

Consulting Civil, Structural & Geo-Environmental Engineers

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Project:
Springwood,
Stoneyhurst,
BB7 9PN

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Report Ref:
23269-PWA-00-XX-RP-S-1000.F01

Prepared For:
Zara Moon Architects

Date:
September 2023

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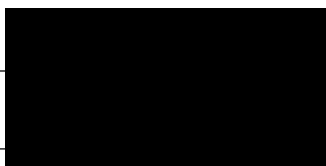
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Appendix B – Helifix Crack Stitching
Appendix C – Helifix CemTies

1. Brief

- 1.1. This report is confined to an inspection of the structural elements of Springwood Barn. Therefore, the report excludes any inspection or comment on electrical and mechanical installation, decorative conditions, damp proofing, non-structural timber fixtures, fittings, mouldings, coverings and all other non-structural matters.
- 1.2. Whilst we will use all reasonable skill and care in preparing this report, it should be appreciated that we cannot guarantee that the property will be free from future defects or that existing defects will not suffer further deterioration.
- 1.3. The purpose of the report is to comment on the structural condition of the Barn for its suitability for converting to a guest annex and comment on any structural defects which will need addressing during the course of conversion.

2. Unexposed Parts

- 2.1. Internal inspection is made within the limits of ready accessibility, and it is not normal practice to expose foundations, encased beams or give detailed inspections to the roof timbers.

3. Method Inspection

- 3.1. External and internal inspection of the Barn has been carried out from ground level. This means that parts of the structure, such as the roof timbers could not be inspected in detail, and we cannot confirm that they are free from defect.

4. Disclosure to a Third Party

- 4.1. This report may not be relied upon by a third party for any purpose without written consent of this practice. Furthermore, this report has been prepared and issued specifically for the benefit of the addressee and no responsibility will be extended to any third party for the whole or any part of its content.

5. Description of the Site

- 5.1. Springwood Barn is located down a track off the B6243 in Stoneyhurst. The Barn is a two-storey structure located in the garden of the existing residential property and is currently used for storage.

- 5.2. The stone walls are of rubble fill construction being some 400-500mm thick. All the external elevations are roughly coursed stonework set in lime mortar. Stone quoins are present at external corners.
- 5.3. Internally the walls are also random stone faced, some have been whitewashed. There are some areas that have been constructed from clay brick, mainly around the recess located on the western gable.
- 5.4. The Barn has a roof with a pitch approximately 35°. The roof is clad in blue slates with a stone ridge. The roof structure is a traditional construction of timber purlins and rafters, which span between 2No. timber upper crucks.
- 5.5. It appears that the building has been re-roofed recently as the rafters are sawn timber and the roof has been felted, most of the purlins are also new sawn timber however some of the original purlins still remain.
- 5.6. The front elevation of the Barn appears to have repointed recently.
- 5.7. To the rear of the structure, it appears that a single storey lean-to was connected to the building. This is in a dilapidated state and has partially collapsed.
- 5.8. The internal lintels to the window openings are timber, they appear to be historic and are not a recent addition to the barn. External lintels are a mixture of timber and stone lintels.
- 5.9. The ground floor of the barn is a concrete slab that steps down towards the rear of the barn.

6. Inspection of the Site

- 6.1. The front elevation of the barn has been repointed (photo 1), there are signs of cracking around the left hand window (photo 2). A bulge is also visible above the left-hand window close to the cracking (photo 3), the bulge could be as a result of a lack of ties within the rubble fill walls or due to the poor condition of the internal timber lintels.
- 6.2. The external stone lintels and sills around the windows and door on the front elevation are in good condition and show no signs of cracking or failure (photos 4-5)
- 6.3. The eastern elevation appears to have been repointed in some areas. There are signs of loose or missing mortar across the elevation (photo 6). Cracking can also be seen across the elevation and is more focused around the openings and eaves level (photos 7-8).

