

INSTALLATION

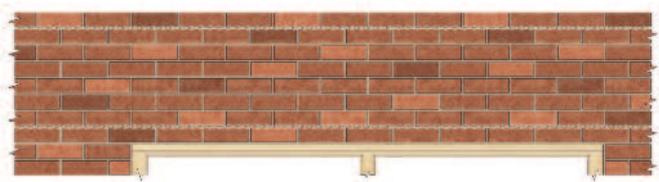
ANZ
NH03

Constructing a new tied arch lintel using HeliBars

Product	Description	Code
HeliBar	Stainless steel reinforcement	HBR

Method Statement

1. Uncoil the HeliBars at least 24 hours prior to installation to ensure that they lie flat and straight.
2. Build up brickwork pillars to required height and leave to harden for 24 hours.
3. Fix formwork to support the beam between the pillars and position approx. 10mm above the brickwork to allow for the mortar which will be used to build the beam over the pillars. The formwork directly under the beam should be covered (use plastic etc) to stop mortar adhering to it. Formwork must be secure and solid yet fixed so that it can be removed easily without damaging the beam.
4. Lay the first course of brickwork, with the bricks laid frog up, over the full length of beam. Lay directly onto the formwork but bed into the mortar over the pillars. Ensure that ALL perp ends are FULL of mortar.
5. Lay a half thickness bed of mortar over the entire length of the beam.
6. Bed the specified number of HeliBars into the mortar, using bricks to hold them in place. The HeliBars must be straight and must extend at each end 500mm beyond the span supported by them. The number of HeliBars required will depend on the span and load carried by the Helibeam. Typically two 6mm HeliBars will be used, with each being positioned 30mm in from the brick faces.
7. Starting from one end, lay the second course of brickwork on to the HeliBars by laying another half thickness bed on top of the bars. This course should be well bedded in to ensure that the HeliBars are completely covered in mortar.
8. Complete the courses above as normal, installing additional Helibars in any further courses as specified. It is important to ensure that the HeliBars are always fully embedded in the mortar, are not disturbed and that all perp ends in the beam are completely filled with mortar.
9. Ensure that the beam is kept damp for 2 to 3 days minimum.
10. Leave the formwork in place for a minimum of 7 days and ensure that the beam is not disturbed during its removal.



*SPECIFICATION NOTES

The following criteria are to be used unless specified otherwise:

- A. This detail and the associated load table relate to tied arch (concealed lintel) construction using clay masonry only. Alternative build methods and specifications may be required for the construction of lintels using concrete, AAC or any other cement-based masonry bricks or blocks which are prone to shrinkage over time.
- B. A reinforcement pattern which takes into account the individual circumstances and requirements, and which adheres to the guidelines provided by the SAA Masonry Code AS3700-2001, must be specified and followed for each situation involving the installation of HeliBars into new masonry. The load table presented on the following page may be used as a guide to the specification of tied arches design in accordance with the Australian masonry codes.
- C. The HeliBar should be embedded in the mortar of the specified courses, either 2, 3 or 4 rods per bed, as construction progresses.
- D. The beams should be built in situ and should not be moved or knocked.
- E. It is critical that the HeliBars are fully embedded in the mortar during construction. They should not be moved or loosened once the mortar has been laid.
- F. Minimum mortar strength Type M3 (C1:L1:S5) in accordance with the masonry code. Bond strength is critical and the use of air entraining agents or other additives likely to reduce bond strength is to be avoided. For increased workability of the mortar a cellulose-type thickener such as 'Dynex' may be used in accordance with the manufacturer's instructions.
- G. The Helibeam must not be broken by flashings, damp-proof courses or weep holes.
- H. In high ambient temperatures (above 25°C) do the following
 - a) Match the brick suction with the mortar water retention for maximum bond strength
 - b) Pre-wet bricks with high initial rate of absorption

The above specification notes are for general guidance only and Helifix reserves the right to amend details/notes as necessary.

GENERAL NOTES

- Product details available from Helifix.
- Contact Helifix if your application differs from this repair detail or you require specific technical information.

