y = 5.18 cm, S_{xx} = 567 cm^3, u = 0.848

X = 15.8

- Design for shear

$P_v = 0.6 P_y D t_w = 0.6 \times 275 \times 206.2 \times 7.9 / 10^3 = 268$ KN > Vapp

$P_v/2 = 134$ KN > Vapp ∴ low shear

∴ $M_c = P_y S_{xx} = 275 \times 567 / 10^3 = 155.9$ KN.m

- Buckling check

$\lambda = l_e / r_y = 4400 / 51.8 = 84.95$

$\lambda / x = 84.95 / 15.8 = 5.38$ + N = 0.5

BS5950 Table 19

∴ v = 0.8

$\lambda_L = u v \lambda \sqrt{\beta_w} = 0.848 \times 0.8 \times 85 \times \sqrt{1} = 58$

BS5950 Table 16

∴ P_b = 218 N/mm^2

$M_b = P_b S_{xx} = 218 \times 567 / 10^3 = 123$ KN.m > Mapp

∴ OK

∴ USE 203x203x52 Kg/m UKC for beam Mark B1+B2

Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 08 of
Project:	Designed by: Date:	
Title:	Checked by: Date:	
Subject:		

Reference:

LOAD CALCS CONT.

x from Rear Extension

DL = 0.85 x 4/2 = 1.7 KN/m

LL = 0.75 x 4/2 = 1.5 KN/m

WL = 0.50 x 4/2 = 1.0 KN/m

x Wt of Existing Rear wall Late 50s cavity.

4.7 x 3.0 h = 14.10 KN/m

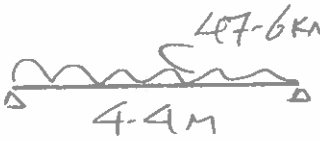
x Swt of beam assumed = 0.85 KN/m

TOTAL UDL = 35.5KN/m SLS.

ULS = 1.2(D+L+W) = 1.2x35.5 = 42.6KN/m

or 1.4D + 1.6L = 1.4 * 24.12 + 1.6 * 8.625 = 47.6 KN/m

o LOAD EFFECTS



left = 4.4M

V = wl/2 = 104.72KN

M = wl²/8 = 115.2 KN.m

o Deflection check

$\delta_{all} = \frac{l}{250} = \frac{4400}{250} = 17.6mm$ (Total load)

$\delta_{act} = \frac{5wl^4}{384EI} \Rightarrow I_{req} \geq \frac{5 * 35.5 * 4400^4}{384 * 210000 * 17x10^4} = 4853 cm^4$

TRy 203x203x52 kg/m UKC $I_{xx} = 5260 cm^4 > I_{req}$:OK

o Section Props.

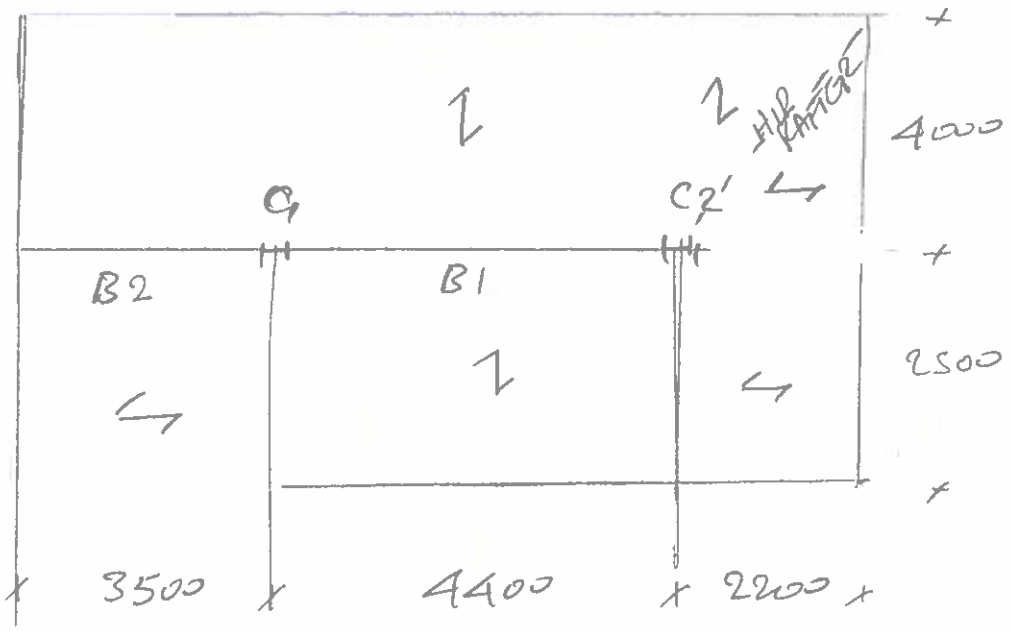
$b/T = 8.17 < 9$, $d/t = 20.4 < 80$ } ∴ Section Type 1 plastic ∴ $\beta_w = 1.0$

$T_f = 12.5mm < 16mm$ ∴ $P_y = 275 N/mm^2$

Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 07 of
Project:	Designed by: Date:	
Title:	Checked by: Date:	
Subject:		

Reference:

3-0 Designing Steel Beam : To BS5950-Pt1



3-1 Designing Beam Mark B1+B2

Note, B1 is more critical.

