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August 2015

HELIFIX

SUSTAINABLE STRUCTURAL SOLUTIONS

Masonry Repair and Reinforcement Strategies

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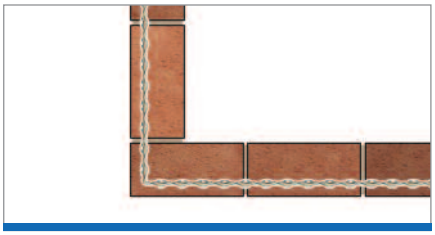
Helifix innovative systems, with their concealed non-disruptive installation techniques, are extremely versatile and adaptable, and have wide ranging applications. Not only will they reliably, economically and sympathetically restore structural integrity in weakened masonry by overcoming virtually all commonly occurring faults, they can also be used to strengthen and improve the performance of existing buildings, offering increased protection against seismic activity.

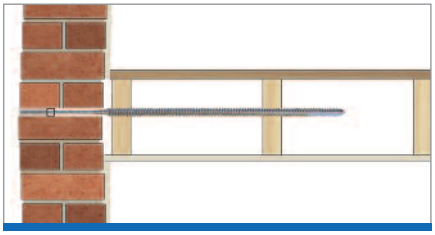
1 Tying walls

Remedial wall ties are installed to tie masonry leaves together or veneers to internal structural frames. Depending on construction type and site conditions, DryFix ties may be driven directly into each leaf, via a small pilot hole, to provide a completely dry connection; or ResiTies may be bonded into clearance holes to provide a resin-based fix at both ends of each installed tie; or RetroTies may be driven into a pilot hole in the remote leaf, via a clearance hole in the near leaf into which they are resin bonded, to provide a dry/resin combination fix.