- 6.4. Timber lintels are present over the doorway and hay loft door, the lintels are in poor condition and show signs of wet rot (photos 9-10). This is likely as a result of the timber not being maintained and treated allowing the effects of the weather to affect them.
- 6.5. The western elevation of the barn is in poor condition externally, across the elevation there are signs of loose/missing mortar as well as missing stonework (photos 11-13). Cracking can also be seen across the elevation (photos 14-16). Cracks in masonry structures indicate movement has occurred. This could mean settlement has occurred in the foundations of the property.
- 6.6. Stone lintel can be seen externally on the western elevation over the ground floor window, the lintel appears to be in good condition with no signs of cracking or failure. Timber lintel is present over the first floor window, the lintel is in poor condition and has been affected by wet rot (photo 17).
- 6.7. Foundation stones are visible externally indicating that there is likely to be no/little foundations beneath ground floor level (photo 18).
- 6.8. The rear elevation of the barn appears to be in fairly good condition for the age of the barn, however access was limited due to the collapsed lean to building to the rear of the barn (photos 19-20). Areas of loose/missing mortar can be seen in some areas (photo 21)
- 6.9. Over the doorway is a timber lintel, the lintel is in poor condition and is showing signs of dry rot (photo 22). As a result of the poor condition of the lintel, the masonry above has started to crack and bulge.
- 6.10. The lean to building to the rear of the barn is in a state of disrepair (photo 23) and looks to have been this way for some time. The roof has fully collapsed and the walls are now starting to collapse. The area is very overgrown therefore we were unable to undertake a full survey of the structure
- 6.11. Trees are growing in close proximity to the rear elevation of the barn and the lean to (photo 24). Trees can cause movement in the foundations therefore further investigations of the foundations and their depths should be undertaken to confirm if any nearby trees are affecting the structure.
- 6.12. The roof appears to have been re-roofed recently therefore the roof looks to be in good condition, there is one slipped slate to the rear (photo 25) but other than this the slates are in good order and the ridge is level.
- 6.13. Internally, the barn is being used for storage at ground floor level therefore access was limited. The concrete ground floor slab appears to be in good condition with no obvious signs of cracking (photos 26-27).

- 6.14. Vertical cracking can be seen internally at ground floor level that appears to mostly originate from first floor level (photo 28).
- 6.15. The first-floor structure looks to have been replaced with a modern timber floor (photo 29), originally the first floor would have likely span between the ceiling ties of the upper cruck however, the first-floor joists now span between a series of timber beams that have been installed alongside the ceiling ties. The timber beams are in good condition. Cracking can be seen beneath the bearing of the timber beams supporting the first floor structure (photo 30), it is likely that no padstones have been provided beneath the beams to spread the load into the masonry.
- 6.16. The ceiling ties of the upper cruck are in poor condition and show signs of dry rot as well as woodworm (photos 31-32). Historically, the ceiling ties of the upper cruck would have supported the first floor joists, however with the introduction of the new timber beams this is no longer the case.
- 6.17. At first floor level, the curving members of the upper cruck are in poor condition with signs of dry rot and woodworm in some areas (photos 33-34). The cruck frames also appear to twist slightly and do not run parallel with the gable walls (photo 35). The tie beam towards the top of the cruck has been removed on one of the frames, remedial works have been undertaken with a small timber tie placed higher than the original tie. This appears to be insufficient (photo 36).
- 6.18. The upper cruck supports the roof purlins and ridge beam. Purlins have previously been replaced. The original purlins show signs of dry rot as well as woodworm and are in a poor condition (photos 37-38). The new purlins are sawn timber and visually appear to be in good condition.
- 6.19. Cracking can be seen across most of the external walls at first floor level with the largest cracks measuring up to 45mm wide (photos 39-41). The cracking is likely as a result of a lack of ties within the building as well as movement to the foundations.
- 6.20. Timber lintels are located over the windows and doors internally, most of the lintels are in poor condition (photos), with some of the lintels failing (photo 42).

7. Recommendation

- 7.1. From the structural survey, the Barn appears to be in a fair condition considering its age and nature. The barn has a number of defects mostly associated with the stone walls and timber beams/lintels which will need to be addressed during the course of the refurbishment and conversion works.

