Carr Mills, Meanwood Road, LEEDS, West Yorkshire

Archaeological Building Investigation

Oxford Archaeology North

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SJD Architects

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SUMMARY

Planning consent has been granted for the conversion of Carr Mills, Meanwood Road, Leeds (NGR SE 3001 3562), into private dwellings (Planning Application No 26/152/03FU and 26/153/03/LI). The planning authority had omitted to include a condition requiring archaeological recording in the planning consent but the developer (Mandale Developments Ltd) decided that because of the mills historic significance, they would commission an appropriate archaeological building investigation.

The building investigation (RCHME Level III) was carried out by Oxford Archaeology North (OA North), following a written specification provided by West Yorkshire Archaeology Service Advisory Service (WYASAS) (*Appendix I*). Previous investigations include a desk-based assessment which was compiled by Northern Archaeological Associates (NAA) in 2003 (NAA 2003). The aims of the survey were to record by means of photographs and annotated and measured drawings, any evidence for the original and subsequent form and functions of the buildings. A further aim was to analyse and interpret the buildings as an integrated system and discuss layout and process flow.

The buildings under investigation are the two main ranges at the core of the mill complex, Ranges A and B, which were joined at an acute angle to form an 'L-shaped' structure. Most of the other buildings have already been demolished and other, new blocks have taken their place. The development of the mill will entail the complete gutting of both Ranges A and B.

Conversion works had already begun prior to the commencement of the archaeological building investigation, which resulted in the removal of a great deal of the evidence for the development and function of the mill complex. Range A in particular, was in an advanced state of stripping-out and both ranges were enveloped in scaffolding while sandblasting was being carried out. Unfortunately, various parts of both ranges were inaccessible, due to health and safety considerations; therefore, the building investigation was severely restricted in both scope and the amount of evidence that could be collected. However, certain aspects of the cast iron framework and roof trusses were recorded just prior to their removal.

The cast iron framework of Range A comprised three types of parabolic beam (Types I, II and III), which originally supported a flagged floor via cast iron parabolic joists. These survived on the second and fourth floors and evidence of power transmission was present on the second floor. Types II (a single beam) and III beams were very similar and had parabolic ribs and flanges. The main difference was the integrally cast lugs (to take line shaft hangers) present on Type III beams. The fourth floor contained no evidence for the transmission of power and consisted entirely of Type I beams (all the joists were identical). Type I beams only had parabolic ribs. During the course of the building investigation all the cast iron floors were removed which enabled a view of the method used to fix them into the walls. The roof structure of Range A comprised 84 cast and wrought iron trusses. Every third truss had a tie beam, most of which carried sliding cast iron brackets thought to be used to carry movable racking (timber). During the course of the building investigation, these were removed and only fragmentary remnants of the trusses remain *in situ*.

Documentary evidence suggests that Range A had an internal engine room at the east end of the building which was probably moved to the centre of the range around 1845. Evidence for this was scant at the time of survey due to the intensive conversion works with nearly all the ground and first floors being stripped and rebuilt.

Range B was of traditional timber construction and each floor comprised 32 beams onto which the floorboards sat directly. The roof comprised ten queen post trusses, each of which was individually numbered. Range B differed slightly in the nature of its fenestration, each window (with some exceptions) containing a decorative column. There was limited evidence for transmission systems in Range B.

A stair and toilet tower provided the link between the two ranges, which contained a spiral stone staircase and a toilet on the half landing between each floor. Evidence suggests that the stair tower and toilet tower were constructed separately.

From the evidence available it is suggested that Range B probably represents part of the original (certainly pre 1831 probably pre-1820) layout of the mill complex. Range A was probably constructed in the mid 1820s. The toilet and stair tower were constructed when Range A was added.

Due to the nature of the conversion works which entail complete stripping of the ranges, no recommendations for further recording work other than additional exterior photography were made.

ACKNOWLEDGEMENTS

OA North would like to thank the clients, SJD Architects, for commissioning the survey, as well as the staff of Mandale Developments Ltd for their assistance on site. We would also like to thank Helen Gomersall of WYASAS for her assistance and for providing the written specification.

Christina Clarke, Chris Ridings and Karl Taylor carried out the building investigation and Karl Taylor wrote the report. Mark Tidmarsh produced the accompanying drawings. Alison Plummer managed the project and edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 Planning consent (Nos 26/125/03/FU and 26/153/03/LI) has been granted by Leeds City Council to convert this early nineteenth century Grade II listed woollen mill on Meanwood Road, Leeds into housing. This will result in the partial demolition of some of the buildings and conversion of the main mill building.

1.1.2 Planning consent was granted without a condition for the completion of a programme of archaeological building investigations. Despite this, the developer decided to commission such a recording programme in recognition of the building's importance in the understanding of the development of both textile mills and fireproof construction. West Yorkshire Archaeology Service Advisory Service (WYASAS), in their capacity as Leeds City Council's archaeological advisors, have provided a specification in order to allow the developer to carry out such an investigation (*Appendix 1*).

1.1.3 Oxford Archaeology North (OA North) was commissioned by SJD Architects Ltd on behalf of Mandale Commercial Ltd to undertake the building investigation and provided a project design (*Appendix 2*) to the client, which was sanctioned by WYASAS. The results are presented in the form of a report which outlines findings of the investigation, together with annotated plans which highlight features of architectural and archaeological significance. This building investigation is supplemental to, and should be read in conjunction with the desk-based assessment carried out by Northern Archaeological Associates (NAA 2003).

1.2 LOCATION, GEOLOGY AND TOPOGRAPHY

1.2.1 Carr Mills is situated within the Buslingthorpe area of Leeds (NGR SE 3001 3562; Fig 1) at the junction between Meanwood Road and Buslingthorpe Lane. The main mill building (Building A) lies parallel to Meanwood Road (which, for the purposes of this investigation, is taken to run east-west).

1.2.2 The solid geology comprises mainly Lower Westphalian coal measures with overlying drift deposits of a mainly fluvial nature (British Geological Survey, North Sheet 1979). The soils are classified 'urban' by the Soil Survey of England and Wales (Ordnance Survey 1983).

1.3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

1.3.1 A desk-based assessment was carried out in 2003 by Northern Archaeological Associates Ltd (NAA 2003). This document outlines the main historical and cartographical evidence for the development of the mill complex at Carr Mills. A brief synopsis of the main developments is outlined below.

1.3.2 Carr Mills was built for Abraham Rhodes in the early nineteenth century, probably around 1810, and may have been constructed on the site of an earlier mill (NAA 2003, 1). It is first mentioned specifically in 1813 when it was insured for £21,500 (*op cit*, 2). By 1815 it appears to have been one of the largest mills in Leeds when Rhodes possibly went into partnership with a Mr Clapham (*ibid*). In 1817 there are records of dyers at Woodhouse Carr, and reference to merchants Abraham Rhodes and Co is made (*ibid*).

1.3.3 Further references to both dyers and manufacturers are made through the 1820s and 1830s and the Mill was leased to T Clapham and Sons in the 1830s (*ibid*). Around 1845 Carr Mill was sold and from 1846 to 1855 the mill was operated by Foster Fletcher and Co and was tenanted by many firms (*ibid*). This continued to be the case through the 1850s, 1860s and 1870s until 1878, when the mill appears to have been owned by a Mr Whitely who was a linen manufacturer, and who sold the mill in the same year to a Mr Laycock (*op cit*, 3). Mr Laycock transferred both Carr Mill and Perseverance Mills to a Mr Williamson for £5,000 (*ibid*).

1.3.4 Both of Ranges A and B first appear on Fowler's map of 1831 (NAA 2003, Fig 2) and it is evident that Range B is not on the same alignment as the rest of the complex and is connected to Range A at an acute angle. Indeed, all the other Ranges (all now removed) shown in Figure 2 of the desk-based assessment appear to be on the same alignment as Range A, with the notable exception of Range B and Range F.

1.3.5 Through subsequent mapping, and right up to the present day, Ranges A and B appear to have retained their original proportions and layout, with only minor modifications being apparent. Various wings, extensions and out-buildings have been added and removed over time, all of which are now no longer in evidence. Figure 8 of the desk-based assessment highlights the date of the buildings from cartographic evidence (*op cit*, Fig 8) with both Ranges A and B dating to before 1831. Apart from the obvious fireproofing, the fabric of Range A is very similar to that of Range B suggesting a similar construction date but the exact dates of construction of Ranges A and B is unclear from both the cartographic and historical evidence, and evidence for a pre-existing mill on the site is similarly scant.

1.3.6 Carr Mills continued to be used by the textile trade until around the turn of the twentieth century when other small industries began to occupy parts of the mill (*op cit, 2*). These gradually replaced the textile industry and continued to occupy the mill until recently (*ibid*).

1.3.7 Of the two surviving Ranges, it is Range A with its cast-iron framework and clear fireproof construction, which provides clear indication of the original function of the building. Obviously, the large investment needed in this method of construction, betrays the importance given to the prevention of fire. As Range A contained the engine and processes such as combing (which required open stoves) were probably being carried out within it, fireproofing would have been of paramount importance.

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 A written specification supplied by WYASAS (*Appendix 1*), was adhered to in full with respect to the building recording and was consistent with the relevant standards and procedures of the Institute of Field Archaeologists (IFA) and generally accepted best practice. OA North supplied a project design based upon the specification to both the client and WYASAS (*Appendix 2*).

2.1.2 The building recording was to consist of a Level III type building survey (RCHME 1996), which was carried out in order to analyse the plan, form, function, age and development of Carr Mills. This comprised a drawn, textual and photographic record of the interior and exterior of the complex.

2.2 BUILDING INVESTIGATION

2.2.1 ***Descriptive Record***: written records using *pro forma* record sheets were made of all principal building elements, both internal and external, as well as any features of historical and architectural significance or pertaining to its past or present use (see *Appendix 1*). Particular attention was paid to the relationships between areas of the buildings where their development or any alterations could be observed. These descriptions are essentially descriptive, although interpretation was carried out on site as required.

2.2.2 ***Site Drawings***: 'as existing' drawings were annotated to produce plans of the floors as outlined in *Section 6.4* of the specification (*Appendix 1*). These were produced in order to show the form and location of structural features and/or features of historical interest. Where necessary these drawings were manually enhanced using hand survey techniques. The hand-annotated field drawings were digitised using AutoCAD to produce the final drawings (Figs 2-22).

2.2.3 ***Instrument Survey***: reflected ceiling plans and cross-sections (as outlined in *Section 6.4* of the specification) of the buildings were surveyed with a reflectorless electronic distance measurer (REDM). The REDM is capable of measuring distances to a point of detail by reflection from the wall surface, and does not need a prism to be placed. The instrument used was a *Leica* T1010 theodolite coupled to a Disto electronic distance meter (EDM). The Disto emits a viable laser beam, which can be visually guided around points of detail. The digital survey data was captured within a portable computer running TheoLT software, which allows the survey to be directly inserted into AutoCAD software for the production of final drawings (Figs 8-10, 15-17, 18 and 19.

2.2.4 ***Photographic Survey***: a photographic survey was produced as per *Section 6.5* of the WYASAS specification. The photographic archive consists of both general and detailed interior photographs which were captured using both monochrome and colour slide 35mm formats. A number of medium format photographs were taken of interior rooms where appropriate. General

photographs of the exterior elevations were taken with a variety of medium format (120 monochrome) and 35mm (monochrome and colour slide) cameras. As far as practicable, photographs of the external elevations were captured using cameras equipped with shift (perspective control) lenses.

2.3 ARCHIVE

2.3.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991) and a synthesis will be submitted to the County SMR and the West Yorkshire Archive Service (the index to the archive and a copy of the final draft report) in the first instance (see *Section 7.3 Appendix 1)*. A copy of the final draft of the report will also be supplied to the client.

2.3.2 Following completion of all recording and post-recording work OA North will deposit the original record archive of projects (paper, magnetic and plastic media) and a full copy of the record archive (microform or microfiche) with the Leeds office of the West Yorkshire Archive Service. The archive will be provided in the English Heritage Centre for Archaeology format. Appropriate arrangements will be made with the designated depository at the outset of the project for the proper labelling, packaging, and accessioning of all material recovered.

2.3.3 The Arts and Humanities Data Service (AHDS) online database *Online Access to index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.

3. BUILDING INVESTIGATION RESULTS

3.1 INTRODUCTION

3.1.1 The parts of Carr Mills under investigation form a five storey 'L-shaped' structure which comprises two distinct sandstone buildings joined together by a shared stair and toilet tower (Fig 2). For the purposes of the building investigation and in common with the desk-based assessment (NAA, 2003) the two buildings will be described as Ranges 'A' and 'B', together with the connecting stair/toilet tower. At the time of the investigation, conversion works had already begun and it was apparent that many features had been already stripped out or were concealed by new panelling and internal divisions. All the external elevations were obscured by scaffolding and were in the process of being sandblasted. For reasons of health and safety some areas of the buildings were not accessible until stripping out was completed, which hindered survey progress. It must be stressed that prior to the commencement of the building investigation, a great deal of original material had already been removed or concealed, which has necessarily limited the findings of this work.

3.1.2 Aerial photographs available to view at Leodis (www.leodis.net) dating to around the 1930s, illustrate that most of the buildings within the complex have already been removed prior to the commencement of the survey. The desk-based assessment (NAA, 2003) discusses buildings which have subsequently been demolished. The only buildings that survive are the Ranges A and B, the adjacent two-storey structure and a gate house located to the east and situated on Buslingthorpe Lane (this is Range Fi – see NAA 2003).

3.2 ARRANGEMENT OF THE BUILDINGS

3.2.1 Range A is 14 windows long and has 29 bays according to the internal framework and lies almost perpendicular to Buslingthorpe Lane (Fig 2). It is approximately 53m (173.9 feet) long by 8.7m (28.5 feet) wide. Attached to its western end at an acute angle is Range B (via the stair tower), (the floor levels of which are slightly higher) which is 11 bays and seven windows long and measures approximately 36.67m (120.3 feet) long by 6.9m (22.6 feet) wide. The stair tower is located at the join between the two ranges, the angle between them being approximately 76 degrees. The toilet tower is located to the west of the stair tower. Attached to the east end of Range A is a two-storey structure which lies outside the scope of this investigation. All of the upper floors in both ranges are only able to be accessed via the stair tower.

3.3 FABRIC

3.3.1 Both Ranges A and B are constructed from coursed yellow sandstone with lime mortar (Photo 8:23-8:32). All of the exterior stone is worked and fairly uniform with an average size of approximately 0.30m (1 foot) wide by 0.18m (7 inches) high. All of the external walls are of double construction with a rubble-filled core (approximately 0.55m (1 foot 9 inches) thick), the internal

wall skin comprising random coursed sandstone of smaller size (than the external) with lime mortar (Photo 6:16). There are areas of patching, rebuilding and repairing with both (machine-and-handmade) brick and cinder block in both ranges. Most of the internal finishes are of either lime wash or distemper, with emulsion and gloss paint in some areas. Whilst the ranges were unroofed at the time of survey, it is known that they were both entirely roofed with stone flags (NAA 2003) and sandstone debris observed on the upper floors, support this. Most of the sills and lintels are of similar sandstone as the walls; however some (particularly in Range A) are steel (Rolled Steel Joists). All the remaining windows are timber.