- LOAD CALCULATIONS.
- from Main Roof

DL = 0.85 x 3.5 = 2.975 KN/m

IL = 0.75 x 3.5 = 2.625 KN/m

WL = 0.50 x 3.5 = 1.750 KN/m

- from loft space allow for future conversion

DL = 1.5 x 3.5/2 = 2.625 KN/m

IL = 1.5 x 3.5/2 = 2.625 KN/m

- from 1ST floor

DL = 1.5 x 2.5/2 = 1.875 KN/m

IL = 1.5 x 2.5/2 = 1.875 KN/m

Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 06 of
Project:	Designed by: Date:	
Title:	Checked by: Date:	
Subject:		

Reference:

6

Checking Deflection

$\delta_{p2} = 0.003 \times 3800 = 11.4\ mm < 14mm$ ∴OK

$$\delta_T = \frac{5wl^4}{384EI} + \frac{12wl^2}{5EA} + \frac{Pa}{EI}\left[\frac{L^2}{8} - \frac{a^2}{6}\right] + \frac{96Pa}{5EA}$$

$a = 1300\ mm$

$$\delta_T = \frac{5 \times 0.42 \times 3800^4}{384 \times 7200 \times 42 \times 10^6} + \frac{12 \times 0.42 \times 3800^2}{5 \times 7200 \times 16460}$$

$$+ \frac{1100 \times 1300}{7200 \times 42 \times 10^6}\left[\frac{3800^2}{8} - \frac{1300^2}{6}\right] + \frac{96 \times 1100 \times 1300}{5 \times 7200 \times 16460} = 11.3\ mm < 11.$$

∴OK

∴By inspection

USC- 2# 47x175C24j for Each Trimmer Mark T2

Also By inspection

USC- 3# 47x175 C24j for Hip Rafter

Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 05 of
Project:	Designed by: Date:	
Title:	Checked by: Date:	
Subject:		

Reference: 2.2

Designing Trimmer Mark T2: SK on Page 04

- LOAD CALCULATIONS

a) from Roof

DL = 0.85 x 0.4/2 = 0.17 KN/m

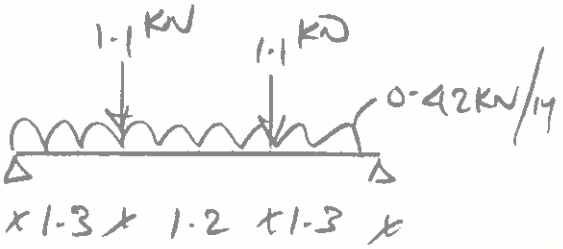
LL = 0.75 x 0.4/2 = 0.15 KN/m

WL = 0.50 x 0.4/2 = 0.10 KN/m

Total UDL = 0.42 KN/m / Trimmer

plus 2# Point Loads each = 1.1KN 1.2m apart representi

T1 reactions.



- Load effects.

$l_{eff} = 3.8m$

$V = \Sigma LOAD/2 = 1.898 KN$

$M_{max} = 1.898 \times \frac{3.8}{2} - (1.1 \times 0.6 + 0.42 \times 3.8^2/8)$

$M_{max} = 2.19 KN\text{-}m$

- Check For bending. $K_3 = K_8 = 1.0$ $G = G_{min}$ as beam

$\therefore Z_{xx} \geq \frac{2.19 \times 10^6}{7.5} = 292000 mm^3$

TRY 2# 47x175 $Z_{xx} = 480\,000 mm^3 > Z_{xx}$:o/c

$A_{xx} = 16460 mm^2$, $I_{xx} = 42 \times 10^6 mm^4$

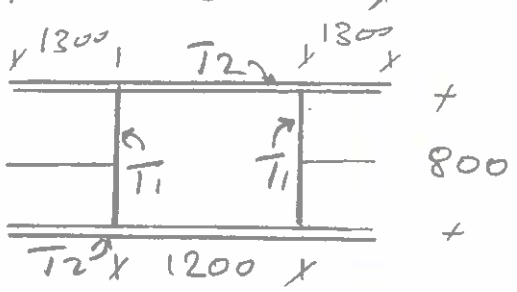
$G = G_{min} = 7200 N/mm^2$

Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 04 of
Project:	Designed by: Date:	
Title:	Checked by: Date:	
Subject:		

