

STRUCTURAL INSPECTION REPORT

AT

**ALDER HOUSE FARM,
BOLTON BY BOWLAND,
BB7 4LZ**

REF: 223532 - NOVEMBER 2023



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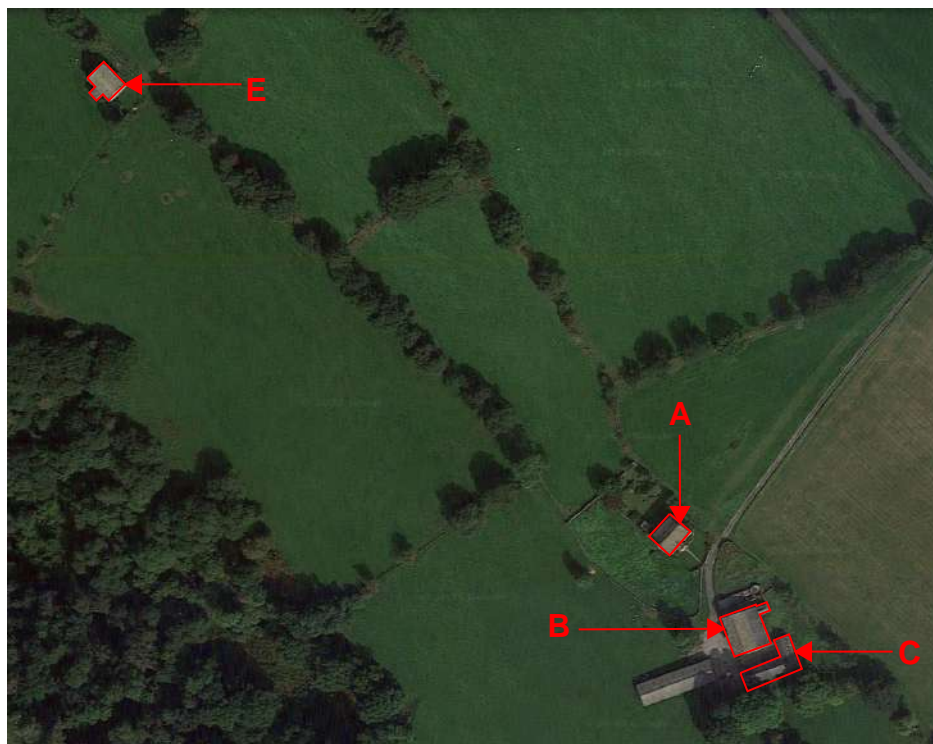
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1. INTRODUCTION

- 1.1. Mason Navarro Pledge Ltd have been commissioned by Lowood Estates Limited to provide a structural survey of 4 buildings at Alder House Farm, Holden Lane. A Grade 2 star listed 18th century manor house and 3 barns.
- 1.2. This report aims to provide an outline of the current condition of each building.
- 1.3. Three of the detached buildings are located next to each other, however barn building E' is located further north westerly across the field from the others as shown on the map in Fig 1.
- 1.4. Our report was instructed to assess the current condition of each property, and to detail the repair work required.
- 1.5. The history and further details regarding the manor house can be found on Historic England's website, please see link here - ([ALDER HOUSE, Bolton-by-Bowland - 1072207 | Historic England](#)).
- 1.6. The manor house was in overall reasonable structural condition. The main issues requiring attention are listed in this report.
- 1.7. The manor outbuildings are in a reparable structural condition. Issues requiring immediate attention are the roofs and some areas of the floors.
- 1.8. All buildings were unoccupied at the time of our inspection with perimeter fencing preventing public access.
- 1.9. The internal inspection was limited in some areas of the barns due to safety concerns relating to the existing upper floors in buildings C & E.
- 1.10. The survey was conducted on 23rd and 24th November 2023. The weather during our inspection was dry and partly overcast.



{Fig. 1}

2. GENERAL CONSTRUCTION DETAILS

2.1 Manor House (Building A)

- 2.1.1. The ground floor slab was constructed of ground bearing stone flags.
- 2.1.2. The interior solid stone walls had a thick lime plaster finish.
- 2.1.3. An original stone staircase spans from ground floor to the half landing with a timber framed stair continuing up to first and second floor levels.
- 2.1.4. An original oak panelled partition wall separates the toilet from the landing at 1st floor.
- 2.1.5. The exterior walls were originally built of stone and lime mortar.
- 2.1.6. The northern elevation had a full render finish.
- 2.1.7. The 1st and 2nd floors are formed of timber joists & boards.
- 2.1.8. The small windowpanes are separated with stone mullions and transoms.
- 2.1.9. The roof was supported by large oak trusses spanning from front to back with purlins running between each truss.
- 2.1.10. The roof had a slate finish, no insulation was present.

2.2 Barn (Building B)

- 2.2.1 The ground floor slab was constructed of ground bearing stone flags.
- 2.2.2 The perimeter stone walls are approximately 450mm thick.
- 2.2.3 The front original section of the barn was open plan from ground to roof.
- 2.2.4 The original barn roof was constructed of large timber trusses spanning front to back with purlins, rafters and a slate finish.
- 2.2.5 Approximately 1/3 of the original barn floor space was separated for what appeared to be a historic cattle store.
- 2.2.6 The lean to extension to the rear of the barn had a concrete finished floor.
- 2.2.7 This section of the barn contains the cow milking bays with timber pillars & beams supporting the 1st floor storage space.
- 2.2.8 The lean to roof was supported by large timber rafters spanning from front to back between the original barn and the new rear wall.
- 2.2.9 A small single storey extension to the west of the lean to was constructed of stone walls supporting a timber gable roof. A suspended timber floor divides the top part of the space from the pigsties beneath.

2.3 Barn (Building C)

- 2.3.1 The ground floor slab had a brushed concrete finish.
- 2.3.2 The barn had 5 rooms, 3 at ground floor with 2 at first floor level which can be accessed from an external stair and a hatch in room 2.
- 2.3.3 From front to back, room 1 looks to be a store room/ workshop. The second room contained animal enclosures and the third room to the rear of the barn was previously used for milk pasteurising.
- 2.3.4 An external stair leads to the first floor room 4. A wall at higher level separates room 4 & 5, access to room 5 can be found via a hatch in room 2.
- 2.3.5 A steel beam supports the wall above the open space at the front of the barn.
- 2.3.6 The first floor was constructed using timber joists and boards supported by the walls and timber posts internally.
- 2.3.7 The external solid stone walls were approximately 450mm thick.
- 2.3.8 The traditional timber roof construction consists of purlins and rafters with a slate finish.

- 2.3.9 The single storey open space to the rear of the barn had a timber roof construction with a slate finish.
- 2.3.10 Access to room 4 was not possible due to the floor being unsafe.

2.4 Barn (Building E)

- 2.4.1 The barn had two storeys containing a lower ground and ground level. The lower ground level is also a semi basement with nearly half of the walls retaining the external ground level.
- 2.4.2 The main barn door entry was at ground level.
- 2.4.3 The external ground level to the front of the barn was supported by a solid stone retaining wall at lower ground floor level.
- 2.4.4 The lower ground floor had a solid stone flag finish.
- 2.4.5 The lower ground floor contained a number of animal enclosures on both sides separated by a corridor running centrally from the side door entrance.
- 2.4.6 The ground floor timber joists are supported between the main walls and 2 rows of central timber posts.
- 2.4.7 The open plan barn at roof level has a timber queen post truss supporting the purlins and rafters with a slate finish.
- 2.4.8 The main barn door entry sits between two buttressing walls supporting large slate tiles.

3. STRUCTURAL INSPECTION

3.1 Manor House (Building A)

Defect drawings can be found in Appendix A.

All photographs can be found in Appendix E.

The following points were noted from the internal inspection.

Ground Floor

- 3.1.1 Rising damp had started to penetrate through the wall below the window damaging the lime plaster in room 4 (See photograph P-01).
- 3.1.2 A number of the walls were showing signs of damp and water ingress in room 2 (See photographs P-02 & P-03).
- 3.1.3 Crack in the timber beam above living space in room 2. (See photograph P-04).

First Floor

- 3.1.4 Water ingress around window and to side wall panel in room 6 (See photographs P-05 & P-06).
- 3.1.5 Corroded window surround due to water ingress in room 7 (See photograph P-07).
- 3.1.6 Vertical crack in wall under the beam corbel in room 9 (See photograph P-08).
- 3.1.7 Cracking to plaster around beam and mould/ damp indicating signs of water ingress in room 9. (See photograph P-09).
- 3.1.8 Signs of water ingress around window and ceiling in room 9 (See photograph P-10).
- 3.1.9 Cracking under beam/ corbel bearing next to the opening in the wall for the cupboard space in room 8. (See photograph P-11).
- 3.1.10 Damp penetration on the wall above shower in room 10 (See photograph P-12).

Second Floor (Roof Structure Over)

- 3.1.11 Cracking/ de-bonding of plaster around the window in room 11 (See photograph P-13).
- 3.1.12 Water ingress to side of the window and de-bonded plaster to cill in room 12 (See photograph P-14).
- 3.1.13 Cracking to plaster above the smaller window and signs of water ingress in room 12 (See photograph P-15).
- 3.1.14 Heavy signs of water penetration along the chimney breast in room 12 (See photograph P-16).
- 3.1.15 Cracking to plaster above door between room 12 & 13 (See photograph P-17).
- 3.1.16 Cracking to plaster around door between landing and room 12 (See photograph P-18).
- 3.1.17 Timber purlin rotten at wall bearing in room 12 (See photograph P-19).
- 3.1.18 Cracking under stone corbel supporting purlin in room 13 (See photograph P-20).
- 3.1.19 Cracked & missing plaster around the window and to the underside of the stone corbels in room 13, plaster was saturated and weakened (See photographs P-21)
- 3.1.20 Heavy signs of water penetration along chimney breast in room 13, decaying rafter closest to the wall was heavily damaged with section missing at the end (See photograph P-22).
- 3.1.21 Cracking along abutment between wall dividing rooms 12 & 13 and perpendicular wall to landing (See photograph P-23).

- 3.1.22 Rotting timber purlin ends with damp timber floor boards under, likely due to water ingress in room 14. Plaster damaged and de-bonded along wall panel (See photographs P-24 & P-25).
- 3.1.23 Mould present to top corner of wall and vertical crack along plaster in landing space (See photograph P-26).
- 3.1.24 Water ingress and mould on wall between stair and window (See photograph P-27).
- 3.1.25 Cracking and de-bonding to plaster along all wall panels and end of timber purlin heavily decayed in room 15 (See photograph P-28).

The following points were noted from the external inspection.

General Note: Roof slates loose in some areas.

Front Elevation (A)

- 3.1.26 Loose joints between stone quoins and stonework next to the front door entrance (See photograph P-29).
- 3.1.27 Corbel and stone coping to edge of gable wall extremely loose. Torching cracked along gable edge resulting in loose tiles & finial (See photographs P-30).

Side Elevation (B)

- 3.1.28 Note: this elevation had a full render finish.
- 3.1.29 Vertical cracking to render along full height of wall next to windows (See photograph P-31).
- 3.1.30 Missing barge and soffit board to rear section of gable roof (See photograph P-32).
- 3.1.31 Missing soffit board and decaying barge board to front of gable roof (See photograph P-33).
- 3.1.32 Tiles loose and guttering damaged to roof above front porch (See photograph P-34).

Rear Elevation (C)

- 3.1.33 Guttering loose (See photograph P-35).
- 3.1.34 Cracking to a number of areas along the elevation, some appear to have been previously infilled with cementitious mortar, please refer to defect drawings. (See photographs P-36 & P-37).

Side Elevation (D)

- 3.1.35 Cracking to mortar joints above and below top left window (See photograph P-38).
- 3.1.36 Diagonal crack stemming from corner of chimney/roof abutment to ground floor level (See photograph P-39).
- 3.1.37 Spalled stonework and cracking in the centre of the wall panel due to poor repointing using cementitious mortar (See photograph P-40).
- 3.1.38 Crack in the mortar under the right hand side window (See photograph P-41).

Out-building A

- 3.1.39 Crack leading from the underside of the roof to the corner of door (See photograph P-42).
- 3.1.40 Slate tiles/ ridge tiles & felt in very poor condition, rafters slightly saturated in most areas (See photographs P-43 & P-44).

Out-building B

- 3.1.41 Stonework loose around front entrance (See photograph P-45).
- 3.1.42 Ceiling finishes in poor condition due to loose tiles allowing water ingress (See photograph P-46).

3.2 Barn (Building B)

Defect drawings can be found in Appendix B.

All photographs can be found in Appendix E.

The following points were noted from the internal inspection.

- 3.2.1 Timber roof was in poor condition above room 1, particularly where felt/tiles are loose or missing.
- 3.2.2 Vertical crack to stone wall under both ends of the truss next to openings in room 1, wall beginning to slip under truss bearing (See photographs P-47 & P-48).
- 3.2.3 Brick infill panel on the rear main wall wasn't toothed and bonded into existing stonework in room 1, confirmation of wall starters required (See photograph P-49).
- 3.2.4 Very poor pointing to inside face of the front wall in room 1 (See photograph P-50).
- 3.2.5 Large vertical crack starting from under the purlin to wall in room 1 (See photograph P-51).
- 3.2.6 Stonework loose in a couple of areas around the door opening in the wall to room 2 (See photograph P-52).
- 3.2.7 Rusting along full length of the steel beams supporting the first floor above room 2 (See photograph P-53).
- 3.2.8 Cracking to render around window and centre of the wall panel adjacent in room 3 (See photograph P-54).
- 3.2.9 Timber beams supporting level 01 floor above room 3 appeared to be in acceptable condition, although two of the end beams are showing signs of decay under the heavily saturated/decaying floor boards above. Note: removal of supporting timber posts to any of the existing timber beams could result in beam failure. (See photographs P-54 & 55).
- 3.2.10 The timber floor above pigsty in room 4 was heavily decayed from a hole in the damaged roof above (See photograph P-56).

The following points were noted from the External inspection.

Front Elevation (A)

- 3.2.11 Minor cracking and loose joints below the circular window opening (See photograph P-57).
- 3.2.12 Limestone lintel above the main barn door entrance decaying & spalled in areas. Timber joists and boards which form the soffit behind are heavily decayed. (See photographs P-58 & P-59).
- 3.2.13 Buttressing walls to the porch not toothed and bonded into main front wall (See photograph P-60).

3.2.14 Poor pointing and cracked joints above window (See photograph P-61).

Side Elevation (B)

- 3.2.15 Large proportion of the wall had been poorly repointed with a material resembling cementitious mortar. There are gaps in some of the joints and a vertical crack starting from the beneath the roof tiles to approximately 2m below (See photograph P-62).
- 3.2.16 Old door opening infill poorly bonded to existing stone wall (See photograph P-63).
- 3.2.17 Sliding door mis-aligned and frame in poor condition, stonework loose to the side of the door (See photograph P-64).
- 3.2.18 Timber purlin above window showing minor signs of decay (See photograph P-65).

Rear Elevation (C)

- 3.2.19 Rain water pipe damaged on gable end. Flaunching below tiles & stone joints loose at higher level. Guttering damaged/missing along majority of gable wall which has resulted in the stone-work joints being washed away (See photograph P-66).
- 3.2.20 Poor pointing and loose joints to the stonework around the window surround and vegetation growth along full length of rear gutter (See photograph P-67).
- 3.2.21 Guttering missing/damaged in two locations along the rear elevation resulting in stone joints being washed away with stones stained and becoming loose (See photographs P-68 & P-69).
- 3.2.22 Joints loose between the corner stone quoins and stone panel (See photograph P-68).
- 3.2.23 Condition of roof to original barn was very poor, the tiles are a rusty brown colour with signs of moss in some areas with a number of tiles damaged or missing (See photograph P-70).
- 3.2.24 Slate roof tiles were in reasonable condition to the newer lean to extension, with the exception of a few missing or damaged tiles.