3.3.2 Range A has individual internal cast iron frames which support each floor and the roof is supported with 84 wrought and cast iron trusses. The floors in Range A are all concrete (the ground floor is new) but were probably originally laid down to flagstones. The flagged covering of the fourth floor of Range A was present in 2003 (NAA 2003) and was apparently removed fairly recently (only the iron frame remains).

3.3.3 Range B is more traditional in that each floor is laid down to timber boards (most between 6 inches and 11 inches wide) supported by timber beams. Most of the floors have been patched in various places with either hardboard or thin steel sheets. The roof (covering removed) is supported by ten timber queen post trusses. Some of the window lintels in Range B are supported by cylindrical cast iron posts with inverted arch detail (Photo 5:21).

3.3.4 The stair/toilet tower is constructed from the same material as the rest of the Range B. All of the steps in the stair tower are sandstone and the floors are laid down to a mixture of flags and timber boards. The roof appears to be a continuation of that from Range B.

3.4 EXTERNAL DETAILS

3.4.1 As already mentioned, the exterior elevations of the buildings were obscured by scaffolding and were undergoing sandblasting, which somewhat limited the inspection. For health and safety reasons access to the scaffolding by persons other than the sandblasting team was prohibited. Nevertheless, the exterior elevations will be discussed in turn below. Other than ongoing modifications the elevations appear to be largely consistent with the descriptions outlined in the desk-based assessment (NAA 2003).

3.4.2 ***Range A South-Facing Elevation:*** this is the main elevation of the surviving complex and faces Meanwood Road (Photo 10:5). The elevation is plain and is constructed from yellow sandstone (*Section 4.2.1*). Relatively little rebuilding and patching has been carried out, with most being confined to blocked windows and doors. Located just off centre on the ground floor is a large entrance which reaches to the ground floor ceiling (Photo 6:24). There is a large cast iron riveted girder spanning (and is wider than) the entrance, which rests upon two opposing, quite finely-finished, bull-nosed corbels. A sign is fixed to this on which is painted 'CARR MILLS SHEET METAL WORKS'. The opening has been reduced with a single skin of cinder blocks and now

contains a smaller doorway and a new window aperture. Two vertical scars above the opening suggest that it was originally higher. A second opening of similar dimensions is located at the west end, and originally covered both the ground and first floors. This has been partially blocked with cinder block. Both of these allow access to the ground floor.

3.4.3 The ground floor contains nine windows, four of which are blocked, one of which contains the remains of a timber window frame (Photo 5:9). The first floor has 13 window openings, some of which have had new timber windows inserted. The seventh window from the west end has been modified slightly and consists of two smaller apertures. The second, third and fourth floors all have 14 windows, all of which have had their frames removed. All of the apertures have slightly projecting sandstone sills and substantial sandstone lintels.

3.4.4 ***Range A North Elevation:*** this elevation faces the internal courtyard and is constructed in the same manner as the front elevation (Photo 8:25). At the time of inspection, it was undergoing a large amount of remodelling and a stair/lift tower was being constructed. There are three standard doorways located on the ground floor, one of which retains a charred timber surround. All of the doors have rolled steel joist (RSJ) lintels.

3.4.5 The elevation contains a varied assortment of window apertures most of which are regular and are of similar size and number to those in the south elevation. Some additional windows of differing size have been inserted, most notably on the ground floor. Most of the window apertures are without frames or are being converted or were blocked historically, mainly with brick. One of the windows on the ground floor contains a large diameter cast iron column which supports the lintel (Photo 5:10). The central apertures of each floor are loading doors of ledged and braced construction. Additional loading bay doors are located at the west end of the second and fourth storeys. A trio of inserted windows are present at the extreme east end of the elevation.

3.4.6 There are two vertical scars present (butt joins) on both the north and south elevations which run to the full height of the elevation (Photo 5:18). They are in the same place on both elevations indicating more than one phase of building (Fig 3). One of these is located to the east of the doorway at the west end of the elevation and the other is situated between the sixth and seventh windows.

3.4.7 ***Range A East Gable Elevation:*** this elevation is partly obscured by the two-storey addition and scaffolding. It is of the same construction details as the other elevations and contains four windows. Two blocked quarter-circle windows are visible and probably once gave light to the roof space. These have substantial sandstone surrounds and are blocked with similar stone to the main fabric.

3.4.8 ***Range A West Gable Elevation:*** this gable faces west and is of the same fabric as the rest of the building (Photo 8:29). There are six symmetrically placed windows on the second, third and fourth floors. The first floor contains one blocked and one partially blocked window and a door aperture. This obviously

allowed access in to a single-storey structure that once abutted the building. The ground floor contains a blocked (brick) recess with a timber lintel (Photo 8:34). There is also a wrought iron pintle visible. This opening is visible from the interior on the ground floor as a brick projection. A second blocked aperture is visible internally (but not externally).

3.4.9 ***Range B East Elevation:*** this elevation faces the courtyard and is of similar fabric and construction details to Range A (Photo 8:23). There are seven windows on each of the first, second and fourth floors and eight on the third. Two timber loading doors are present at the northern ends of the second and fourth floors. The ground floor contains a mixture of differently sized window and door apertures, most of which have been created recently during conversion works. All of the upper storey windows are wider than those in Range A but have similar slightly projecting sills flush lintels (supported by cast iron columns); non of the frames remain.

3.4.10 A vertical wall scar is present at the south end of the elevation (Fig 3: Photo 5:19), which reaches to approximately the third floor. This is quite obviously a butt join and suggests that the stair and/or toilet tower is a later addition. There are two large quoins present on the south side of the join at ground floor level. There is a window on each of the first to fourth floors within the stair tower, which are similar to those in Range A. On the ground floor are two joined doorways, the right allowing access (via the stair tower), to all the other floors, the left allowing access only into the ground floor of Range A (and possibly the additional building to the west and/or a basement). Both doorways have semicircular arched heads with sandstone voussoirs and sandstone block jambs. A timber sign is present to the right of the second floor window displaying 'KEY ENERGY SERVICES TEL 262 4974'

3.4.11 ***Range B West Elevation:*** the other side of Range B (Photo 8:31), this elevation appears to have formed the western extent of the complex and is of the same construction to the east elevation of Building B. The second, third and fourth floors each contain seven windows identical to those on the east elevation. The ground floor contains a collection of differently sized apertures and was unable to be surveyed due to ongoing conversion works. It is apparent that some additional structures have been removed (Range AB, NAA 2003). At eaves level on both elevations are projecting dentils which are approximately 0.77m (2.5 feet) apart and project by 0.13m (0.4 feet).

3.4.12 ***Range B South Elevation:*** this elevation is partly obscured by Range A and by the imposition of the stair tower (Photo 8:29). The fabric that is visible is identical to the rest of Range B and there are two small windows visible which give light into the toilets located on the half landings in-between the second and third and third and fourth floors. At the base of the elevation is a partially collapsed ?doorway which may have allowed access between the removed (Range V, NAA 2003) building and the ground floor of Range B.

3.4.13 ***Range B North Elevation:*** this elevation is plain and is of exactly the same construction as the rest of Range B. There are several blocked apertures visible which are discussed in the relevant section for each of the floor spaces. Range Z (NAA 2003) has been demolished.

3.5 INTERNAL DETAILS

3.5.1 Each of the internal floor spaces and rooms will be discussed following a logical manner commencing with the ground floor of Range A and working up through each floor in turn including the stair tower/toilet block. During the inspection a number of internal floors had been removed which hindered survey progress. Also during the survey conversion works were being carried out which, for health and safety reasons, restricted the inspection. It was found that upon commencement of the survey a great deal of evidence for original material, such as the engine room (which was located within Range A) and process flow, had been removed or was covered by new material. The material discussed here will complement and add to the desk-based assessment.

3.5.2 ***Range A Ground Floor:*** upon inspection of this room conversion work was already well under way. In common with all the other floors in the complex, it forms a large open space with no internal (other than brand new) partitions or smaller rooms (Photos 1:6 and 4:1). Both the floor and ceiling are brand new insertions and the room was in the process of being subdivided with modern partition walls. The ceiling (forming the first floor) is supported with RSJs.

3.5.3 The walls are of the same fabric as the external elevations and are random coursed with lime mortar and exhibit much patching with a mixture of both hand-made and modern brick and cinder block. There are traces of lime and cement plaster and limewash/distemper visible. There are wall scars evident on both long walls in the vicinity of the original internal engine house (Photo 5:3, Fig 3), suggesting that partition walls once existed. Some of these are fairly wide (0.56m) and it is probable that most of the partition walls were of stone and there is evidence to suggest they continued up to the first floor. These walls were extant in 2003 (NAA 2003). No other trace of the engine house remains.

3.5.4 There are various open and blocked doorways present on this floor of the building (Figs 3 and 4). There are two blocked doorways located in the east wall (Photo 5:6), both of which are blocked with cinder block, which appears to have been carried out recently (no lintels are evident). The most southerly was an external doorway, while the other gave access to the building attached to the east end. The north long wall contains two doorways which have been reduced in size to create windows (Photo 5:15); both of these have substantial RSJ lintels. There is a blocked door at the west end of the north wall which allowed access to the space below the stairs (*Section 4.5.8,* Photos 5:12 and 5:17). This exhibits two phases of blocking with brick and cinder block and retains a timber surround. The original aperture had a finely-tooled sandstone surround. There are two open doorways, both of which allow access to and from the courtyard and both of which have RSJ and sandstone lintels (Photo 5:8). The south wall contains a large open aperture with a massive RSJ/cast iron lintel (see *Section 4.4.2*), which has been recently reduced in size with cinderblock to create a smaller door and adjacent window. To the west of this an aperture recently blocked with cinder block stretches to the first floor and may have been a loading door of some description. In the far south-west corner of the room is a projecting flue-like structure (Photo 5:14), which

corresponds with the position of the recess on the west external elevation (Photo 8:34). It is constructed from brick.

3.5.5 There are 11 windows on the north long wall and nine on the south, many of which have been reduced in size (width) with brick. Most have low sandstone sills and lintels. Window eight on the north side has had a small parabolic cast iron beam inserted above the lintel. This appears to be the same as the cast iron floor joists recorded elsewhere within this building. To the east of this a cylindrical column supports the cracked lintel of the window aperture (Photo 5:10). The two windows at the west end of the south long wall are blocked with brick. A blocked window with a sloping sill and thin cast iron column supporting the lintel is present at the north side of the west wall (Photo 5:13).

3.5.6 Unfortunately, the process of inserting the new ceiling has obliterated most of the evidence for the original ceiling on this floor. It is assumed that its general layout and features are similar to the upper floors of this building (see NAA 2003). Fortunately, evidence for the positions of many of the beams was visible in the form of the cut ends of the beams being visible at the tops of the long walls, their soffits being 2.28m above (new) floor level (Photos 5:4 and 5:7). From inspection of the cut ends it can be seen that most of them are of cast iron construction and appear to be of the same section detail as the others on the upper floors (see also Fitzgerald 1988, 127 Fig 1 K). It is apparent that the five beams visible at the east end were replaced with RSJs (Figs 3 and 4) and that those beams in the vicinity of the engine room were strengthened. Some of the beams appear to have been broken off rather than cut. There are two joist slots visible in the north east corner of the room in the east wall.

3.5.7 There is limited evidence for the power transmission system on this floor. As already mentioned there is very limited evidence for the position of the original internal engine room. There is, however, a single blocked bearing box present within the bay eight of the north wall (Photo 5:11). It is cast iron and is of typical bearing box design and has been blocked recently (although information from construction workers suggests it was blocked previously with brick). Its location roughly correlates with the probable original engine room. There are two further blocked apertures within the south wall but there is no evidence to suggest that these were associated with the transmission system. Recent conversion work has obliterated or covered over most of the evidence.

3.5.8 ***Range A First and Second Floors:*** the removal of the cast iron frame supporting the second floor has resulted in the creation of a high room spanning both of these floors (Photo 4:4-4:11). At the time of inspection a new RSJ frame was being inserted which will support the second floor. Unfortunately, the original cast iron floor frame has been totally removed and there are no cut ends remaining in the walls. This total removal of the ends of the beams has, however, enabled inspection of the methods with which they were fixed in to the walls (Photos 6:2-6:10). The beams and joists appear to have been the same as those that existed on the ground floor (NAA 2003)

3.5.9 The walls are of the same construction as the rest of the building with random coursed stone bonded with lime mortar. The walls (except for the extreme

eastern two bays which are sandblasted) are covered with a thick layer of limewash/distemper and/or plaster. It is apparent that the partition walls visible on the ground floor continue up to the first floor (they do not continue to the second floor). There is evidence for partition walls at the east end of both floors, which appear to have been associated with a staircase in the south-east corner known to have existed in 2003 (NAA 2003), (Photo 6:23) and probable toilet facilities (waste pipes are visible) on the north side of the second floor (Photo 7:31). A horizontal scar running the length of the long walls testified to the position of the original floor.

3.5.10 Access to both the first and second floors is via a single doorway in the north-west corner of each floor (Bay 1). Both of these apertures are plain affairs with finely-furrowed, substantial sandstone jambs and lintels. The first floor contains two doorways, one of which is located in the east wall and allowed access to the two-storey adjacent structure (Photo 7:37). The door is of steel construction and the part of wall surrounding it has been extensively rebuilt and modified. Above the door a (cut) cast iron beam projects from the wall. The visible rebuilding was probably as a result of the staircase, which according to the desk-based assessment was present in this corner. There is a wide double door arrangement which is a continuation of that from the ground floor, and was probably a loading door.

3.5.11 The north long wall of the second floor has two additional doorways located in bays three and eight. The doorway in bay three is a loading door, is the full height of the wall and may originally have been a window which has been enlarged. The door is of timber ledged and braced construction. The door in bay eight is the same height as the windows. A partially bricked-up aperture (possibly a door originally) is present in bays two, six and nine.

3.5.12 The first floor contains 13 windows on the either long wall, while the second has 14 on the south wall and 12 on the north wall. All have plain square surrounds and flat sandstone lintels (except window 11 on the north wall of the second floor). Window 14 on the south wall has been reduced in width by a double skin of brick. There are two windows in the west wall of both floors either side of a projecting chimney breast.

3.5.13 The east/west wall of both floors contains an interesting arrangement of projecting flues supported by corbels (Photo 7:6). It is probable that the flue on the first floor is a continuation of that from the ground floor. The flue on the second floor is centrally placed and contains a small aperture of unknown purpose on the north side (Photo 6:13).

