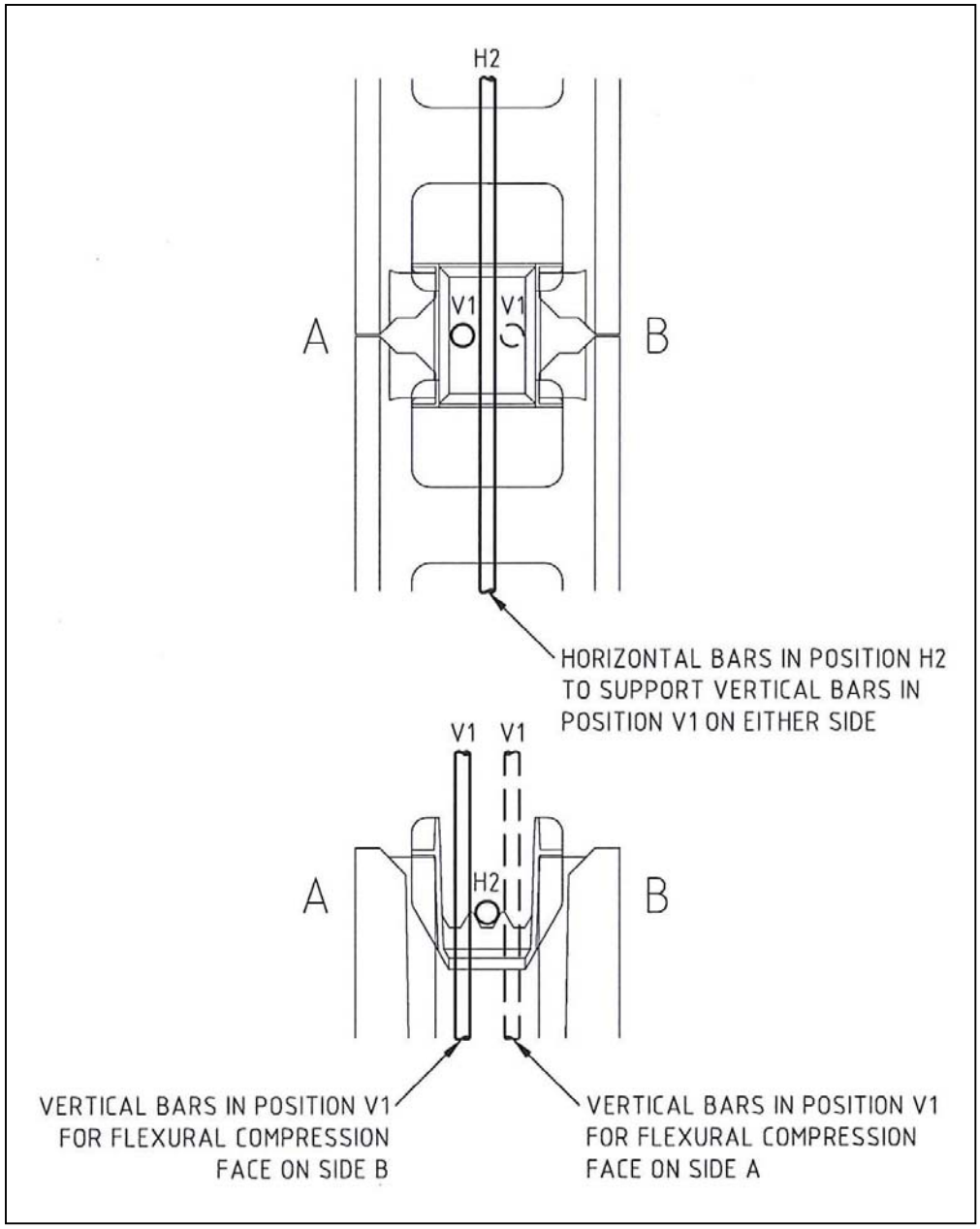
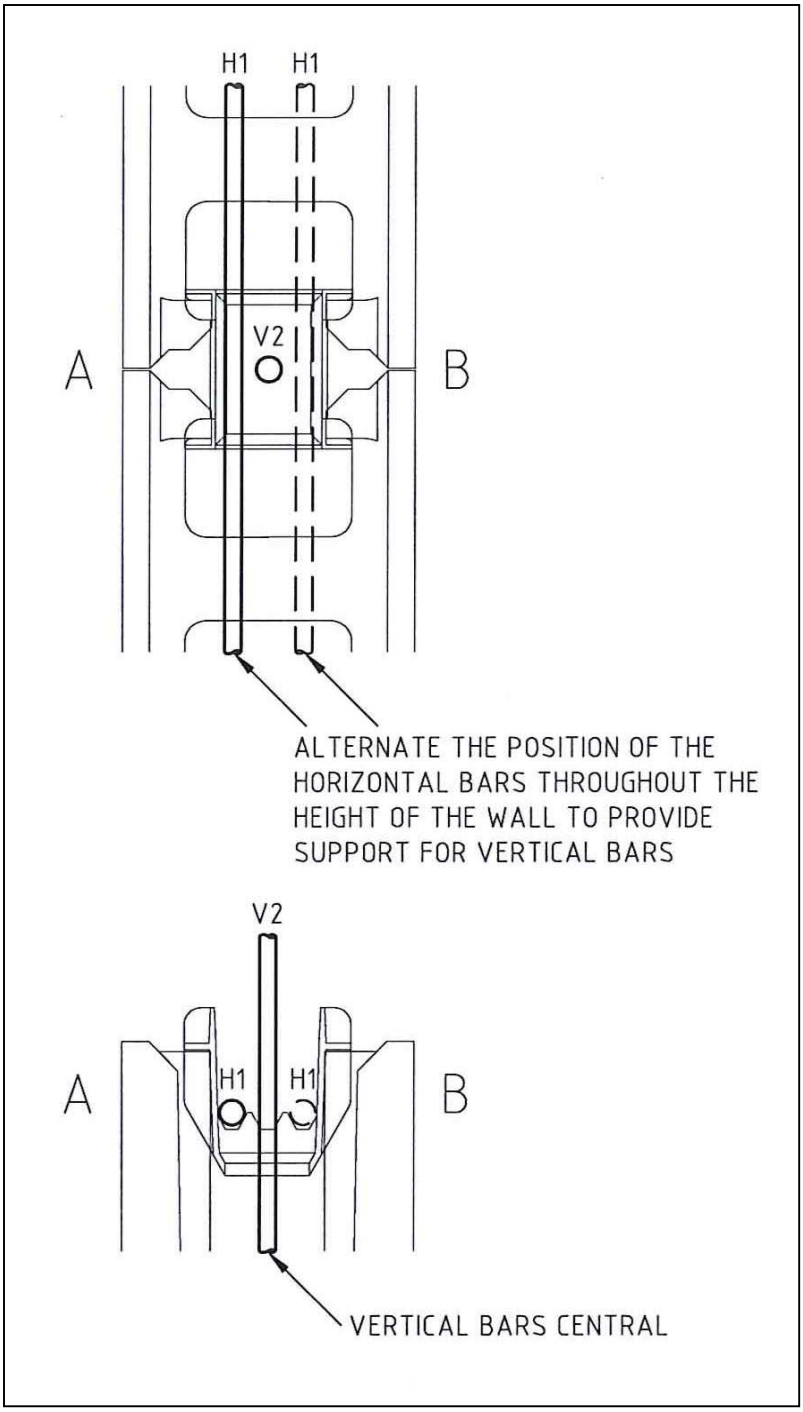
SECTION 3. DESIGN OF WALLS FOR BENDING