- 7.2. It is assumed that a blockwork liner wall will be constructed to the internal perimeter of the Barn to allow for insulation to be introduced into the Barn. The new blockwork liner should be tied back to the existing external walls using wall ties at appropriate horizontal and vertical centers. The wall ties should allow for vertical movement to allow for any settlement between the liner walls and existing walls.
- 7.3. The open bed joints in the external walls should be raked out and filled with a suitable lime mortar, as should all minor cracks elsewhere in the stonework, both internally and externally. Loose/missing stonework should be locally re-built and re-pointed with lime mortar. Walls should be monitored for further movement.
- 7.4. The bulge in masonry on the front elevation is likely as a result of a lack of ties in the rubble fill walls, remedial works should be undertaken in the areas required to stabilise the walls. Helifix CemTie (appendix C) should be used to stabilise the walls and prevent any further movement.
- 7.5. All timber lintels should be removed and replaced with a suitable alternative. Any cracking above the openings can then be repaired using the Helifix HeliBar crack stitching repair method (appendix B) and repointed.
- 7.6. Suitably sized padstones should be installed beneath the bearing of the timber beams supporting the first floor. This will allow the load from the first floor to be safely transferred into the masonry. Any cracking below the bearings can then be repaired using the Helifix HeliBar crack stitching repair method (appendix B) and repointed.
- 7.7. Cracks over 5mm in external walls should be repaired using the Helifix HeliBar crack stitching repair method (appendix B) and repointed. Further monitoring may be required to ensure no further movement occurs.
- 7.8. Due to access limitations the condition of the existing timber cruck and purlins are unknown. Some of the timber members appeared to be rotten and indicated signs of woodworm therefore a timber specialist should be consulted to verify the existing timbers that can be retained and make any suggestions for recommended timber treatments.
- 7.9. Further investigations should be carried out on the depth and size of the existing foundations, it is likely that the majority of the movement within the structure has been caused by movement in the foundations. Underpinning may be required to the foundations to stabilise the structure and reduce any further movement. From reviewing geological records in the area, we expect that the ground consists of Devensian till which is susceptible to heave.
- 7.10. Trees located in very close proximity to the building and its foundations should be removed and foundations assessed for any damage. Trees on site should also be

assessed to ascertain if any of the nearby trees are affecting the foundations. Depending on the landscape proposals for the site trial pits would be advised to confirm the ground conditions.

- 7.11. If proposals for the site include the conversion of the lean to building to the rear of the barn, the remaining structure will require taking down and being rebuilt with suitable foundations.

8. Conclusion

- 8.1. Apart from the defects noted in this report, the Barn appears to be in a fair condition considering its age and nature. Given this the Barn at Springwood is suitable for the proposed conversion, providing that the recommendations noted in this report are carried out.
- 8.2. Investigations should be undertaken on the existing foundation for the barn, it is likely that there are no substantial foundations for the building due to the age of the structure. Underpinning is likely required to the foundations to ensure the structure is found on suitable strata and prevent further movement.
- 8.3. In addition, the proposed conversion works will only add robustness to the barn with the introduction of a new first floor and strengthened walls which will provide the effective restraint required to limit any further movement in the building.

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Appendix A

Site Photos

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Photo 1 – Front elevation that has been pointed

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Photo 2 – Cracking around window on front elevation

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Photo 3 – Bulging masonry above front elevation window

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Photo 4 – Stone lintel on front elevation



Photo 5 – Stone lintel over door on front elevation

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Photo 6 – Eastern elevation with missing mortar and partial repointing



Photo 7 – Cracking around openings on eastern elevation

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Photo 8 – Cracking and missing mortar at eaves level of eastern elevation



Photo 9 – Timber lintel over hay loft opening

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Photo 10 – Timber lintel over doorway

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Photo 11 – Western elevation of barn

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Photo 12 – Cracking and missing masonry on western elevation

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Photo 13 – missing mortar on western elevation

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Photo 14 – Cracking on western elevation

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Photo 15 – Cracking on western elevation

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Photo 16 – Cracking on western elevation

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Photo 17 – Rotten timber lintel at first floor level



Photo 18 – No sign of foundations or foundation stones

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Photo 19 – Rear elevation of barn



Photo 20 – Rear elevation of barn and derelict lean to

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Photo 21 – Missing mortar on rear elevation