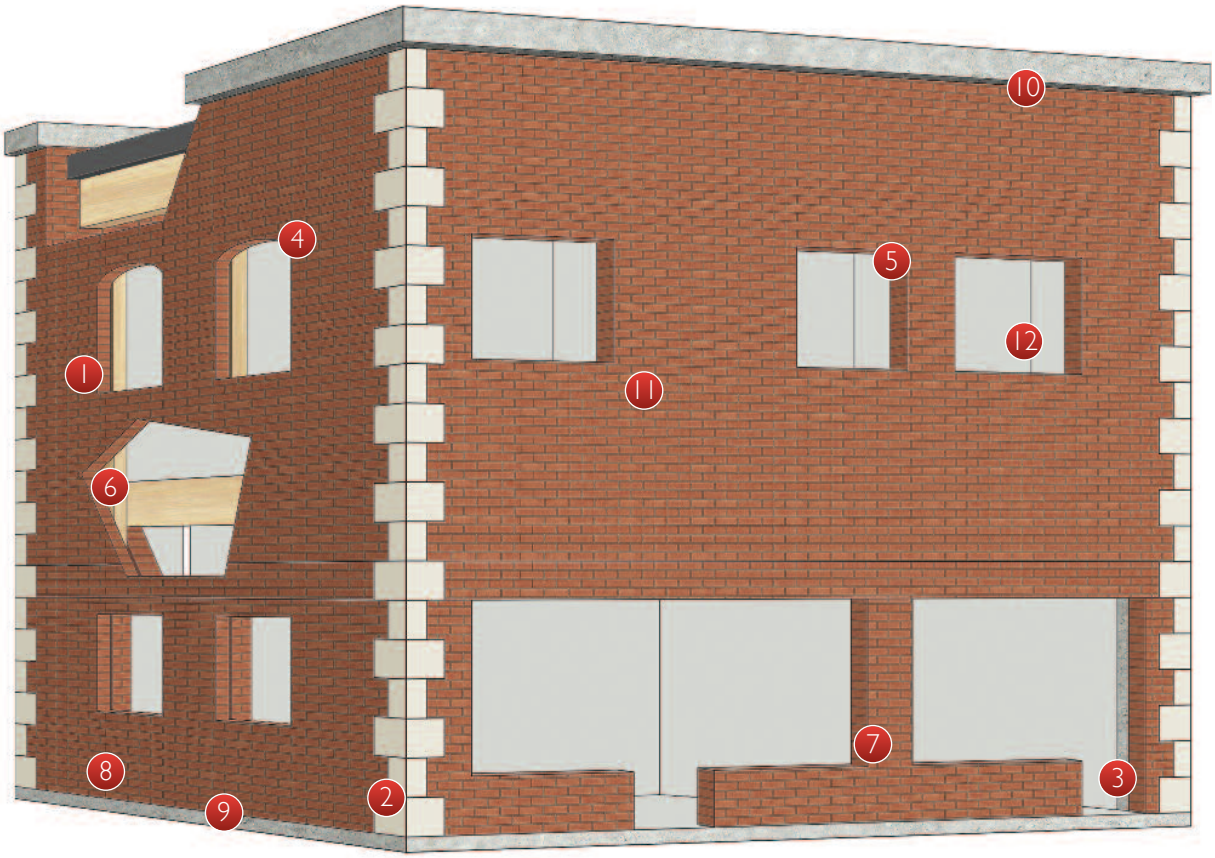
2 Tying corners

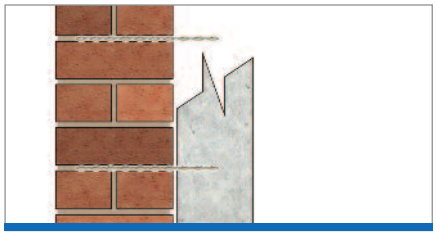
Lengths of HeliBar are bent and bonded into slots cut into the near and return wall at predetermined intervals with HeliBond grout.



6 Tying walls to joist sides

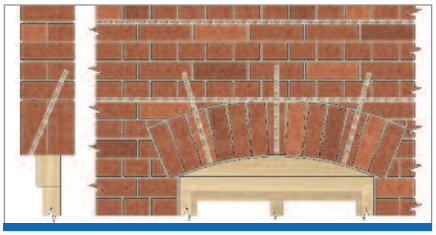
BowTie HDs are inserted through clearance holes in the masonry and power driven through the first and second joists (and third, if required) before the outer end is bonded into the masonry with EpoxyPlus resin.





3 Tying masonry to new concrete

DryFix ties are installed directly into the wall via a small pilot hole. The tail of the tie is left exposed to be covered by the newly applied concrete.

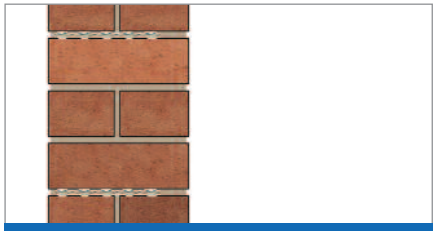


4 Repairing brick arch lintels

Parallel lengths of HeliBar reinforcement are bonded into the specified cut slots directly above the existing lintel. Angled CemTies or DryFix ties are installed through the lintel and into the masonry above the lower HeliBars.

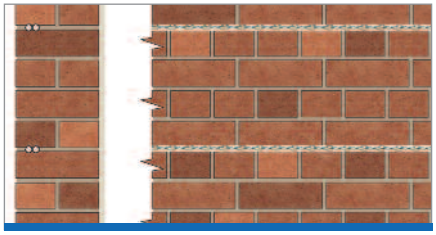
5 Tying intersecting walls

CemTies are installed simultaneously with HeliBond grout into angled clearance holes drilled through the external wall and into the internal wall to the required depth.



7 Pinning multi-leaf masonry

DryFix ties, CemTies or ResiTies, depending on requirements, are installed directly into the wall at regular intervals. DryFix ties are driven directly into the wall, via small pilot holes. CemTies and ResiTies are installed into clearance holes with HeliBond grout or EpoxyPlus resin respectively.

