

Fortcrete reinforced masonry lintels may be used to span openings in wall panels whilst maintaining the appearance of the block units. Tables 19, 20, 21 and 22 provide an indication of the loading that the lintels can sustain for a given span.

The lintels should be designed in accordance with BS 5628 Part 2 'Code of Practice for the Use of Reinforced Masonry'. The tables have been developed applying the recommendations of this British Standard. The infill assumed is an RC40 concrete with 10mm aggregate size.

The values given within the tables are for guidance only. The reinforcement quantities and the application of the lintel should be approved by the project Structural Engineer.

The safe working loads within the tables are assumed uniformly distributed and a partial factor of safety on loading of 1.50 has been adopted to convert the lintels' ultimate strength to the safe working loads indicated. The span of the lintel is typically the distance between the centre line of the bearings.

To achieve durability for Exposure Situation E3 (BS 5628 Part 2), stainless steel reinforcement is required as indicated with an *.

Note: Spans indicated within the tables represent the structural span of the lintel only.

The end bearing of the lintels should be calculated paying due allowance to the compressive strength of the blockwork at the bearings and the anchorage requirements of the reinforcement at the bearings.

In some cases the ends of the reinforcement may require a full hook to achieve the required bond length. For further advice on the design and application of Fortcrete lintel units, refer to the Fortcrete Technical Department.

FIG 37 LINTEL UNITS

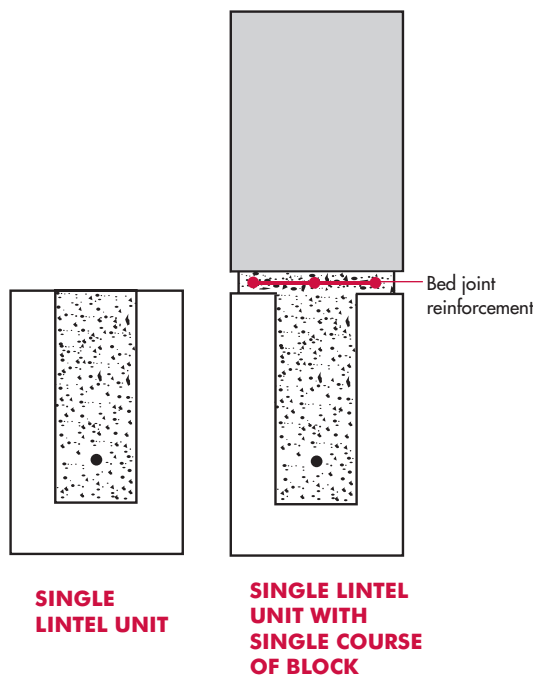


TABLE 20. 390 X 190^{MM} LINTEL UNIT WITH ONE COURSE OF MASONRY AND BED JOINT REINFORCEMENT ABOVE

Lintel Width	Block Ref	Reinforcement (high yield)	ULS Moment (kNm)	ULS Shear (kN)	Safe UDL in kN/m for span (mm)							
					600	900	1200	1500	1800	2100	2400	
90	K28/K14	1H6*	3.2	5.1	11.3	7.6	5.7	4.5	3.8	3.2	2.8	
		1H8*	5.4	5.3	11.8	7.9	5.9	4.7	3.9	3.4	2.9	
		1H10*	7.8	5.5	12.2	8.1	6.1	4.9	4.1	3.5	3.1	
140	P28/P14	1H6*	3.3	7.8	17.3	11.6	8.7	6.9	5.4	4.0	3.1	
		1H8*	5.7	8	17.8	11.9	8.9	7.1	5.9	5.1	4.4	
		1H10*	8.5	8.2	18.2	12.1	9.1	7.3	6.1	5.2	4.6	
190	R28/R14	2H6	6.4	10.6	23.6	15.7	11.8	9.4	7.9	6.7	5.9	
		2H8	10.7	10.9	24.2	16.1	12.1	9.7	8.1	6.9	6.1	
		2H10	15.5	11.4	25.3	16.9	12.7	10.1	8.4	4.2	6.3	

TABLE 21. 390 X 190^{MM} LINTEL UNIT ONLY

Lintel Width	Block Ref	Reinforcement (high yield)	ULS Moment (kNm)	ULS Shear (kN)	Safe UDL in kN/m for span (mm)						
					600	900	1200	1500	1800	2100	
90	K28/K14	1H6*	1	1.9	4.2	2.8	2.1	1.7	1.4	1.2	
		1H8*	1.3	2.1	4.7	3.1	2.3	1.9	1.6	1.3	
		1H10*	1.3	2.3	5.1	3.4	2.6	2.0	1.7	1.5	
140	P28/P14	1H6*	1.1	2.9	6.4	4.3	3.2	2.6	1.8	1.3	
		1H8*	1.7	3.1	6.9	4.6	3.4	2.8	2.3	2.0	
		1H10*	2	3.3	7.3	4.9	3.7	2.9	2.4	2.1	
190	R28/R14	2H6	1.9	3.9	8.7	5.8	4.3	3.5	2.9	2.3	
		2H8	2.4	4.3	9.6	6.4	4.8	3.8	3.2	2.7	
		2H10	2.4	4.7	10.4	7.0	5.2	4.2	3.5	2.9	