Photo 22 – Diagonal cracking over rotten timber lintel

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Photo 23 – Derelict lean-to to rear of barn



Photo 24 – Tree growing in close proximity to rear wall of barn

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Photo 25 – Slipped roof slate to rear



Photo 26 – Concrete floor internally

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Photo 27 – Internal layout of barn at ground floor level

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Photo 28 – Cracking in internal masonry

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Photo 29 – Sawn timber structure for first floor



Photo 30 – Cracking beneath bearing of timber beams

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Photo 31 – Sawn timber structure alongside original ceiling ties of upper cruck



Photo 32 – Dry rot and woodworm on ceiling tie of upper cruck

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Photo 33 – Upper cruck with signs of rot and woodworm



Photo 34 – Upper cruck with signs of rot and woodworm

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Photo 35 – Possible twist in upper cruck



Photo 36 – Replacement tie on upper cruck

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Photo 37 – Original and replacement purlins supported from upper cruck



Photo 38 – Condition of original purlins

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Photo 39 – Cracking in external wall at first floor level

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Photo 40 – Cracking in external wall at first floor level

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Photo 41 – Cracking in external wall at first floor level

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Photo 42 – Failed timber lintel at first floor level

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Appendix B

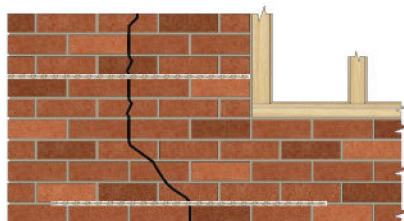
Helifix Crack Stitching

HeliBar

Helical stainless steel reinforcing bar for masonry repair and strengthening in both remedial and new build situations

Applications

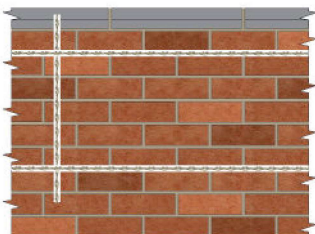
- Crack stitching
- Lintel repair and creation
- Forming deep masonry beams
- Horizontal structural restraint (when used with BowTie systems)
- Reconnecting separated walls
- Securing parapet walls
- Support existing masonry when creating new openings
- Creating movement joints
- Reinforcing new build masonry
- Seismic upgrades for existing masonry
- Repairing bridges, tunnels and arches



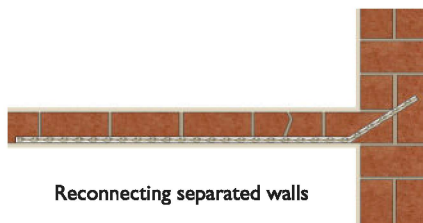
Crack stitching



Lintel reinstatement



Securing parapet walls



Reconnecting separated walls

Over 100 standard repair specifications are available online, covering all common structural faults.

Relevant Repair Details: BW01 & BW02; CS01 to CS14 (except 4, 7, 9, 11 & 12); LB01 to LB05; LR01 to LR11; MA03 to MA05; MJ01 to MJ03; PW01 to PW03; RB06; RF07 & RF09; RW01, 3 & 6;



For full Product Information, Case Studies and downloadable Repair Details go to:

www.helifix.co.uk/products/remedial-products/helibar



Features

- Austenitic stainless steel helical bars
- Combines great axial strength with flexibility
- Accommodates differential building movement
- No additional stresses introduced into structure
- Generates high tensile strength with mortar (new build only) or HeliBond grout
- Extremely economical compared with alternative methods
- May remove or reduce the need for mass underpinning
- Fully concealed once installed
- Avoids expensive taking down and rebuilding
- Minimal disruption to building's fabric or occupants
- Spreads structural loads to avoid secondary cracking
- Reduces the potential for cracking in shrinkable materials