Reinforcing bar positions

The location of all reinforcement in ***mortarless*** walls is controlled by the notches in the connectors that support the horizontal bars. The 140 mortarless connectors have three notches, and the bar positions are described as V1, V2, H1 and H2 as shown in the following skecthes. Positions V1 and H1 are located furthest from the neutral axis, while positions V2 and H2 are located closest to the neutral axis. These positions are referred to in the moment capacity tables below.



Reinforcing bar positions V1 and H2 for 140 *mortarless*



Reinforcing bar positions H1 and V2 for 140 *mortarless*

Table 3.1: Bending moment capacity of walls

140 *mortarless* walls - unchamfered blocks

Block Grade & Reinforcement (f_{sy} = 500Mpa)	A_s mm²/m	BENDING MOMENT CAPACITY (kNm/m)							
		vertical bending				horizontal bending			
		A_{sd} mm²/m	bars in position V1 d = 70	A_{sd} mm²/m	bars in position V2 d = 57	A_{sd} mm²/m	bars in position H1 d = 74	A_{sd} mm²/m	bars in position H2 d = 57
Grade 15 blocks									
N12-200	550	542	9.5	435	6.1	550	10.1	435	6.1
N12-400	275	275	5.3	275	4.2	275	5.6	275	4.2
N12-600	183	183	3.7	183	2.9	183	3.8	183	2.9
N12-800	138	138	2.8	138	2.2	138	2.9	138	2.2
N12-1000	110	110	2.3	110	1.8	110	2.4	110	1.8
N12-1200	92	92	1.9	92	1.5	92	2.0	92	1.5
N16-200	1000	542	9.5	435	6.1				
N16-400	500	500	8.9	435	6.1				
N16-600	333	333	6.3	333	4.9				
N16-800	250	250	4.9	250	3.8				
Grade 20 blocks									
N12-200	550	550	9.97	500	7.1	550	10.4	500	7.1
N12-400	275	275	5.4	275	4.3	275	5.7	275	4.3
N12-600	183	183	3.7	183	2.9	183	3.9	183	2.9
N12-800	138	138	2.8	138	2.2	138	3.0	138	2.2
N12-1000	110	110	2.3	110	1.8	110	2.4	110	1.8
N12-1200	92	92	1.9	92	1.5	92	2.0	92	1.5
N16-200	1000	622	10.9	500	7.1				
N16-400	500	500	9.2	500	7.1				
N16-600	333	333	6.4	333	5.0				
N16-800	250	250	5.0	250	3.9				

Table 3.2: Bending moment capacity of *mortarless* beams

140 *mortarless* beams - unchamfered blocks					
	D (mm)	*d* (mm)	Reinf't	**BM Capacity (kNm)**	
				Grade 15 blocks	Grade 20 Blocks
2 course beam	400	230	1N12	7.5	7.5
	400	230	1N16	13.5	13.6
	400	230	1N20	13.5 **	15.6
3 course beam	600	430	1N12	14.1	14.1
	600	430	1N16	25.4	25.4
	600	430	1N20	37.6 **	39.1
4 course beam	800	630	1N12	20.7 *	20.7 *
	800	630	1N16	37.4	37.4
	800	630	1N20	57.6	57.7
5 course beam	1000	830	1N12	27.3 *	27.3 *
	1000	830	1N16	49.4	49.4
	1000	830	1N20	76.2	76.36
6 course beam	1200	1030	1N12	33.9 *	33.9 *
	1200	1030	1N16	61.4	61.4
	1200	1030	1N20	94.8	94.9

Notes

1. * indicates that A_s provided is less than A_s(min) required by AS 3600-2009 Clause 8.1.6.1. **CAUTION** is recommended in these cases.
2. ** indicates that BM capacity has been calculated using A_s(max) which is less than A_s