TABLE 22. 440 X 215^{MM} LINTEL UNIT WITH ONE COURSE OF MASONRY AND BED JOINT REINFORCEMENT ABOVE

Lintel Width	Block Ref	Reinforcement (high yield)	ULS Moment (kNm)	ULS Shear (kN)	Safe UDL in kN/m for span (mm)							
					600	900	1200	1500	1800	2100	2400	
100	D28/D14	1H6*	3.8	6.5	14.4	9.6	7.2	5.8	4.8	4.1	3.5	
		1H8*	6.6	6.7	14.9	9.9	7.4	6.0	5.0	4.3	3.7	
		1H10*	9.6	6.9	15.3	10.2	7.7	6.1	5.1	4.4	3.8	
140	H28/H14	1H6*	3.8	8.9	19.8	13.2	9.9	7.9	6.3	4.6	3.5	
		1H8*	6.6	9	20.0	13.3	10.0	8.0	6.7	5.7	5.0	
		1H10*	9.9	9.3	20.7	13.8	10.3	8.3	6.9	5.9	5.2	
190	A28/A14	2H6	7.4	12.3	27.3	18.2	13.7	10.9	9.1	7.8	6.8	
		2H8	12.3	12.7	28.2	18.8	14.1	11.3	9.4	8.1	7.1	
		2H10	17.5	13.1	29.1	19.4	14.6	11.6	9.7	8.3	7.3	
215	F28/F14	2H6	7.6	13.8	30.7	20.4	15.3	12.3	10.2	8.8	7.0	
		2H8	12.9	14.1	31.3	20.9	15.7	12.5	10.4	9.0	7.8	
		2H10	19.1	14.6	32.4	21.6	16.2	13.0	10.8	9.3	8.1	

TABLE 23. 440 X 215^{MM} LINTEL UNIT ONLY

Lintel Width	Block Ref	Reinforcement (high yield)	ULS Moment (kNm)	ULS Shear (kN)	Safe UDL in kN/m for span (mm)							
					600	900	1200	1500	1800	2100	2400	
100	D28/D14	1H6*	1.3	2.6	5.8	3.9	2.9	2.3	1.9	1.6	1.2	
		1H8*	2	2.8	6.2	4.1	3.1	2.5	2.1	1.8	1.6	
		1H10*	2.2	3	6.7	4.4	3.3	2.7	2.2	1.9	1.7	
140	H28/H14	1H6*	1.3	3.4	7.6	5.0	3.8	3.0	2.1	1.6	1.2	
		1H8*	2.1	3.5	7.8	5.2	3.9	3.1	2.6	2.2	1.9	
		1H10*	2.7	3.7	8.2	5.5	4.1	3.3	2.7	2.3	2.1	
190	A28/A14	2H6	2.3	4.8	10.7	7.1	5.3	4.3	3.6	2.8	2.1	
		2H8	2.8	5.2	11.6	7.7	5.8	4.6	3.9	3.3	2.6	
		2H10	2.8	5.6	12.4	8.3	6.2	5.0	4.1	3.4	2.6	
215	F28/F14	2H6	2.5	5.3	11.8	7.9	5.9	4.7	3.9	3.0	2.3	
		2H8	3.9	5.7	12.7	8.4	6.3	5.1	4.2	3.6	3.2	
		2H10	4.2	6.1	13.6	9.0	6.8	5.4	4.5	3.9	3.4	

COVER FOR REINFORCEMENT

Note that BS 5628: Part 2 requires that cover for durability is measured from the insitu concrete only, whereas cover for fire resistance may include the thickness of the masonry lintel/bond beam units.

SEQUENCE OF CONSTRUCTION

The sequence of trough lintel construction is as follows:

- build the blockwork to the soffit height of the lintel
- provide temporary propping to the lintel units
- lay the lintel units with a 10mm wide x 20mm deep temporary spacer in each joint. Temporary joint spacers can be of any material which provides adequate retention of the concrete infill and can be removed for pointing (e.g. polystyrene)
- place concrete in the bottom of the lintel units
- fit plastic spacers to the reinforcement to ensure correct concrete cover
- place reinforcement as appropriate
- complete in-situ filling, tamping by hand
- after curing period strip propping, remove temporary joint spacers and point joints carefully to match surrounding blockwork

The minimum specification for infill concrete is:

- Aggregate: 10mm (maximum)
- Concrete Strength: 40N/mm² (minimum)
- Slump: 75mm (minimum)

HELPFUL HINT

To achieve the figures in tables 20 and 22, for a lintel unit with one course of masonry and bed joint reinforcement above, both the reinforcement and the course of masonry must be bedded into the concrete during construction, in a single operation, and left to cure.

FIG 38 LINTEL UNITS