Side Elevation (D)

- 3.2.25 Large crack over the door lintel (See photograph P-71).
- 3.2.26 Wall abutment between new lean to extension and original barn was not properly toothed and bonded together. Proof of connection either through wall starters or ties to be established. (See photograph P-72).
- 3.2.27 Previous repointing with cementitious mortar in some areas has caused the original limestone bricks to spall (See photograph P-73).
- 3.2.28 Vertical cracking to joints over the door lintel (See photograph P-74).
- 3.2.29 Poor pointing to the stone soldiers above the window and the stone quoins along the wall edge (See photograph P-75).

3.3 Barn (Building C)

Defect drawings can be found in Appendix C.

All photographs can be found in Appendix E.

The following points were noted from the internal inspection.

- 3.3.1 Minor cracks in the stone render in room 1 (See photograph P-76).

- 3.3.2 Timber beams in room 1 in reasonable condition with the exception of a minor crack forming at the end of one of the beams. The existing timber posts are helping prop and support the joists (See photographs P-77 & P-78).
- 3.3.3 Section of timber joist missing near end bearing (See photograph P-79).
- 3.3.4 The walls and timber joists in room 2 were in good condition, the timber posts were providing extra support to the joists. (See photograph P-80).
- 3.3.5 There was restricted access to room 4 at the first floor level however the floor was exposed from below which showed a number of joists and boards had decayed with some holes in the floor boards. (See photograph P-81).
- 3.3.6 Room 5 was accessed from a small hatch below in room 2, the roof looked in reasonable condition. Hay stacks obstructed the view of the floor boards from above, however the condition appeared good from below. (See photograph P-82).

The following points were noted from the External inspection.

Side Elevation (A)

- 3.3.7 Loose/ missing mortar due to poor pointing (See photograph P-83).
- 3.3.8 Tiles missing along gable edge and barge board decaying at the end (See photograph P-83).
- 3.3.9 Joints loose in stonework beneath stair and vegetation growing along the wall to stair abutment (See photograph P-84).
- 3.3.10 Timber door heavily decayed and damaged to first floor room (See photograph P-84).

Front Elevation (B)

- 3.3.11 Steel beam showing signs of rust along full length but no signs of delamination have occurred yet (See photograph P-85).
- 3.3.12 Stonework joints loose under the steel beam end bearing (See photograph P-86).
- 3.3.13 Cracking in wall beneath timber joists supporting floor over (See photograph P-87).
- 3.3.14 Steel beam supporting decaying joists is showing heavy signs of rust, delamination doesn't appear to be present (See photograph P-81).
- 3.3.15 Mortar joints washed away and stonework stained due to water ingress from the split in the guttering above (See photograph P-88).
- 3.3.16 Crack forming between the stonework and stone mullion to the side of the top window (See photograph P-89).
- 3.3.17 Loose stonework joints under the bottom window cill (See photograph P-90).
- 3.3.18 Loose joints in stonework under the roof/wall abutment where mortar has been washed out. Vegetation growth present here too (See photograph P-91).
- 3.3.19 Steel beam above opening appeared in reasonable condition other than stripped paintwork (See photograph P-92).
- 3.3.20 Mortar joints loose in stonework above the door and along wall panel between the large opening and door to the milk pasteurising room 3 (See photograph P-93).

Rear Elevation (C)

- 3.3.21 Guttering missing along the majority of the wall length.
- 3.3.22 Roof in poor condition, a large number of slate tiles loose and missing.
- 3.3.23 Stonework stained and joints washed away where the slate roof tiles and guttering are missing along the edge and no longer providing protection to the wall (See photograph P-94).
- 3.3.24 Large vertical crack down the centre of the wall panel (See photograph P-95).

Side Elevation (D)

- 3.3.25 Generally the stonework on the elevation was in an acceptable overall condition.
- 3.3.26 Guttering loose at the corner of the wall and stonework joints loose below (See photograph P-96).
- 3.3.27 Mortar joints very loose between the stair wall and the main wall (See photograph P-97).

3.4 Barn (Building E)

Defect drawings can be found in Appendix D.

All photographs can be found in Appendix E.

The following points were noted from the internal inspection.

- 3.4.1 A large proportion of the timber joists supporting the ground floor level were damaged and showing signs of decay (See photograph P-98 & P-99).
- 3.4.2 Holes from the decay were present in some of the timber floor boards (See photographs P-98 & P-100).
- 3.4.3 The stone walls supporting the timber posts which help prop the floor at midspan were damaged with sections missing in some areas (See photograph P-101).
- 3.4.4 The internal stone stair from lower ground to ground level was covered with hay making it difficult to assess the stairs condition (See photograph P-102).
- 3.4.5 The stone joints had become very loose above the sliding barn door at ground level, the stonework subsiding had caused a rafter to slip off its bearing (See photographs P-103 & P104).
- 3.4.6 A number of the purlins showed heavy signs of decay particularly at the wall bearings (See photograph P-105).
- 3.4.7 Light coming through the roof exposed areas where the roof tiles were damaged or missing, consequently the timber ridge beam and rafters below were showing signs of weathering & deterioration (See photograph P-106).
- 3.4.8 The bottom chord to the existing timber truss was heavily decayed (See photograph P-107).
- 3.4.9 Large vertical cracks in the corners of the wall are more prominent internally. This is likely due to differential settlement between the stone quoins and the main stonework panel (See photographs P-108 & P-109).
- 3.4.10 Timber rafter damaged (See photograph P-109).
- 3.4.11 Timber purlin showing signs of a fracture (See photograph P-110).
- 3.4.12 Timber purlin with section missing due to deterioration (See photograph P-111).

The following points were noted from the External inspection.

Front Elevation (A)

- 3.4.13 Vertical crack to top right corner of wall (See photograph P-112).
- 3.4.14 Vertical crack in centre of the wall panel and large diagonal crack in the buttressing wall next to the main entrance (See photograph P-113).
- 3.4.15 Buttressing wall not properly toothed and bonded to the main wall (See photograph P-114).

Side Elevation (B)

- 3.4.16 Mortar joints loose and gaps in the stonework due to poor pointing. Level of pointing generally poor across full elevation. (See photograph P-115).
- 3.4.17 Mortar joints loose across the top of the gable wall (See photograph P-116).

Rear Elevation (C)

- 3.4.18 Some stonework loose across the top of wall (See photograph P-117).
- 3.4.19 Loose joints to stonework around door opening (See photograph P-118).
- 3.4.20 Stonework local to cantilever stair/ wall abutment stained and vegetation present due to water ingress (See photograph P-119).

Side Elevation (D)

- 3.4.21 Ends of the timber purlins visible and heavily corroded. Stonework loose across the top of the gable wall (See photograph P-120).
- 3.4.22 Large vertical cracks to the corners of the wall are less prominent from external face, please see point 3.4.10.

4.0 Conclusions and Recommendations

4.1 Manor House

NOTE: Defects Drawings are in Appendices A-D. Typical repair details sheet is in Appendix E.

Internal

- 4.1.1 The manor house was in good overall condition, all walls were plumb and floors were in acceptable structural condition presenting minimal signs of deterioration.
- 4.1.2 The roof wasn't water tight, this is largely the reason for internal signs of damp penetration on a number of the walls and floors. The lack of water tightness had resulted in some rafters and purlins becoming saturated and weakened, these will need repairing if possible, but if the damage is beyond the point of repair then replacement is necessary.
- 4.1.3 Damp walls on the ground and first floors likely due to condition of roof. After roof has been made water tight, plaster & finishes can be replaced, where required.
- 4.1.4 Where rising damp is present, all plaster and finishes should be removed so the bare stone is visible, the ground strata on the opposite side of the wall should also be removed/ battled back at 45 degrees. As this is an old building there will be no cavity and DPC (damp proof coursing) meaning water from the ground is penetrating through small gaps in the stonework joints directly to the inside face. Permaseal or a similar type of waterproofing resin should be injected into any gaps to seal out all moisture. Plaster and finishes reapplied once the wall is dry.
- 4.1.5 The majority of the roof timber members were in reasonable condition, however, the roof will need stripping back and re-felting and re-tiling to make water tight and prevent further deterioration.
- 4.1.6 Any de-bonded or dampened plaster on the walls will need replacing once the roof works have been completed.
- 4.1.7 All damp and rotting floor boards will need to be replaced.
- 4.1.8 All cracked/ de-bonded plaster to be removed and stone wall inspected behind, especially where cracks appear under supports or from the corners of openings.

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- 4.1.9 Split/fracture in the original timber beam in room 2 to be examined closely, any further movement should be reported to an engineer immediately.

External

- 4.1.10 All guttering, soffit and barge boards to be replaced when the roof is made good.
4.1.11 All loose joints to be repointed using lime mortar to match existing. Cementitious mortar should not be used.
4.1.12 All loose cracks in stonework to be carefully infilled with lime mortar.
4.1.13 Very loose corbel on elevation A to be removed and reinstated, corbel to be properly bonded into gable wall. Use of Helifix or Cintec anchors may need to be used to tie corbel back to existing wall.

4.2 Barn (Building B)

Internal

- 4.2.1 Timber survey required to assess condition of saturated timber roof members to main barn/room 1. Some rafters and purlins will likely need replacing depending on level of deterioration, a timber survey is required. It is recommended that as many timber members as possible be repaired rather than replaced to keep the building heritage intact. Fragile joists should be kept with new joists laid next to them.
4.2.2 Existing timber truss to be adequately propped so the cracked & slipping sections of stone walls can be locally rebuilt. The new stonework or similar approved will need to be properly toothed and bonded into the existing, use of helifix anchors will help facilitate this. See typical repair details sheet in Appendix E.
4.2.3 Wall under the purlin to be locally rebuilt and pointed to remove large vertical crack, purlin to be sufficiently propped during repair process.
4.2.4 All loose/ open joints will need re-pointing with lime mortar.
4.2.5 A lack of protection and moist air exposure had led to rusting steel beams. Beams to be cleaned removing the rust with a wire brush or sandblasting before protecting with a suitable primer.
4.2.6 All cracked render likely to be de-bonded/ damaged and any loose render should be replaced.
4.2.7 The timber floor will likely need to be entirely removed/replaced and roof made water tight if the room above the pigsty is to be utilised in the future.

External

- 4.2.8 All loose joints to be re-pointed.
4.2.9 Further erosion of limestone lintel to be prevented with use of protective sealants to shield from moisture.
4.2.10 Timber soffit joists and boards to be replaced and adequately protected/ concealed to eliminate exposure.
4.2.11 All joints previously repaired with cementitious mortar to be carefully grubbed out and replaced with lime mortar to prevent further deterioration of the stonework.
4.2.12 All cracks in the stonework joints to be repointed with lime mortar. If cracking occurs through stone block itself then these should be removed and reinstated.
4.2.13 Doors to be replaced and stonework re-bonded/pointed.
4.2.14 Timber lintel to be removed above 1st floor window on side elevation and replaced with stone lintel to match others.

- 4.2.15 Main barn roof needs to be made water tight. Old and damaged slates and roof felt to be replaced. All new rainwater pipes, guttering, soffit & barge boards are required.
- 4.2.16 All water damaged sections of the stone wall will need locally rebuilding.
- 4.2.17 All vegetation to be removed along with old gutter.
- 4.2.18 Missing or damaged roof tiles to lean to extension to be replaced and roof made water tight. Majority of the roof tiles were in reasonable condition and should be fit for re-use.
- 4.2.19 Wall abutment between old and new barn to be suitably tied either with use of helifix wall starters or similar. See typical repair details sheet in Appendix E.
- 4.2.20 Any loose joints or gaps in mortar joints to be re-pointed with lime mortar.

4.3 Barn (Building C)

Internal

- 4.3.1 All cracked render to be removed locally and replaced.
- 4.3.2 Timber joist end to be repaired, either replace the joist (depending on level of decay along the member) or bolt section of new timber joist into existing joist where good. New ends painted with protective primer and lapped with DPM prior to refitting into the wall. See typical repair details sheet in Appendix E.
- 4.3.3 Rotting timber floor joists and boards supporting first floor to be supported with new joists laid next to existing, all rotting existing timber joists to be dried & treated prior to new instalment. Any joists where end bearings have rotten will need to be repaired with similar procedure as above (4.3.2). See typical repair details sheet in Appendix E.
- 4.3.4 Timber beams/ joists in rooms 1 & 2 propped by timber posts. Engineer to be consulted if removal of timber posts is required for proposed scheme.

External

- 4.3.5 All loose joints to be repointed using limestone mortar.
- 4.3.6 Roof tiles appeared to be in reasonable condition. Any gaps or damaged tiles will need replacing. Roof will need re-felting and insulating depending on future use, original slate can be reinstated. All guttering, soffit & barge boards should be replaced.
- 4.3.7 Wall will need locally rebuilding to remove large vertical crack below timber joists under room 4. New stone to be properly toothed and bonded into existing, or alternatively, helifix rods or a similar solution can be used to dowel fix the walls together and joints re-pointed afterwards. See typical repair details sheet in Appendix E.
- 4.3.8 A lack of protection and moist air exposure has resulted in rusting along the beam under room 4 from point 3.3.11. Beam to be cleaned back to bare metal by removing the rust with a wire brush or by sandblasting before protecting with a suitable primer. Stonework joints under beam end bearings can be repointed prior to reinstallation of the beam. Timber floor to be suitably propped prior to removal of beam.
- 4.3.9 Similar method to the above point to be applied to the smaller steel beam behind from point 3.3.14.
- 4.3.10 All water damaged stonework to be locally rebuilt.
- 4.3.11 Similar to 4.1.4. - steel beam to be cleaned and repainted.
- 4.3.12 Gable roof to the single storey open plan area to rear of building to be completely replaced. New timber rafters and purlins required.
- 4.3.13 All cracks within stonework to be repointed using lime mortar.