Reference:

2.0 Designing Sky-Light Trimmers: To BS5268-Pt1

2.1 Designing Trimmer Mark T1

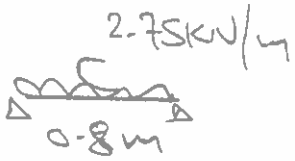


- LOAD CALCULATIONS
  - from Roof
    - DL = 0.85 x 1.3/2 = 0.55 KN/m
    - LL = 0.75 x 1.3/2 = 0.49 KN/m
    - WL = 0.50 x 1.3/2 = 0.33 KN/m
  - from Sky light
    - DL = 1.0 x 1.2/2 = 0.60 KN/m
    - LL = 0.75 x 1.2/2 = 0.45 KN/m
    - WL = 0.50 x 1.2/2 = 0.30 KN/m

TOTAL LOAD ≃ 2.75 KN/m including Sw.

- LOAD EFFECTS.

left = 800mm



V = wl/2 = 1.1 KN

M = wl²/8 = 0.22 KN.m

∴ By inspection + Comparison to Roof rafters PP03+02

∴ USE 1# 47X175 C24 for each Trimmer Mark T1

Calculation Sheet	CSDS	Sheet 16 of
Project:	Designed by: Date:	
Title:	Checked by: Date:	
Subject:		

Reference:

9.0 Designing Cavity wall : To BS5628-pt1

- Load calculations
- from Roof Con.

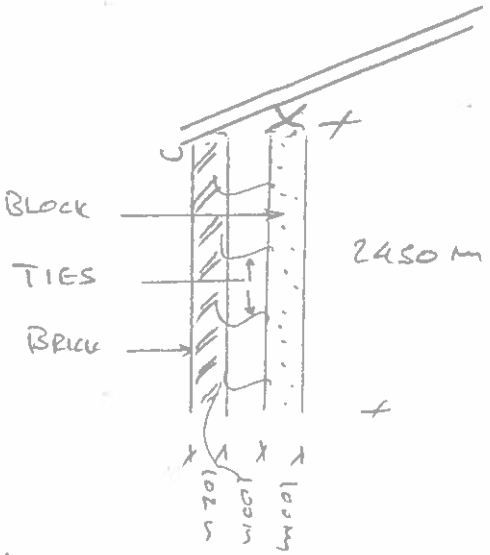
DL - $0.85 \times 3.5/2$ = 1.49 kN/m

LL = $0.75 \times 3.5/2$ = 1.31 kN/m

WL = $0.50 \times 3.5/2$ = 0.88 kN/m

Sw of wall = 3.3×2.45 = 8.085 kN/m

TOTAL LOAD = 11.8 kN/m



Eccentricity = $\frac{100}{2} - \frac{100}{3}$ = 16.7 mm

h_{eff} = 0.75×2450 = 1838 mm

t_{ef} = $\frac{2}{3}(t_1 + t_2)$ = $\frac{2}{3}(102+100)$ = 134.6 mm

BS5628 Table 7

S.R = h_{eff}/t_{eff} = 1838/134.6 = 13.66 < 27 ∴ ok

∴ f = 0.716 ← γ_f = 1.5 Con

γ_m = 3.5 worst case t = 100mm inner leaf only.

$\therefore f_{kreq} \geq \frac{F \cdot \gamma_m \gamma_f}{Bf} = \frac{11.8 \times 3.5 \times 1.5}{0.716 \times 100} = 0.87 N/mm^2 < 3.5 N/mm^2$

∴ Normal Cavity Construction

Use 100mm Breez block of 3.5N/mm² for inner leaf apart from 3 courses under lintels use 10N/mm² Blocks. For outer leaf use brick to match existing.

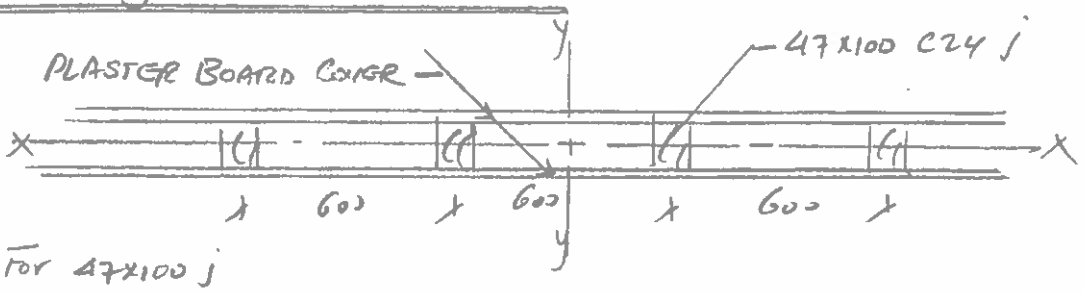
Use mortar type ii for both skins, with wall ties @ 3 to 5 courses.

Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 15 of 52
Project:	Designed by:	Date:
Title:	Checked by:	Date:
Subject:		

Reference:

R40

Designing Timber Stud walls: To BS 5268-Pt 1

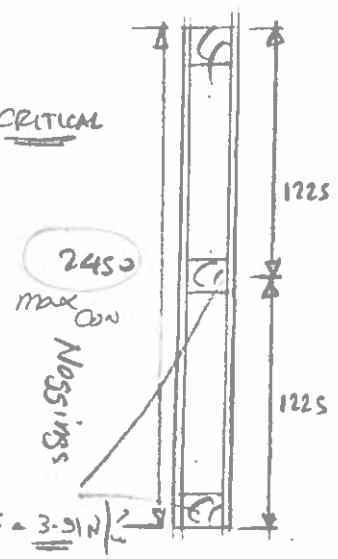


For 47x100 j

$A_{xx} = 4700\,mm^2$, $r_{xx} = 28.9\,mm$, $r_{yy} = 13.6\,mm$

$$\lambda_{xx} = \frac{l_{ex}}{r_{xx}} = \frac{2450}{28.9} = 85 < 180 \therefore OK$$

$$\lambda_{yy} = \frac{l_{ey}}{r_{yy}} = \frac{1225}{13.6} = 90 < 180 \therefore OK \quad \text{CRITICAL}$$



$\sigma_{c,\parallel}$ for C24 = $\sigma_{5,\parallel} K_3 = 7.9\,N/mm^2$

$$\frac{E_{mi}}{\sigma_{c,\parallel}} = \frac{7200}{7.9} = 911 \times \lambda = 90$$

BS5268 Table 22

$K_{12} \simeq 0.45$

$\sigma_{c,adm,\parallel} = \sigma_{5,\parallel} K_3 K_8 K_{12} = 7.9 \times 1 \times 1.1 \times 0.45 = 3.91\,N/mm^2$

Load/stud = $\sigma_{c,adm,\parallel} A = 3.91 \times 4700 / 10^3 = 18.37\,kN/stud$

Load/m run of wall = $\frac{18.37}{0.6} = 30.6\,kN/m$

∴ USE 47x100 C24 j @ 600 mcl with top, middle & bottom noggings with plaster covering on both faces 2 layers/face for stud partitions.

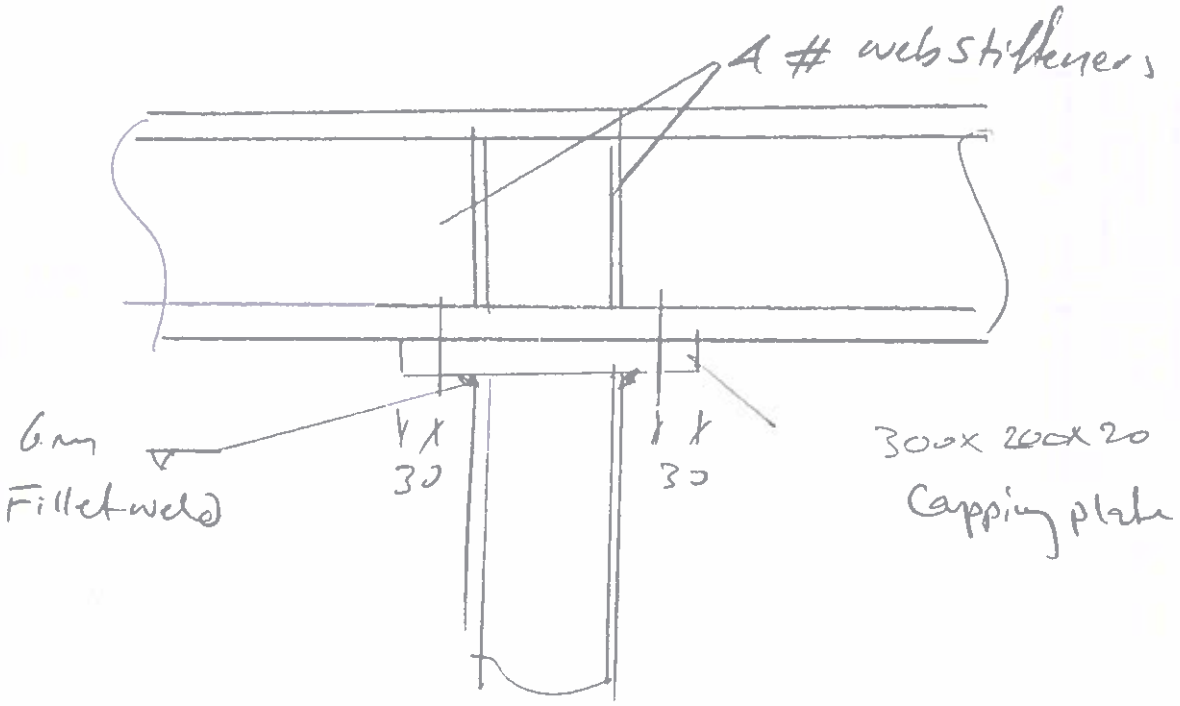
Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 14 of
Project:	Designed by:	Date:
Title:	Checked by:	Date:
Subject:		