3.5.14 The most notable feature of the second floor is the remaining cast iron framework which supports the floor above (Photos 4:4 – 4:7, Figs 8 and 9 and Figs 20 and 21), which is now concrete. This comprises 26 equally spaced parabolic cast iron inverted 'T' section north/south beams, creating 26 bays, each of which has 13 equally spaced upright 'I' section parabolic north/south joists. The eastern part of the framework beyond beam 26 is missing and was of differing design (see NAA 2003). This difference in style is also known to have existed on the ground, and first floors. Some of the joists are missing in bays four and five, within which the northernmost joist is missing; bay 14

within which the southernmost joist is missing; bay 16 within which both the northern-most (replaced by a bracket) and southernmost joists are missing; bay 17 within which the northernmost joist is missing; bay 20 within which joist 10 and the northernmost joists are missing and bay 24 within which the southernmost joist is missing (all joists are numbered from the north and bays are numbered from the west).

3.5.15 There are three types of beam represented within the framework (all the joists are identical), Types I, II and III. All of the beams are cast with a flattened bulb-shaped flange (Fitzgerald 1988, 127 Fig 1K and Photo 6:7) at the base of the web and contain equally spaced projecting dovetail sockets (on both faces) into which fit the joists (Photos 6:2 – 6:9). All the beams cover the width of the floor in a single span, which is approximately 7.6m (25 feet), wall to wall, and 8.43m (27.6 feet), including the end flanges (Figs 20 and 21).

3.5.16 Type I beams are parabolic in profile at the top of the web and have progressively deeper 'scoops' in between the dovetail sockets. This was done in order to achieve the parabolic profile and keep the sockets level to support the floor via the joists. The sockets project out from the web and are the same thickness as the flange. The beam section measures 0.34m (13.3 inches) high in the centre and 0.23m (9 inches) high at the ends.

3.5.17 Types II and III beams are virtually identical to each other except that Type III beams have two centrally placed projecting lugs with twin holes either side of the central dovetail socket on the west face of the beam (Photo 7:15). The single Type II beam has twin sets of double holes in the same place. What distinguishes these beams from Type I is that they are parabolic both on the flange and the top of the web (Fig 20). The curve of the web parabola is not as pronounced as that on the Type I beam and the joist sockets do not project above to the same degree. Unlike Type I beams, the curve of the parabola projects above the horizontal top line of the seven central sockets and drops down slightly below at the ends. This means that the web must have projected into the flagged floor above, while on Type I beams it was flush. The beam section measures 0.4m (15.7 inches) high in the centre and 0.28m (11 inches) high at the ends.

3.5.18 All three beam types are fixed into the wall via splayed fishtail flanges at each end of the beam. These are identical and have a flat flange with a sloping web (Photos 6:2 – 6:9). It is apparent that the flanges sat directly upon the wall fabric and once construction was finished they became invisible.

3.5.19 All of the joists are identical and are of upright unequal 'I' section with a flattened bulb-shaped parabolic base flange and flat top flange. The tails at both ends of each joist slot vertically into the sockets. The flat top flange obviously bore the flagstone floor above. Each joist is 0.15m (5.9 inches) high in section (at the centre).

3.5.20 The locations of each type of beam may give clues to the phases of construction within the building. Beams 1-15 are Type I, beam 16 is a Type II (the only Type II beam), beam 17 is a Type I and beams 18 to 26 are Type III. The fourth floor, however, is an all Type I construction which complicates this

explanation. It is not known why Type III (and the single Type II) beams required a parabolic base flange.

3.5.21 At the east end of this floor the cast iron framework is missing and there is evidence to suggest that a different arrangement existed here (see NAA 2003, Fig 19, Photos 6:20 – 6:24). There are three cut beams visible (a fourth probable beam is missing) which project from the east wall and would have originally run east/west, the middle two being supported upon stone corbels. Three joists are present which are identical to those in the main part of the ceiling. The southern joist has been cut approximately in half probably to allow for the insertion of the staircase. All three remaining beams have the same dovetail sockets as the main beams and it is possible that the centre two beams are of Type I design. The extreme northern beam is of slightly different appearance in that the rib extends somewhat above the socket. This may represent a possible Type IV beam and there is a dovetail socket only on the south side. There is limited evidence for how the two parts of the roof were connected, as there is no indication of this in the east face of beam 26 other than empty joist sockets. There are, however, two square holes on each side of the floor that may represent a removed beam which may have supported this removed part of the ceiling (Photo 6:22). Seven joist slots are also visible in the south wall (Photo 6:22).

3.5.22 The beams exhibit some evidence for the power transmission system, the most obvious feature being the twin projecting lugs on the Type III beams (Photo 7:15) to which hangers were presumably bolted. The Type II beam has two sets of holes in the same place and all the Type I beams each have an almost random collection of holes drilled through the web, some of which (those on beams 16 – 26) correspond to the lug holes (Figs 8 and 9). There is bracket located at the south end of bay 16 which replaces one of the joists (Photo 7:20). This has a flange with four vertical and two horizontal bolt holes and presumably carried drive out of the adjacent window. At the north end of bay three is a timber baulk with an assembly of six pulley wheels bolted to it (Photos 7:7 – 7:10). Two steel I beams are bolted to beams 5 and 6 and project out through the loading bay door in bay 6. A blocked aperture located in the west wall probably represents a bearing box.

3.5.23 ***Range A Third Floor:*** at the time of survey, the entire floor covering of the third floor had been removed and the entire naked cast iron framework was visible and consisted entirely of Type I beams and the familiar joists (Photo 8:21). This was subsequently removed and a new concrete frame and floor was inserted which interrupted the survey. This was inserted at a higher level which necessitated the raising of the window. Within bay 16, joist seven has been replaced with a substantial cast iron bracket which fits into the dovetail sockets and is also bolted (Photo 6:15). This corresponds with a hoist on the fourth floor.

3.5.24 The third floor has the same general layout as the other floors within building A. There are 13 windows on the north side and 14 on the south side of this floor. These are all identical and are the same as the other windows on the other floors except a small aperture inserted between windows 12 and 13. All the windows have sandstone lintels and sills (Photo 6:16). There is a loading

door situated in bay eight and the other door at the west end of the north wall allows access to the staircase and is the same as those on the first and second floors. The walls (and beams) are lime-plastered and/or lime-washed except for the east end and a small section on the north wall which has been sandblasted exposing the fabric (Photo 6:16). The floor is concrete.

3.5.25 The east wall contains two windows either side of a projecting brick (stretcher bond with lime mortar) chimney breast, which contains a fireplace with a substantial sandstone lintel (Fig 19; Photo 6:19). To the left of the fireplace is a vertical wall scar, which attests to the presence of a studwall. A similar scar is present on the south wall (Photo 6:23). The east wall contains a similar projection (although deeper and of stone) with a window either side.

3.5.26 ***Range A Fourth Floor:*** during the initial building inspection, the fourth floor was inaccessible and a safety net obscured the roof trusses (Photo 10:01). The roof was therefore inspected later when a new floor was inserted and some parts of the trusses had been removed.

3.5.27 There are 84 cast and wrought iron roof trusses, set two feet apart, which are of two types. These are based upon similar designs, the main difference being that every third truss has an additional tie beam and associated braces, sockets and tie rods (Figs 15, 16 and 22, Photos 11:15). Therefore, it follows that Trusses 3, 6, 9 and so on have rectangular wrought iron tie beams which are bolted to the base of the principals. They span the whole width of the building in a graceful arch not too dissimilar (although more plain in appearance) from the arched trusses at Old Mill Lane, Northowram, which was built in 1825-8 (Giles and Goodall 1995, Fig 124c), the main difference being the addition of tie beams and rods.

3.5.28 The trusses were cast in sections and each is made up of two identical and symmetrical halves which are bolted together at the apex and collar (Photo 8:07). Each principal has approximately 36 teeth on the upper surface, some of which are missing, which supported the roofing battens at regular intervals (see Plate 11, NAA 2003). It appears that the main weight of the roofing flags was supported by the truss, the battens must have primarily given lateral support to the truss, as at the time of inspection the roof and battens had been removed and the trusses were rocking quite markedly from side to side in the strong winds. It is apparent, although conjectural, that teeth missing from each truss are in similar locations implying that they were removed to accommodate each batten.

3.5.29 Those trusses which have tie beams exhibit a feature not present on the other trusses, namely integrally cast sockets, into which the braces and tie beams are fixed with pins not bolts (Photo 11:12). A mixture of pins and bolts are used to fix the tie rods and tie beams to the trusses with pins being predominant. During initial brief inspection of the trusses, contractors were in the process of removing a number of trusses to allow the insertion of new softwood prefabricated trusses which will eventually support the weight of the roof. Follow-up inspection some weeks later revealed that most of the trusses had either been removed or dismembered, which allowed inspection of the method of fixing each truss within the wall. Fragments of truss salvaged revealed that

the base of each principal was set into the wall by approximately one foot (Photo 11:04) and each was bolted to a longitudinal wall 'plate' with vertical flanges.

3.5.30 Most of those trusses with tie beams have various numbers of sliding brackets fitted to them (Photo 11:15, Fig 22). These are a single symmetrical casting with an integral rectangular slot through which the tie beam passes. On either side of each bracket is a flange with a single bolt hole. These brackets may have been designed to accommodate a length of timber which spanned three trusses and was connected to a corresponding bracket. At first this seemed a plausible explanation but more detailed inspection has revealed that there are not equal numbers of corresponding brackets on adjacent trusses (some may of course have been broken or removed) (see Figs 15 and 16).

3.5.31 ***Stair Tower:*** this L-shaped tower is located at the south end of, and is on the same alignment as, Range B (Fig 2). It comprises a spiral stone staircase and individual small rooms on half landings at each floor (Photo 2:23). The tower forms a link between Ranges A and B and allows access to all of the upper three floors in each range.

3.5.32 ***Stair Tower Ground Floor:*** located below the stairs is a small foyer area which is now only able to be accessed from outside (Photo 5:16). Originally, a blocked door on the south wall enabled access to and from the ground floor of Range A (see *Section 4.5.4*) (Photo 5.17). It is probable that this room once served a greater function than it now does, and it may have contained the stairs allowing access to a basement and may also have allowed access to removed ranges (Ranges AC and Q, NAA 2003). Certainly, the doorways which allow access to this room are not plain affairs. The floor of this small relatively cramped room has been replaced recently, which has destroyed possible evidence for any descending staircase. The finely-tooled undersides of the stone steps leading up to the first floor are visible. The north wall of this room is of brick construction, which is composed of a collection of varying brick types. There is no access into the ground floor of Building B from here. The walls are all bare and appear to have been stripped recently.

3.5.33 In-between the ground floor and the first floor is a small room which was last used as a WC (Photo 5:29-31). This room, in common with those on the other floors is a very small square space. The floor is laid down to flagstones and the ceiling also appears to consist of flagstones (the floor of the first floor toilet). There is a small window aperture (still with casement window) in the south-west corner, which has a tooled lintel and sill (1.62m high). This is identical to other windows in the same position in the toilet rooms on the other floors. There is limited evidence of a blocked window in the north wall (this was not able to be inspected from Range B.

3.5.34 ***Stair Tower First Floor:*** upon leaving the ground floor, an anti-clockwise route is taken up the spiral staircase. The first floor landing allows access into both first floors of Ranges A and B, which at the time of inspection by NAA (NAA 2003) was not visible (these may have been obscured). The door surrounds are similar to those on the upper three floors, which are exhibit fine horizontal furrow tool marks. At the time of inspection both Ranges A and B

were without first floors and access was impossible. There is a window located in the east wall of the landing, which has a 0.77m high sill and exhibits similar tooling to the door surrounds. Both the floor and ceiling (2.76m) are flagged and all the walls are whitewashed. There is a tubular steel handrail and evidence of a sprinkler system is present.

3.5.35 The half landing toilet is almost identical to that in-between the ground and first floors. It has the same floor and ceiling, and a similar windows in the south wall. Again, there is evidence in the form of vertical scars for a possible blocked window in the north wall.

3.5.36 ***Stair Tower Second Floor:*** this is similar in appearance to the first floor and access is available in to both Ranges A and B (Photo 5:23). The floor and ceiling are both composed of flagstones and all the walls are whitewashed. A single east-west beam supports the ceiling flags which exhibit feint tool marks. There is a circular hole which has been cut into the ceiling and subsequently blocked (Photo 5:27), the purpose of which is unknown. There is a window in the east wall, which is identical to that on the first floor.

3.5.37 The toilet on the half landing between the first and second floors is similar in layout appearance to the others already described, although the ceiling is concrete rather than flagstone. Wrought iron pintles are present in the south side of the doorway which allows access into the toilet, obviously indicating a door was present here. Within the toilet is a similar window to the others already described in the south wall. Within this room there is evidence for the construction details of this part of the building (Fig 5). To the east of the small window (in the south-east corner of the room) is a butt join (Photo 5:25) which shows that the south wall of the toilet room butts against the east wall. Similarly, in the opposite corner, a vertical scar (Photo 5:24) appears to indicate that the west wall of the toilet butts against the south wall of the second floor of Range B. It is possible, therefore, that the toilet rooms were added to a pre-existing stair tower.

3.5.38 ***Stair Tower Third Floor:*** the third floor of the stair tower is almost identical in appearance to all the other floors already described and there are no significant differences. Worthy of note is a parabolic cast iron joist (identical to those in Range A) which supports part of the ceiling in the toilet.

3.5.39 ***Stair Tower Fourth Floor:*** there are significant differences on the fourth floor, to the layout of the both the stair tower and the toilet. The most obvious is noticeable when leaving the half landing above the third floor. There are two doorways which allow access into the fourth floor of Range A (although access was not available at the time of inspection because the floor had been removed). The stairs are modified to allow this (Photo 5:24) and it appears to be an original feature. Both doorways into Range A are of similar appearance to those described for the other floors. The doorway allowing access into Range B is similar to those on the other floors and has no tooled surround.

3.5.40 The floor is laid down to flagstones and is 0.2m lower than the floor in Range B. The area was originally ceiled with 5 ½ inch wide board with an access hatch. Most of this is missing and the roof is now visible, which consists of

common rafters with purlins that rest on the north and south walls. Initially, this was thought to be a continuation of the roof from Range B but closer inspection reveals it to be an independent construction (Fig 15). The roof above the toilet appears to be an extension of the roof from Range B. The roof of the stair/toilet has been constructed in such a way as to enable the slope of the roof from Range B to continue uninterrupted to the south wall of the stair tower.