4.4 Barn (Building E)

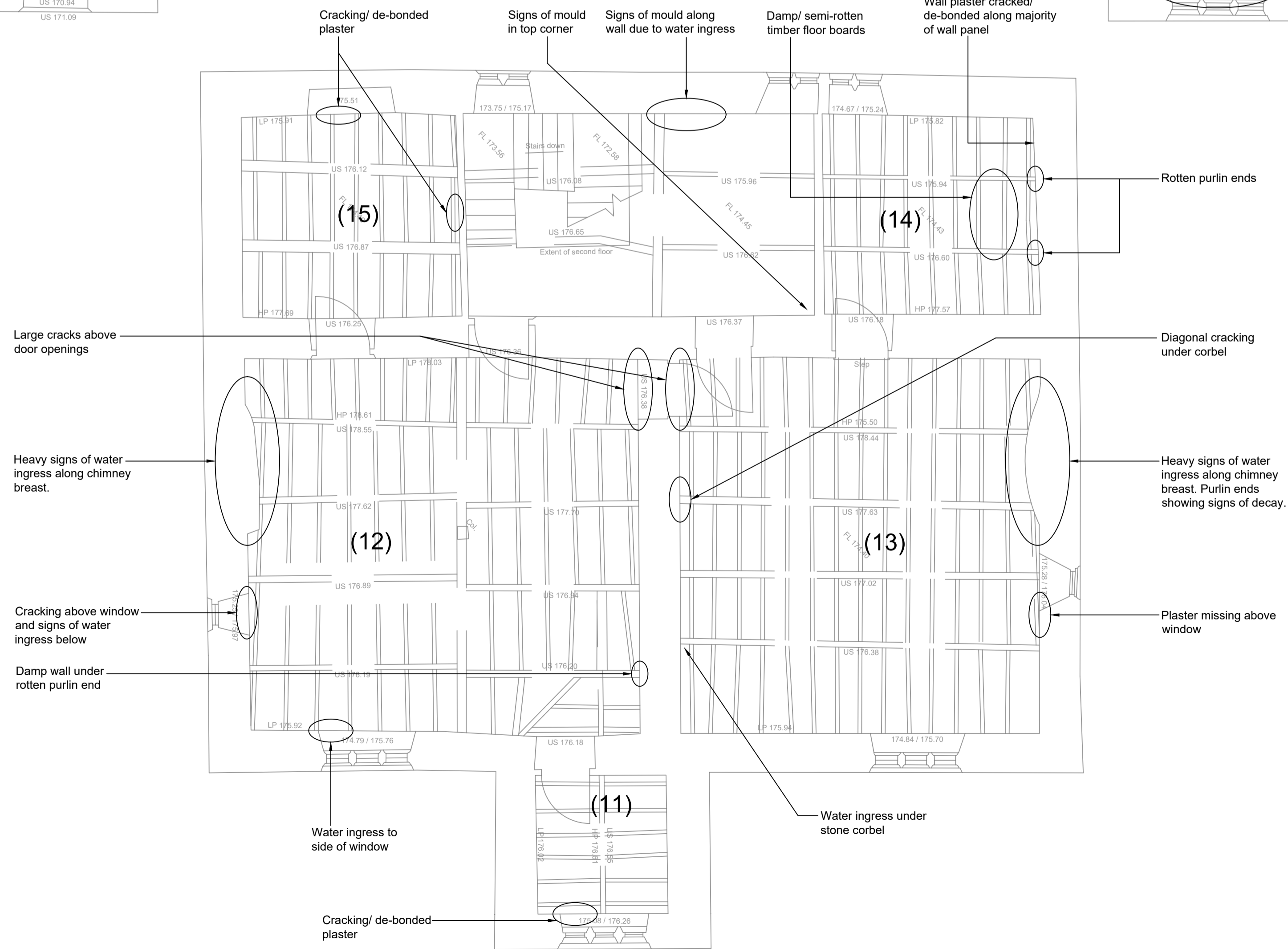
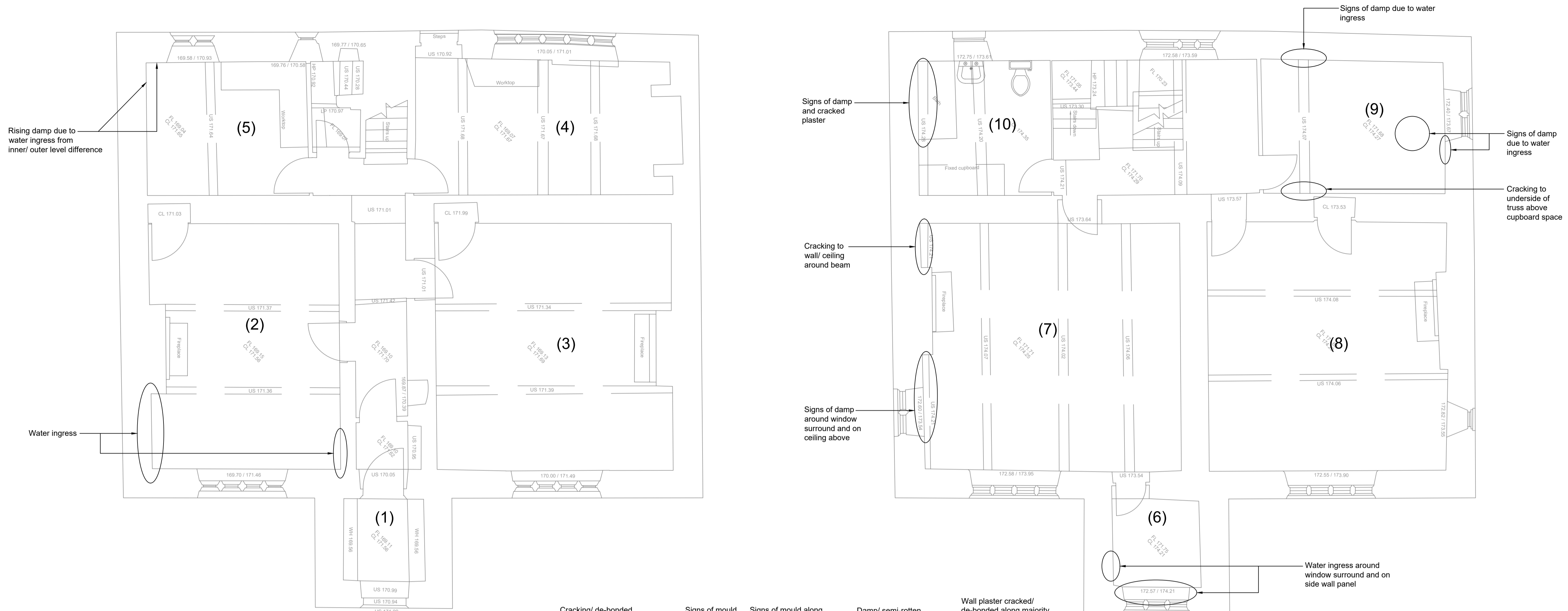
Internal

- 4.4.1 The timber floor is not fit for purpose. A timber survey will be required to assess the condition of the timber members. If the timber floor is being removed in parts then the external walls will need to be locally propped, especially where they're retaining the external ground level on the front elevation. It's important to try and save the timber floor members where possible to maintain the buildings historic significance. The majority of the fragile joists should be kept with new joists laid next to them.
- 4.4.2 Roof to be made water tight, new felt and slates required. Majority of the timber rafters will need replacing.
- 4.4.3 Decayed or fractured purlins to be strengthened. New purlin of matching size to be bolted through the existing purlin where the timber is good and decayed section removed. Where purlins have deteriorated at the wall bearing, the new timber end sections will need a protective coating and lapping with DPM. Roof to be suitably propped during restoration works. A timber survey will be required to confirm exactly which members have decayed/ started to decay. See typical repair details sheet in Appendix E.
- 4.4.4 The walls will need repairing to eliminate large vertical cracks in the corners. Stone Cintec anchor rods should be used to horizontally fix stone quoins to main stone wall panel. Once installed, all loose joints in this area will need repointing. See typical repair details sheet in Appendix E.
- 4.4.5 Loose stonework to be rebuilt and repointed with lime mortar.
- 4.4.6 Truss to be suitably propped prior to repair works. Decayed section of bottom chord member to be removed & repaired with steel PFCs or matching timber sections bolt fixed to both sides of existing member. See typical repair details sheet in Appendix E.

External

- 4.4.7 Crack repair required in a number of areas. Wall to be repointed using lime mortar to match existing.
- 4.4.8 Cintec anchors/ Helfix rods or similarly approved used to fix buttressing walls into main wall. See typical repair details sheet in Appendix E.
- 4.4.9 Any recessed joints or areas with loose stones to be repointed.
- 4.4.10 All gutters, soffit & barge boards to be replaced when the roof has been repaired.
- 4.4.11 Vegetation removed and stonework sufficiently cleaned and blasted before being repointed. Stairs/ stair landing to be repaired and relevelled to prevent any pooling of water.
- 4.4.12 Ends of timber purlins visible from the external walls to be protected to prevent further weathering, see point 4.4.3.

APPENDIX A - Manor House (Building A) Defect Drawings



P01	ISSUED	05.01.24	JT
REV	COMMENTS	DATE	CHK
STATUS			

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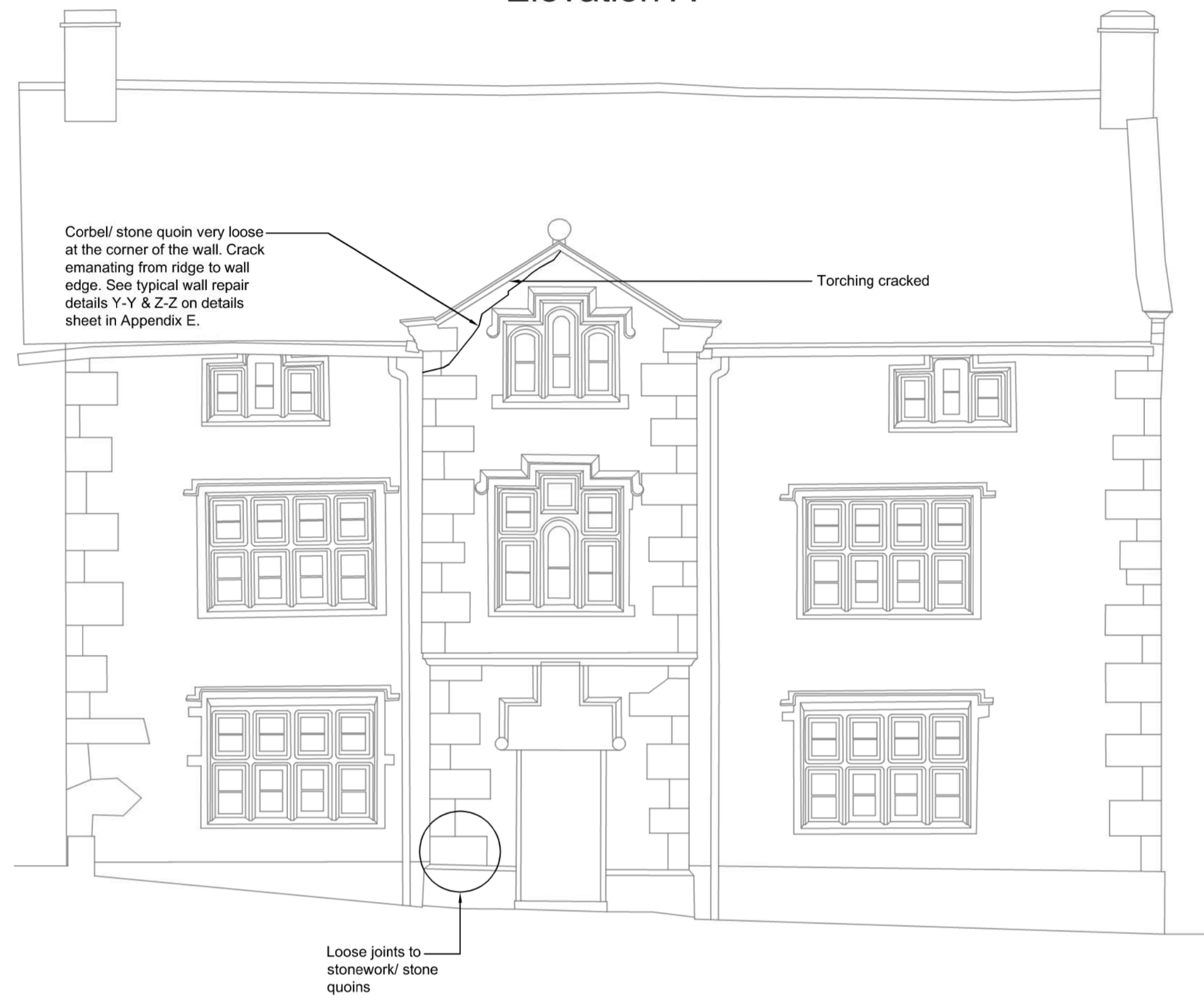
CLIENT
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PROJECT
**ALDER HOUSE FARM
 BOLTON BY BOWLAND**

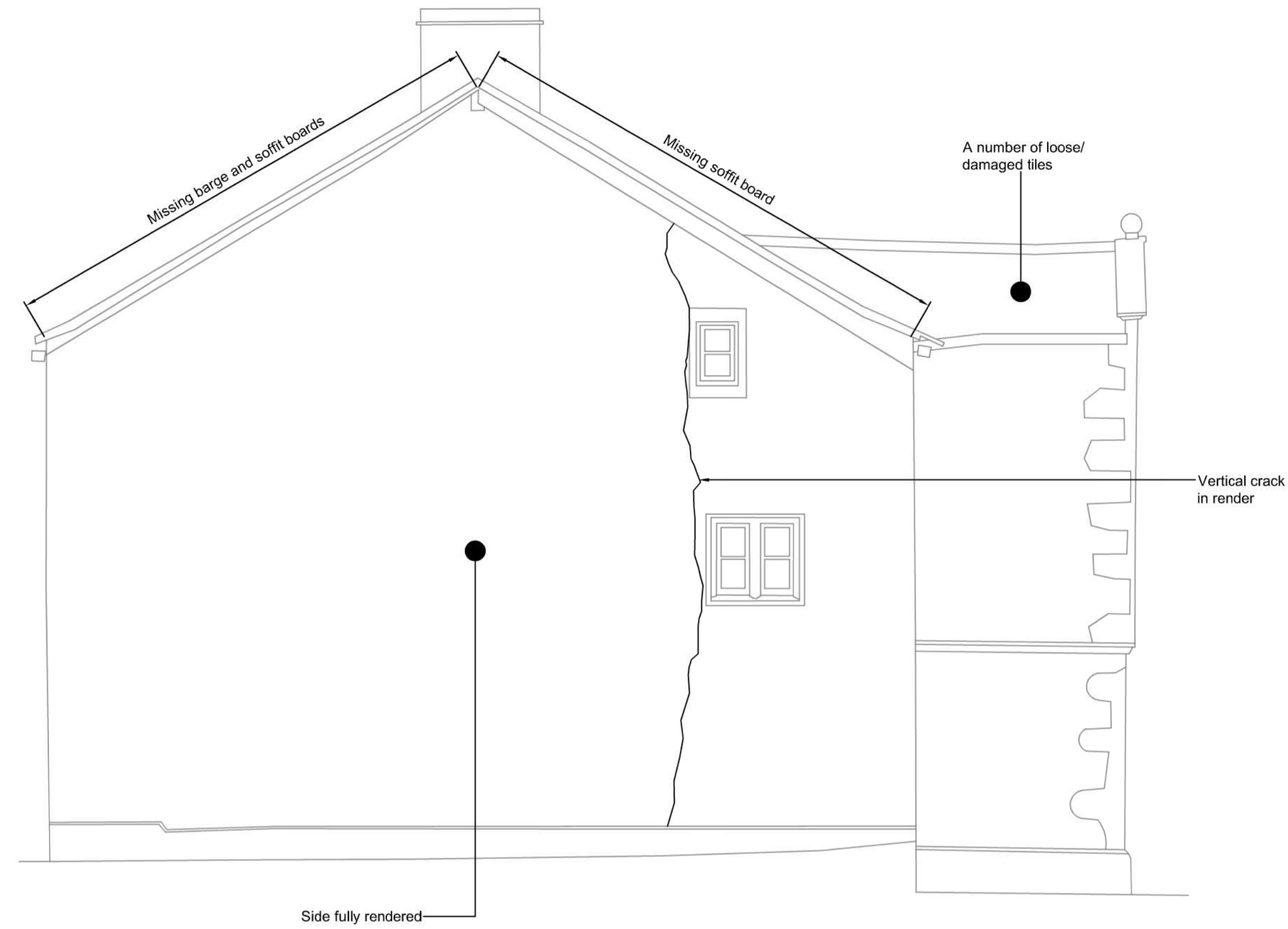
DRAWING TITLE
**MANOR HOUSE (BUILDING A)
 INTERNAL DEFECT DRAWINGS
 ALL LEVELS**

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Ref No.	222532-MNP-BA-XX-DR-S-100	