Reference: 7.2

B1 + B2 + C1

B1 + B2 Sizes ⇒ 203x203x52 UKC

C1 Size ⇒ 152x152x37 UKC



Calculation Sheet	CSDS Civil and Structural Design Solutions Limited	Sheet 13 of
Project:	Designed by: Date:	
Title:	Checked by: Date:	
Subject:		

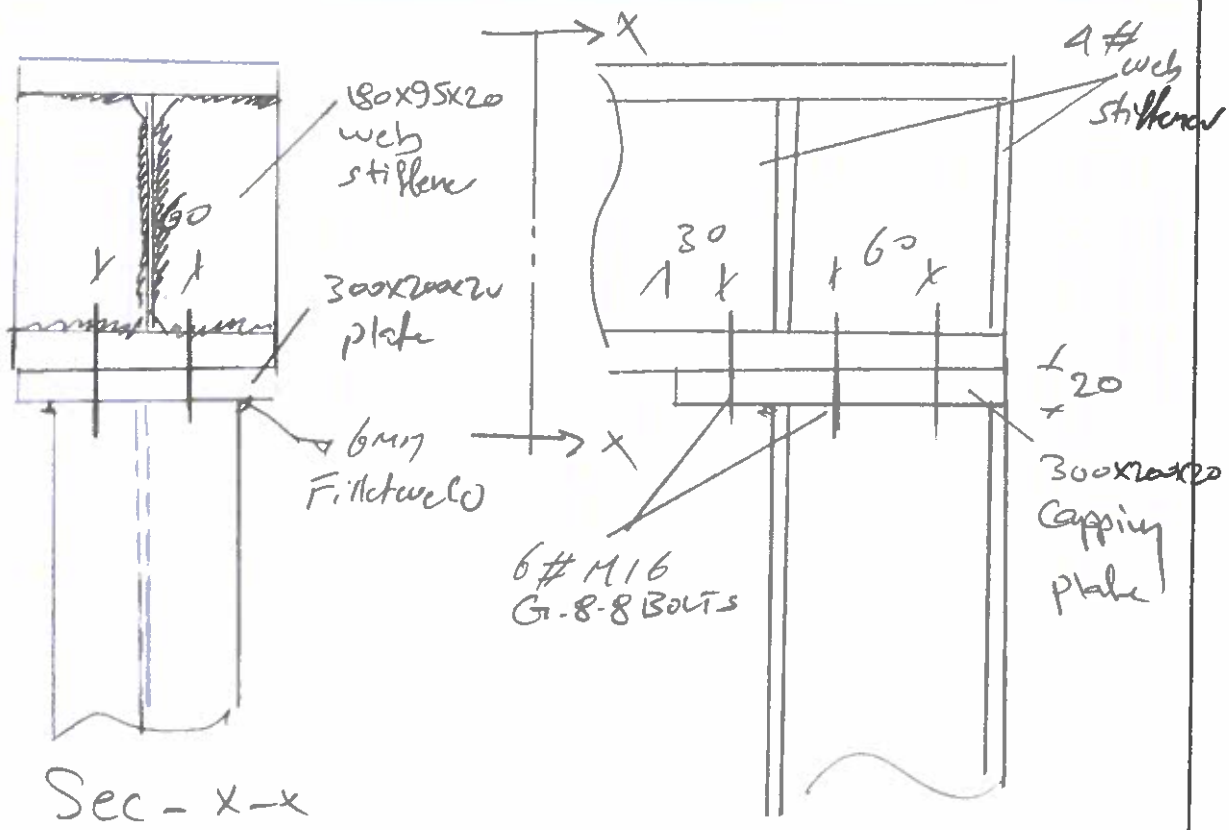
Reference:

7-0 CONNECTION TO BS 5950-PH

7-1 B1 to C2 Column

B1 Size ⟹ 203X203X52 UKC

C2 Size ⟹ 152X152X37 UKC



Sec - X-X

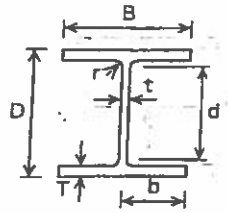
Standard Loadings for Roofs, Floors and Walls from BS648 & BS6399

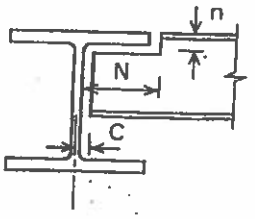
			Output		
			Dead KN/m²	Live KN/m²	Total KN/m²
Pitch Roofs					
	Tiles	= 0.6 KN/m²			
	Battens + Felt	= .1 KN/m²			
	Rafters	= .15 KN/m²			
		0.85 KN/m²	0.85	0.75	1.6
Roof Space					
	Joists + Insulation	= 0.15 KN/m²			
	Soffite	= 0.15 KN/m²			
		0.30 KN/m²	0.3	0.25	0.55
		Total Roof + Space	1.15	1.0	2.15
Flat Roofs					
	Chippings + Felt	= 0.35 KN/m²			
	Boards + Joists + Firrings	= 0.30 KN/m²			
	Soffite + Insulation	= 0.15 KN/m²			
		.80 KN/m²	0.8	0.75	1.55
Timber Floors					
	Boards + Joists	= 0.35 KN/m²			
	Soffite	= 0.15 KN/m²			
		0.5 KN/m²	0.5	1.5	2.0
	Partitions	= 1.0 KN/m²	1.5	1.5	3.0
Walls					
	Timber stud internal				
	Plasterboard	= 0.15 KN/m²	Lath + Plaster = 0.25 KN/m²		
	Studs	= 0.10 KN/m²	Studs = 0.10 KN/m²		
	Plasterboard	= 0.15 KN/m²	Lath + Plaster = 0.25 KN/m²		
		0.40 KN/m²	0.6 KN/m²	0.4	– 0.4
				0.6	– 0.6
	Timber stud external				
	Tiles	= 0.55 KN/m²			
	Battens + Felt + Insulation	= 0.10 KN/m²			
	Studs	= 0.10 KN/m²			
	Plasterboard	= 0.15 KN/m²			
		0.90 KN/m²		0.9	– 0.9
	Brick & Blockwork				
	Brick 102mm	= 2.0 KN/m²			
	Block 100mm	= 1.0 KN/m²	Cavity Construction		
	Plaster (one face)	= 0.3 KN/m²			
		3.3 KN/m²		3.3	– 3.3
	Brick 102mm	= 2.0 KN/m²			
	Plaster (two faces)	= 0.5 KN/m²			
		2.5 KN/m²		2.5	– 2.5
	Brick 215mm	= 4.2 KN/m²			
	Plaster (two faces)	= 0.5 KN/m²	Solid Consteuction		
		4.7 KN/m²		4.7	– 4.7
	Brick 330mm	= 6.5 KN/m²			
	Plaster (two faces)	= 0.5 KN/m²			
		7.0			