HeliBar is inserted into HeliBond grout within a cut slot

Installation Procedures

1. HeliBar to be long enough to extend a minimum of 500mm either side of the crack or 500mm beyond the outer cracks if two or more adjacent cracks are being stitched using one rod.
2. Where a crack is less than 500mm from the end of a wall or an opening, the HeliBar is to be continued for at least 200mm around the corner and bonded into the adjoining wall or bent back and fixed into the reveal, avoiding any DPC.
3. For solid masonry in excess of 225mm thick and in a cavity wall where both leaves are cracked, the wall must be crack stitched on both sides.
4. If there is render/plaster, this thickness must be added to the depth of slot. Crack stitching must be installed in the masonry and never in the render.
5. Ensure the masonry is well wetted or primed to prevent premature drying of the HeliBond due to rapid de-watering, especially in hot conditions. Ideally additional wetting of the slot should be carried out 1 to 2 minutes prior to injecting the HeliBond grout.
6. Do not use HeliBond when the air temperature is +4°C and falling or apply over ice. In all instances the slot must be thoroughly damp or primed prior to injection of the HeliBond grout.



1. Rake out or cut slots into the horizontal mortar beds, a minimum of 500mm either side of the crack



4. Using the HeliBar Insertion Tool push one HeliBar into the grout to obtain good coverage



2. Clean out slots and flush with clean water and thoroughly soak the substrate within the slot



5. Insert a further bead of HeliBond over the exposed HeliBar, finishing 12mm from face and 'iron' firmly into the slot using the HeliBar Insertion Tool



3. Using the Helifix Pointing Gun, inject a bead of HeliBond along the back of the slot



6. Inject CrackBond TE3 into the crack leaving enough space for making it good. Re-point the bed joints with matching mortar and make good the crack.

Slot Depth and Spacing

	Single skin/ Cavity wall	Solid Masonry		
		Up to 102.5mm	102.5mm to 225mm	Over 225mm
Depth of slot	25 – 35mm	25 – 40 mm	25 – 40 mm	25 – 40mm On both sides
Vertical Spacing	Every 4 – 6 courses, 300 – 450mm			

Technical Specifications

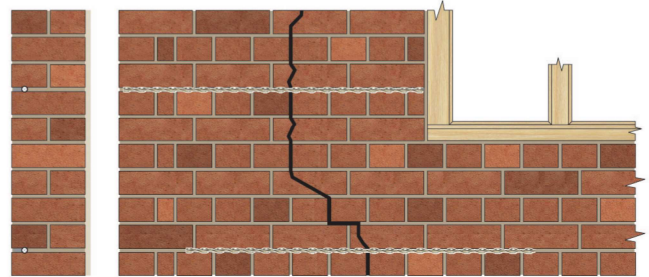
Material:	Austenitic stainless steel Grade 304 (1.4301) or 316 (1.4401)
Diameter:	4.5mm, 6mm, 8mm and 10mm
Tensile strength (6mm HeliBar):	10kN
0.2% Proof stress (6mm HeliBar):	900 N/mm ² (304 / 1.4301) 840 N/mm ² (316 / 1.4401)
Standard lengths:	1m, 1.5m & 2m – in packs of 10
Width of slot:	Full height of bed joint (10mm in render/plaster)
Bonding agent:	HeliBond cementitious grout. 1 x 3ltr HeliBond = 10 linear metres of crack stitching
RECOMMENDED TOOLING	
For cutting slot up to 40mm deep:	Twin-bladed cutter with vacuum attachment or angle grinder or hammer and mortar chisel
For mixing HeliBond grout:	3-jaw-chuck drill with mixing paddle
For injection of HeliBond into slots:	Helifix Pointing Gun CS with mortar nozzle
For smoothing pointing:	Standard finger trowel
For inserting HeliBar:	HeliBar Insertion Tool

Crack Stitching a Solid Wall using HeliBars

METHOD STATEMENT

1. Using a twin-bladed, diamond-tipped wall chaser with vacuum attachment, cut slots into the horizontal mortar joints to the specified depth and at the required vertical spacing. Ensure that NO mortar is left attached to the exposed brick surfaces in order to provide a good masonry/grout bond.
2. Remove ALL dust and mortar from the slots and thoroughly flush with water. Where the substrate is very porous or flushing with water is inappropriate, use HeliPrimer WB. Ensure the slot is damp or primed prior to commencing step 5.
3. Mix HeliBond cementitious grout using a power mixer and load into the Helifix Pointing Gun CS.
4. Fit the appropriate mortar nozzle.
5. Inject a bead of HeliBond grout, approx. 15mm deep, into the back of the slot.
6. Push the 6mm HeliBar into the grout to obtain good coverage.
7. Inject a second bead of HeliBond grout over the exposed HeliBar and iron it into the slot using a finger trowel. Inject additional HeliBond as necessary, leaving 10-15mm for new pointing.
8. The crack within the wall should be weather-proofed using an appropriate Helifix bonding agent e.g. HeliBond or CrackBond, depending on the width of the crack and the surface made good or left ready for any decoration.
9. Clean tools with clean, fresh water.

