Vale Consultancy

CONSULTING CIVIL & STRUCTURAL ENGINEERS

STRUCTURAL REPORT

Pont y Meibion
Llanarmon Road
Glyn Ceiriog
Llangollen
LL20 7HS

Prepared for: Martin Obbard
Project Ref: N5002

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DOCUMENT CONTROL

Project:	Pont Y Meibion, Llanarmon Road, Glyn Ceiriog, Llangollen, LL20 7HS
Client:	Martin Obbard
Vale Consultancy Ref:	N5002

Issue	Prepared by	Approved by	Date	Status
01	Gwion Richards BEng (Hons)	Nedw Llewelyn BEng (Hons) MSC CEng MICE	28.11.2025	First issue

28 November 2025
Our Ref: **N5002**

[redacted]

To whom it may concern,

Following our appointment, we undertook an inspection at the above property, which was performed on Wednesday 5th November 2025. Our assessment and report outline the current condition of both listed barns and provides details on the level of structural defects found, with suggestions on rectification works required to enable conversion into a habitable dwellings.

Our findings are restricted to structural matters only and we would state that we have not examined parts of the building that were covered, unexposed or inaccessible and are therefore unable to state that any such component is free from defect. All assessments are taken from a visual assessment only, and no high level (roof) or invasive investigations have been made.

This report shall be for the confidential use of our client, and the report shall not be reproduced in whole, or in part, or relied upon by a third party without the express written authorisation of Vale Consultancy.

Description

Both barns assessed within this report are situated alongside each other on a sloping parcel of land directly adjoining the B4500 (Llanarmon Road) approximately 2 miles south of the village of Glyn Ceiriog, Wrexham. Both barns carry Grade II listed status, with the original construction of these buildings dating back to approximately 1701.

To aid the understanding of this report, each individual barn is to be discussed separately to ensure clarity regarding specific observations and recommendations made are conveyed, namely:

<u>Barn 1 – Main Rectangular Barn</u>

This two-story detached barn has been built into the natural sloping bank consistent throughout the site, with the external ground level to the rear area of the property noticeable higher than the front (**Photograph 1**) (**Photograph 2**). To the right of the original stone barn adjoins a two-story stonework extension believed to have been added onto the property at some point during the Victorian era (**Photograph 3**).

The external walls are all solid stonework construction of random rubble infill, approximately 500-600mm thick (**Photograph 4**). Internal stonework walls are also present up to the underside of first floor level, providing support to the first-floor structure and roof trusses. All load bearing stonework walls are believed to have been constructed on larger founding stones laid directly onto the subsoil below (**Photograph 5**).

The stone barn features a duo-pitch timber cut roof structure made up of 2no oak purlins per pitch (160mm deep x 200mm wide) spanning between 3no oak kingpost trusses, as well as onto the external gable walls at either end (**Photograph 6**) (**Photograph 7**) (**Photograph 8**). Two of the oak trusses feature additional supporting timbers which are propped off the single-story internal stone walls directly below (**Photograph 9**) (**Photograph 10**). The oak purlins subsequently support timber rafters above (50mm deep x 75mm wide @ 400mm c/c). Externally the roof is finished with traditional slate, with no internal finishes present.

The ground floor is made up of stone/slate cobbled slabs (of unknown thickness) which are believed to be laid directly onto the subsoil below (**Photograph 11**).

The first-floor structure consists of several differing timber joists configurations, with the joists supported between intermediate oak beams and internal/external stone walls (**Photograph 12**) (**Photograph 13**). The majority of the first floor is currently topped with corrugated metal sheeting which is believed to be a temporary measure to allow the barn to remain operational for storage/agricultural use. There is currently no direct access from the ground to first floor, with access upstairs only possible via an external door opening located on the rear elevation.

All internal and external openings have been formed using a series of timber lintels of various dimensions installed next to each other, matching the width of the existing stone walls above (**Photograph 14**).

Barn 2 – Small Square Barn

This smaller two-story detached former coach house has again been built into the natural sloping ground consistent throughout the site, with the internal ground floor and external ground level to the rear and side noticeable higher than the front (**Photograph 15**) (**Photograph 16**) (**Photograph 17**). The barn in enclosed on two sides by an existing steel portal frame storage shed, with substantial existing masonry retaining walls forming the open area outside the large opening into the rear elevation.