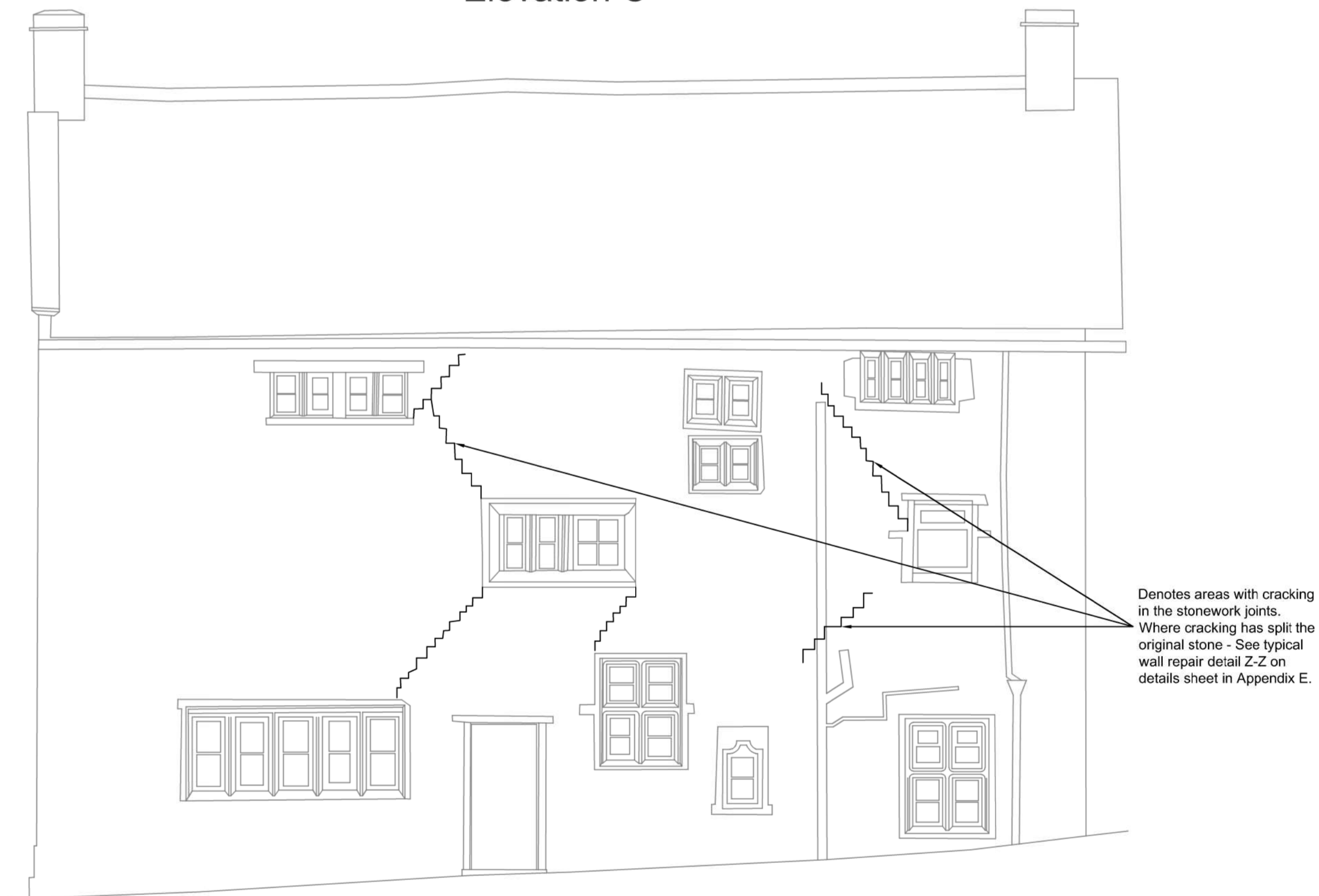
Elevation A



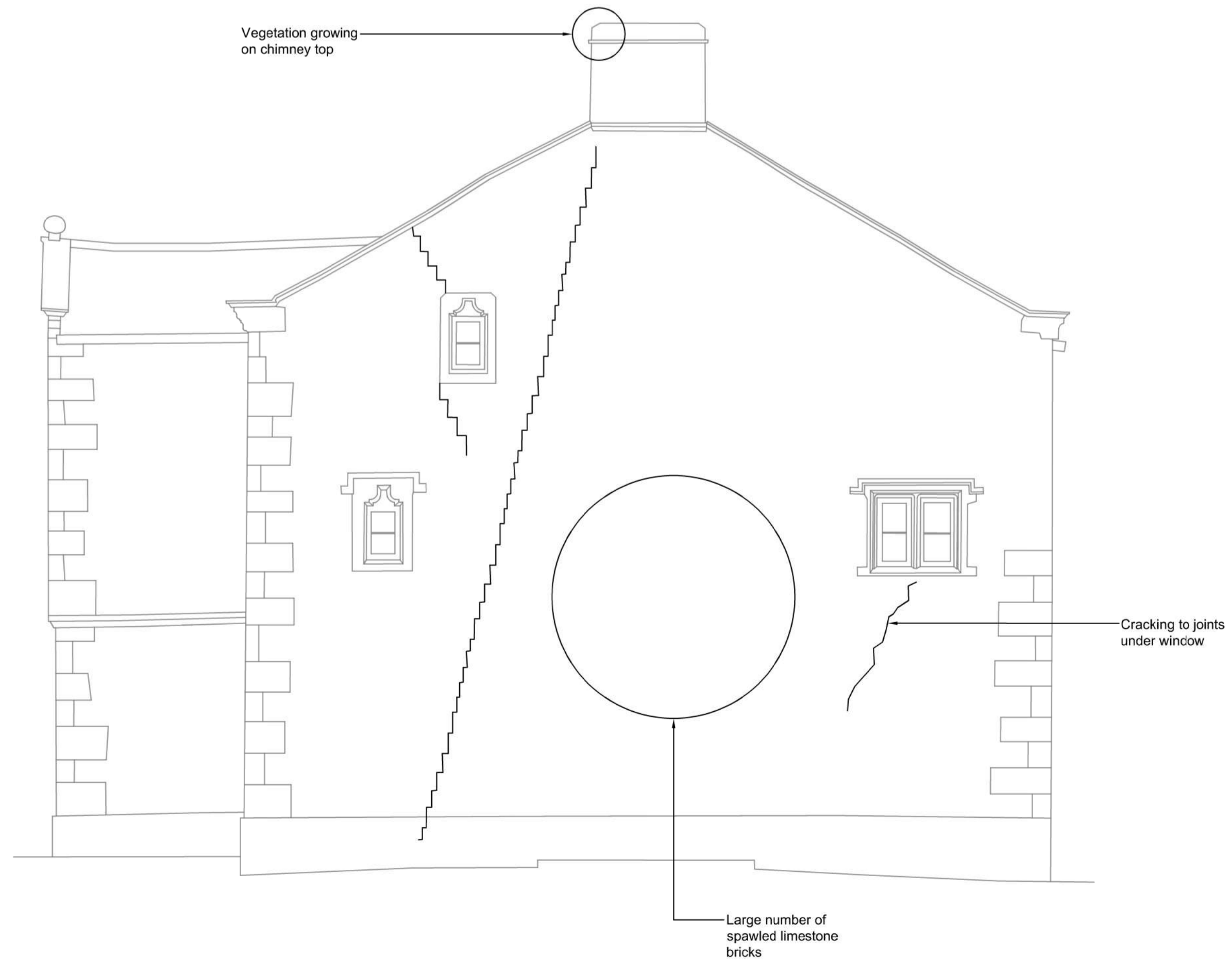
Elevation B



Elevation C



Elevation D



P01	ISSUED	05.01.24	JT
REV	COMMENTS	DATE	CHK
STATUS			

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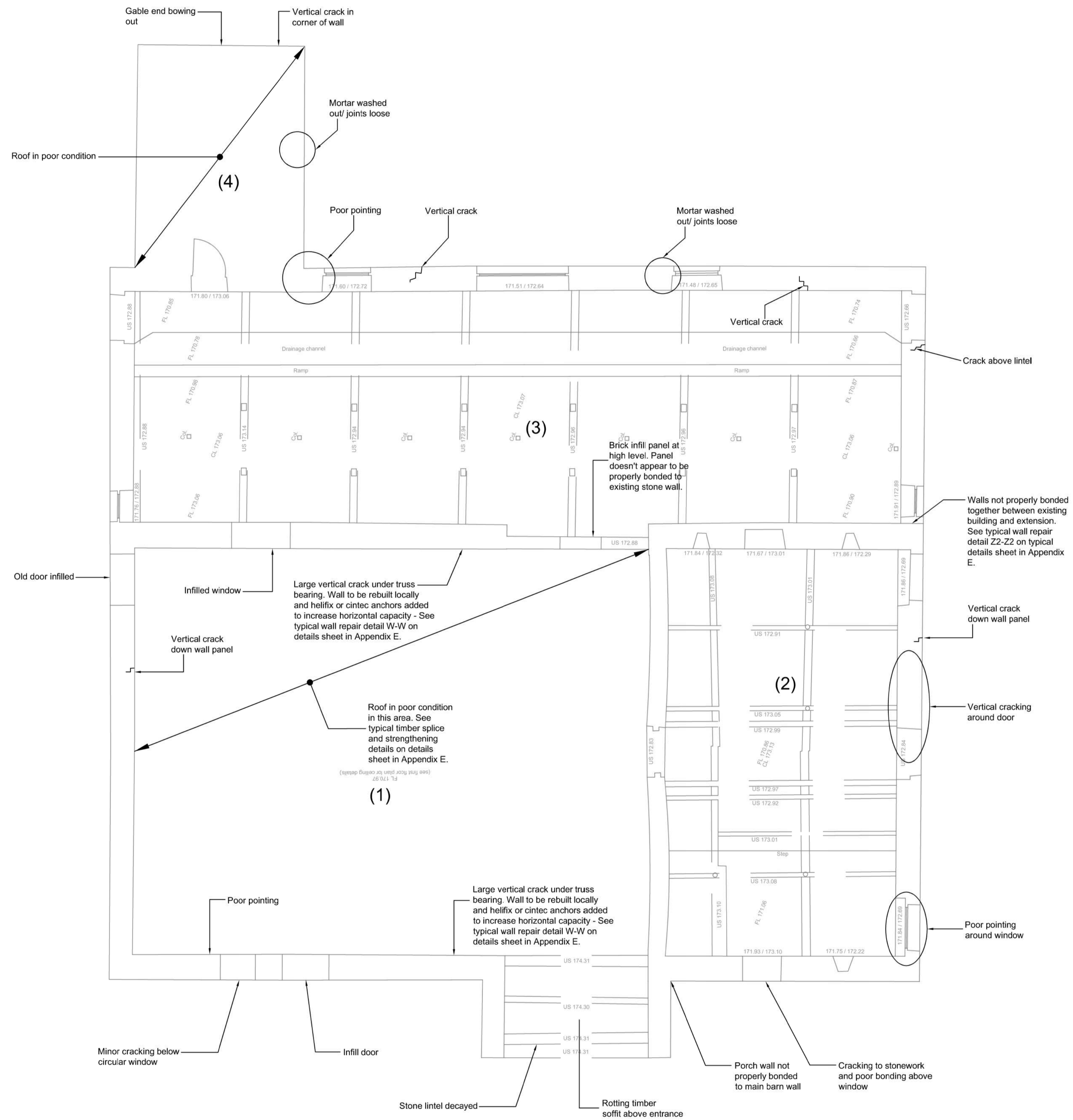
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PROJECT
**ALDER HOUSE FARM
 BOLTON BY BOWLAND**

DRAWING TITLE
**MANOR HOUSE (BUILDING A)
 EXTERNAL DEFECT DRAWINGS
 ALL ELEVATIONS**

SCALE @ A1	DRAWN BY	DATE
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MNP No.	STATUS CODE	REV
222532	S0	P01
Ref No: 222532-MNP-BA-XX-DR-S-101		

APPENDIX B - Barn (Building B) Defect Drawings



Ground Floor Level

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REV	COMMENTS	DATE	CHK
STATUS			

FOR COMMENTS

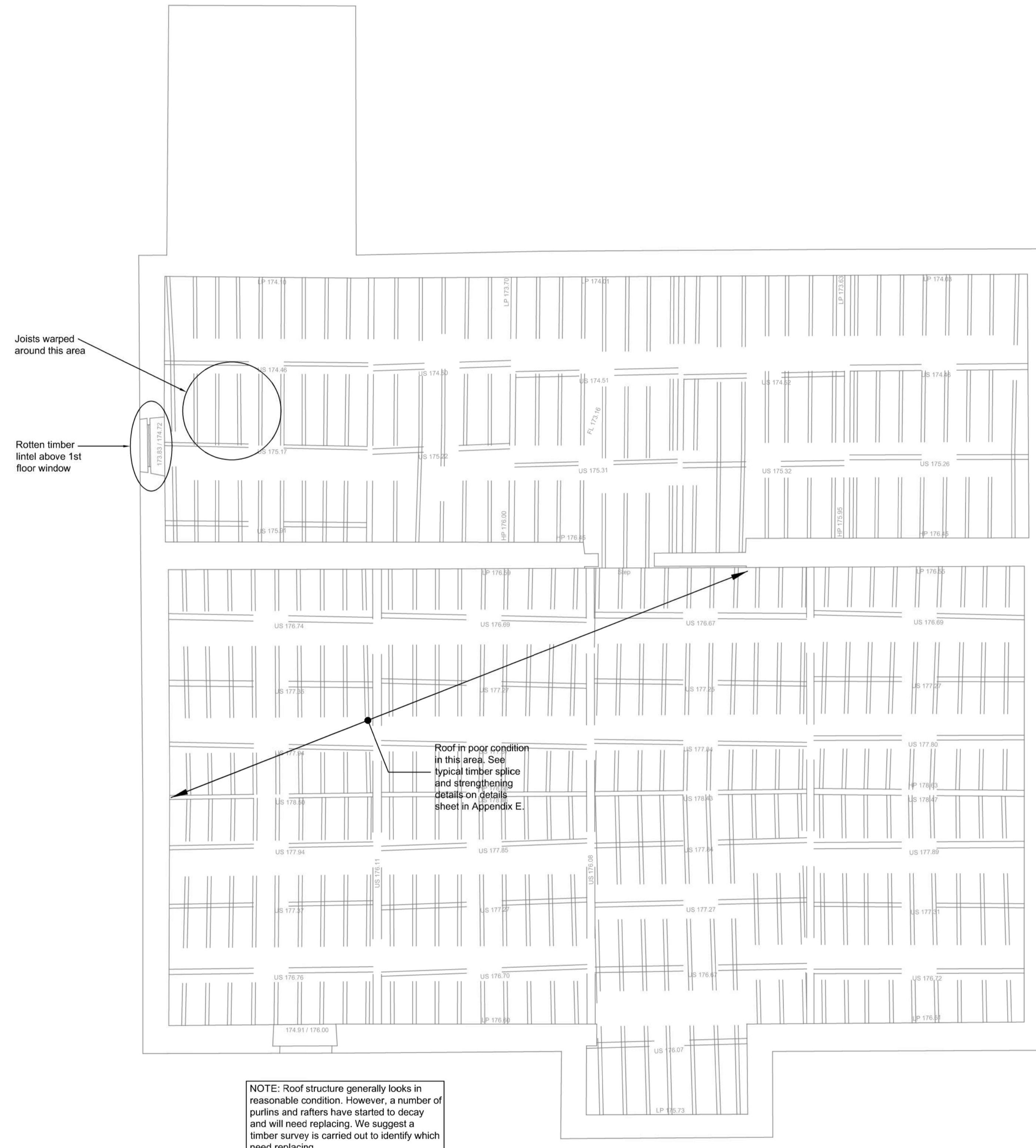
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DRAWING TITLE
**BARN (BUILDING B) DEFECT
 DRAWINGS - GROUND LEVEL**

