

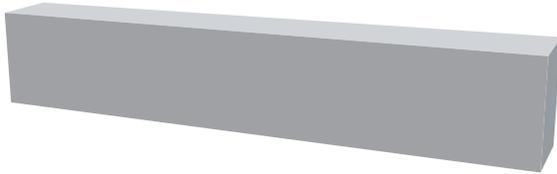
Lintels - Reinforced Beam and Trough Lintels

Lignacite Ltd produces two distinct types of lintel - the conventional reinforced Beam Lintel and the Trough Lintel Block which is infilled with reinforced concrete on site. Both are available in most of our product ranges.

Beam Lintels

Description

Conventional reinforced Beam Lintels are hand cast in a mould box using semi-dry mixes. The types available are intended to provide a close match to the facing blocks that we produce including Lignacite, Lignacrete and the various Facing Masonry ranges. Due to the manufacturing method, the maximum clear spans achievable are limited by the shear resistance of the semi-dry concrete.



Standards

Beam Lintels conform to BS EN 845-2. Quality is controlled at every stage with procedures assessed and certified to BS EN ISO 9001.

Lintel Range

Beam Lintels are manufactured using the same materials as those used in the production of our blocks. Please refer to separate data sheets on these products. Although we aim to achieve the closest possible match between our blocks and Beam Lintels, some variation in colour and texture will occur. This is a result of the different methods of manufacture used to produce these products.

Dimensions

Lintel height is 215mm.
Lintel widths 75mm to 215mm.
Lintel lengths: for 75mm to 100mm width, lengths up to 2240mm. For 140mm width and above, lengths up to 2690mm.

When determining the overall length of Beam Lintels, please ensure to add the length of the bearings at each end to the structural opening size. We generally recommend that a 215mm end bearing is provided at each end.

Design

Beam Lintels are intended to span openings in masonry walls where no point load or openings occur within the 60° load triangle (Fig.5.1). Please refer to the Product Data sheets on Beam Lintels for structural properties.

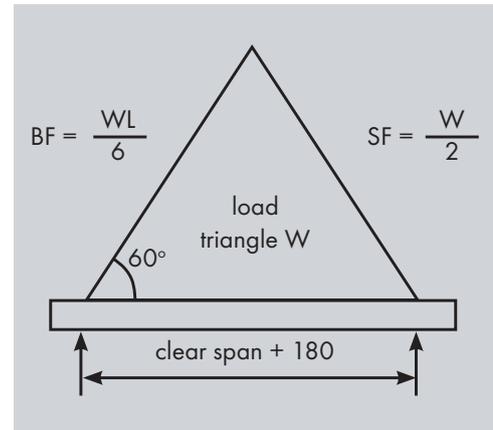


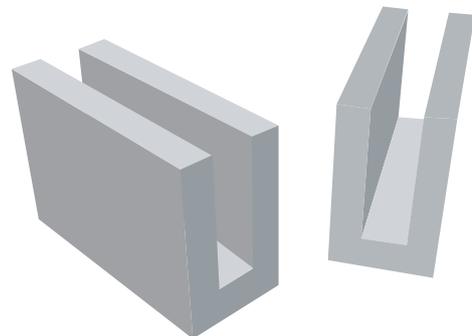
Figure 5.1 - Triangular Load

Carbon steel reinforcement is used in the manufacture of our Beam Lintels. This specification is suitable for use in exposure class MX1 as indicated in the National Annex to BS EN 1996-1-1. For higher exposure conditions please contact Lignacite Ltd for advice.

Trough Lintel Blocks

Description

Trough lintels are intended to span openings in walls whilst maintaining the appearance of the surrounding masonry. They are constructed using Trough Lintel Blocks, which are cut from the same blocks produced on the block machine enabling a close colour and texture match. The open core is filled on site with horizontal reinforcement and concrete infill. Trough Lintel Blocks can be produced in Lignacite, Lignacrete and the Facing Masonry ranges.



Standards

Trough lintels should be designed in accordance with BS 5628-2 "Code of Practice for the Use of Reinforced Masonry" or equivalent European design standards.

Lintels

Lintel Range

Trough Lintel Blocks are produced to provide a close colour and texture match to blocks in the following ranges:

Commodity ranges - Lignacite and Lignacrete

Facing Masonry ranges - Original, Premier, Riverbed and Sahara.