The external walls are all solid stonework construction of random rubble infill, approximately 600-700mm thick (**Photograph 18**). All external stonework walls appear to have been constructed on top of a stonework plinth adjoining the roadside, with this foundation stonework likely to have been laid directly onto the subsoil below.

The stone barn features a duo-pitch timber cut roof structure made up of 1no timber purlin per pitch (200mm deep x 100mm wide) spanning between external gable walls and onto a single intermediate oak kingpost truss (**Photograph 19**). The timber purlin subsequently supports limited timber rafters above, with the roof finished externally with corrugated fibre cement sheets.

The ground floor is made up of compacted mixed rubble and soil.

The first-floor structure consists of timber joists supported between the external stone gable walls and intermediately onto a solid oak beam (**Photograph 20**). There is currently no direct access from the ground to first floor, with access upstairs only possible via crogloft hatch within the timber floor structure.

All external openings have been formed using a series of timber lintels of varying dimensions installed next to each other, matching the width of the existing stone walls above.

Observations

Barn 1 – Main Rectangular Barn

In general, the timber roof structure appears in fair condition considering the age of the building with evidence of previous repair and regular maintenance observed. Having said this minor structural defects were observed in some localised areas throughout.

Evidence of historical and recent wet rotting was observed within localised areas of purlins, rafters, ridge and wall plate, likely caused by water ingress via the exposed dormer structure and previous holes within the slate roof that have since been repaired (**Photograph 21**) (**Photograph 22**) (**Photograph 23**). Thorough inspection will be required by the contractor following the stripping of the roof coverings in order to identify all defective areas that require localised repair.

The solid stonework ground floor internal wall upon which the upright timber posts propping one of the kingpost trusses is supported is leaning excessively (**Photograph 24**), which has subsequently caused significant bowing in the truss and associated timber props, opening up the mortise and tenon connections (**Photograph 25**) (**Photograph 26**). These timber props also featured signs of significant wood worm infestation (**Photograph 27**) (**Photograph 28**), with the damage observed beyond feasible repair in our professional opinion. These upright timber props will need to be replaced with like-for-like oak members, with the stone wall taken down and rebuilt on a sufficient concrete foundation.

The duo-pitch roof over the Victorian age extension has reached a state of disrepair and will need to be taken down and rebuilt according to the architects/structural engineers' specification (**Photograph 29**).

Overall, the external walls of the barn were found to be square and plumb considering the age of the structure, with specific areas having been recently rebuilt/repointed to a high standard (**Photograph 30**) (**Photograph 31**). Only localised areas showed signs of structural defects, including a significant bulge that observed on the rear elevation ground floor wall, noted by the client to be a longstanding defect within the barn (**Photograph 32**). This wall functions as a retaining wall given the internal/external level difference leading us to believe that a build-up of hydrostatic pressure behind the wall could be a contributing factor to this structural movement within the wall.

Heavy rain had fallen in the days leading up to our inspection, with groundwater found to be dispersing directly through the rear elevation wall into the house in one area (**Photograph 33**). It is imperative for adequate drainage to be installed behind all retaining walls throughout the property to sufficiently divert groundwater away from the building, with detailed waterproofing/tanking specifications also provided by specialist contractors.

Some of the founding stones were found have had the surrounding ground washed away due to inadequately dispersing groundwater washout, however no indication of excessive undermining was found (**Photograph 34**).

Several vertical separation cracks were visible on the external face of the rear elevation first floor external wall (**Photograph 35**), with corresponding cracks observed internally suggesting that the entire wall panel has been subject to movement in this wall panel (**Photograph 36**). Repeated water ingress via the poorly constructed and exposed dormer has likely led to the mortar becoming brittle eventually leading to the wall "blowing" out. Localised rebuild and repointing will be required, with the cracks further stabilised using helical bars to eliminate any potential risk of structural movement reoccurring here.