SCALE @ A1	DRAWN BY	DATE
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MNP No.	STATUS CODE	REV
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Ref No: 222532-MNP-BB-XX-DR-S-200		



First Floor Level

P01	ISSUED	05.01.24	JT
REV	COMMENTS	DATE	CHK
STATUS			

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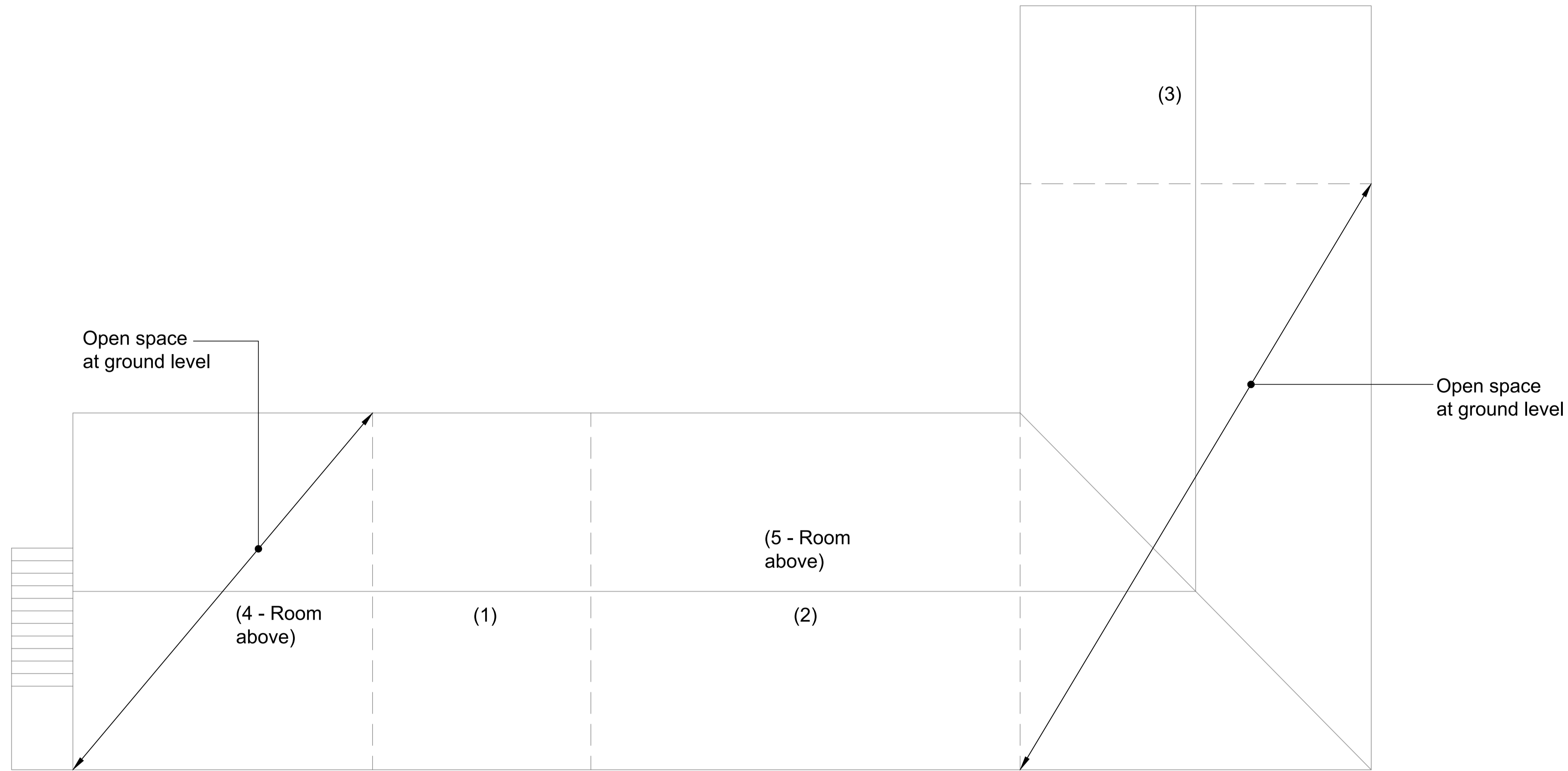
CLIENT
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PROJECT
**ALDER HOUSE FARM
 BOLTON BY BOWLAND**

DRAWING TITLE
**BARN (BUILDING B) DEFECT
 DRAWINGS - FIRST LEVEL**

SCALE @ A1	DRAWN BY	DATE
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MNP No.	STATUS CODE	REV
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Ref No: 222532-MNP-BB-XX-DR-S-201		

APPENDIX C - Barn (Building C) Defect Drawings



Plan View

P01	ISSUED	05.01.24	JT
REV	COMMENTS	DATE	CHK
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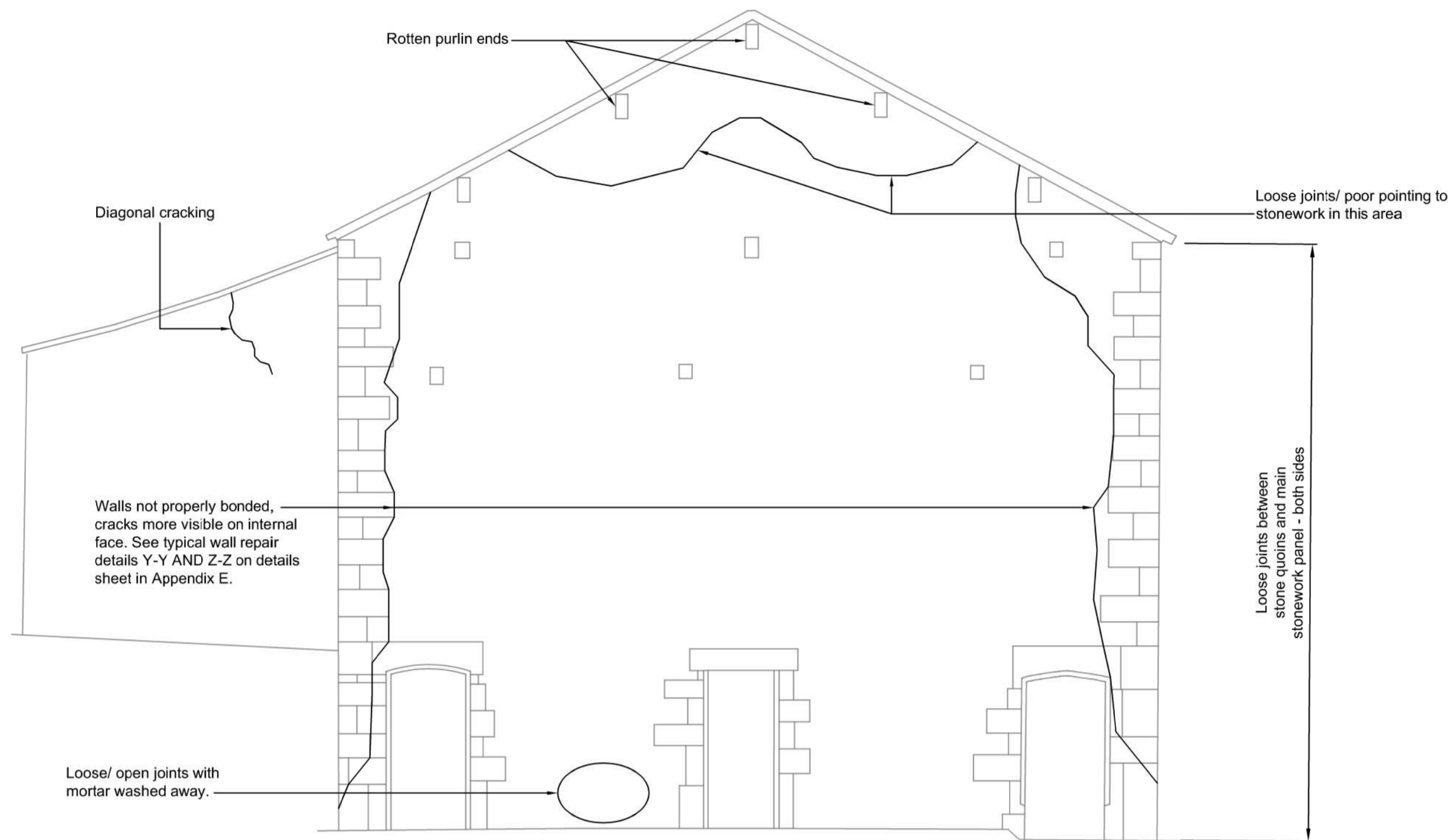
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PROJECT
**ALDER HOUSE FARM
 BOLTON BY BOWLAND**

DRAWING TITLE
**BARN (BUILDING C) DEFECT
 DRAWINGS - KEY PLAN (NTS)**

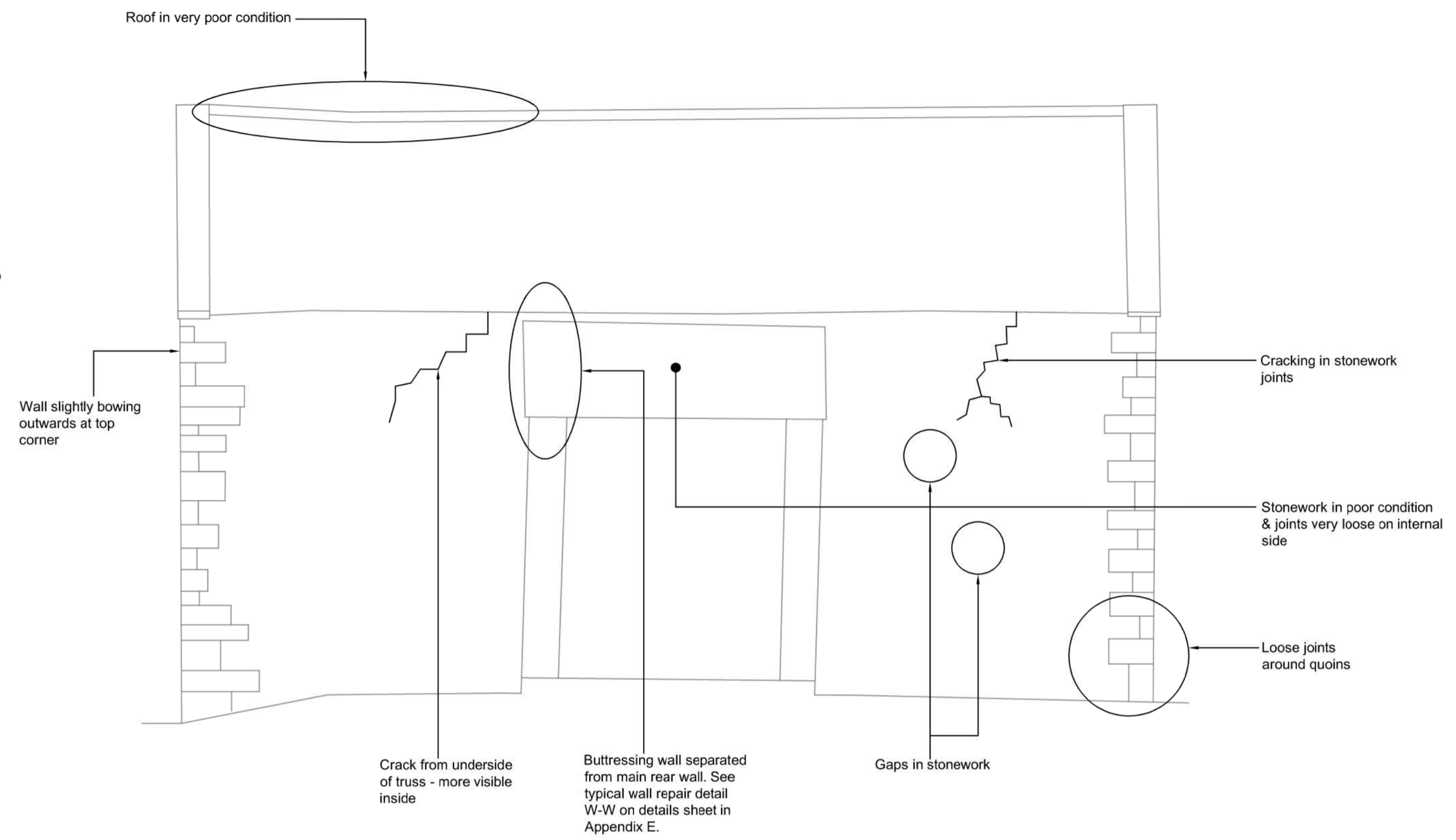
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REF No: 222532-MNP-BC-XX-DR-S-300		