3.5.41 Access into the toilet is via a slightly sloping timber walkway (Photo 2:23), which has a timber matchboard handrail. The doorway into the toilet has wrought iron pintles which are identical to those on the second floor. The toilet room is slightly higher that the stair landing and the room is similar to those already described. There is evidence for a blocked door which once gave access into the fourth floor of Range B (this is also visible in Range B). There is a flue present in the north-west corner of the toilet which exits to a chimney stack constructed from tooled sandstone with a moulded oversailing course. There is a small window located in the south wall of the room which is the same as those on the other floors.

3.5.42 ***Range B Ground Floor:*** at the time of survey the ground floor of Range B was undergoing substantial refurbishment and both the floor and ceiling had been removed. A new ceiling (first floor) was being and there was no access due to health and safety regulations in force. The ground floor remained, therefore, un-inspected.

3.5.43 ***Range B First Floor:*** due to the removal of the floor there was no access onto this floor and it remained un-inspected. The layout of both of these floors is similar to the upper floors and their general appearance is also similar.

3.5.44 ***Range B Second Floor:*** the second floor of Range B comprises a single open space (Photo 1:1-2) which is seven windows (on each side) and (equal) 32 bays long. It is only able to be accessed via the main spiral staircase at the south end of the Range but there was evidently a staircase at the northern end of the floor, which has now been removed. Beam 32 was cut to accommodate the staircase.

3.5.45 All the walls are plain and are composed of random coursed rubblestone, all of which has been whitewashed. There is a (brick) blocked door at the east side of the north wall, which may once have provided access into the demolished Range Z (NAA 2003 Fig 8). This is not visible externally due to the north elevation being obscured by scaffolding. To the west of this is a wide projection, which is most likely to be a chimney breast, although there was no evidence of a fireplace (a fireplace is said to have been present on the ground floor (NAA 2003). A diagonal scar here attests to the presence of the staircase which once allowed access to the first and third floors. A cast iron bearing box is present within the north wall, which has been blocked with brick

3.5.46 At the north end of the east wall is a loading bay (Bay 7) which appears to have been created by modifying an existing window (Photo 2:32) via the insertion of steel RSJs and a timber lintel. This is directly below similar openings on the third and fourth floors (Fig 7, Bay 4). Inspection of both

internal long walls reveals some evidence for other blocked doors. There are vertical wall scars visible at the south end of the floor, which evidently appear to have been stud walls erected to create additional toilet facilities. All the windows except the east window of Bay 4 have cast iron columns. Below the window on the east side of Bay 6, and attached to the exterior are two brackets. These are bolted to the wall.

3.5.47 The floor is laid down to 6 inch wide tongue and groove floorboards, which are laid north/south directly onto the beams. These are in reasonable condition, some being patched with small nailed steel sheets. There is no evidence for any blocked holes which would enable the passage of transmission mechanisms, except for a hole at the extreme south end of the room (Photo 2:37) (only small holes for sprinkler pipes exist). A trap door (Fig 7) with twin opening doors is located at the northern end of the floor (Photo 2:30). There is no evidence for a similar aperture in the ceiling above.

3.5.48 The ceiling is composed of 32 identical east/west beams, most of which exhibit vertical saw marks, and the whole ceiling appears to have once been covered by lath and plaster. The beams are 11 ½ inches deep and there are two rows of cross-braces (Photo 2:25) between each beam which would have stiffened the floor. Beam 27 has two bolts fitted to its western end and Beam 28 has a corresponding cut-out (Photo 2:28). One beam (Beam 22) exhibits inscribed marks (Photo 2:29). A projecting stone corbel is present on the south wall (Photo 2:25).

3.5.49 ***Range B Third Floor:*** the third floor of Range B is identical in layout to all the other floors within this Range. There is evidence of a blocked door at the east side of Bay 4 and the staircase at the north end is similar to that on the second floor. The loading door present in Bay 7 of both the second and fourth floors, has been reduced in size to create a window.

3.5.50 ***Range B Fourth Floor:*** again, the layout of the fourth floor of Range B is identical to that of the other floors within this range. The entire roof structure is visible, which has had its covering removed, visibility of the roof was impaired somewhat by the presence of a large safety net (Photo 3:2). This floor is now only able to be accessed via the spiral staircase although, in common with all the floors in Range B, there was an inserted staircase at the northern end of the floor. The floor is laid down to timber tongue and groove boards, which have an average width of approximately 6 inches and are rotten in places. There is no evidence of a transmission system visible in the floor but the roof trusses do exhibit possible evidence of a power transmission system (*Section 3.5.55*).

3.5.51 All the walls are constructed from random-coursed rubble stone most of which has been whitewashed. There are areas of brick infilling, most of which comprises handmade bricks measuring approximately 9 inches x 2 ½ inches x 4 ¼ inches. The chimney breast at the northern end of the floor is also of brick construction and all the mortar appears to be lime. There is a blocked door at the western side of the south wall, which, obviously, once allowed access into the toilet (Photo 2:20) and is visible from within the toilet. This has been blocked with later brick and has a sandstone lintel. Above and slightly to the

right of this is a blocked cast iron bearing box (Photo 2:20), which is not visible within the toilet. A bearing box is also present within the north wall and is similarly blocked. A brick flue is present on the west wall next to the window of Bay 2. This is a continuation of the flue from the lower floors and it projects up through the roof to form a low chimney stack. A brick projection with timber lintel on the south wall (Photo 2:17) is of unknown purpose.

3.5.52 There is a full height loading bay door at the north end of the floor, which corresponds with that on the second floor (Bay 7). It is apparent that the door jambs have been modified and the door has been narrowed with the addition of later brickwork and RSJ lintels. This was probably done in order to accommodate a winch assemblage which is present here (Photo 2:14). Similarly, the window on the opposing side has modified with brick to support the winch.

3.5.53 All the windows are similar to those on the other floors of Range B and have slightly splayed reveals and substantial sandstone sills and lintels, and cast iron columns. The window on the east side of Bay 4 appears have once been a door and is without a supporting column. It has a higher sill than the others and there is no evidence that there was ever a supporting column. Both the windows on the west side of Bays 6 and 7 have been reduced slightly in width with modern brick.

3.5.54 The roof is of queen post truss construction (which has been sand-blasted) and comprises ten trusses which are individually numbered from I to X from south to north (Photo 2:09). All the marks are on the south side of the trusses, indicating this was the upper face. There are two rows of staggered, trenched purlins on each side of the trusses which are through-tennoned. A ridge board sits at the apex of the truss and supports the common rafters. The tie beams, queen posts and principal rafters are all of similar dimensions. The whole assembly appears to be original and the tie beams are inserted into the walls and rest on timber baulks (Photo 2:07). Trusses 1, 4, 6, 7, 8, and 9 exhibit inscriptions which are probably 'Baltic Timber Marks' (Photo 2:11); all of these are situated on the lower face of the trusses.

3.5.55 Each truss exhibits varying numbers of bolt holes and some have semi-circular notches cut into the soffit of the tie beam (Photo 2:07). These are cut into trusses 3, 4, 5 and 8, at the west end of each tie beam. Other trusses have similar notches cut into the soffit of the tie beam, some of which are aligned, although there is no overall pattern (Fig 17). Truss 1 has a bolted cast iron bracket situated almost in the centre of the tie beam (Photo 2:05). This has a hole which may have accommodated a line shaft hanger or similar. Debris on the floor suggests the roof had a stone covering.

3.5.56 Located at the northern end of the range, and to the north of truss 10, is a substantial winch assembly (Photos 2:13-16). This is supported on two substantial beams which appear to have been reused and exhibit 'Baltic Timber Marks'. The winch appears to have been electrically operated but may have originally been belt-driven. Most of the apparatus is still present, including the winding mechanisms and brake.

4. DISCUSSION

4.1 INTRODUCTION

4.1.1 At the time of the building investigation, Carr Mills was undergoing rapid and extensive refurbishment and alteration and stripping of internal fabric was at an advanced stage. Unfortunately, this has resulted in the removal of a great deal of the evidence for the development and function of the complex. Nearly all of the associated buildings within the Carr Mills complex, which are discussed in the desk-based assessment (NAA 2003) have been demolished. Figure 8 of the desk-based assessment illustrates the surviving buildings and their possible date. Of these buildings, only Ranges A, B and Fi survive, all the others were presumably demolished during the current conversion works.

4.1.2 This building investigation has, by necessity been limited to Ranges A and B which form the surviving core of Carr Mills. Both of these ranges first appear on Fowler's map of 1831 (NAA 2003, Fig 2) and it is evident that Range B is not on the same alignment as the rest of the complex and is connected to Range A at an acute angle. Other buildings, Ranges S, Y and Z were on the same alignment as Range B. These ranges lie almost perpendicular to Meanwood Road while Range A lies perpendicular to Buslingthorpe Lane. It is possible that the mill pond illustrated on Fig 2 (NAA 2003) was already in existence and influenced the layout of some of the complex.

4.2 RANGE A

4.2.1 At the time of survey, Range A was undergoing extensive refurbishment and the most of the cast iron parabolic joists had either been removed or were in the process of being removed. It is apparent that all the floors were constructed using these joists, with the east end of the first, second and third floors being of slightly different construction (but using similar parabolic joists aligned east/west instead of north/south, Photo 6:23). The first, second and third floors were originally supported by a (now removed) cast iron column (NAA 2003, Fig 12). The building recording evidence shows that the parabolic cast iron framework of the first, second and third floors did not extend all the way to the east wall of the range but stopped short in the vicinity of Bay 26 (Photo 6:23. This was almost certainly done in order to accommodate an steam engine at the east internal end, which is probably the one mentioned as existing in 1825 (NAA 2003, 16). No trace of any other evidence for the engine now exists.

4.2.2 The engine was supposedly removed and re-sited more centrally at some point before 1890 (NAA 2003, 17), although Range K, which is labelled 'Boiler House' (NAA 2003, Fig 3), appears on the 1847 OS map and may also be the same structure present on Fowler's map of 1831 (NAA 2003, Fig 2). At the time of survey there was limited evidence for the re-siting of the engine as most of the ground floor had been stripped and the first and second floors had been removed. Wall scars still present though testify to the division of the central part of the ground and first floors (*Section 4.5.3*). Aerial photographs available at www.leodis.net show the ultimate position of the chimney and

also show the complex as illustrated on the 1909 OS map (NAA 2003, Fig 5), with the chimney probably represented by Range J.

4.2.3 Despite undergoing removal, enough of the internal parabolic cast iron beams remain to gain an insight into how they were utilised within the structure of the building. It is obvious that all the floors in the building were constructed using this framework, which Fitzgerald (Fitzgerald (1988) suggests was built in 1824. Fitzgerald also suggests that Carr Mills shared sufficient similarities with Pildacre Mill near Ossett (dated to 1826) to be by the same engineer (Fitzgerald 1988, 134). It is obvious that there are three different types of beams (Fig 20), Types I, II and III in range A. More detailed inspection revealed that there was only one Type II beam (on the second floor) and that all the beams on the fourth floor were Type I. Types II and III are parabolic on both web and flange and are confined to the east side of the second floor. This is possibly due to differing load requirements in different parts of the mill.

4.2.4 The question of how power transmission was carried out within Range A is one which is difficult to answer from the evidence gathered during the building investigation. Type III beams clearly exhibit integrally-cast twin lugs located in the centre of each beam and all the Type II beams have holes drilled in the same locations (Figs 8 and 9). The Type I beams at the west end of the second floor have an apparently random collection of drilled holes some of which are aligned in adjacent beams. It is probable that two line shafts provided power for the second floor and, initially, only the east side may have been powered. Missing beams on the ground and first floors mean that it is impossible to suggest how power was transmitted here, but it is reasonable to assume that similar power transmission methods were utilised. The Type I beams on the third floor exhibit no drilled holes whatsoever.

4.2.5 The roof trusses on the fourth floor of Range A are particularly interesting and the whole assemblage is a fine example of a cast and wrought iron roof. During the building investigation, access to the fourth floor of Range A was impossible and inspection had to be postponed until the floor had been replaced. Even so it was obvious that the fourth floor was not ceiled and was open right up into the roof space (see NAA 2003, Plate 11). It is obvious that the sliding brackets attached to each third truss were utilised for some form of racking system, which was probably part of the first stage in wool processing (it was probably used for storage). A single loading door at the west end of the north elevation served this floor.

4.3 RANGE B

4.3.1 This range differs considerably from Range A in both detail and construction methods. It is slightly narrower than Range A, has wider windows, is not fireproof and is constructed using traditional timber technology. All of the floors within Range B are plain and contain limited or no evidence of power transmission. What evidence there is exists in the form of blocked bearing boxes in both the north and south walls (on most floors) and bolt holes and notches cut into the trusses on the fourth floor, together with a single cast iron hanger bolted to a truss. There is no evidence for the transmission of power

from Range A to Range B. Despite that fact that Range A was fireproof, it was physically connected to Range B, which could allow the spread of fire between the ranges (presumably iron fire doors were fitted to obviate this). Range B was probably utilised for the end processes, such as cutting and packing.

4.4 THE STAIR TOWER

4.4.1 This has an irregular relationship with both Ranges A and B. There are clearly visible vertical wall scars where it seems to butt against both buildings, and, although aligned with Range B it is probably not contemporary with it. The windows in the east elevation of the stair tower have more in common with those in Range A and, therefore it is plausible to suggest that it was constructed at or about the same time as Range A. The toilet tower may be contemporary with Range B and the stair tower may represent 'filling in' of the gap between the two buildings to allow access to both, although evidence from internal inspection of the toilet appears to suggest the toilet tower butts against both and may be a later addition.

4.5 FUNCTION

4.5.1 Both Ranges A and B now contain extremely limited internal evidence for how each area of the complex functioned. The desk-based assessment carried out by NAA identified features within the fabric which can be related to certain processes of wool textile production (NAA 2003, 14-19).

4.5.2 It has been suggested that the third floor of Range A may have been utilised for the sorting of the raw fleeces due to it being oriented on an east/west axis, therefore enabling sorting tables to be placed against north-facing windows (*ibid*). This may indeed be the case as the fourth floor of Range A may well have been used for the storage of raw fleeces or drying of cloth, as the sliding brackets present on certain trusses may testify. Fireproofing the fourth floor would have been a high priority.

4.5.3 Combing and carding of the wool was probably carried out in Range A as suggested by NAA (*ibid*), as it was the fireproof part of the mill and the combing process involved heating the combs on charcoal stoves. If these processes were carried out in Range A then they would have probably taken place on the second floor. Holes drilled in the beams and pulleys may well have been inserted later when the processes became fully mechanised some time in the 1850s.

4.5.4 There is very little evidence for the processes of spinning and weaving within Carr Mills but these would almost certainly would have been carried out on the ground and first floors of Range A. Spinning would perhaps have been carried out on the first floor of Range A. Weaving may have been carried out on the ground floors of both Ranges although there is limited evidence for power transmission into Range B. It is suggested that the fenestration of both Ranges A and B reflect these processes (*ibid*).