BS 5950-1: 2000
BS 4-1: 2005

UNIVERSAL COLUMNS

Advance UKC





Dimensions

Section Designation	Mass per Metre	Depth of Section	Width of Section	Thickness		Root Radius	Depth between Fillets	Ratios for Local Buckling		Dimensions for Detailing			Surface Area	
				Web	Flange			Flange	Web	End Clearance	Notch		Per Metre	Per Tonne
		D	B	t	T	r	d	b/T	d/t	C	N	n		
	kg/m	mm	mm	mm	mm	mm	mm			mm	mm	mm	m^2	m^2
356x406x634	633.9	474.6	424.0	47.6	77.0	15.2	290.2	2.75	6.10	26	200	94	2.52	3.98
356x406x551	551.0	455.6	418.5	42.1	67.5	15.2	290.2	3.10	6.89	23	200	84	2.47	4.48
356x406x467	467.0	436.6	412.2	35.8	58.0	15.2	290.2	3.55	8.11	20	200	74	2.42	5.18
356x406x393	393.0	419.0	407.0	30.6	49.2	15.2	290.2	4.14	9.48	17	200	66	2.38	6.06
356x406x340	339.9	406.4	403.0	26.6	42.9	15.2	290.2	4.70	10.9	15	200	60	2.35	6.91
356x406x287	287.1	393.6	399.0	22.6	36.5	15.2	290.2	5.47	12.8	13	200	52	2.31	8.05
356x406x235	235.1	381.0	394.8	18.4	30.2	15.2	290.2	6.54	15.8	11	200	46	2.28	9.70
356x368x202	201.9	374.6	374.7	16.5	27.0	15.2	290.2	6.94	17.6	10	190	44	2.19	10.8
356x368x177	177.0	368.2	372.6	14.4	23.8	15.2	290.2	7.83	20.2	9	190	40	2.17	12.3
356x368x153	152.9	362.0	370.5	12.3	20.7	15.2	290.2	8.95	23.6	8	190	36	2.16	14.1
356x368x129	129.0	355.6	368.6	10.4	17.5	15.2	290.2	10.5	27.9	7	190	34	2.14	16.6
305x305x283	282.9	365.3	322.2	26.8	44.1	15.2	246.7	3.65	9.21	15	158	60	1.94	6.86
305x305x240	240.0	352.5	318.4	23.0	37.7	15.2	246.7	4.22	10.7	14	158	54	1.91	7.96
305x305x198	198.1	339.9	314.5	19.1	31.4	15.2	246.7	5.01	12.9	12	158	48	1.87	9 44
305x305x158	158 1	327.1	311.2	15.8	25.0	15.2	246.7	6.22	15.6	10	158	42	1.84	11.6
305x305x137	136 9	320.5	309.2	13.8	21.7	15.2	246.7	7.12	17.90	9	158	38	1.82	13.3
305x305x118	117.9	314.5	307.4	12.0	18.7	15.2	246.7	8.22	20.6	8	158	34	1.81	15.4
305x305x97	96.9	307.9	305 3	9.9	15.4	15.2	246.7	9.91	24.9	7	158	32	1.79	18.5
254x254x167	167.1	289.1	265.2	19.2	31.7	12.7	200.3	4.18	10.4	12	134	46	1.58	9.46
254x254x132	132.0	276.3	261.3	15.3	25.3	12.7	200.3	5.16	13.1	10	134	38	1.55	11.7
254x254x107	107.1	266.7	258.8	12.8	20.5	12.7	200.3	6.31	15.6	8	134	34	1.52	14.2
254x254x89	88.9	260.3	256.3	10.3	17.3	12.7	200.3	7.41	19.4	7	134	30	1.50	16.9
254x254x73	73.1	254.1	254.6	8.6	14.2	12.7	200.3	8.96	23.3	6	134	28	1.49	20.4
203x203x127 +	127.5	241 4	213.9	18.1	30.1	10.2	160.8	3.55	8.88	11	108	42	1.28	10.0
203x203x113 +	113.5	235.0	212.1	16.3	26.9	10.2	160.8	3.94	9.87	10	108	38	1.27	11.2
203x203x100 +	99.6	228.6	210.3	14.5	23.7	10.2	160.8	4.44	11.1	9	108	34	1.25	12.6
203x203x86	86.1	222.2	209.1	12.7	20.5	10.2	160.8	5.10	12.7	8	110	32	1.24	14.4
203x203x71	71.0	215.8	206.4	10.0	17.3	10.2	160.8	5.97	16.1	7	110	28	1.22	17.2
203x203x60	60.0	209.6	205.8	9.4	14.2	10.2	160.8	7.25	17.1	7	110	26	1.21	20.2
203x203x52	52.0	206.2	204.3	7.9	12.5	10.2	160.8	8.17	20.4	6	110	24	1.20	23.1
203x203x46	46.1	203.2	203.6	7.2	11.0	10.2	160.8	9.25	22.3	6	110	22	1.19	25.8
152x152x51 +	51.2	170.2	157.4	11.0	15.7	7.6	123.6	5.01	11.2	8	84	24	0.935	18.3
152x152x44 +	44.0	166.0	155.9	9.5	13.6	7.6	123.6	5.73	13.0	7	84	22	0.924	21.0
152x152x37	37.0	161.8	154.4	8.0	11.5	7.6	123.6	6.71	15.5	6	84	20	0.912	24.7
152x152x30	30.0	157.6	152.9	6.5	9.4	7.6	123.6	8.13	19.0	5	84	18	0.901	30.0
152x152x23	23.0	152.4	152.2	5.8	6.8	7.6	123.6	11.20	21.3	5	84	16	0.889	38.7

Advance and UKC are trademarks of Corus. A fuller description of the relationship between Universal Columns (UC) and the Advance range of sections manufactured by Corus is given on page A - 42.

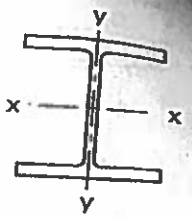
+ These sections are in addition to the range of BS 4 sections.