APPENDIX D - Barn (Building E) Defect Drawings



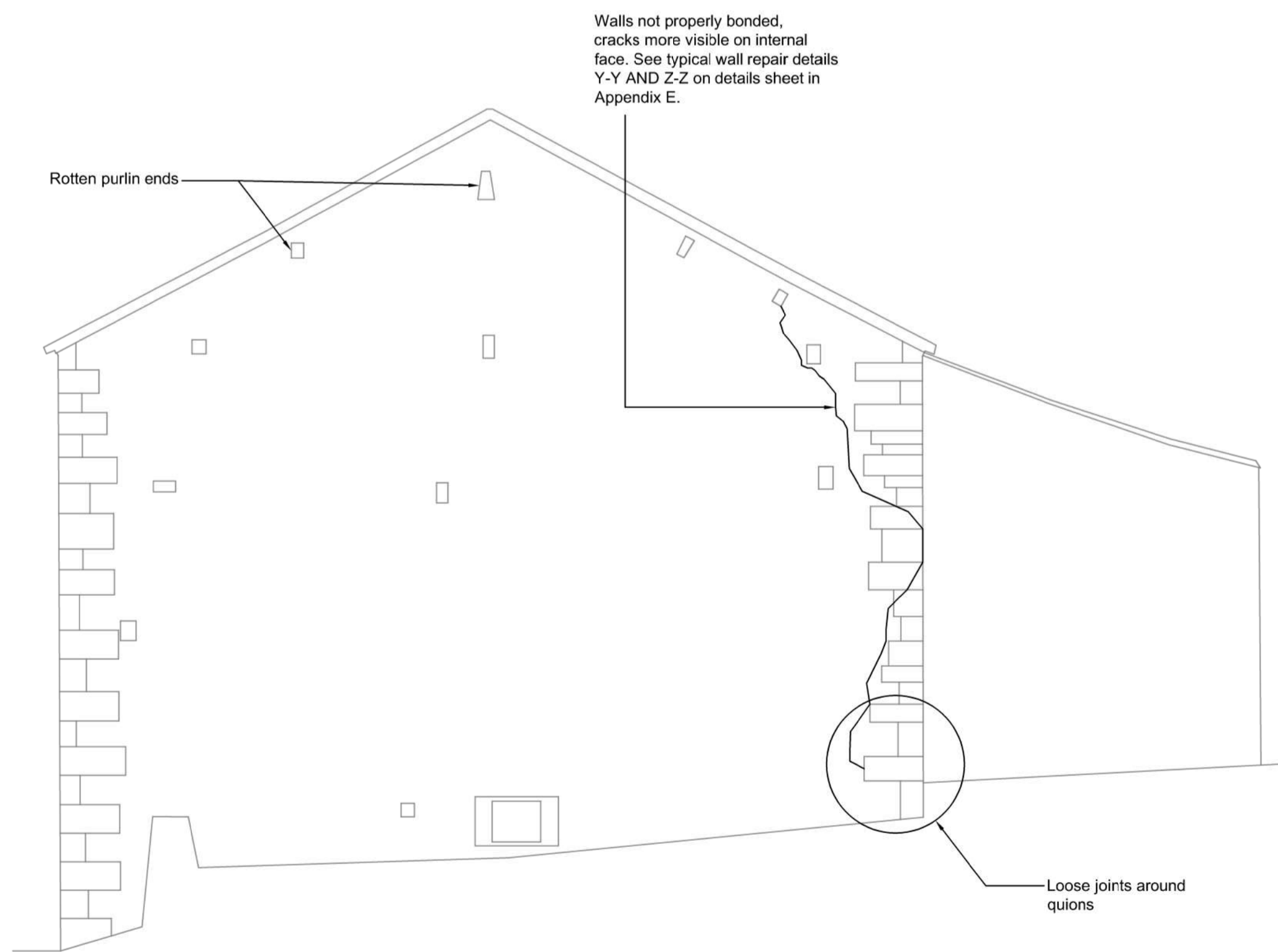
Elevation D

NOTE: All loose joints will need re-pointing



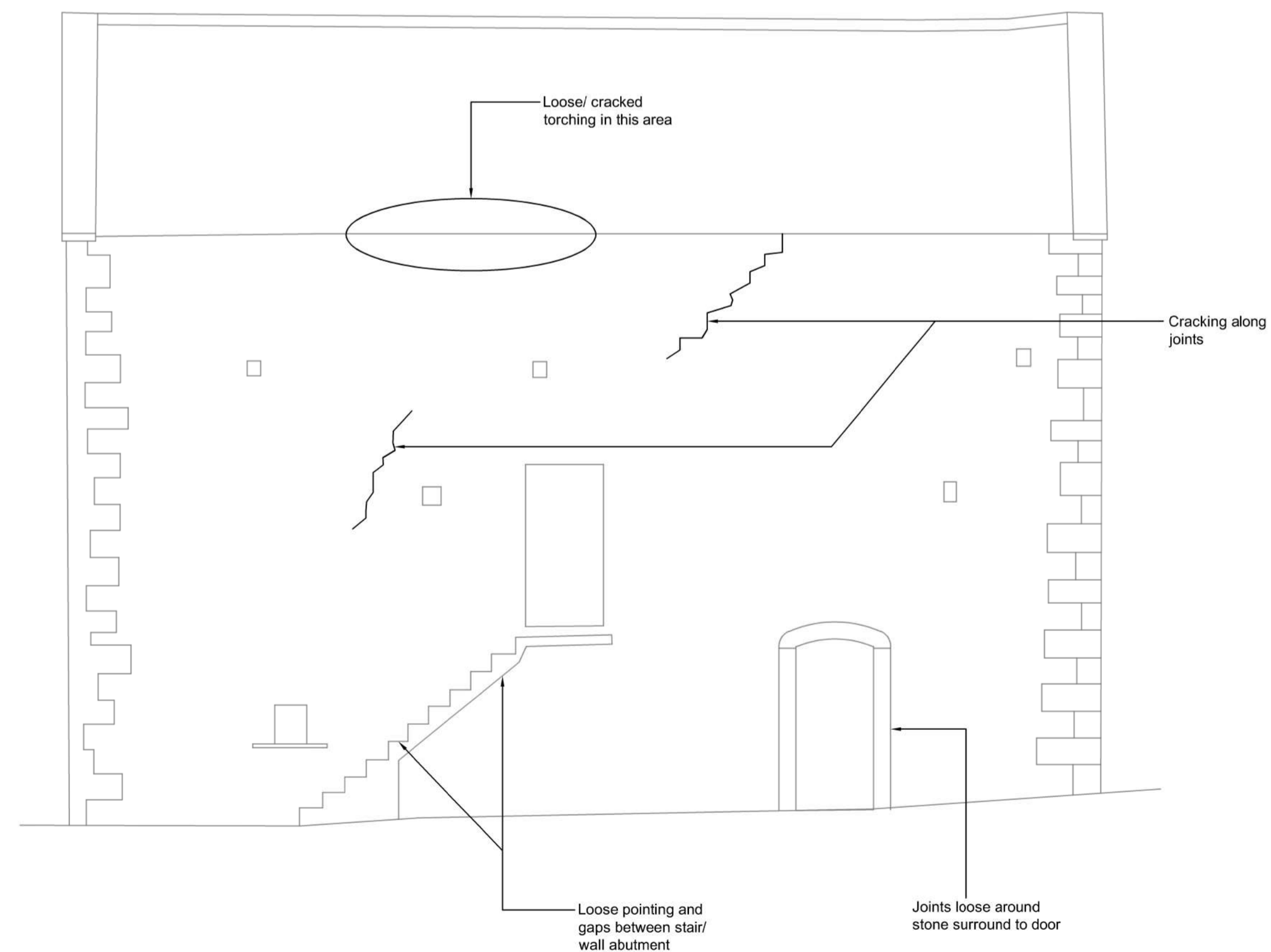
Elevation A

NOTE: Overall the roof is in a poor condition - timber survey required. Slates appeared to be in reasonable condition and can be reinstated.



Elevation B

NOTE: Some very loose joints along elevation, majority of wall panel will need re-pointing.



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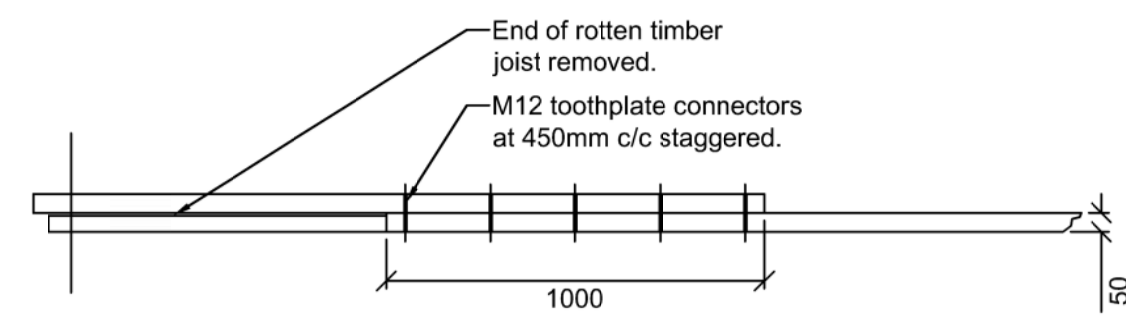
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**ALDER HOUSE FARM
 BOLTON BY BOWLAND**

DRAWING TITLE
**BARN (BUILDING E) EXTERNAL
 DEFECT DRAWINGS - ALL
 ELEVATIONS**

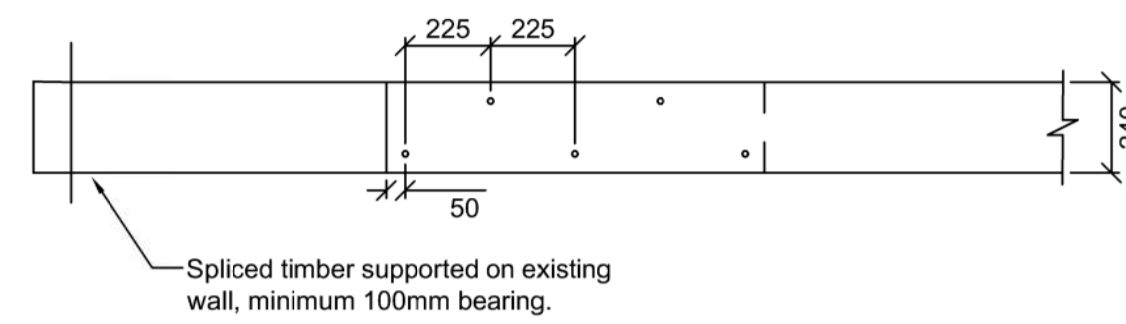
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MNP No.	STATUS CODE	REV
222532	S0	P01
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APPENDIX E - Typical Repair Details Sheet



Joist End Splice Repair Detail - Plan

Scale 1:20

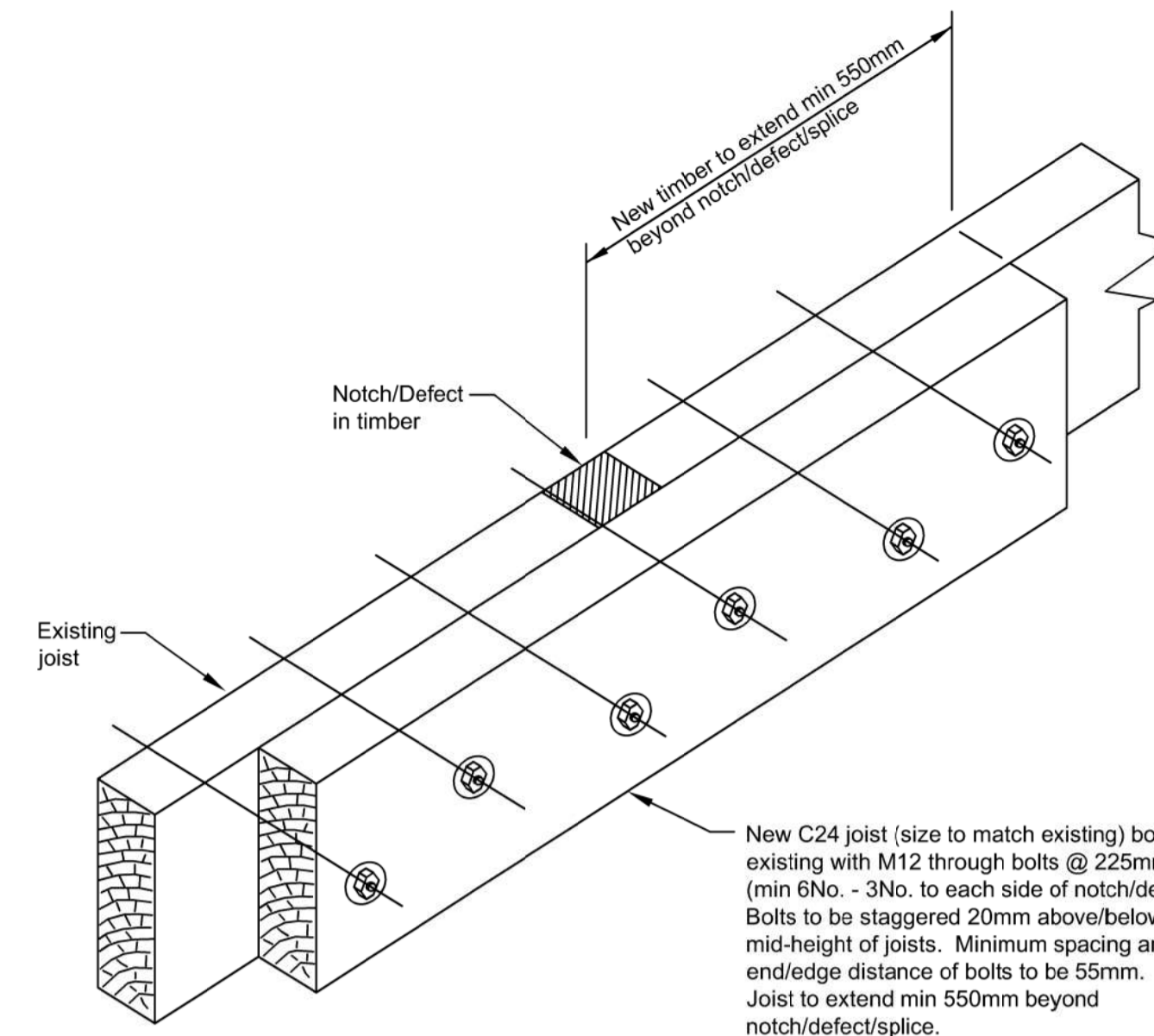


Joist End Splice Repair Detail - Elevation

Scale 1:20

Splice Detail Repair Details (X-X)

Scale 1:20

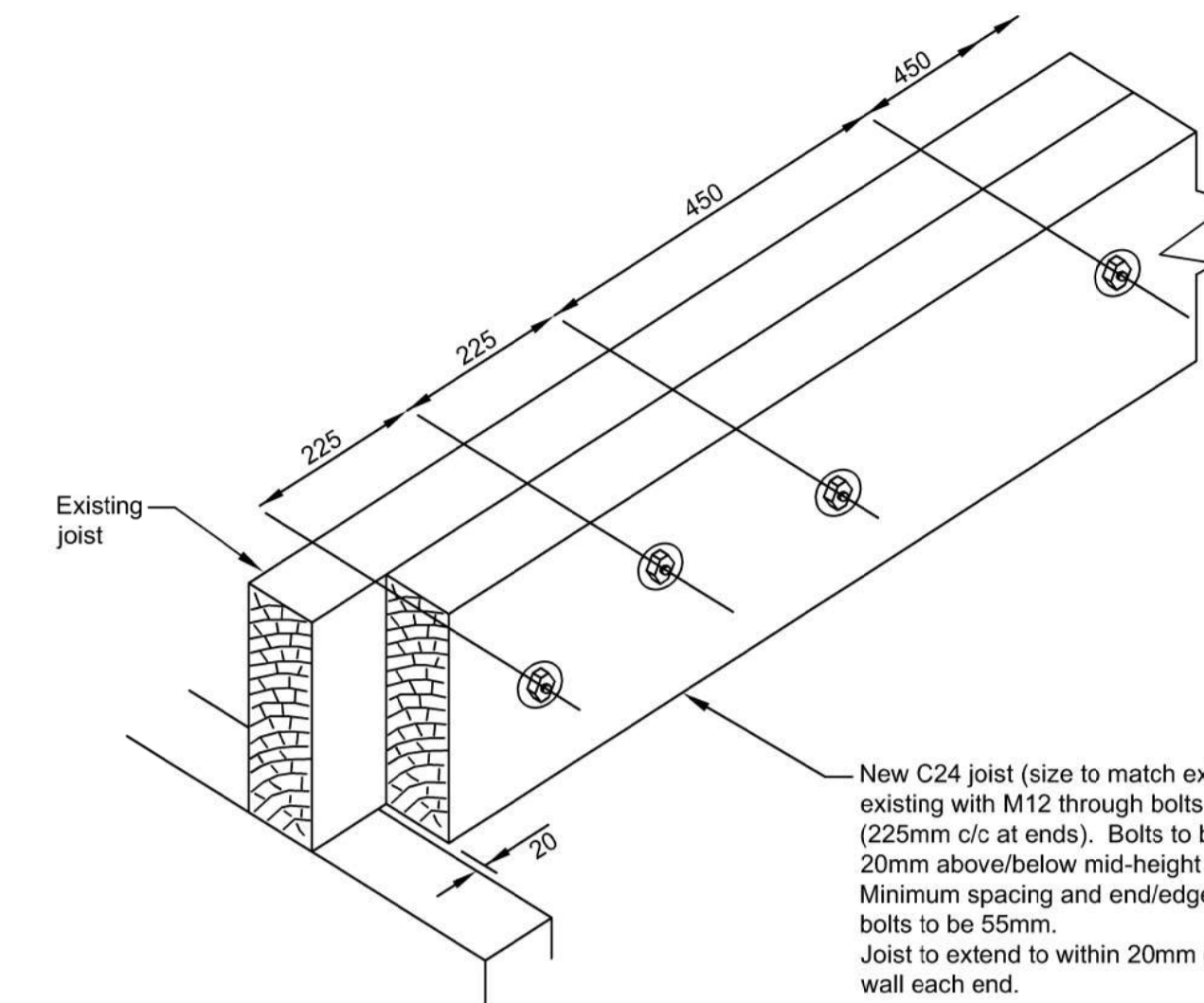


STRENGTHENING TO EXISTING JOIST (DETAIL 1)