N.B. Pointing may be carried out as soon as is convenient after the HeliBond has started to gel.



RECOMMENDED TOOLING

- For cutting slots up to 40mm deepTwin bladed cutter with vacuum attachment
- For mixing HeliBond3-jaw-chuck drill with mixing paddle
- For injection of HeliBond into slotsHelifix Pointing Gun CS with mortar nozzle
- For smoothing pointingStandard finger trowel

Specification Notes

The following criteria are to be used unless specified otherwise:

- A. Depth of slot into the masonry to be 35mm to 40mm.
- B. Height of slot to be equal to full mortar joint height, with a minimum of 8mm. For thin mortar joint specifications refer to the Helifix Technical Dept.
- C. HeliBar to be long enough to extend a minimum of 500mm either side of the crack or 500mm beyond the outer cracks if two or more adjacent cracks are being stitched using one rod.
- D. Normal vertical spacing is 450mm (6 brick courses).
- E. Where a crack is less than 500mm from the end of a wall or an opening, the HeliBar is to be continued for at least 100mm around the corner and bonded into the adjoining wall or bent back and fixed into the reveal, avoiding any DPC.
- F. In hot conditions ensure the masonry is well wetted or primed to prevent premature curing of the HeliBond due to rapid de-watering. Ideally additional wetting of the slot, or priming with HeliPrimer WB, should be carried out just prior to injecting the HeliBond grout.
- G. Do not use HeliBond when the air temperature is +4°C and falling or apply over ice. In all instances the slot must be thoroughly damp or primed prior to injection of the HeliBond grout.

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

GENERAL NOTES

If your application differs from this repair detail or you require specific advice on your particular project, call the Helifix Technical Sales Team on **020 8735 5222**. Our Technical Department can provide you with a full support service including:

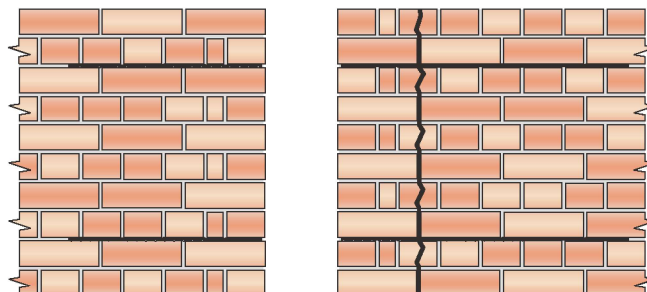
- Advice, assistance and recommendations on all structural repair matters
- Devising and preparing complete repair proposals for specific situations
- An insurance-backed warranty via our Approved Installers scheme

Repair of a Crack Near a Corner in a Solid Wall using HeliBars

METHOD STATEMENT

1. Using a twin-bladed, diamond-tipped wall chaser with vacuum attachment, cut slots into the horizontal mortar joints to the specified depth and at the required vertical spacing. Ensure that NO mortar is left attached to the exposed brick surfaces in order to provide a good masonry/grout bond.
2. Remove ALL dust and mortar from the slots and thoroughly flush with water. Where the substrate is very porous or flushing with water is inappropriate, use HeliPrimer WB. Ensure the slot is damp or primed prior to commencing step 5.
3. Mix HeliBond cementitious grout using a power mixer and load into the Helifix Pointing Gun CS.
4. Fit the appropriate mortar nozzle.
5. Inject a bead of HeliBond grout, approx. 15mm deep, into the back of the slot.
6. Push the 6mm HeliBar into the grout to obtain good coverage.
7. Inject a second bead of HeliBond grout over the exposed HeliBar and iron it into the slot using a finger trowel. Inject additional HeliBond as necessary, leaving 10-15mm for new pointing.
8. The crack within the wall should be weather-proofed using an appropriate Helifix bonding agent e.g. HeliBond or CrackBond, depending on the width of the crack and the surface made good or left ready for any decoration.
9. Clean tools with clean, fresh water.