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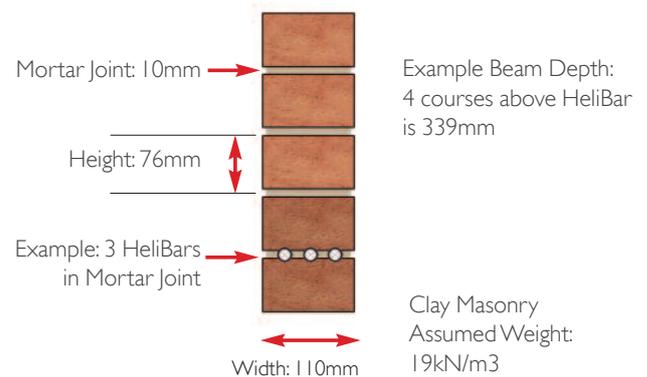
LOAD TABLE – TIED ARCH (CONCEALED LINTEL) DESIGN

Courses above HeliBars	Effective Beam Depth (mm)	Number of HeliBars	LINTEL CLEAR SPAN (MM)						Design Moment kNm	Design Shear kN	Ultimate Moment kNm
			1200	1800	2400	3000	3600	3900			
			Superimposed Uniformly Distributed Safe Load (kN/m)								
3	253	2	9.30	3.73	1.79	0.88	0.39	0.23	1.80	6.82	2.58
3	253	3	10.64	5.86	2.98	1.65	0.93	0.68	2.66	6.82	3.81
4	339	2	12.63	5.12	2.48	1.27	0.60	0.38	2.44	9.14	3.48
4	339	3	14.33	8.02	4.12	2.31	1.33	1.00	3.61	9.14	5.16
5	425	2	15.97	6.50	3.18	1.65	0.82	0.54	3.07	11.45	4.38
5	425	3	18.01	10.18	5.25	2.97	1.74	1.32	4.56	11.45	6.52
6	511	3	21.69	12.34	6.39	3.64	2.14	1.64	5.51	13.77	7.87
6	511	4	21.69	14.04	8.86	5.22	3.24	2.58	7.29	13.77	10.42
7	597	3	25.38	14.50	7.53	4.30	2.55	1.96	6.46	16.09	9.23
7	597	4	25.38	16.44	10.44	6.16	3.84	3.06	8.55	16.09	12.22
8	683	3	29.06	16.66	8.67	4.96	2.95	2.28	7.40	18.41	10.58
8	683	4	29.06	18.83	12.02	7.11	4.44	3.55	9.82	18.41	14.03
9	769	3	32.74	18.83	9.80	5.63	3.36	2.60	8.35	20.72	11.93
9	769	4	32.74	21.23	13.59	8.05	5.04	4.03	11.08	20.72	15.83
10	855	3	36.43	20.99	10.94	6.29	3.76	2.91	9.30	23.04	13.29
10	855	4	36.43	23.36	15.17	9.00	5.64	4.52	12.35	23.04	17.64

TABLE NOTES

- The figures presented in this table relate to the structural performance of tied arches constructed from clay masonry and designed in accordance with the Australian masonry codes. Design data have been verified by practical tests on 4.2m clear span beams carried out by the Department of Civil Engineering and Surveying at the University of Newcastle under the supervision of Professor A.W. Page.
- The additional benefits of continuous brickwork and loading over end supports are ignored in this design table but can result in considerable improvements in the performance of the reinforced masonry.
- HeliBar reinforcement contributes to the strength of the masonry in both the uncracked and cracked state. Masonry only acts as reinforced masonry when some deflection and micro cracking of the masonry has occurred, permitting the steel reinforcement to take effect. This design table limits the deflection to less than Span/300. Further reduction of deflection and micro cracking can be achieved by using additional HeliBars.
- For design purposes the characteristic tensile strength (f_{sy}) of the reinforcement is taken as 700MP.
- Loads shown satisfy both Design Moment and Design Shear.

STANDARD MASONRY SPECIFICATION



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