ADDITIONAL TIMBER SPLICE

Scale 1:10

FOR MINOR NOTCHES / DEFECTS IN EXISTING JOIST

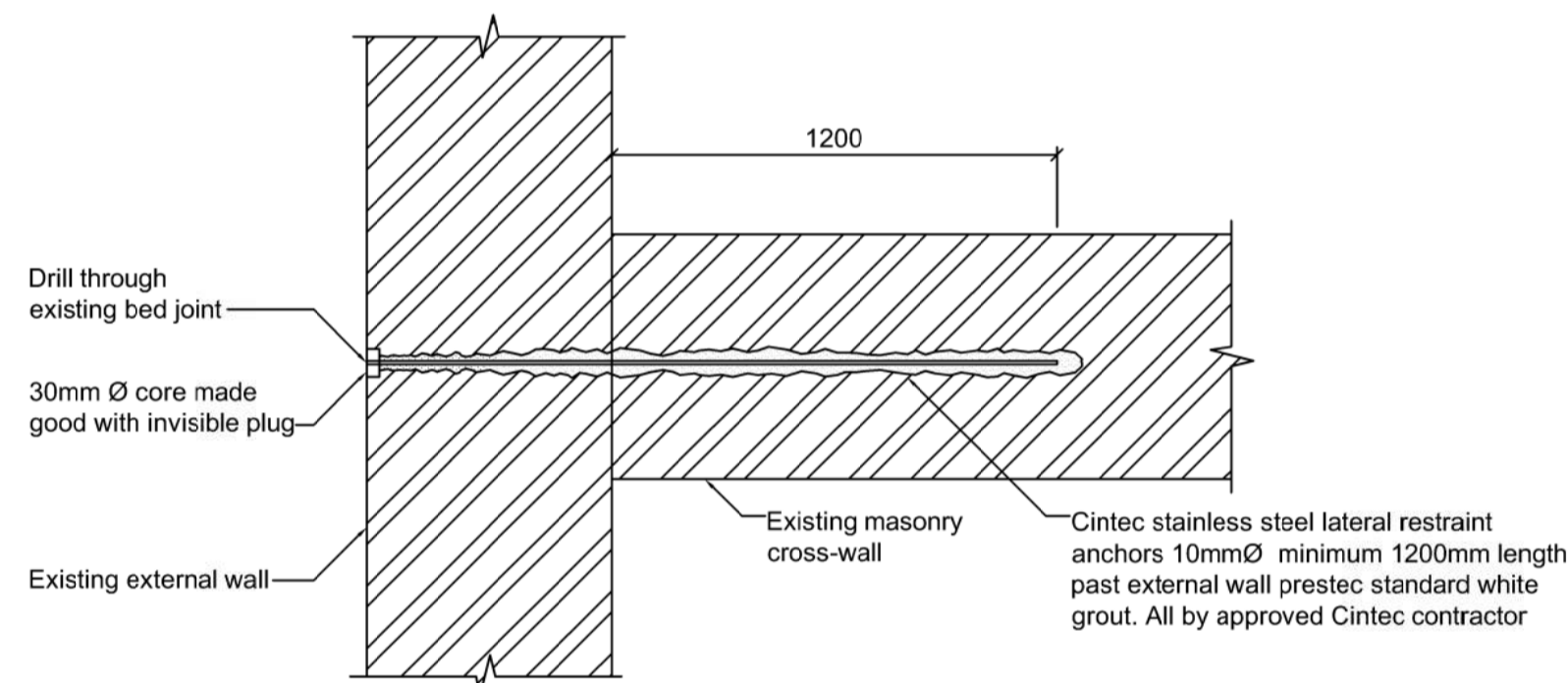


STRENGTHENING TO EXISTING JOIST (DETAIL 2)

FULL LENGTH STRENGTHENING

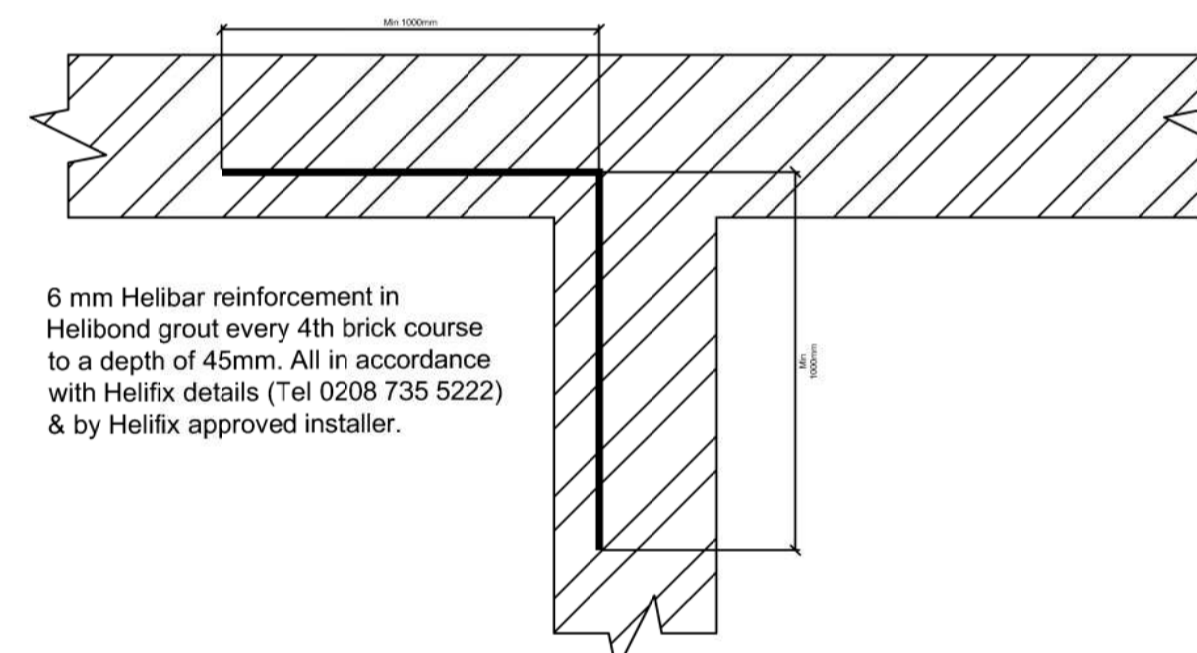
Scale 1:10

FOR SIGNIFICANT NOTCHES / DEFECTS OR WHERE FLOOR LOADING IS BEING INCREASED



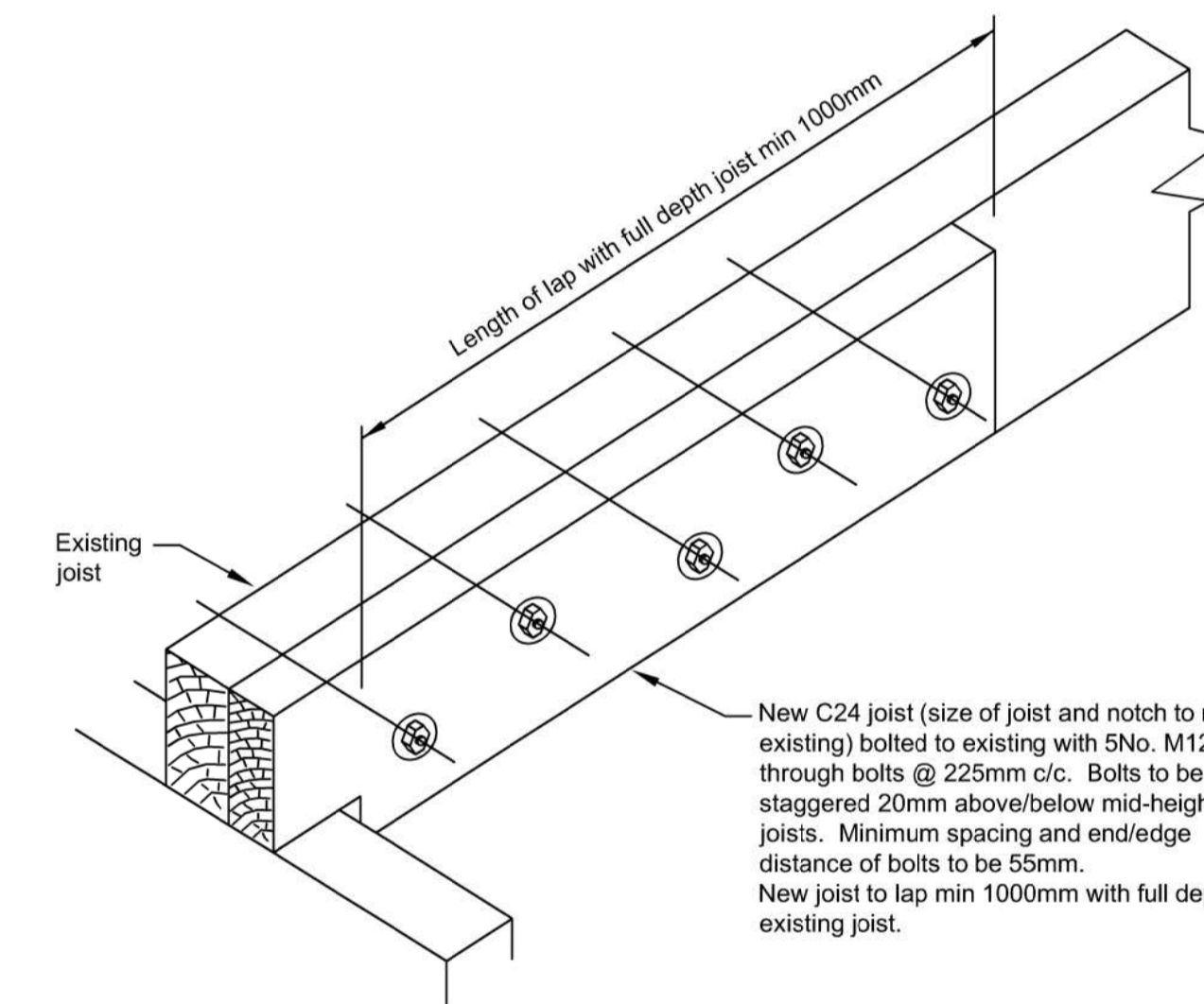
Cintec - Cross Wall Repair (Plan View) (Detail W-W)

Scale 1:20



Helifix Corner Repair Detail (Detail Y-Y)

Scale 1:10



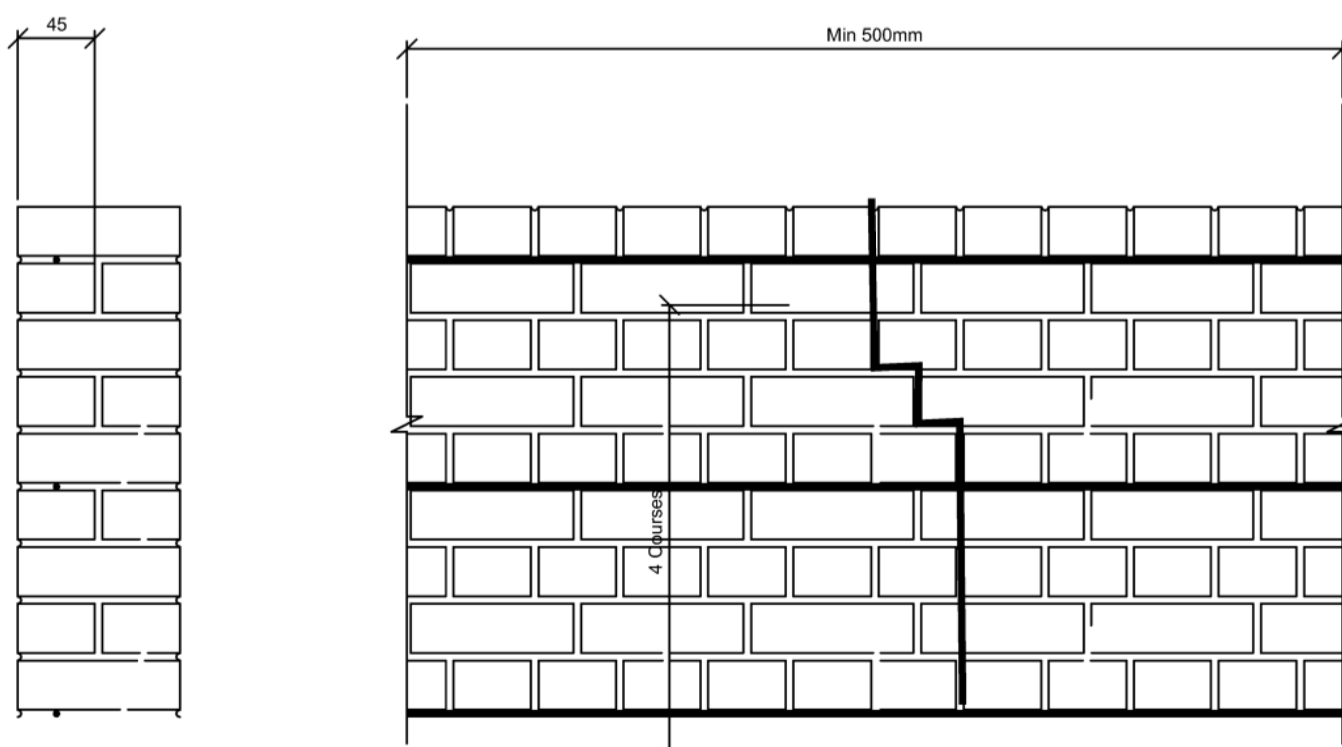
STRENGTHENING TO EXISTING JOIST BEARING (DETAIL 3)

TIMBER SPLICE TO END

Scale 1:10

WHERE EXISTING BEARING REQUIRES STRENGTHENING

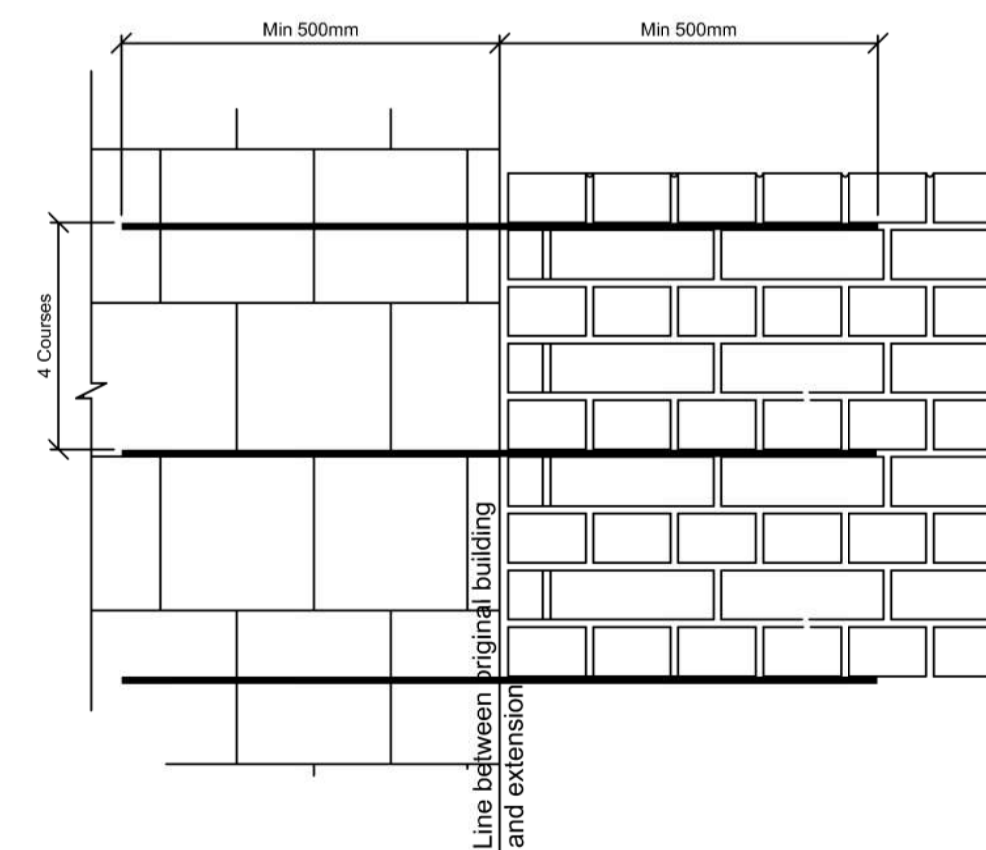
6 mm Helibar reinforcement in Helibond grout every 4th brick course to a depth of 45mm. All in accordance with Helifix details (Tel 0208 735 5222) & by Helifix approved installer.