Please refer to separate data sheets on these products.

Dimensions

Trough Lintel Block height is 215mm	
Trough Lintel Block widths:	100mm and 140mm
Trough Lintel Block lengths:	100mm width units - 215mm or 440mm lengths
	140mm width units - 215mm in length when cut from cellular blocks or 215mm and 440mm lengths when cut from solid blocks.

Design

The design of trough lintels should be entrusted to the Project Engineer. However for guidance, the safe uniformly distributed loads for various block widths and span of openings are provided in Table 5.1. The concrete infill is assumed to be a minimum strength of 40 N/mm² with a nominal maximum size of 10mm aggregate. The safe working loads within the tables assume a partial safety factor on loading of 1.5 to convert the lintel's ultimate strength to the safe working loads. The span of the lintel is taken as the distance between the centre line of the bearings.

The type of reinforcement and its concrete cover should be suitable for the appropriate Exposure situation. As a guide, the use of carbon steel reinforcement, with the specified concrete cover, is suitable for MX1 Exposure situations as indicated in the National Annex to BS EN 1996-1-1. For higher exposure conditions, consideration should be given to the use of austenitic stainless steel in accordance with BS EN 10088.

The end bearing of the lintel must be calculated by the designer taking into account the compressive strength of the blockwork at the bearings and the anchorage requirements of the reinforcement.

Table 5.1 - Structural Performance of Reinforced Trough Lintels 215mm high.

Lintel Size		Reinforcement	ULS	ULS	Safe UDL in kN/m for clear span (mm)						
Width mm	Depth mm				High Yield	Moment kNm	Shear kN	600	900	1200	1500
100	215	1 T8	1.8	3.1	6.0	4.2	3.2	2.6	2.2	1.9	1.6
		1 T10	2.2	3.6	7.0	4.9	3.7	3.0	2.5	2.2	1.9
140	215	1 T8	2.4	3.9	7.5	5.3	4.0	3.3	2.7	2.4	2.1
		1 T10	2.7	4.6	8.7	6.1	4.7	3.8	3.2	2.7	2.4
190	215	2 T8	3.5	5.9	11.0	7.9	6.1	4.9	4.2	3.6	3.1
		2 T10	4.1	6.9	13.1	9.2	7.1	5.7	4.8	4.1	3.6
215	215	2 T8	3.9	6.5	12.4	8.6	6.6	5.4	4.5	3.9	3.4
		2 T10	4.5	7.5	14.3	10	7.7	6.2	5.2	4.5	4.0

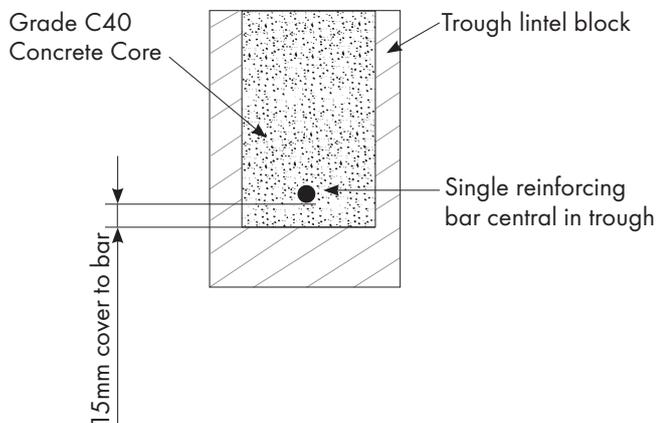


Figure 5.2 - Typical detail of Lintel with Single Reinforcing Bar.

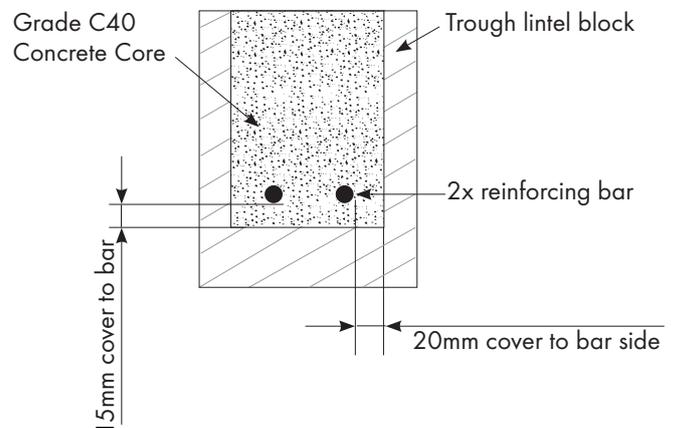


Figure 5.3 - Typical detail of Lintel with Double Reinforcing Bar.