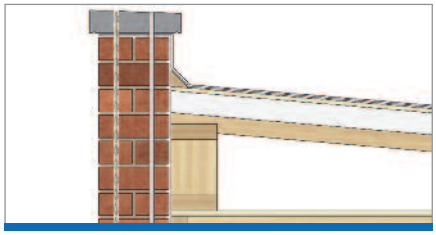


8 Creating masonry beams

Parallel lengths of HeliBar reinforcement are bonded into predetermined cut slots (normally cut into the mortar beds) using HeliBond grout to form deep masonry beams which distribute the building loads. Helibeams may be used to resist both vertical and lateral loads.

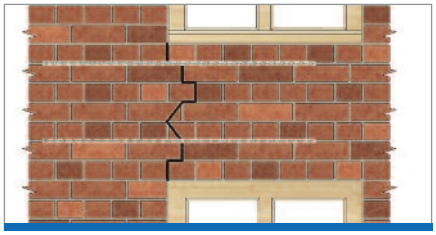
9 Concrete crack injection

CrackFix resin is injected directly into the crack via injection ports that are affixed to the wall. The ports are mechanically removed from the wall once the resin has cured.



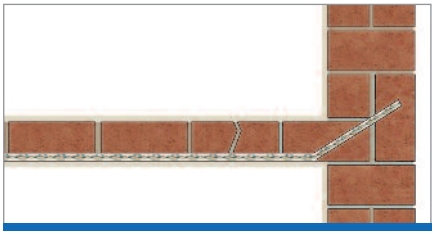
10 Parapet repairs

CemTies are installed simultaneously with HeliBond grout into clearance holes drilled down into the wall to the required depth. Parallel lengths of HeliBar reinforcement are bonded into predetermined cut slots (normally cut into the mortar beds) with HeliBond grout to tie the masonry together and form masonry beams. DryFix ties and BowTies are installed wherever possible to tie the masonry to joists and timber frames to complement and further reinforce any other lateral restraint systems used.



11 Crack stitching

Lengths of HeliBar extending 500mm either side of the crack are bonded into slots normally cut into the mortar beds, using HeliBond grout. Where cracks are less than 500mm from an external corner or an opening, at least 100mm of HeliBar should be bent round the corner and bonded into the return wall or bent and fixed into the reveal, avoiding any DPC membrane.



12 Reconnecting walls

Predetermined slots on the internal wall are channelled out to the specified length into the corner. Angled holes of 10mm are drilled from the corner into the external wall. Single lengths of HeliBar are bent to shape with the angled end bonded into the hole with EpoxyPlus resin and the remainder grouted with HeliBond cementitious grout into the internal wall.

Websites

For full details of Helifix masonry repair and reinforcement strategies visit:
www.helifix.com.au or **www.helifix.co.nz**

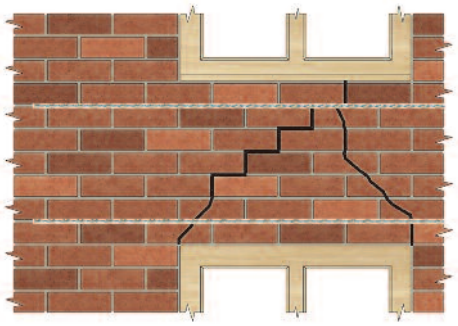
- Complete details of all remedial products and their wide ranging applications
- Full list of Product Data Sheets with installation instructions
- Downloadable Repair Details with recommended tooling, specifications and method statements covering all common structural faults
- Wide selection of project case studies

Helifix austenitic stainless steel ties, fixings and structural reinforcements are simple one-piece products, precision engineered to a unique helical Hi-Fin design and purpose-designed for specific applications. Independently tested, approved and widely used, they are quick and easy to install, fully concealed, effective, reliable and economical.