4.5.5 The fourth floor of Range B contains evidence for power transmission in the form of a blocked bearing boxes in the north and south walls and evidence of line shaft hangers and cut-outs within some of the trusses (*Section* 3.5.50 – 3.5.56). The bearing box visible in the south wall is not visible in the corresponding wall of the toilet tower suggesting that power was being supplied to Range B before the toilet tower was constructed. Obviously some mechanised processes were being carried out on the fourth floor but prior to the insertion of the toilet tower.

4.6 PHASING

4.6.1 The earliest specific reference to Carr Mill(s) is in 1813 when it was insured for £21,500 (NAA 2003, 2). From the available evidence it is probable that Range A dates to at least the mid 1820s and was built during the rapid expansion of the site. It is probable that Range B predates Range A and may have been associated with the adjacent mill pond visible on Fowler's map of 1831 (NAA 2003, Fig 2). Range B may be part of the original mill complex. At some point between the construction of Ranges A and B, the toilet tower was added and following construction of Range A on a (different alignment) the stair tower was probably added.

4.6.2 Later it is probable that the internal engine at the east end of Range A was relocated to the centre of that Range, possibly in 1845 when reference to a different engine is made (NAA 2003, 16). It would appear from the evidence collected that little further major structural modification was made (until this current phase of refurbishment) to both Ranges, other than replacement of some internal flagged floors (with concrete) and the insertion of internal partition walls.

5. IMPACT AND RECOMMENDATIONS

5.1 IMPACT

5.1.1 It has already been stated that this building investigation was of limited scope due to the amount and intensity of conversion and stripping works being carried out. Some of the parabolic beam floors of Range A had already been removed prior to the investigation and the others were in the process of being taken out. Health and safety requirements prevented access into various parts of the Ranges and, when access was safe, most of the floors and features had either been removed or obscured with new dry lining and partition walls. None of the parabolic beam floors were to remain *in situ* due to the uncertain structural integrity of the beams. Similarly, all the floors in Range B were to be removed and replaced.

5.1.2 A second site visit was made following the insertion of a new fourth floor, during which, it was hoped a detailed inspection of the cast and wrought iron roof trusses would be made. Unfortunately, most of these had either been removed or damaged and nearly all of the tie beams had been removed, together with the sliding brackets. What remains *in situ* will be retained and incorporated into the new roof structure.

5.1.3 The exterior of the mill was being sandblasted and repointed, which will undoubtedly impact upon the nature of the fabric.

5.2 RECOMMENDATIONS

5.2.1 Following completion of the refurbishment and conversion of Carr Mills it is unlikely that further investigation will add greatly to the information already gathered. However, removal of the scaffolding will enable a complete set of external photographs to be taken.

6. BIBLIOGRAPHY

British Geological Survey, North Sheet, 1979

English Heritage, 1991 *The Management of Archaeological Projects*, 2nd edn, London

Fitzgerald R S, 1988 *The Development of the Cast iron Frame in Textile Mills to 1850*

Giles, C, and Goodall, IH, 1995 *Yorkshire Textile Mills, 1770-1930*, 2nd edn, RCHME and WYAS, London

Northern Archaeological Associates, 2003 *Carr Mills, Buslingthorpe Lane, Leeds, West Yorkshire*, unpubl client rep

Ordnance Survey, 1983, *Soil Survey of England and Wales*

RCHME, 1996 *Recording Historic Buildings: A Descriptive Specification*, 3rd edn, Swindon

7. ILLUSTRATIONS

7.1 FIGURES

Figure 1:	1:25 000	Location Map
Figure 2:	1:250	Arrangement of Buildings
Figure 3:	1:100	Ground floor plan of Range A (west end)
Figure 4:	1:100	Ground floor plan of Range A (east end)
Figure 5:	1:100	Second floor plan of Range A (west end)
Figure 6:	1:100	Second floor plan of Range A (east end)
Figure 7:	1:100	Second floor plan of Range B
Figure 8:	1:100	Second floor reflected ceiling plan of Range A (west end)
Figure 9:	1:100	Second floor reflected ceiling plan of Range A (east end)
Figure 10:	1:100	Second floor reflected ceiling plan of Range B
Figure 11:	1:100	Third floor plan of Range A (east end)
Figure 12:	1:100	Forth floor plan of Range A (west end)
Figure 13:	1:100	Forth floor plan of Range A (east end)
Figure 14:	1:100	Fourth floor plan of Range B
Figure 15:	1:100	Fourth floor reflected ceiling plan of Range A (west end)
Figure 16:	1:100	Fourth floor reflected ceiling plan of Range A (east end)
Figure 17:	1:100	Fourth floor reflected ceiling plan of Range B
Figure 18:	1:50	West-facing cross-section Range A
Figure 19:	1:50	West-facing internal elevation of Range A
Figure 20:	1:30	Orthographic views of cast joist and three distinct cast beam types
Figure 21:	1:30	Isometric exploded view of floor construction in Range A

Figure 22: 1:20 Isometric view of Prefabricated Cast Iron Truss Assembly

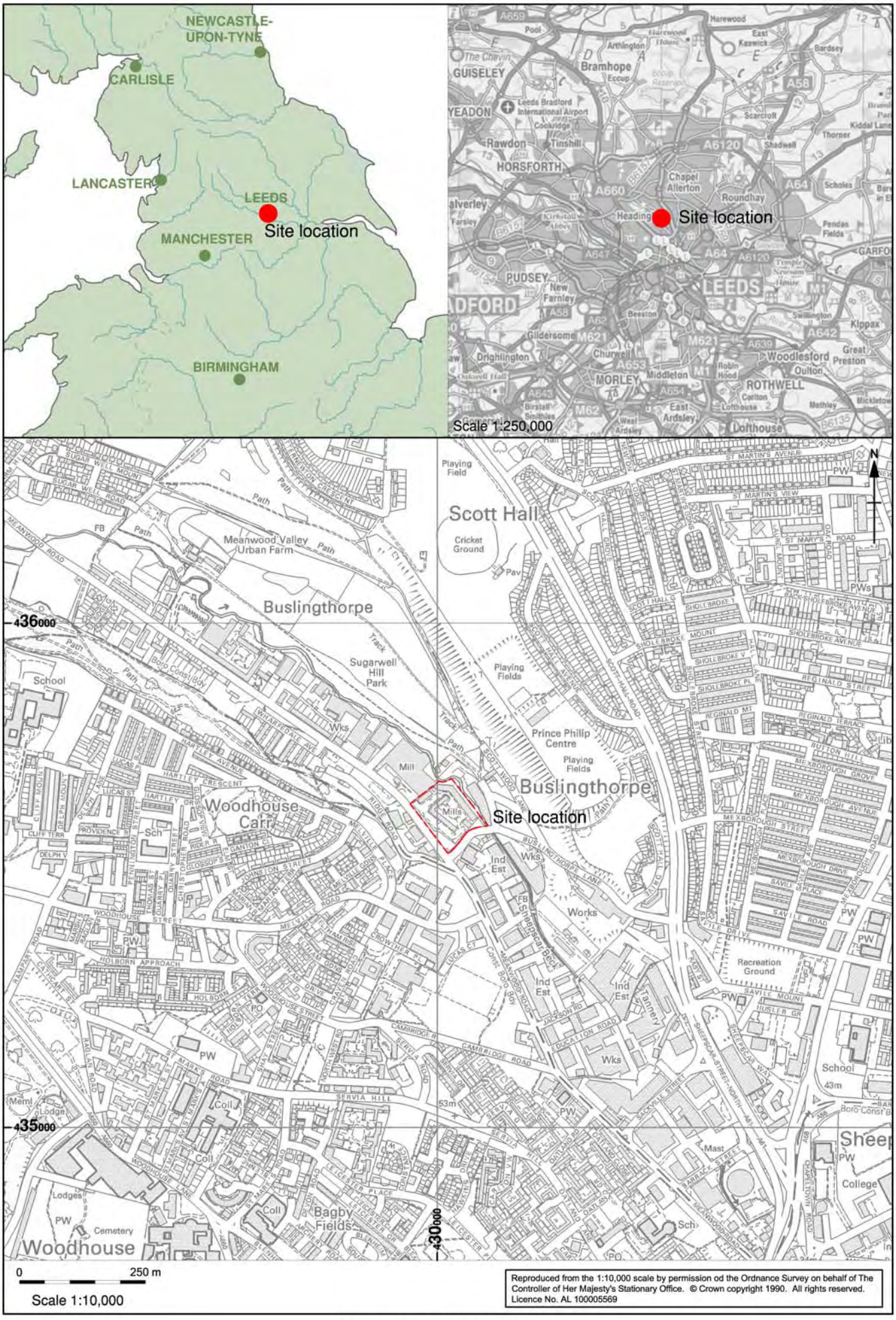

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Figure 1: Site Location

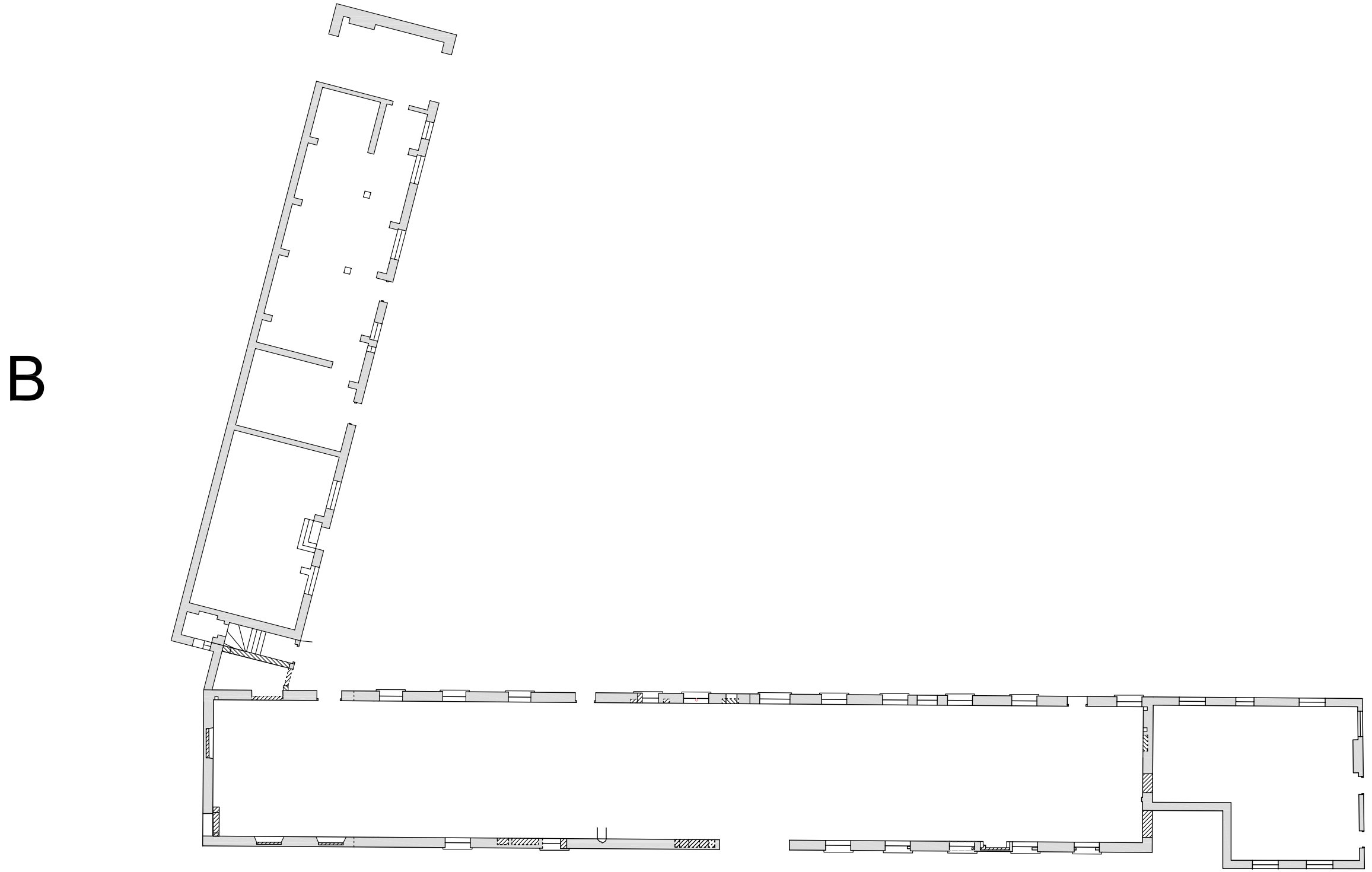


Figure 2: Arrangement of buildings

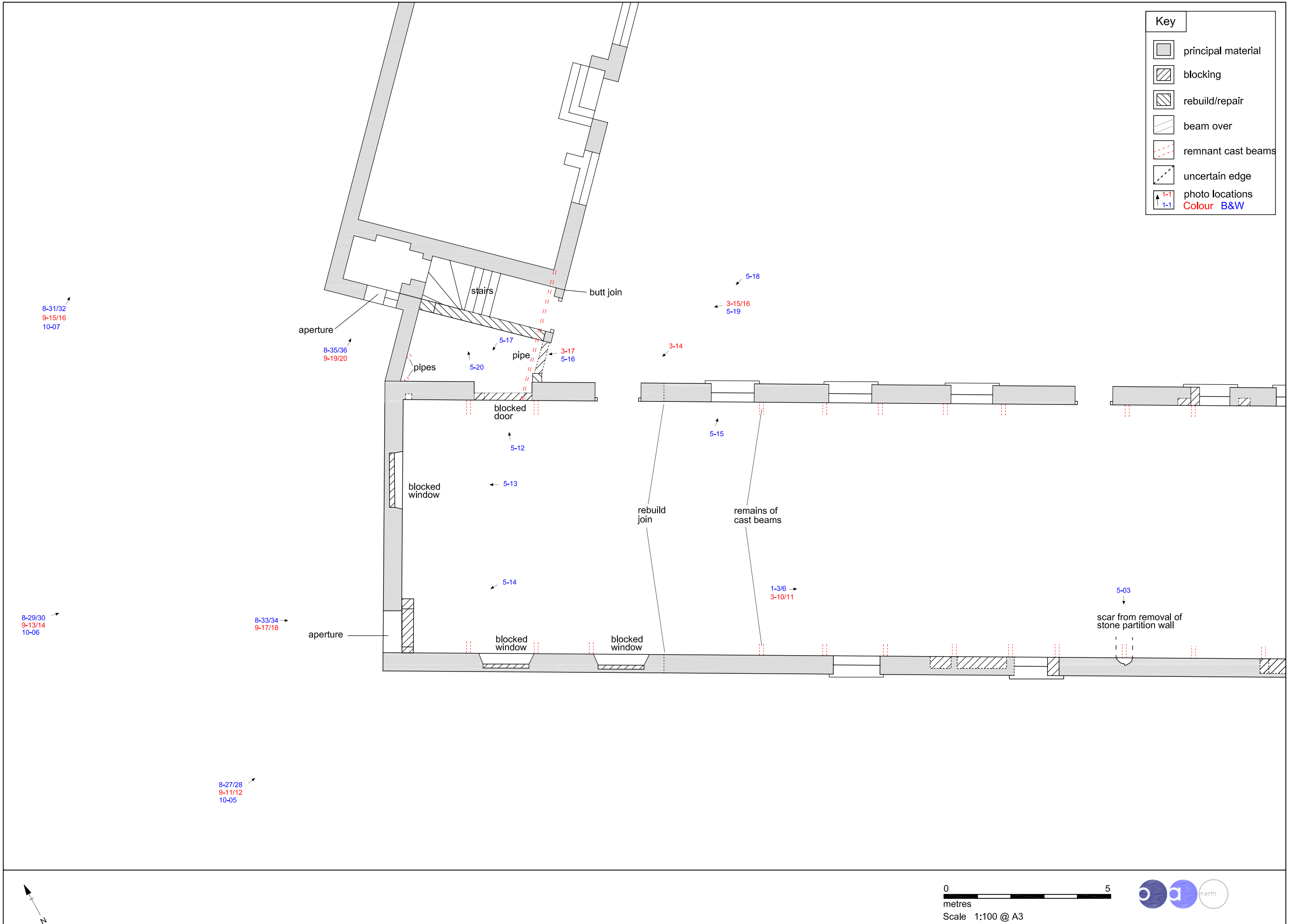


Figure 3: Ground floor plan of Range A (west end)

