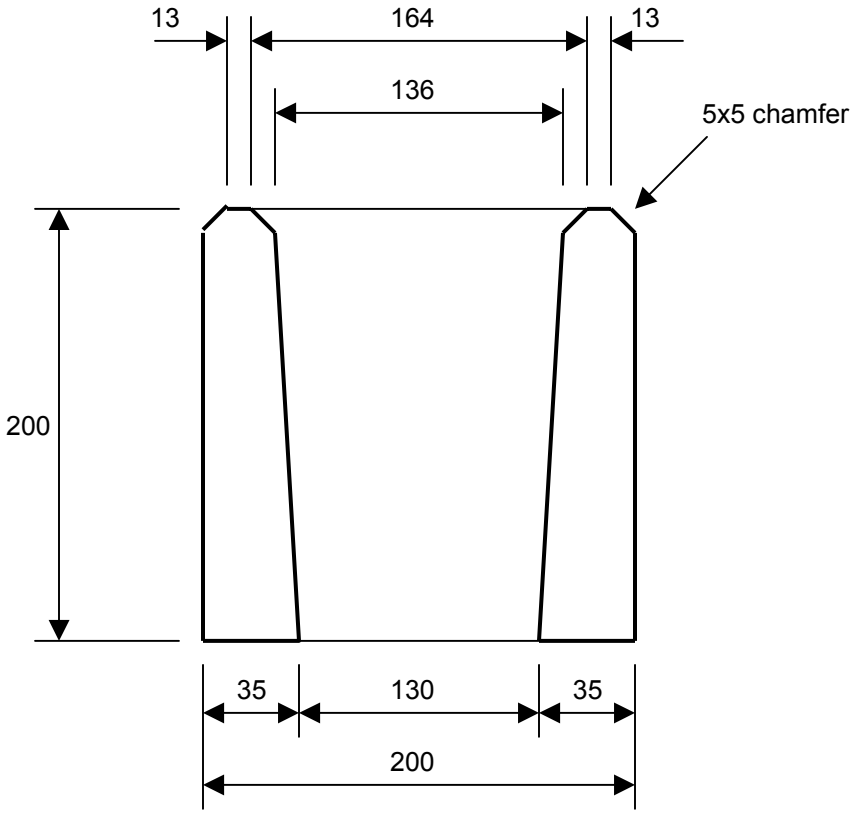
SECTION 1. 200 MORTARLESS BLOCK - CHAMFERED

1.1 Cross section dimensions & properties



Cross Section – 200 *mortarless* block

Properties of 200 chamfered *mortarless* masonry units:

Mortarless Block	O/A width mm	Chamfer Width (ext) mm	Chamfer Width (int) mm	Bedded Width mm	Core Width mm	A_b sq.mm./m	A_c sq.mm./m	A_d sq.mm./m	f'_{uc} MPa	f'_m MPa
200 Chamfered	200	5	14	164	136	28000	136000	164000	15 20	8.1 9.3

Basic compressive capacity (F_o) of 200 chamfered *mortarless* masonry:

Mortarless Block	f'_{uc} MPa	f'_m MPa	F_o (kN/m) Grout strength (28 day cylinder strength)		
			15 MPa	20 MPa	25 MPa
200 Chamfered	15	8.1	393	433	433
	20	9.3	408	453	493

1.2 Maximum heights and lengths of *mortarless* walls to satisfy robustness provisions

It is essential to check that all wall panels are sufficiently robust. For this purpose AS 3700 provides maximum slenderness coefficients for different configurations.

In this Section of the design manual all walls are described as four types (A, B, C & D) depending on the nature of the applied load and the degree of lateral and rotational restraint at the top and bottom edges. The characteristics for each wall type are tabulated below:

	WALL OR PIER TYPE			
	A	**B**	**C**	**D**
TOP EDGE OF WALL OR TOP END OF PIER:				
Lateral support	■	■		
Partial rotational restraint	■			
Supporting slab across full width	■			
Free			■	■
BOTTOM EDGE OF WALL OR BOTTOM END OF PIER:				
Lateral support	■	■	■	■
Partial rotational restraint	■	■	■	■
Reinforcement anchored into slab or footing			■	

Maximum heights (calculated from slenderness limits) - walls <u>without</u> engaged piers and free-standing piers:

Maximum height *H* when height governs design:

Walls and piers reinforced* vertically

	WALL TYPE				PIER TYPE
	A	**B**	**C**	**D**	**B**
H* max **	9600	7200	2400	1200	6000

Maximum lengths (calculated from slenderness limits):

Maximum length *L* when length governs design:

Walls reinforced* horizontally

	Length L_1 **	Length L_2 **	Length L_3 **
***L* max**	7200	4800	3200

* Reinforced means meeting the minimum requirements for reinforcement.