Evidence of historical movement was visible in the Victorian age stone extension, with a separation gap formed at its junction with the original barn along with further vertical cracks found in the front elevation wall (**Photograph 37**) (**Photograph 38**). The client had infilled all voids with expanding foam approximately 2 years ago, with no signs of progressive movement appearing since. Regardless that no evidence of ongoing structural movement was found here, the foundation of the extension area should be exposed with localised underpinning completed if poor ground conditions are uncovered.

The timber first floor structure was also found to be in good conditions considering the age of the barn, with only localised structural defects found. One specific area, directly below where water ingress has occurred at first floor level due to the exposed dormer, featured rotten timber joists which were currently supported with temporary acro-props (**Photograph 39**).

Timber lintels were found to be excessively deflecting in several areas (**Photograph 40**) (**Photograph 41**), with evidence of woodworm infestation also identified in many (**Photograph 42**). All lintels will need to be inspected in detail on site, with replacement specification provided by a structural engineer, with an emphasis on ensuring the replacement lintels are in keeping with the character of the listed barn (i.e. treated oak where possible)

Barn 2 – Small Square Barn

The main roof appears in fair condition considering the age of the structure, however woodworm infestation was visible in the central timber truss (**Photograph 43**). It's unlikely that the existing purlin and rafter configuration would be adequate to support dead and imposed loading governed by modern regulations, which will need to incorporate insulation and plasterboard as well as the additional weight of upgraded external finishes (i.e traditional slate).

Overall, the external walls of the barn were again found to be square and plumb considering the age of the structure, with only localised areas featuring structural defects. Vertical separation cracks were visible on the front elevation wall of the property below floor level (**Photograph 44**). Likely caused by poor quality stonework construction, localised rebuild and repointing will likely provide a sufficient repair, however we suggest the cracks are further stabilised using helical bars to eliminate any potential risk of future structural movement.

Given that some of the external walls are acting as retaining walls it is imperative for adequate drainage to be installed behind all retaining walls throughout the property to sufficiently divert groundwater away from the building or else hydrostatic pressure build-up could cause failure. Detailed waterproofing/tanking specifications should also be provided by specialist contractors.

The timber first floor structure was also found to be in good conditions considering the age of the barn, with no excessive deflection visible. A significant bow/buckling was noted in the principal oak beam, however given the adequate condition of the timber (**Photograph 45**) it may suggest that the bowing is just a historical feature of the structural member.

The substantial timber lintels forming the large rear elevation opening were found to be fair condition (**Photograph 46**) (**Photograph 47**), however, are unlikely to be sufficient to support the proposed loading configuration according to modern regulations. Evidence of woodworm infestation was also identified in several of the timber window lintels (**Photograph 48**). All lintels will need to be inspected in detail on site, with replacement specification provided by a structural engineer, with an emphasis on ensuring the replacement lintels are in keeping with the character of the listed barn where possible (i.e. treated oak).

Recommendations

**** [Please note that all proposed works listed below need to be approved by the local authority conservation officer prior to any works being completed on site. Contact structural engineer if any of the replacement structural member specification needs to be changed or any additional information is required] ****

Barn 1 – Main Rectangular Barn

- Due to the listed status of the barn, it is recommended that as much of the original timber roof members are preserved to keep the character. However, depending on static loading factors (additional weight of building materials from conversion), which are to be determined by the architect at planning and design stage, the retained timber members may need to be upgraded or strengthened. For example, if the external roof finishing is to be kept as traditional slate with upgraded battens/membrane, together with additional weight of modern insulation and internal finishing, this would add considerable weight to an already slightly defective structure. Each existing structural roof member would need to be analysed and designed at Building Regulations stage by a qualified structural engineer, considering the conditions specified above, to determine if the member can be used or would need to be strengthened/replaced. Should the timber member be relatively close to passing the structural checks at design stage, and requiring structural strengthening as

opposed to replacement, we would suggest installing steel flitch plates along the side of the timbers to strengthen (subject to acceptance from the conservation/heritage officer). The steel flitch plate would need to be fixed through the current timber using high tensile bolts at fixed staggered centres. Specific details such as plate thickness and bolt spacing would be subject to the engineers detailed design.