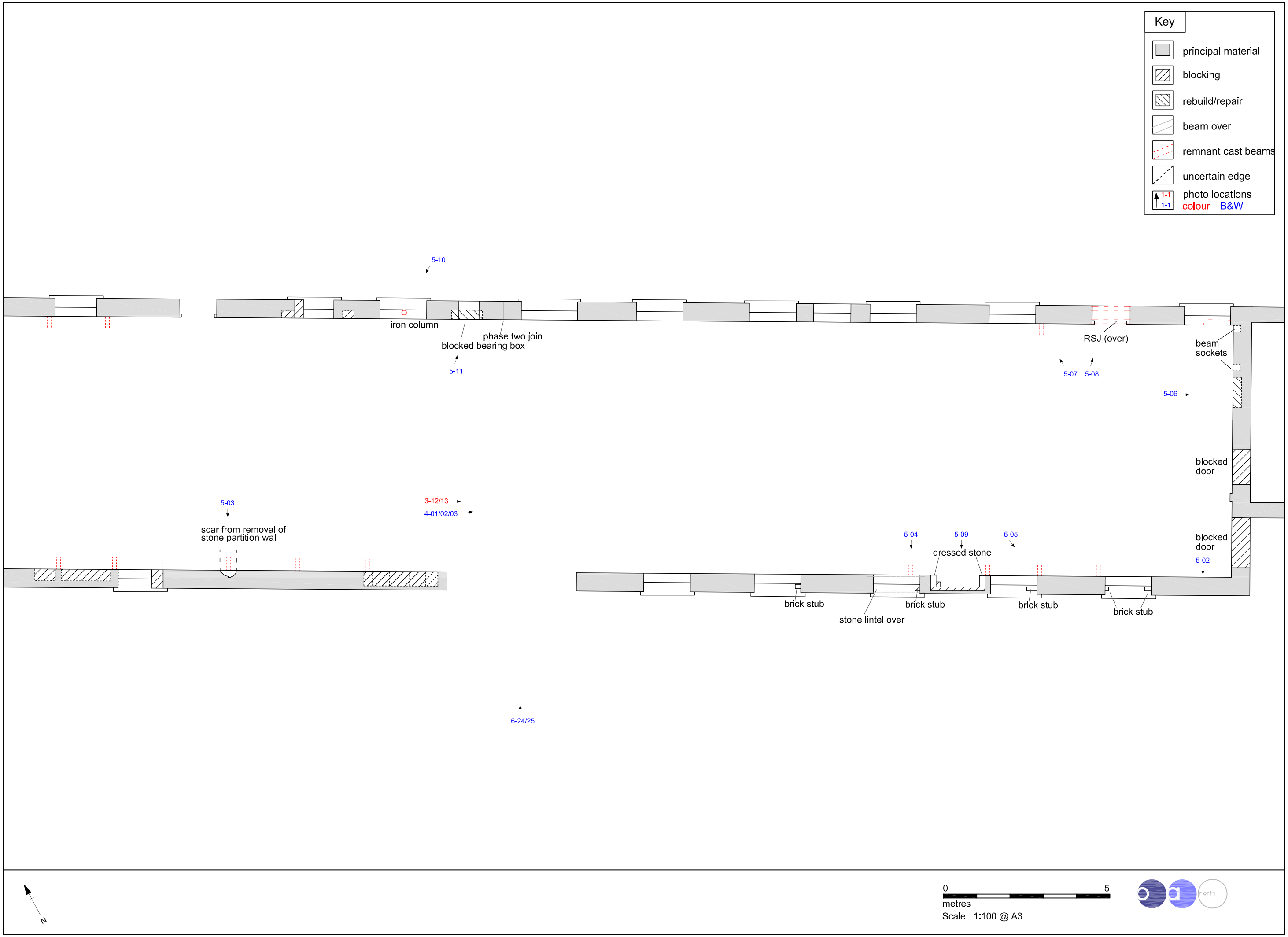


Figure 4: Ground floor plan of Range A (east end)

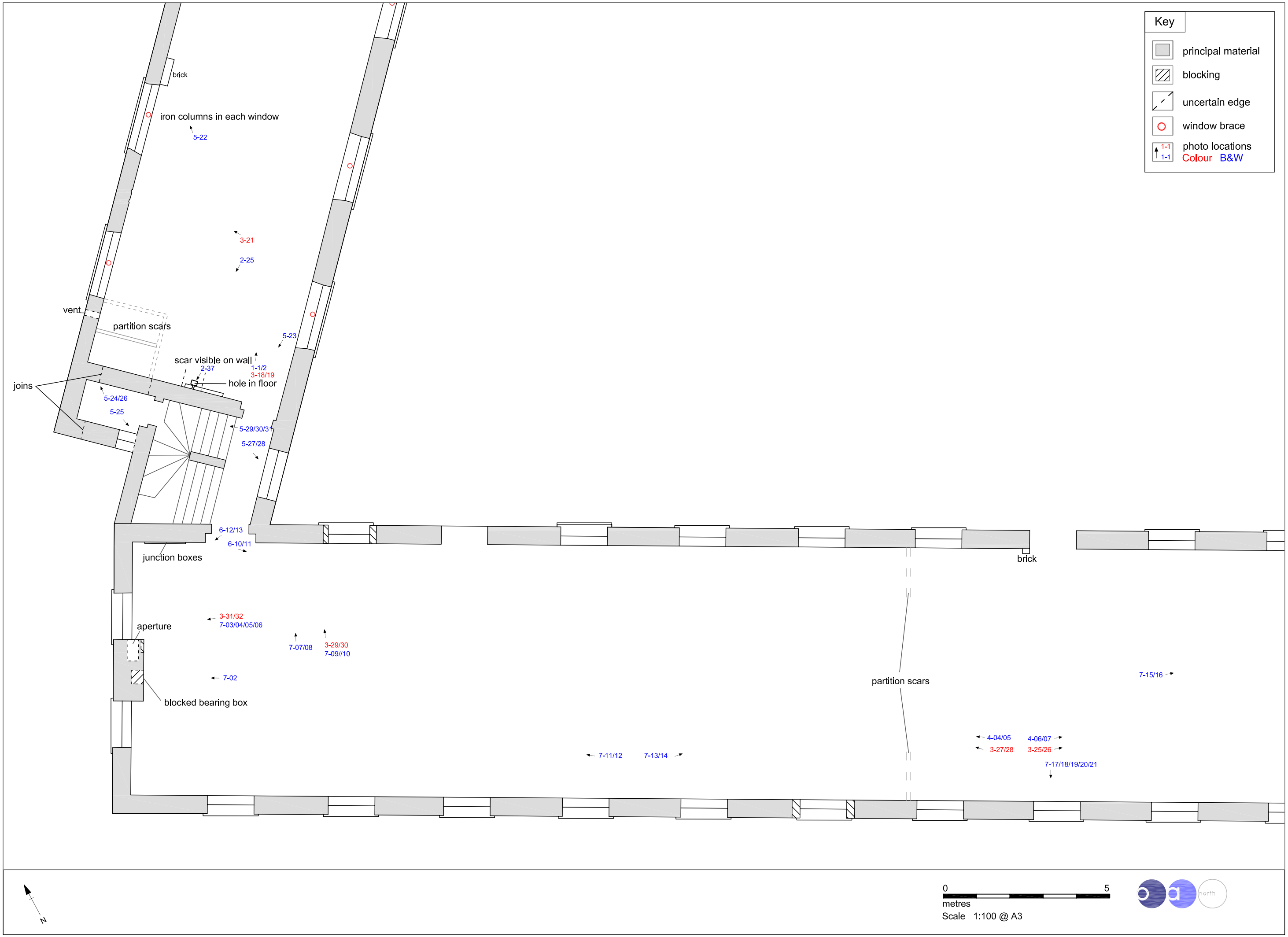


Figure 5: Second floor plan of Range A (west end)

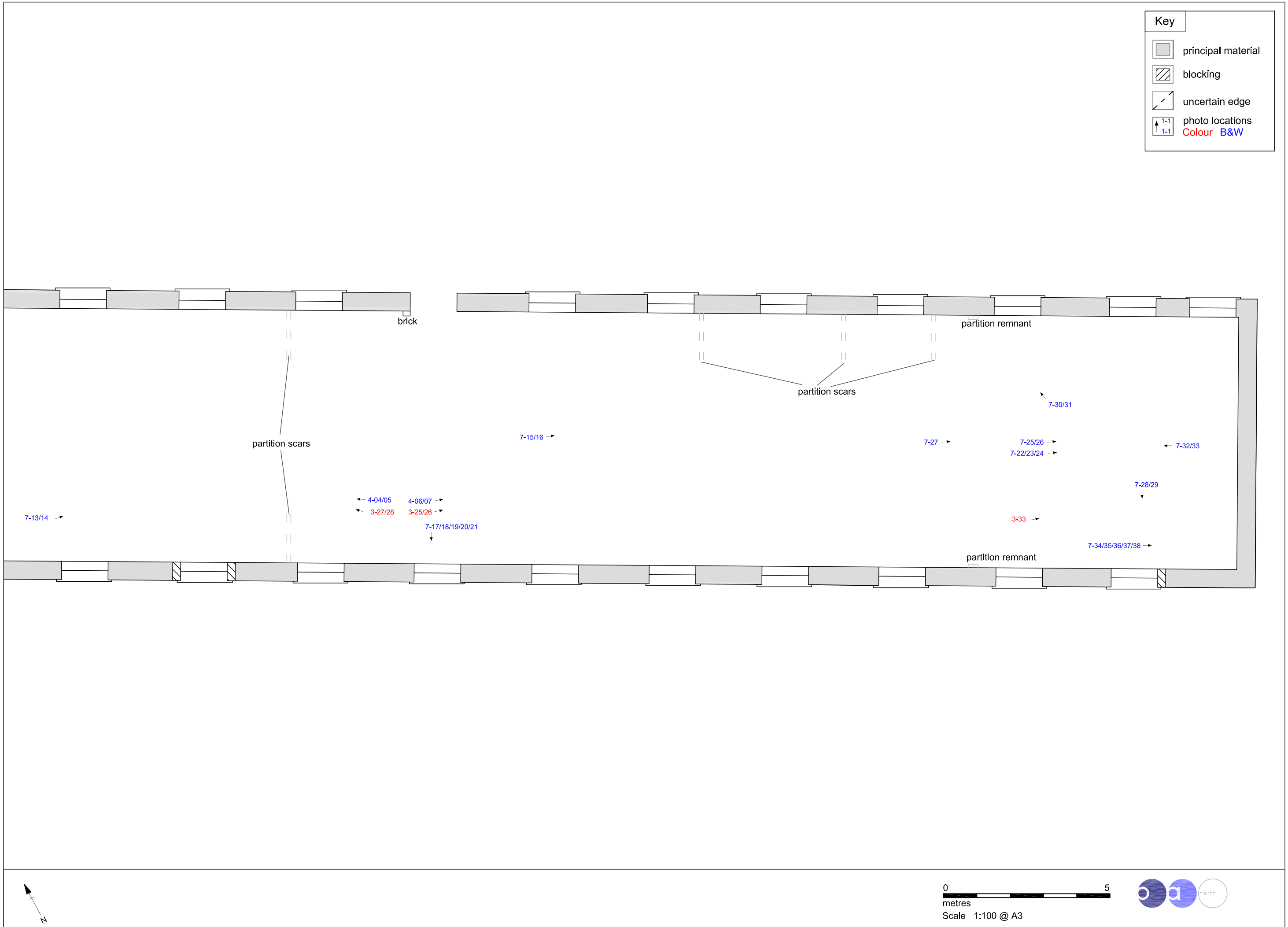


Figure 6: Second floor plan of building A (east end)