** L_1 refers to the length of a wall panel that is laterally supported along both of its vertical edges.

L_2 refers to the length of a wall panel that is laterally supported along one of its vertical edges (other vertical edge free) and with reinforcement continuous past the support

L_3 refers to the length of a wall panel that is laterally supported along one of its vertical edges (other vertical edge free)

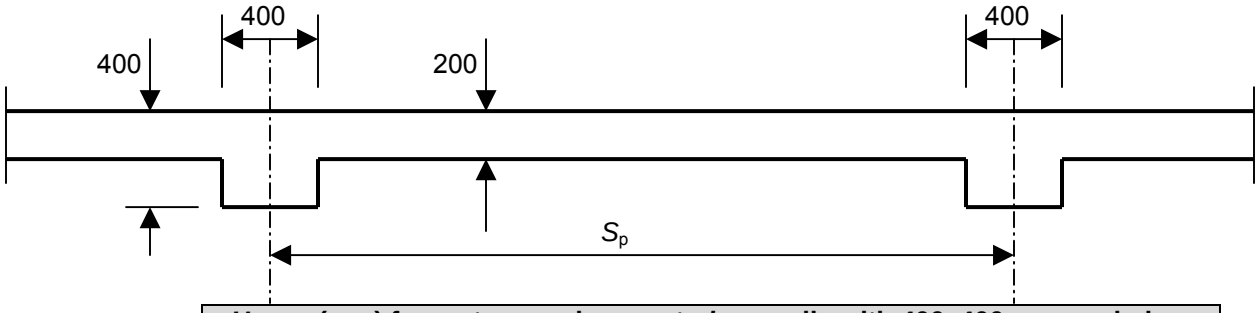
*** If L_1, L_2 or L_3 as applicable is less than the tabulated value of *L* max, then *H* may exceed '*H* max' as slenderness of wall panel is governed by length and not height.

Note that lateral supports to vertical edges must be designed in accordance with AS 3700 Clause 2.6.3, and this requires that the horizontal design load acting on the member or system providing lateral support be the greater of the following:

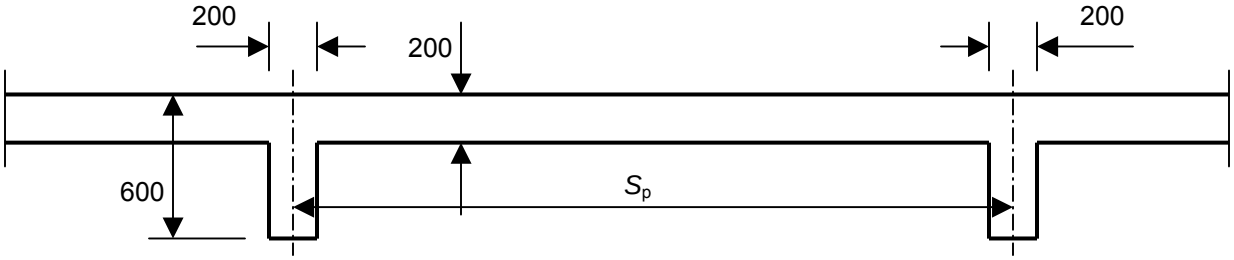
a) the sum of the simple static reactions to any applied horizontal forces, plus 2.5% of the design vertical load on the wall panel.

b) The reaction from 0.4kPa acting on the appropriate tributary area of the supported masonry wall panel.

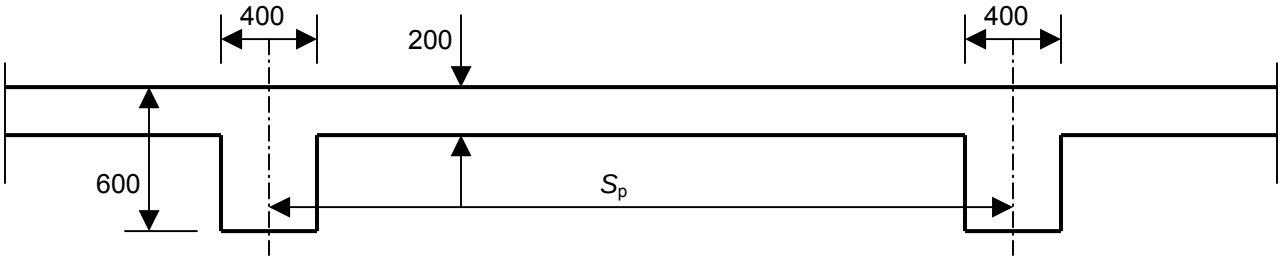
200 *mortarless* walls with engaged piers (spanning vertically):



	***H* max (mm) for vert. spanning *mortarless* walls with 400x400 engaged piers**							
	Vertically reinforced				**Unreinforced vertically**			
Wall Types	**Pier spacing S_p (mm)**				**Pier spacing S_p (mm)**			
	2400	**3200**	**4000**	**4800**	**2400**	**3200**	**4000**	**4800**
A	13400	12400	11500	11000	10000	9300	8600	8300
B	10000	9300	8600	8300	7400	7000	6400	6200
C	3300	3100	2800	2700	NOT APPLICABLE			
D	1600	1500	1400	1300	1600	1500	1400	1300



	***H* max (mm) for vert. spanning *mortarless* walls with 600x200 engaged piers**							
	Vertically reinforced				**Unreinforced**			
Wall Types	**Pier spacing S_p (mm)**				**Pier spacing S_p (mm)**			
	1200	**2800**	**3200**	**3600**	**2400**	**2800**	**3200**	**3600**
A	19200	13400	11900	10300	14400	10000	8900	7700
B	14400	10000	8900	7700	10800	7500	6600	5800
C	4800	3300	2900	2500	NOT APPLICABLE			
D	2400	1600	1400	1300	2400	1600	1400	1300



	***H* max (mm) for vert. spanning *mortarless* walls with 400x400 engaged piers**							
	Vertically reinforced				**Unreinforced vertically**			
Wall Types	**Pier spacing S_p (mm)**				**Pier spacing S_p (mm)**			
	2400	**3200**	**4000**	**4800**	**2400**	**3200**	**4000**	**4800**
A	19200	16300	13400	12600	14400	12200	10000	9500
B	14400	12200	10000	9500	10800	9100	7500	7100
C	4800	4000	3100	2700	NOT APPLICABLE			
D	2400	2000	1600	1500	2400	2000	1600	1500