- Areas of localised timber defects (wet rot, woodworm infestation, excessive deflection) identified within the existing roof structure will require localised treatment or repairs. Details of complex repairs such as splicing on new sections of oak purlins using traditional methods (i.e scarf joints) should be outlined by specialist contractors.

- Due to the listed status of the barn, it is recommended that as much of the original structural floor members are preserved to keep the character. However, depending on static and imposed loading factors (additional weight of building materials from conversion and residential imposed loading), the retained timber members may need to be strengthened or upgraded. Each existing structural floor member would need to be analysed and designed at Building Regulations stage by a qualified structural engineer, considering the conditions specified above, to determine if the member can be used or would need to be strengthened/replaced. Any replacement joists should be bearing onto timber wall plates resin anchor bolted into the internal face of the external stone walls. The timber wall plates should be 150 x 50mm C16 grade and bolted into the walls with M10 resin bolts at 450mm staggered centres. We would also recommend running a breathable membrane behind the timber wall plate to avoid any potential rotting.

- The defective internal stonework wall should be take taken down and rebuilt according to the conservation officer/architect's specification. A new mass concrete strip foundation should be installed to provide sufficient support. All new blockwork/stonework should be tied into the existing stonework using proprietary wall ties/starter kits as specified by the contractor.

- A new land drain should be installed behind the entire rear and side elevation retaining walls to redirect excess groundwater away from collecting behind the rear face. Perforated UPVC pipework should be installed surrounded by geotextile membrane and single sized stone, with the pipework diverted to an adequate drainage outlet to alleviate excess hydrostatic pressure from causing retaining wall failure. During drainage excavation the stone wall structure should be inspected in detail, in particular areas where a noticeable bulge is present internally. Based on the condition of wall exposed, localised rebuild or repairs may be required to ensure the stone wall remains in stable structural condition.

- We recommend that any significant vertical separation cracks to the existing stonework walls are stabilized using Helifix HeliBar Crack stitching, following the procedure outlined in **APPENDIX C**. The 6mm diameter horizontal helical bars should be installed into 40mm deep slots cut into the existing mortar joints and secured using the Helibond cementitious grout provided within the proprietary kit. The HeliBars should be installed @ 225mm vertical centres throughout the height of crack, protruding a minimum of 500mm past each side of the cracks.

- All loose pointing and open joists should be raked out and repointed using NHL 3.5 mortar. Due to the exposure of the barn walls to the elements and surface water, it would be more appropriate to use Natural Hydraulic Lime (NHL) mortar than cement-based mortar. Furthermore, cement-based mortars would set harder than the stone itself, which would cause further problems with the condition of walls. The pointing should not take place in temperatures below 5°C and the surface of the walls should be covered in tarpaulin after each day of working, until the mortar is fully set.

- Where the ground surrounding founding stones has been washed away due to weathering, we suggest building up the ground to ensure there is no undermining of external walls.

- It's suggested that all defective timber lintels should be replaced with treated oak lintels in keeping with the heritage of the barn. All new/replacement lintels will need to be designed by a qualified structural engineer at building regulation stage.

- New gullies and proprietary rainwater goods should be installed around the entire building and connected to a stormwater soakaway or combined sewer. The soakaway would need to be a minimum distance of 5.0m away from the building and be designed by a competent professional, after infiltration testing is carried out on the ground.

- It is recommended that a new ground bearing slab is installed over the entire barn footprint. The existing slab should be taken up and the formation compacted with 150mm layer of Type 1 material. The ground bearing slab should be a minimum of 125mm thick with the specific slab, damp proof membrane, insulation and screed following specifications provided by the architect. Care should be taken not to undermine the existing founding stones when excavating the new concrete slab formation.