Detail D-300.11 helifix crack stitching repair (Z-Z)

Scale 1:10

6 mm Helibar reinforcement in Helibond grout every 4th brick course to a depth of 45mm. All in accordance with Helifix details (Tel 0208 735 5222) & by Helifix approved installer.



Helifix Wall Connection/ Tie Detail (Z2-Z2)

Scale 1:10

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DRAWING TITLE
TYPICAL DETAILS SHEET

SCALE @ A1	DRAWN BY	DATE
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MNP No.	STATUS CODE	REV
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Ref No: 222532-MNP-XX-XX-DR-S-500		

APPENDIX F - Photographs



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(P-02)



(P-03)



(P-04)



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(P-18)



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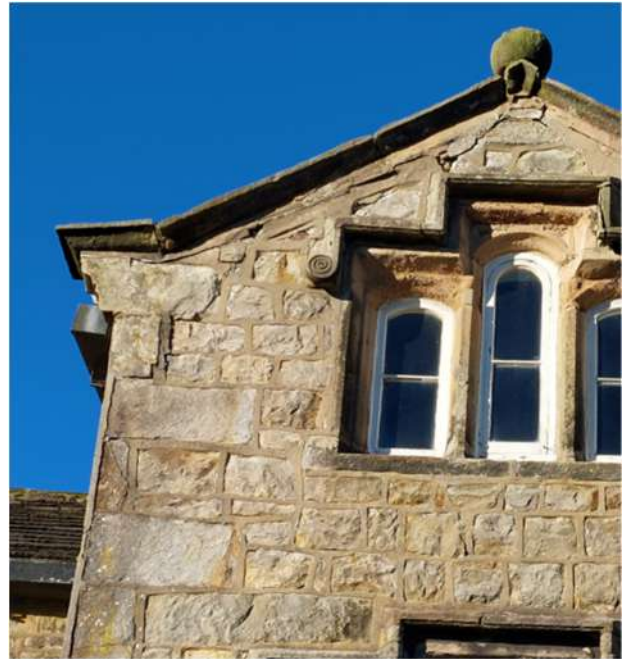
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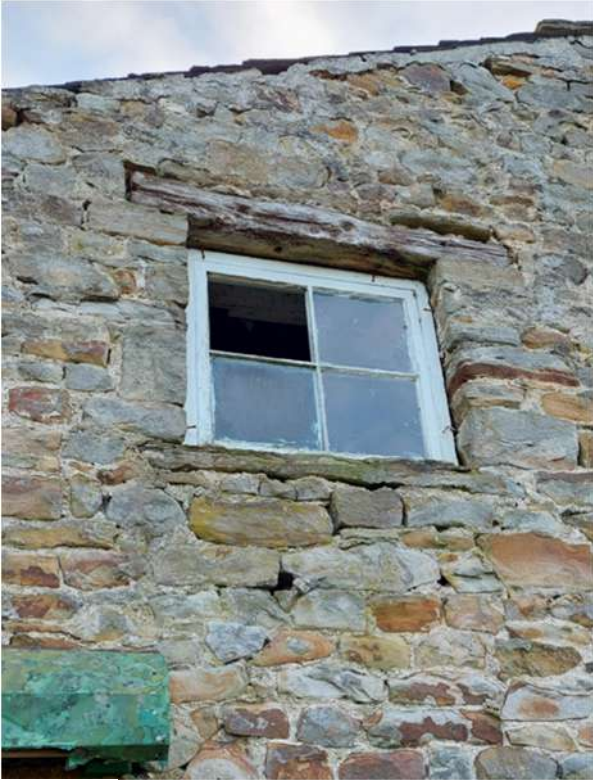
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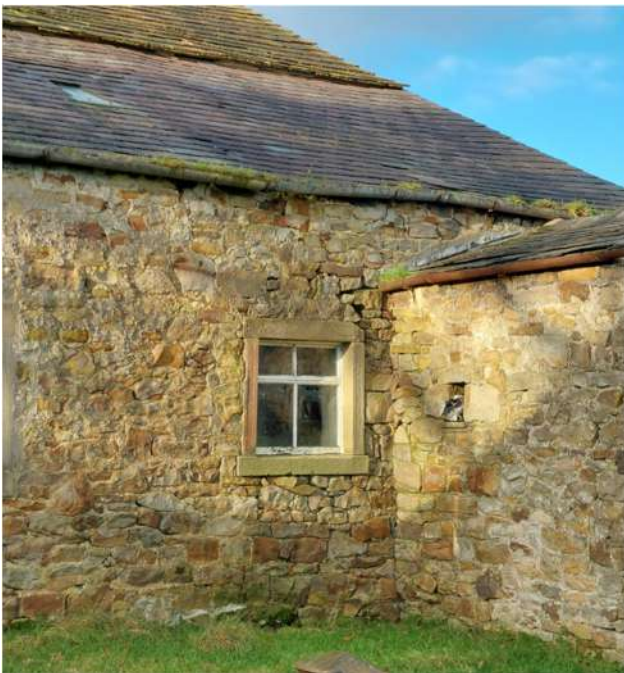
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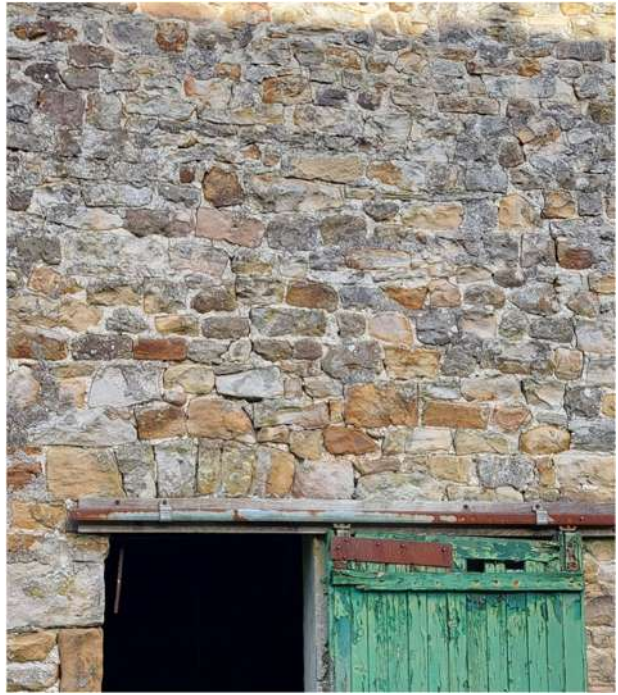
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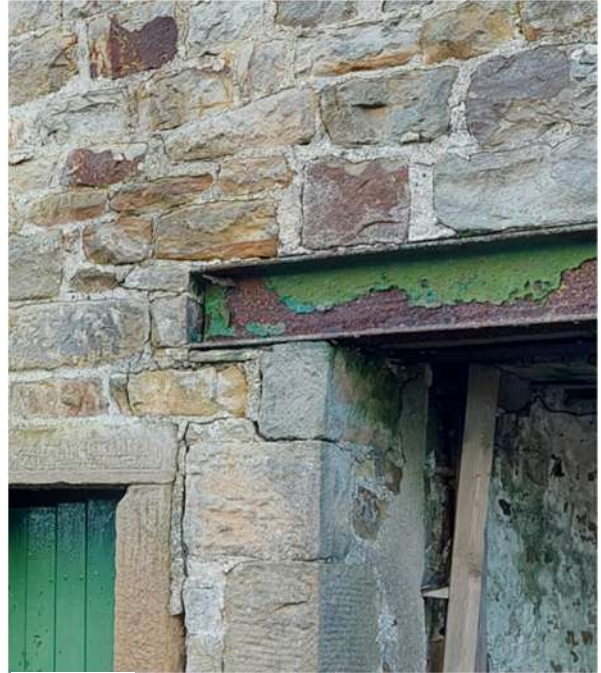
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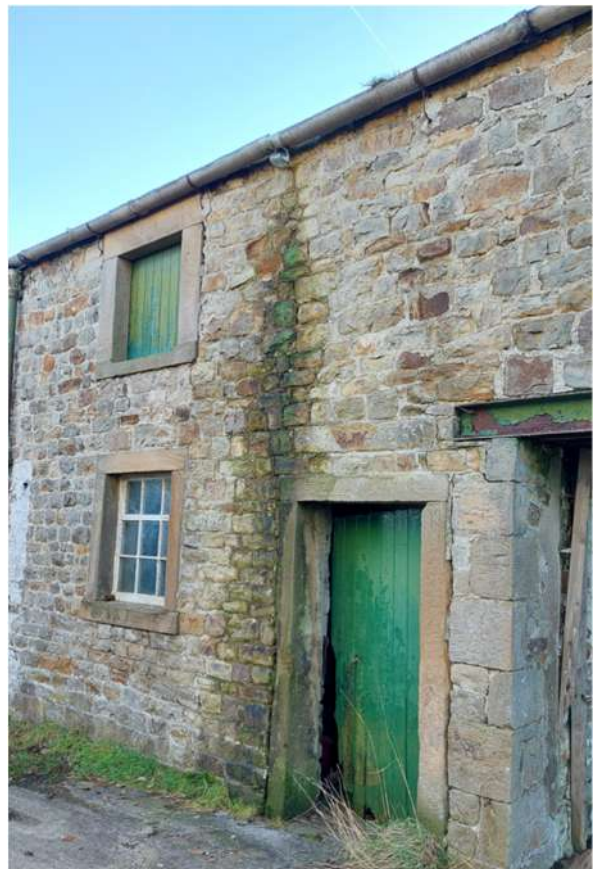
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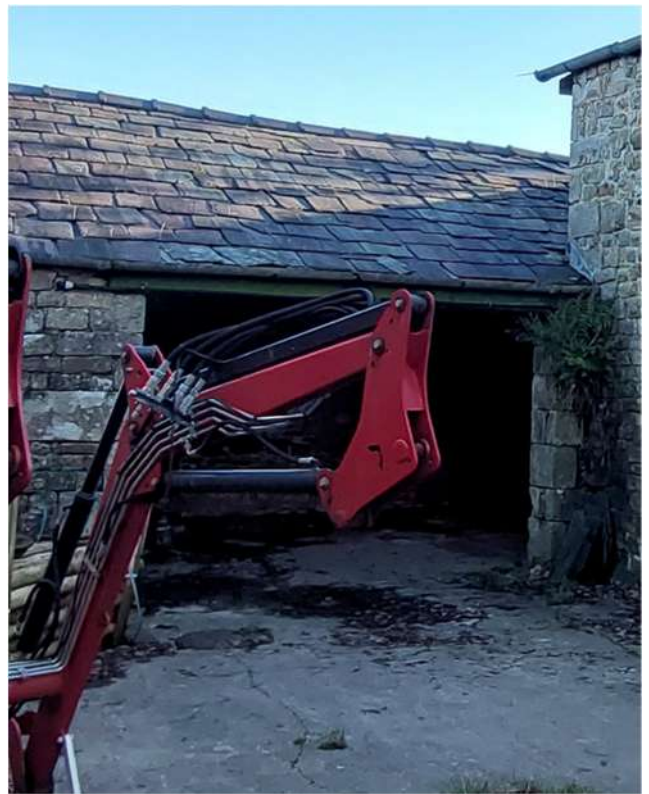
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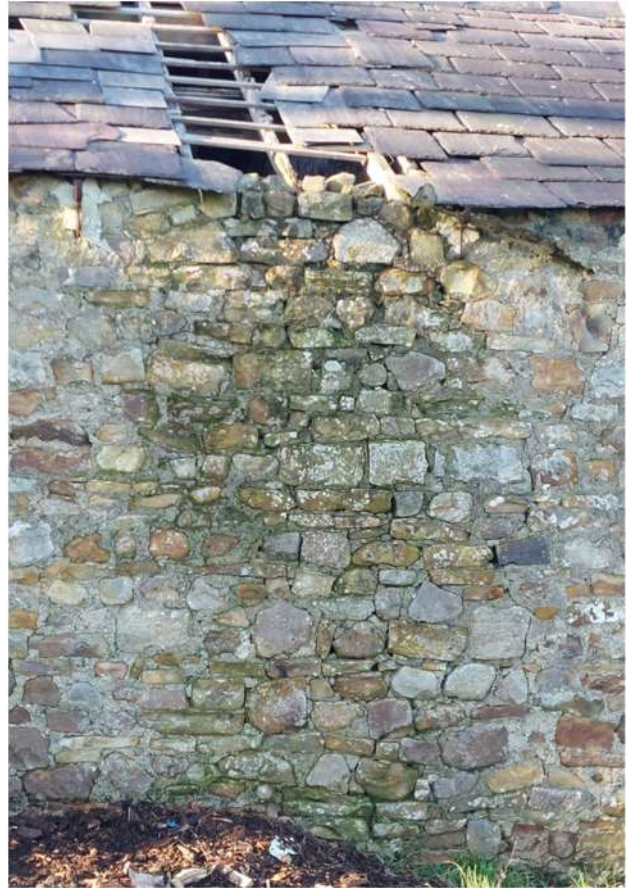
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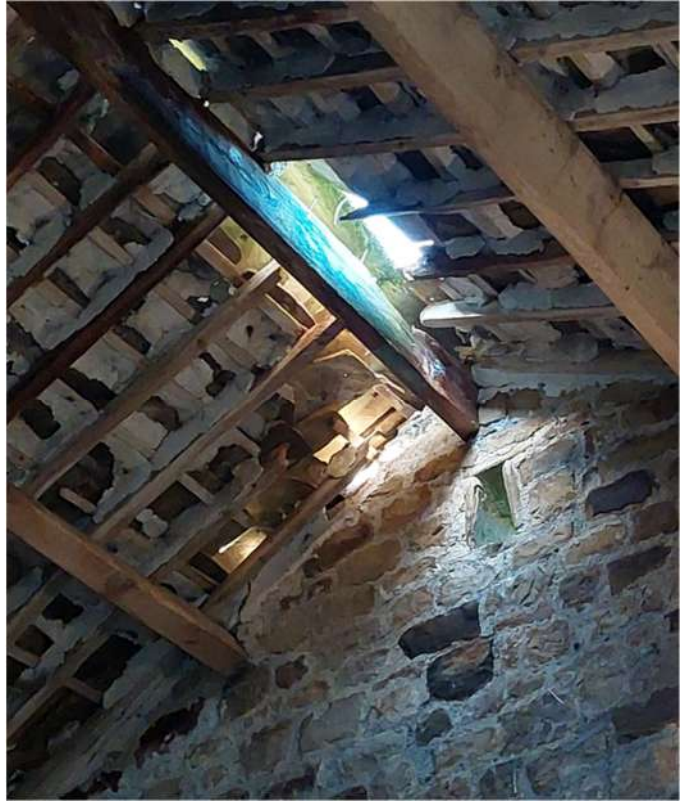
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