N.B. Pointing may be carried out as soon as is convenient after the HeliBond has started to gel.



RECOMMENDED TOOLING

- For cutting slots up to 40mm deepTwin bladed cutter with vacuum attachment
- For mixing HeliBond3-jaw-chuck drill with mixing paddle
- For injection of HeliBond into slotsHelifix Pointing Gun CS with mortar nozzle
- For smoothing pointingStandard finger trowel

Specification Notes

The following criteria are to be used unless specified otherwise:

- A. Depth of slot into the masonry to be 35mm to 40mm.
- B. Height of slot to be equal to full mortar joint height, with a minimum of 8mm. For thin mortar joint specifications refer to the Helifix Technical Dept.
- C. HeliBar to be long enough to extend a minimum of 500mm either side of the crack or 500mm beyond the outer cracks if two or more adjacent cracks are being stitched using one rod.
- D. Normal vertical spacing is 450mm (6 brick courses).
- E. Where a crack is less than 300mm from the end of a wall or an opening the HeliBar is to be continued for at least 100mm around the corner and bonded into the adjoining wall.
- F. In hot conditions ensure the masonry is well wetted or primed to prevent premature curing of the HeliBond due to rapid de-watering. Ideally additional wetting of the slot, or priming with HeliPrimer WB, should be carried out just prior to injecting the HeliBond grout.
- G. Do not use HeliBond when the air temperature is +4°C and falling or apply over ice. In all instances the slot must be thoroughly damp or primed prior to injection of the HeliBond grout.

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

GENERAL NOTES

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Report Ref: 23269-PWA-00-XX-RP-S-1000.F01
Project: Springwood,
Stoneyhurst,
BB7 9PN
Date: September 2023

Appendix C

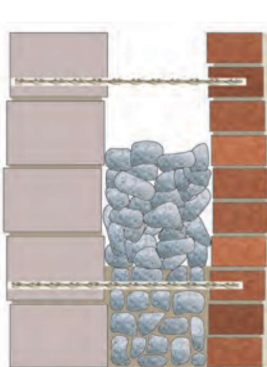
Helifix CemTies

CemTie

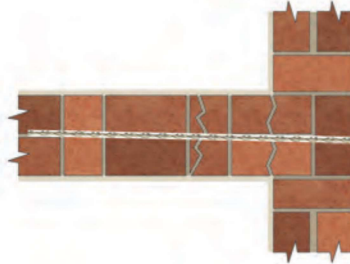
A fully grouted remedial tie for stabilising solid masonry

Applications

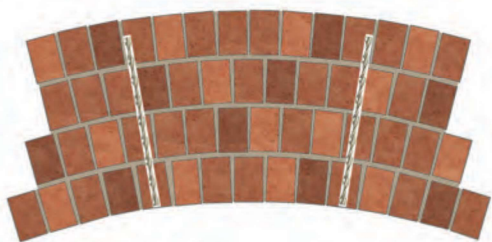
- Stabilising solid or rubble filled walls
- Reinstating failed lintels (when combined with Helibeam techniques)
- Securing multi-layer brick rings in bridges, tunnels and arches
- Reconnecting separated internal and external building walls
- Securing delaminated masonry
- Repairing and securing cornices and decorative fascias
- Securing parapet walls and copings



Stabilising bulging rubble-filled wall



Reconnecting cracked party wall to external solid wall



Re-pinning separated brick arch rings

Over 100 standard repair specifications are available online, covering all common structural faults.