FOR EXPLANATION OF TABLES SEE NOTE 2

BS 5950-1: 2000
BS 4-1: 2005

UNIVERSAL COLUMNS

Advance UKC



Properties

Section Designation	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant	Area of Section
	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y					
	cm^4	cm^4	cm	cm	cm^3	cm^3	cm^3	cm^3	u	x	H dm^6	J cm^4	A cm^2
356x406x634	275000	98100	18.4	11.0	11600	4630	14200	7110	0.843	5.46	38.8	13700	808
356x406x551	227000	82700	18.0	10.9	9960	3950	12100	6060	0.841	6.05	31.1	9240	702
356x406x467	183000	67800	17.5	10.7	8380	3290	10000	5030	0.839	6.86	24.3	5810	595
356x406x393	147000	55400	17.1	10.5	7000	2720	8220	4150	0.837	7.86	18.9	3550	501
356x406x340	123000	46900	16.8	10.4	6030	2330	7000	3540	0.836	8.85	15.5	2340	433
356x406x287	99900	38700	16.5	10.3	5070	1940	5810	2950	0.835	10.2	12.3	1440	366
356x406x235	79100	31000	16.3	10.2	4150	1570	4690	2380	0.834	12.1	9.54	812	299
356x368x202	66300	23700	16.1	9.60	3540	1260	3970	1920	0.844	13.4	7.16	558	257
356x368x177	57100	20500	15.9	9.54	3100	1100	3460	1670	0.844	15.0	6.09	381	226
356x368x153	48600	17600	15.8	9.49	2680	948	2960	1430	0.844	17.0	5.11	251	195
356x368x129	40200	14600	15.6	9.43	2260	793	2480	1200	0.844	19.9	4.18	153	164
305x305x283	78900	24600	14.8	8.27	4320	1530	5110	2340	0.855	7.65	6.35	2030	360
305x305x240	64200	20300	14.5	8.15	3640	1280	4250	1950	0.854	8.74	5.03	1270	306
305x305x198	50900	16300	14.2	8.04	3000	1040	3440	1580	0.854	10.2	3.88	734	252
305x305x158	38700	12600	13.9	7.90	2370	808	2680	1230	0.851	12.5	2.87	378	201
305x305x137	32800	10700	13.7	7.83	2050	692	2300	1050	0.851	14.2	2.39	249	174
305x305x118	27700	9060	13.6	7.77	1760	589	1960	895	0.850	16.2	1.98	161	150
305x305x97	22200	7310	13.4	7.69	1450	479	1590	726	0.850	19.3	1.56	91.2	123
254x254x167	30000	9870	11.9	6.81	2080	744	2420	1140	0.851	8.49	1.63	626	213
254x254x132	22500	7530	11.6	6.69	1630	576	1870	878	0.850	10.3	1.19	319	168
254x254x107	17500	5930	11.3	6.59	1310	458	1480	697	0.848	12.4	0.898	172	136
254x254x89	14300	4860	11.2	6.55	1100	379	1220	575	0.850	14.5	0.717	102	113
254x254x73	11400	3910	11.1	6.48	898	307	992	465	0.849	17.3	0.562	57.6	93.1
203x203x127 +	15400	4920	9.75	5.50	1280	480	1520	704	0.854	7.38	0.549	427	162
203x203x113 +	13300	4290	9.59	5.45	1130	404	1330	618	0.853	8.11	0.464	305	145
203x203x100 +	11300	3680	9.44	5.39	988	350	1150	534	0.852	9.02	0.386	210	127
203x203x86	9450	3130	9.28	5.34	850	299	977	456	0.850	10.2	0.318	137	110
203x203x71	7620	2540	9.18	5.30	706	246	799	374	0.853	11.9	0.250	80.2	90.4
203x203x60	6120	2080	8.96	5.20	584	201	656	305	0.846	14.1	0.197	47.2	76.4
203x203x52	5260	1780	8.91	5.18	510	174	567	264	0.848	15.8	0.167	31.8	66.3
203x203x46	4570	1550	8.82	5.13	450	152	497	231	0.847	17.7	0.143	22.2	58.7
152x152x51 +	3230	1020	7.04	3.96	379	130	438	199	0.848	10.1	0.061	48.8	65.2
152x152x44 +	2700	860	6.94	3.92	326	110	372	169	0.848	11.5	0.050	31.7	56.1
152x152x37	2210	706	6.85	3.87	273	91.5	309	140	0.848	13.3	0.040	19.2	47.1
152x152x30	1750	560	6.76	3.83	222	73.3	248	112	0.849	16.0	0.031	10.5	38.3
152x152x23	1250	400	6.54	3.70	164	52.6	182	80.1	0.840	20.7	0.021	4.63	29.2

Advance and UKC are trademarks of Corus. A fuller description of the relationship between Universal Columns (UC) and the Advance range of sections manufactured by Corus is given on page A - 42.

+ These sections are in addition to the range of BS 4 sections.

FOR EXPLANATION OF TABLES SEE NOTE 3