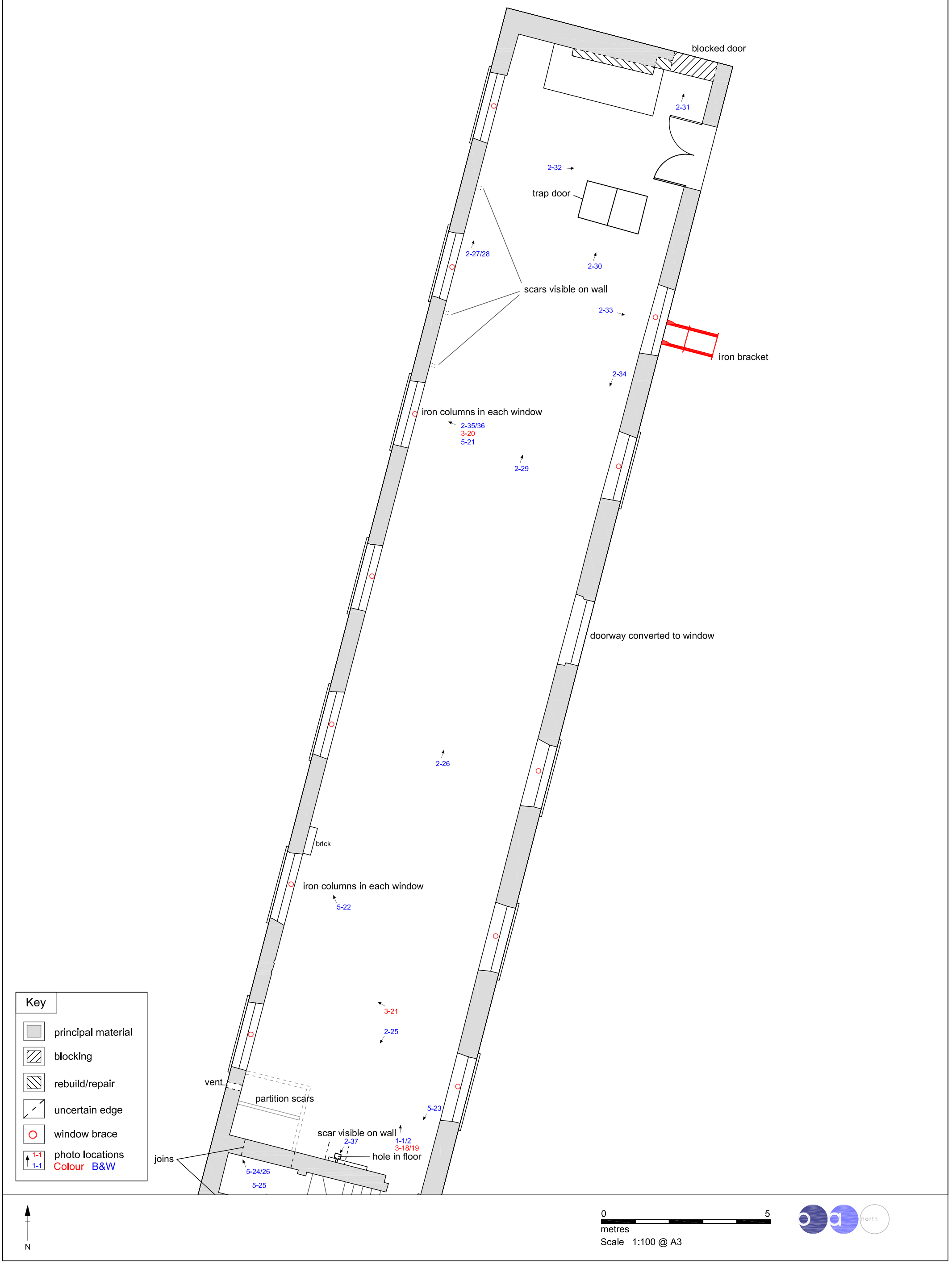


Figure 7: Second floor plan of Range B

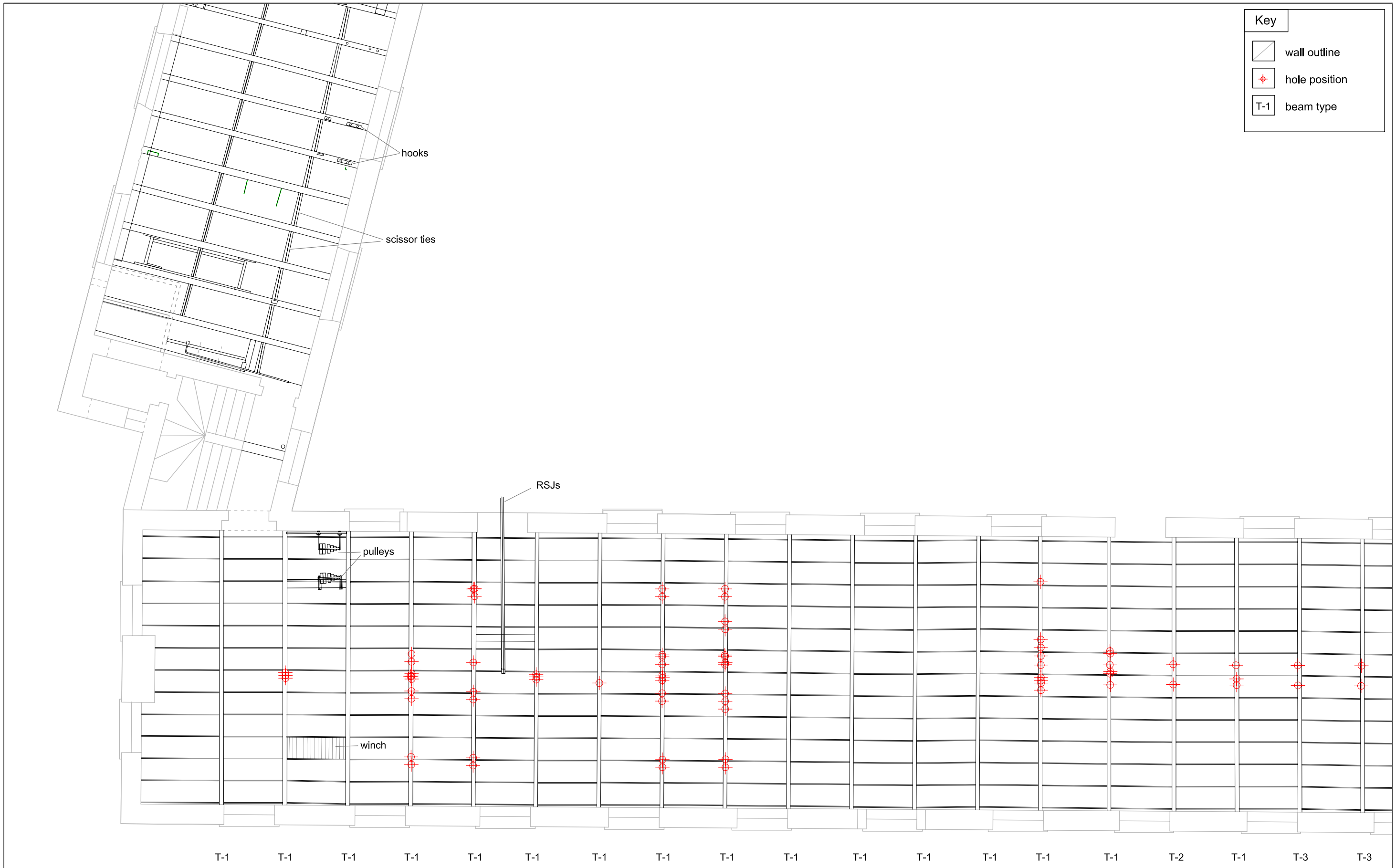


Figure 8: Second floor, reflected ceiling plan of Range A (west end)

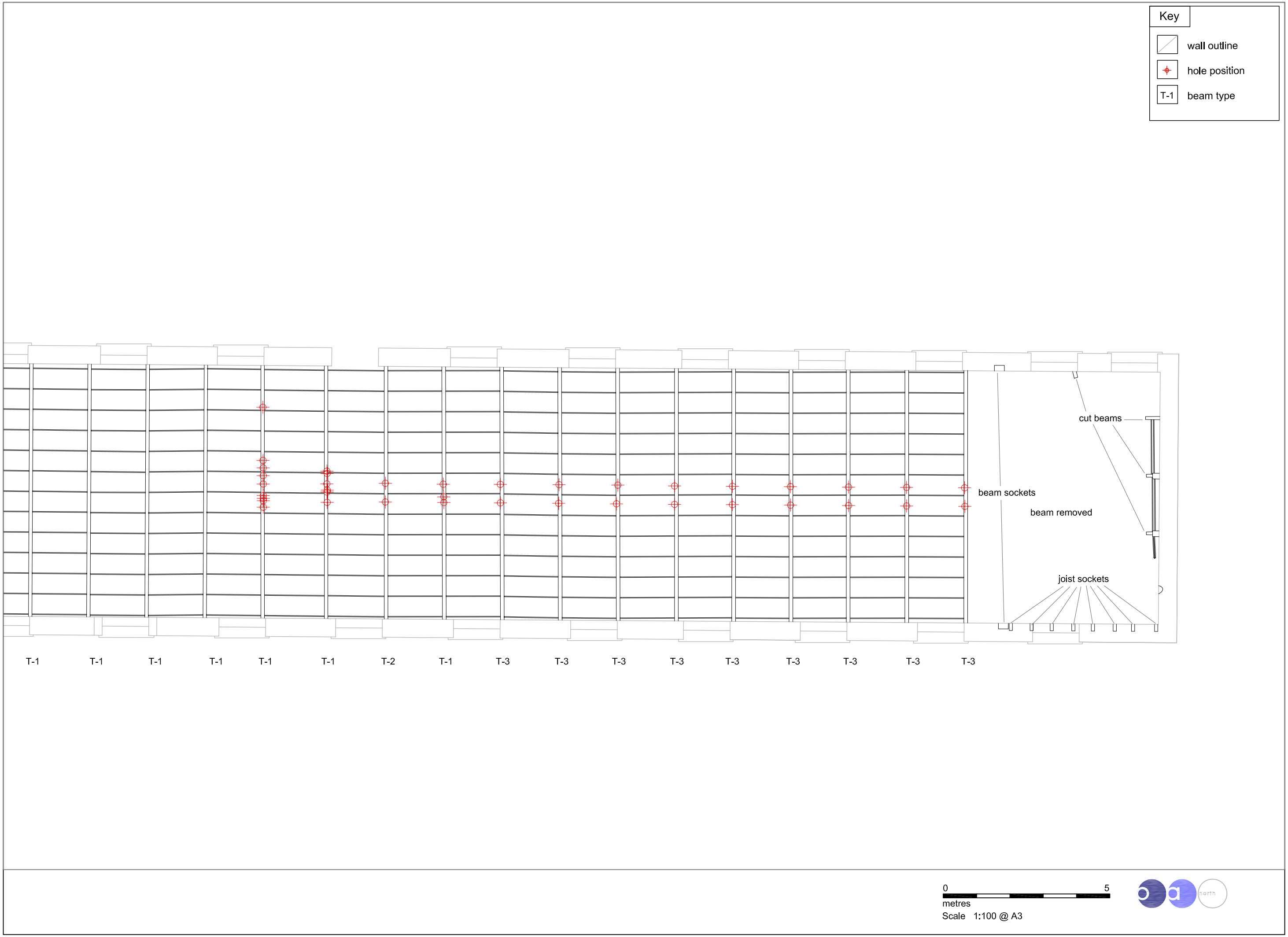


Figure 9: Second floor, reflected ceiling plan of Range A (east end)