HeliBar - adding strength and ductility

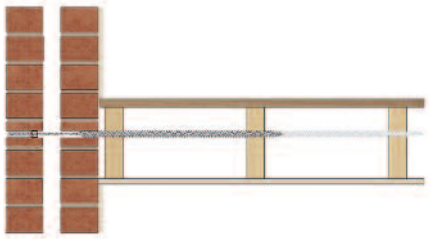
HeliBar is a versatile helical stainless steel reinforcing bar used for strengthening and stabilising new build and existing masonry. HeliBars provide substantial tensile properties to masonry when bonded with HeliBond cementitious grout and improve the ability of buildings to deform without collapsing which is an important part of seismic strengthening programmes. They bond the masonry together and distribute stresses over larger areas. Consequently, they have a variety of applications.

- Crack stitching
- Forming deep masonry beams
- Tying corners and wall junctions
- Reconnecting separated walls
- Lintel stabilisation and creation
- Horizontal structural restraint
- Reinforcing new build masonry
- Providing seismic upgrades



BowTie

– stabilising bowed building walls



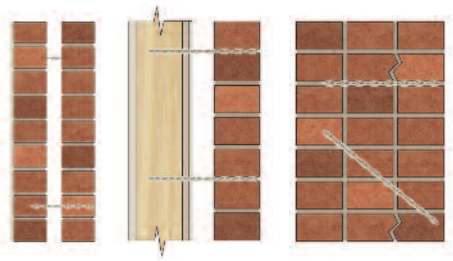
BowTie is a wall tie system for securing masonry walls to internal timber joists. BowTie HDs are used when tying to parallel joists. The standard BowTie is a self-tapping helical tie while BowTie HD is a 12mm threaded bar with self-cutting end. They are both inserted into a clearance holes drilled through the masonry before being driven into the joists - the Bowtie HD through the first and subsequent joists and the BowTie into the joist end to a minimum depth of 75mm. The outer ends are then bonded into the masonry wall with EpoxyPlus resin.

- Quick, easy, non-disruptive
- Self-tapping – no splitting of timbers
- Effective in all common wall materials
- Important component of seismic upgrades
- Fully concealed – no unsightly external plates

DryFix - retrofit wall ties

Failed, omitted or inadequate wall ties can lead to catastrophic collapse particularly during high winds and seismic events and in coastal areas. There are Helifix remedial ties for all situations and materials and DryFix ties are probably the quickest and most cost-effective ties available. Requiring no grouts or resins, they are simply power-driven into both leaves, via a small pilot hole, using a special attachment which leaves the tie recessed below the face.

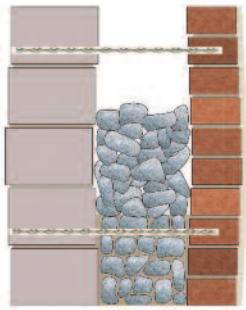
- Slim, self-tapping, stainless steel tie
- Highly economical and easy to install
- Replacement wall tie
- Securing multiple layers of masonry
- Pinning delicate masonry features
- Pinning render and thin panels
- Seismic retrofit in masonry walls



CemTie - fully grouted tie

CemTie is a fully grouted reinforcement tie that is installed simultaneously with HeliBond cementitious grout into drilled clearance holes to produce great tensile strength combined with rotational flexibility. Quick and easy to install, it causes minimal disturbance to the building fabric, is very cost-effective and ideal for overhead installations. It is suitable for use in a variety of situations.

- Securing fractured solid masonry
- Bonding wall junctions
- Reconnecting internal and external walls
- Stabilising masonry arches
- Securing bulging solid or rubble-filled walls



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A division of Ancon® BUILDING PRODUCTS

98 Kurrajong Avenue, Mount Druitt, Sydney, NSW 2770, Australia
Tel: 1300 66 70 71 • Fax: 02 9669 1702 • email: sales@helifix.com.au
www.helifix.com.au

2/19 Nuttall Drive, Hillsborough, Christchurch 8022, New Zealand
Tel: 03 376 5205 • Fax: 03 376 5206 • email: info@helifix.co.nz
246D James Fletcher Drive, Otahuhu, Auckland 2024, New Zealand
Tel: 09 276 2236 • Fax: 09 276 2237 • email: info@helifix.co.nz
www.helifix.co.nz

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