Barn 2 – Small Square Barn

- It is recommended that the main roof structure is upgraded with modern construction, such as steel ridge beam and timber to accommodate the significantly increased loading of upgraded internal/external finishes. The exact replacement structural specification should be confirmed by a structural engineer. Subject to the architect/council's conditional planning approval, the finishing of the roof can be upgraded to traditional slate in keeping with the main barns' character, fixed onto new treated battens, vapour-porous sarking membrane and insulation underneath to the architect's specification. The new rafters should be fixed on to a timber wall plate, fixed down to the inner face of both the front and rear elevations of the property with stainless steel straps installed at 1.5m horizontal centres

- Due to the listed status of the barn, it is recommended that as much of the original structural floor members are preserved to keep the character. However, depending on static and imposed loading factors (additional weight of building materials from conversion and residential imposed loading), the retained timber members may need to be strengthened or upgraded. Each existing structural floor member would need to be analysed and designed at Building Regulations stage by a qualified structural engineer, considering the conditions specified above, to determine if the member can be used or would need to be strengthened/replaced. Any replacement joists should be bearing onto timber wall plates resin anchor bolted into the internal face of the external stone walls. The timber wall plates should be 150 x 50mm C16 grade and bolted into the walls with M10 resin bolts at 450mm staggered centres. We would also recommend running a breathable membrane behind the timber wall plate to avoid any potential rotting.

- We recommend that any significant vertical separation cracks to external stonework walls are stabilized using Helifix HeliBar Crack stitching, following the procedure outlined in **APPENDIX C**. The 6mm diameter horizontal helical bars should be installed into 40mm deep slots cut into the existing mortar joints and secured using the Helibond cementitious grout provided within the proprietary kit. The HeliBars should be installed @ 225mm vertical centres throughout the height of crack, protruding a minimum of 500mm past each side of the cracks.

- All loose pointing and open joists should be raked out and repointed using NHL 3.5 mortar. Due to the exposure of the barn walls to the elements and surface water, it would be more appropriate to use Natural Hydraulic Lime (NHL) mortar than cement-based mortar. Furthermore, cement-based mortars would set harder than the stone itself, which would cause further problems with the

condition of walls. The pointing should not take place in temperatures below 5°C and the surface of the walls should be covered in tarpaulin after each day of working, until the mortar is fully set.

- It's suggested that all defective timber lintels should be replaced with treated oak lintels in keeping with the historical character of the barn. All new/replacement lintels will need to be designed by a qualified structural engineer at building regulation stage.

- New gullies and proprietary rainwater goods should be installed around the entire building and connected to a stormwater soakaway or combined sewer. The soakaway would need to be a minimum distance of 5.0m away from the building and be designed by a competent professional, after infiltration testing is carried out on the ground.

- It is recommended that a new ground bearing slab is installed over the entire barn footprint. The existing ground floor should be taken up and the formation compacted with 150mm layer of Type 1 material. The ground bearing slab should be a minimum of 125mm thick with the specific slab, damp proof membrane, insulation and screed following specifications provided by the architect. Care should be taken not to undermine the existing founding stones when excavating the new concrete slab formation.

Conclusions

It is of our professional opinion that generally the overall structural condition of the barns is adequate, and they only require localised repair in areas and re-roofing/flooring. No major or extensive structural repairs are required to convert the main shell of the buildings into habitable spaces, and if the refurbishments follow the above recommendations and in-line with current building regulations, we consider both barns to be good contenders for conversion.

If you have any queries regarding this report or require any further information, please contact our office at the above address.