Cover for reinforcement

Please note that BS 5628-2 requires the cover for durability to be measured from the in situ concrete only, whereas cover for fire resistance can include the thickness of the trough unit.

Sequence of construction

The sequence of Trough Lintel Block construction is as follows:

- Build the facing masonry to the soffit height of the lintel.
- Provide temporary propping to the Trough Lintel Blocks.
- Lay the Trough Lintel Blocks 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 the specified concrete fill in the bottom of the trough units.
- Fit plastic spacers to the reinforcement to ensure correct concrete cover.
- Place reinforcement as appropriate.
- Complete in-situ filling, tamping by hand.
- After a curing period, strip propping, remove temporary joint spacers and point joints carefully to match surrounding facing masonry.

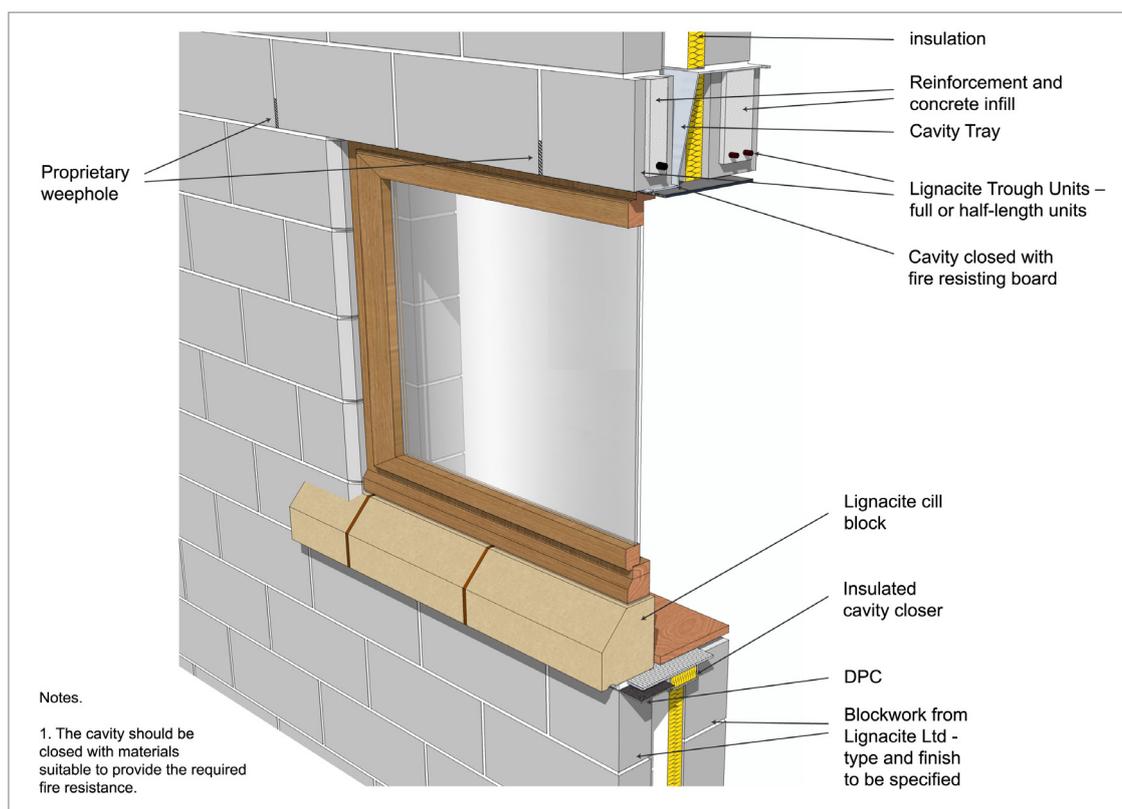


Figure 5.4 - Lintel Block Construction