Relevant Repair Details: RDs CS04, CS07, CS09, CS11, CS12, LR03, LR10, MA02, MA03, MA06, MA08, PW01 to PW03, RF01 to RF09, RW02, RW04, RW05



For full Product Information, Case Studies and downloadable Repair Details go to:

www.helifix.co.uk/products/remedial-products/cemtie/



Features

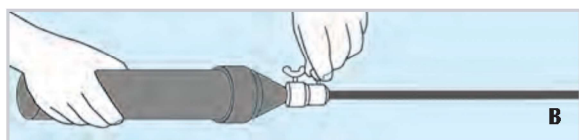
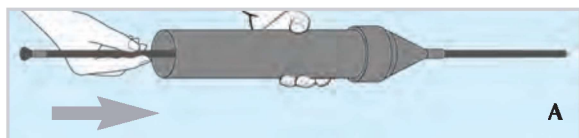
- Grade 304 (1.4301) or 316 (1.4401) stainless steel tie up to 1m long as standard
- Quick, easy, non-disruptive installation
- Tie and grout installed simultaneously
- Ideal for overhead installations
- Highly cost-effective masonry stabilisation technique
- Much quicker and simpler than alternative methods
- Fully concealed for sympathetic repairs
- CemTie plus HeliBond grout produces great tensile strength
- Flexible to allow normal structural movements



Inserting the grout-filled pinning nozzle, containing the CemTie, into the clearance hole

Installation Procedures

1. Drill clearance hole to required diameter and depth and thoroughly clean and wet down with water.
2. Attach the required length of CemTie pinning nozzle to the gun (see diagrams A and B below).
3. Mix HeliBond cementitious grout using a power mixer and load into the Helifix Pointing Gun HD.
4. Pump grout to fill the nozzle.
5. Wind the CemTie into the nozzle and ensure that it is fully covered in grout.
6. Insert the nozzle to the end of the drilled hole and pump the grout until the CemTie is fully embedded.



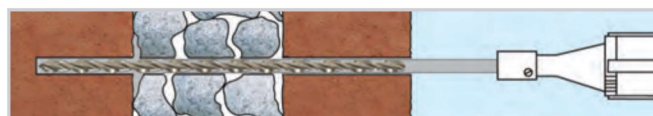
Note: CemTie pinning nozzles are available in 12.7mm and 15.0mm diameters and the length is made to suit the CemTie. The 12.7mm pinning nozzle fits the cone nozzle. The cone nozzle must be drilled out to accept the 15mm pinning nozzle.



1. Drill clearance hole to required diameter and depth and flush clean



2. Push CemTie fully into grout-filled pinning nozzle of grout gun and insert nozzle to the back of the hole



3. As grout is injected the CemTie is carried with it



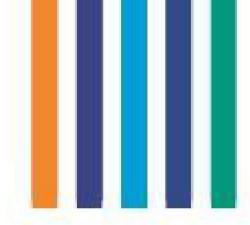
4. Back pressure pushes nozzle out of hole to leave fully grouted tie

Fitting the CemTie pinning nozzle

1. Loosen the locking screws device and slide off the far end of the pinning nozzle
2. Insert the pinning nozzle tube through the cone (as in A) and secure the flared end into position at the bottom of the cone
3. Replace the locking screws device and secure to both the pinning nozzle tube and the cone (as in B)

Technical Specifications

Material:	Austenitic stainless steel Grade 304 (1.4301) or 316 (1.4401)
Diameter:	8mm and 10mm
Length to be used:	50mm less than the materials being tied
Standard lengths:	400mm, 500mm, 600mm, 700mm, 800mm, 900mm and 1000mm – in packs of 10
Diameter of clearance hole:	8mm tie: length up to 600mm – 16mm; length 600mm to 1m – 18mm 10mm tie: 18mm
	For CemTies over 1m long call the Helifix Technical Dept
Depth of clearance hole:	Length of CemTie + 25mm
Bonding agent:	HeliBond Cementitious Grout
HeliBond consumption:	In a 16mm diameter hole; 10 linear metres from one 3ltr HeliBond tub (subject to voiding) In a 18mm diameter hole; 7 linear metres from one 3ltr HeliBond tub (subject to voiding)
RECOMMENDED TOOLING	
For drilling:	SDS rotary hammer drill 650/700w
For mixing HeliBond:	3-jaw-chuck drill with mixing paddle
For insertion of the CemTies:	Helifix Pointing Gun Kit HD with pinning nozzle



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