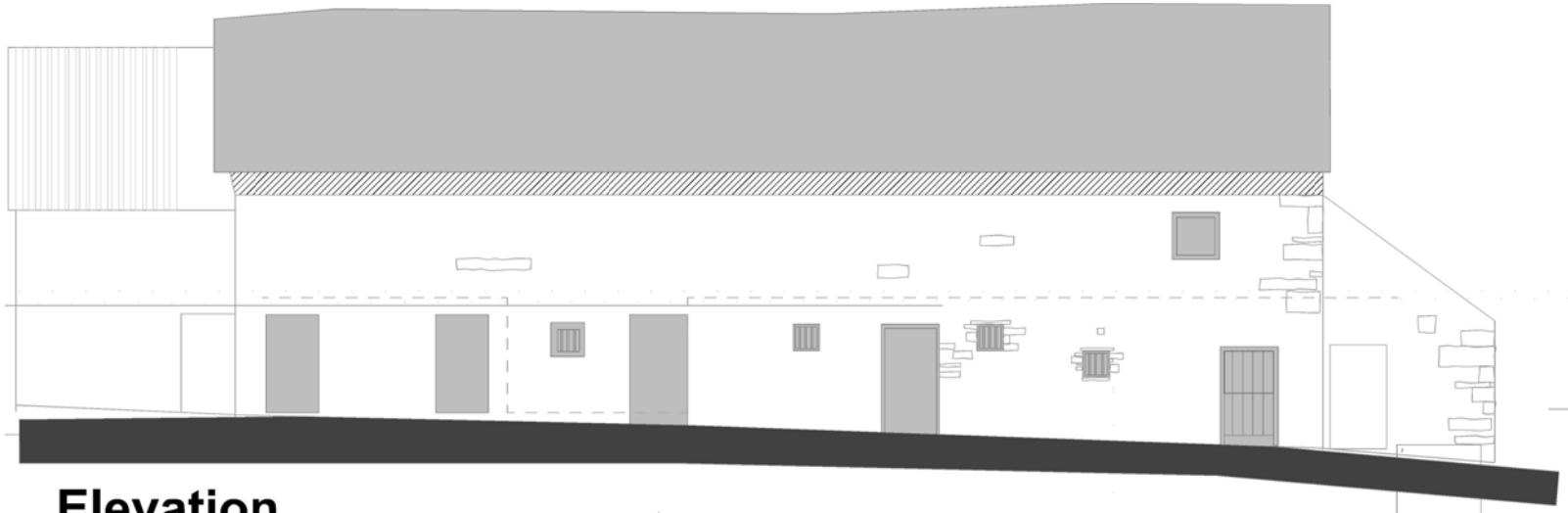
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Enclosed:

APPENDIX A – Existing Architectural Drawings
APPENDIX B – Photographs
APPENDIX C – Helifix HeliBar Product Sheet

APPENDIX A

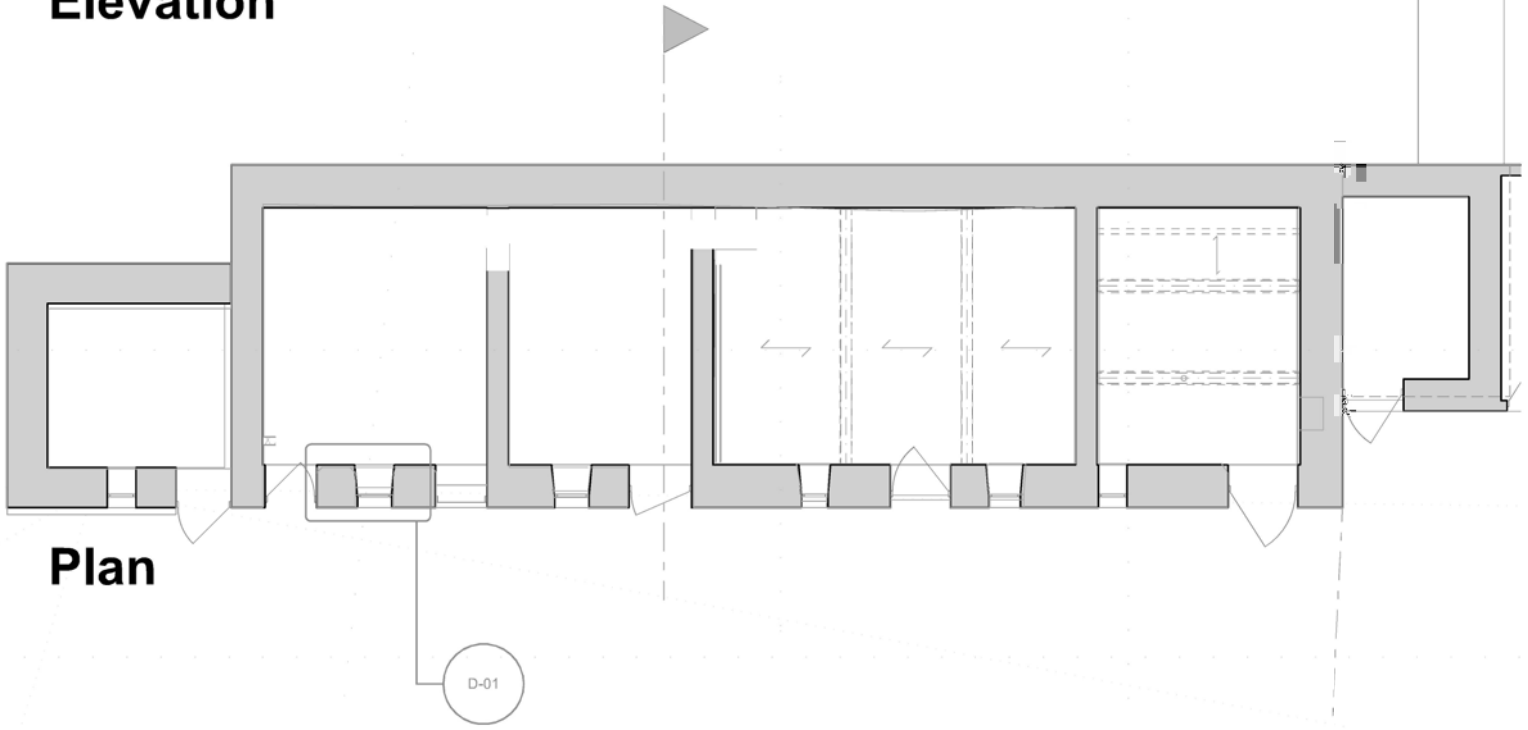
Existing Architectural Drawings of Main Rectangular Barn



Elevation



Section



Plan

Survey as Existing : Pont Y Meibion,
Llanarmon Road, Glyn Ceiriog, Llangollen

Frederick Carter
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Detailing,
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DATE	1/8/2022	SCALE	1:50 @ A1 1:100 @ A3
DWG No	P.2024.91.S02		REV

APPENDIX B
Photographs

Photograph 1



Photograph 2



Photograph 3



Photograph 4



Photograph 5



Photograph 6



Photograph 7



Photograph 8



Photograph 9



Photograph 10



Photograph 11



Photograph 12



Photograph 13



Photograph 14



Photograph 15



Photograph 16



Photograph 17



Photograph 18



Photograph 19



Photograph 20



Photograph 21



Photograph 22



Photograph 23



Photograph 24



Photograph 25



Photograph 26



Photograph 27



Photograph 28



Photograph 29



Photograph 30



Photograph 31



Photograph 32



Photograph 33



Photograph 34



Photograph 35



Photograph 36



Photograph 37



Photograph 38



Photograph 39



Photograph 40



Photograph 41



Photograph 42



Photograph 43



Photograph 44



Photograph 45



Photograph 46



Photograph 47



Photograph 48



APPENDIX C

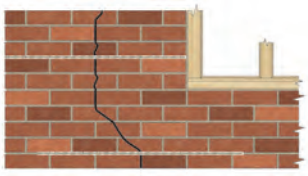
Helifix HeliBar Product Sheet

HeliBar

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

APPLICATIONS

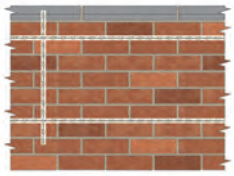
- Crack stitching
- Lintel repair and creation
- Forming deep masonry beams
- Horizontal structural restraint (when used with BowTie systems)
- Reconnecting separated walls
- Securing parapet walls
- Support existing masonry when creating new openings
- Creating movement joints
- Reinforcing new build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



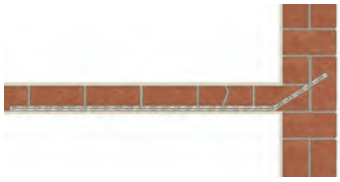
Crack stitching



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;



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

For full product information, case studies and downloadable repair details go to:
www.helifix.co.uk/products/remedial-products/helibar

TECHNICAL SPECIFICATIONS

SLOTH 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 – 40mm on both sides
Vertical spacing	Every 4 – 6 courses, 300 – 450mm			

HELIBAR	
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/mm2 (304 / 1.4301) 840 N/mm2 (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

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.



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



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



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



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.



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.