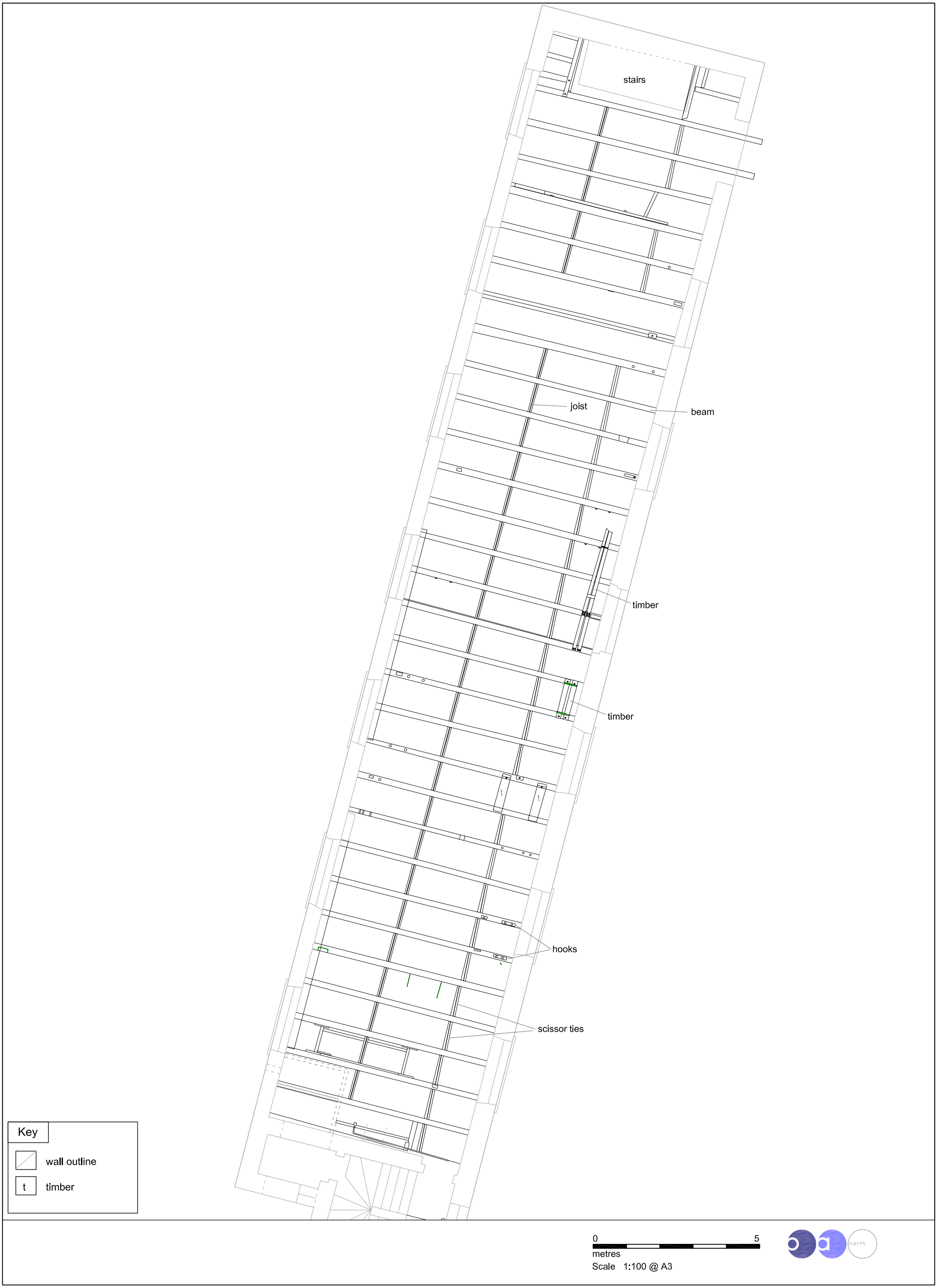


Figure 10: Second floor, reflected ceiling plan of Range B

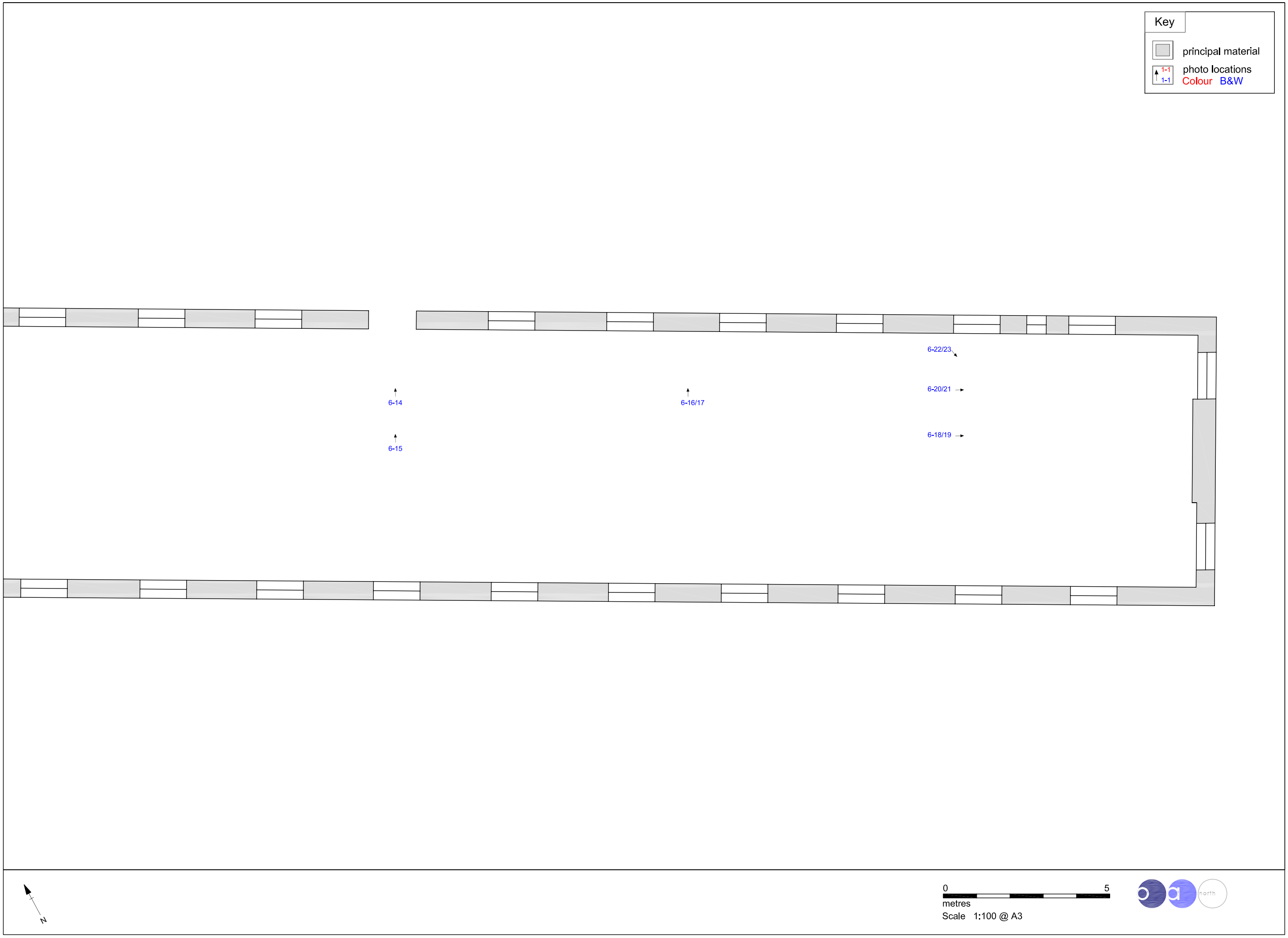


Figure 11: Third floor plan of Range A (east end) showing photo locations

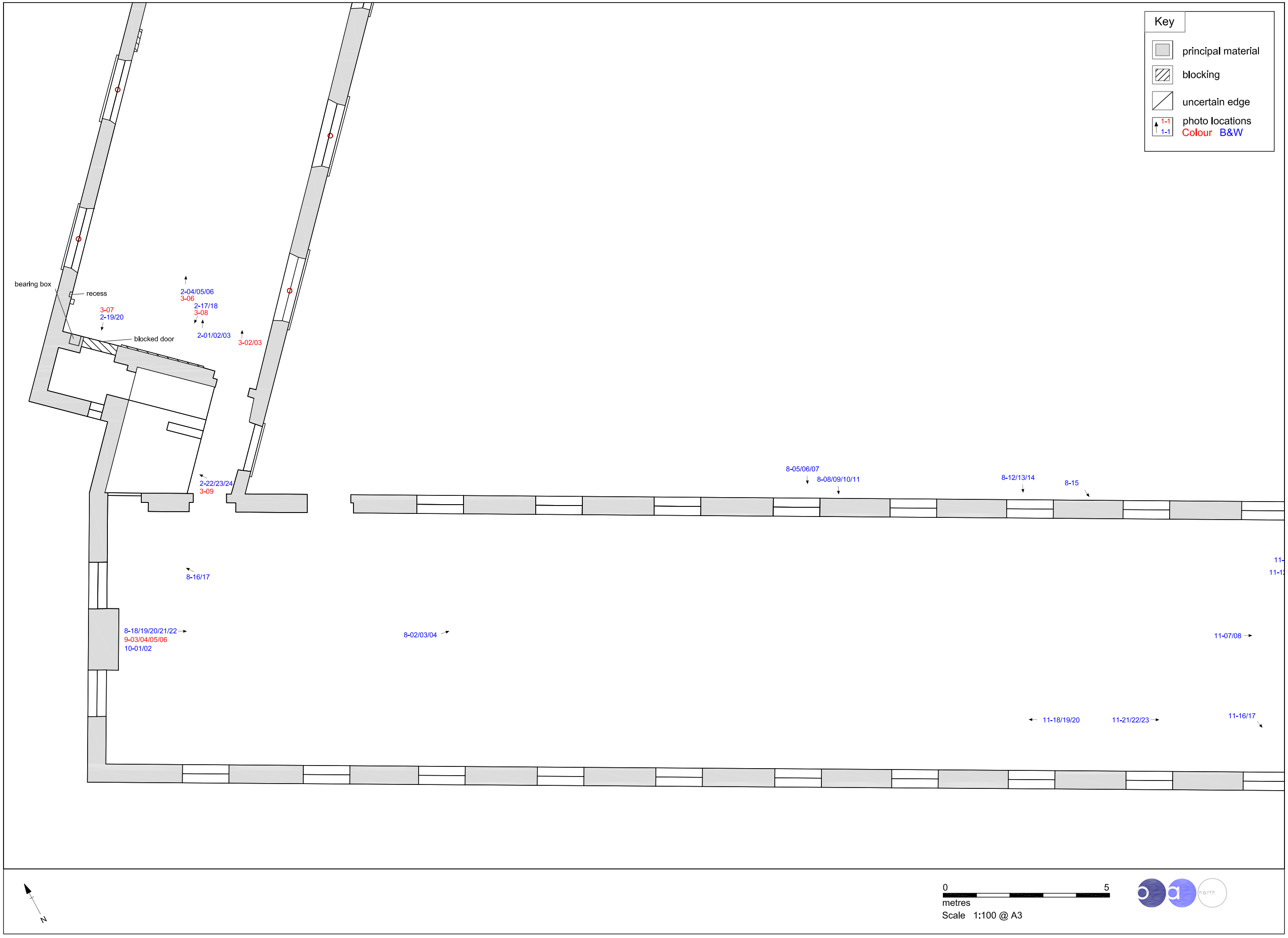


Figure 12: Fourth floor plan of Range A (east end)

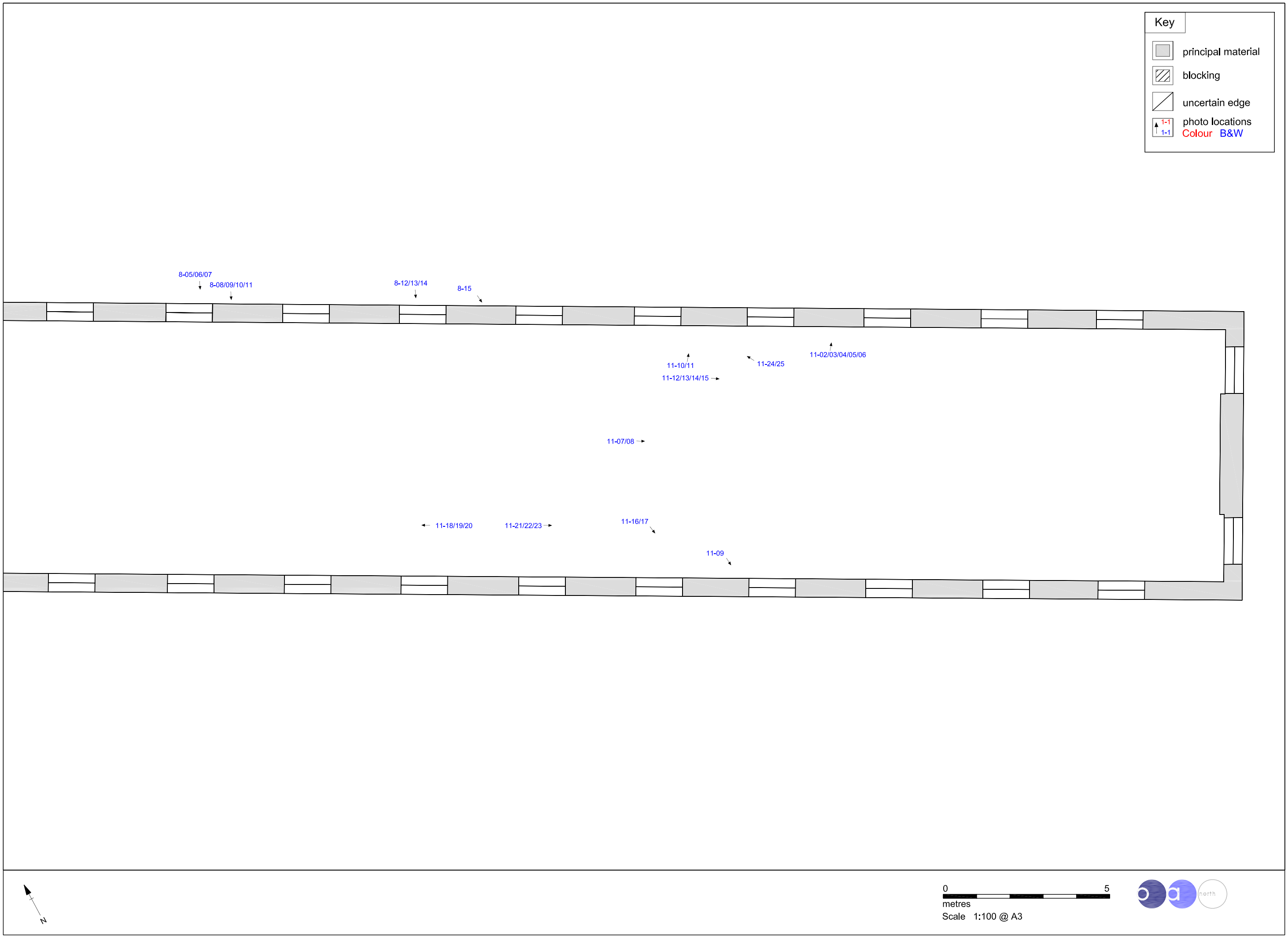


Figure 13: Fourth floor plan of Range A (west end)

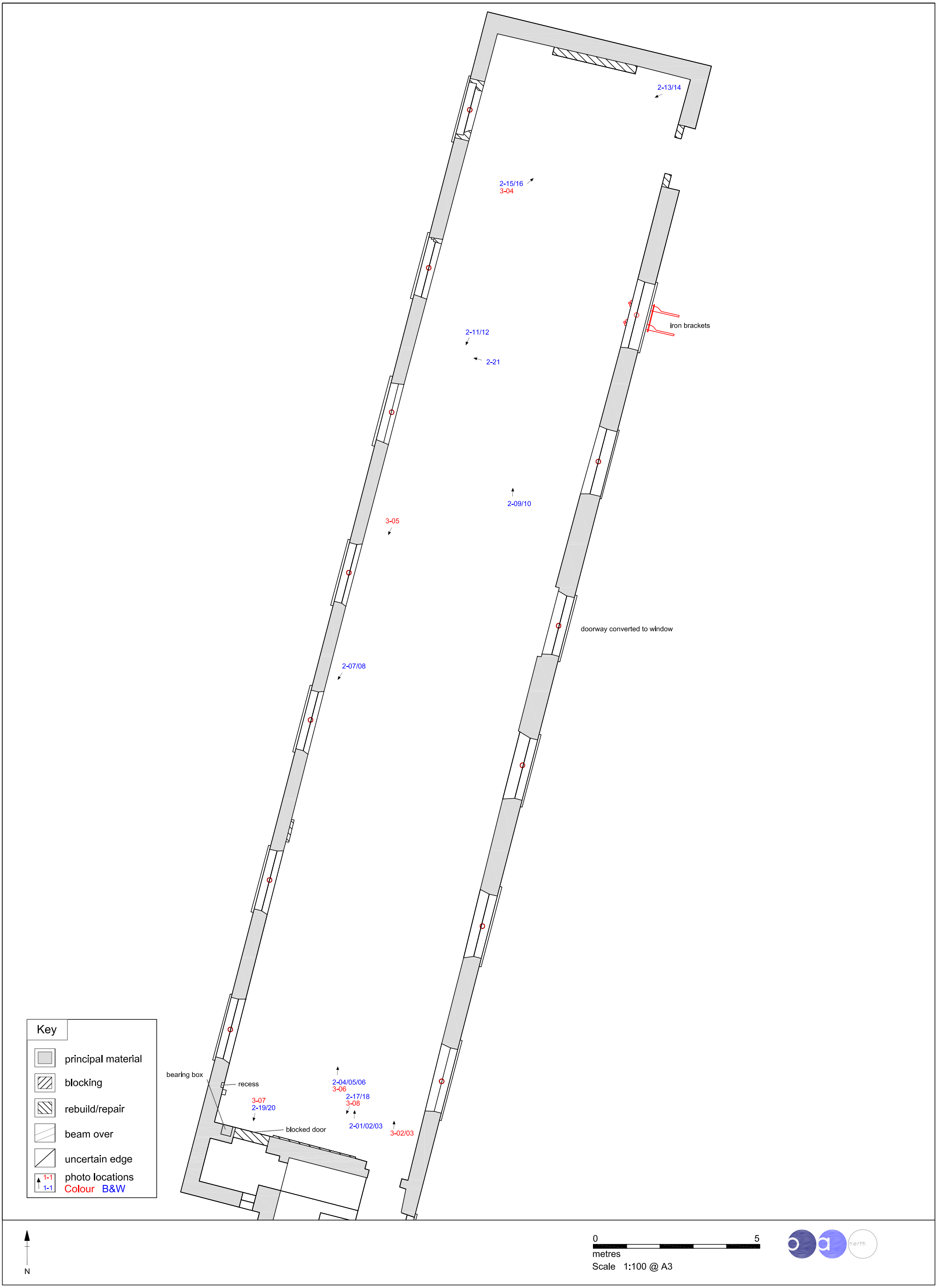


Figure 14: Fourth floor plan of Range B

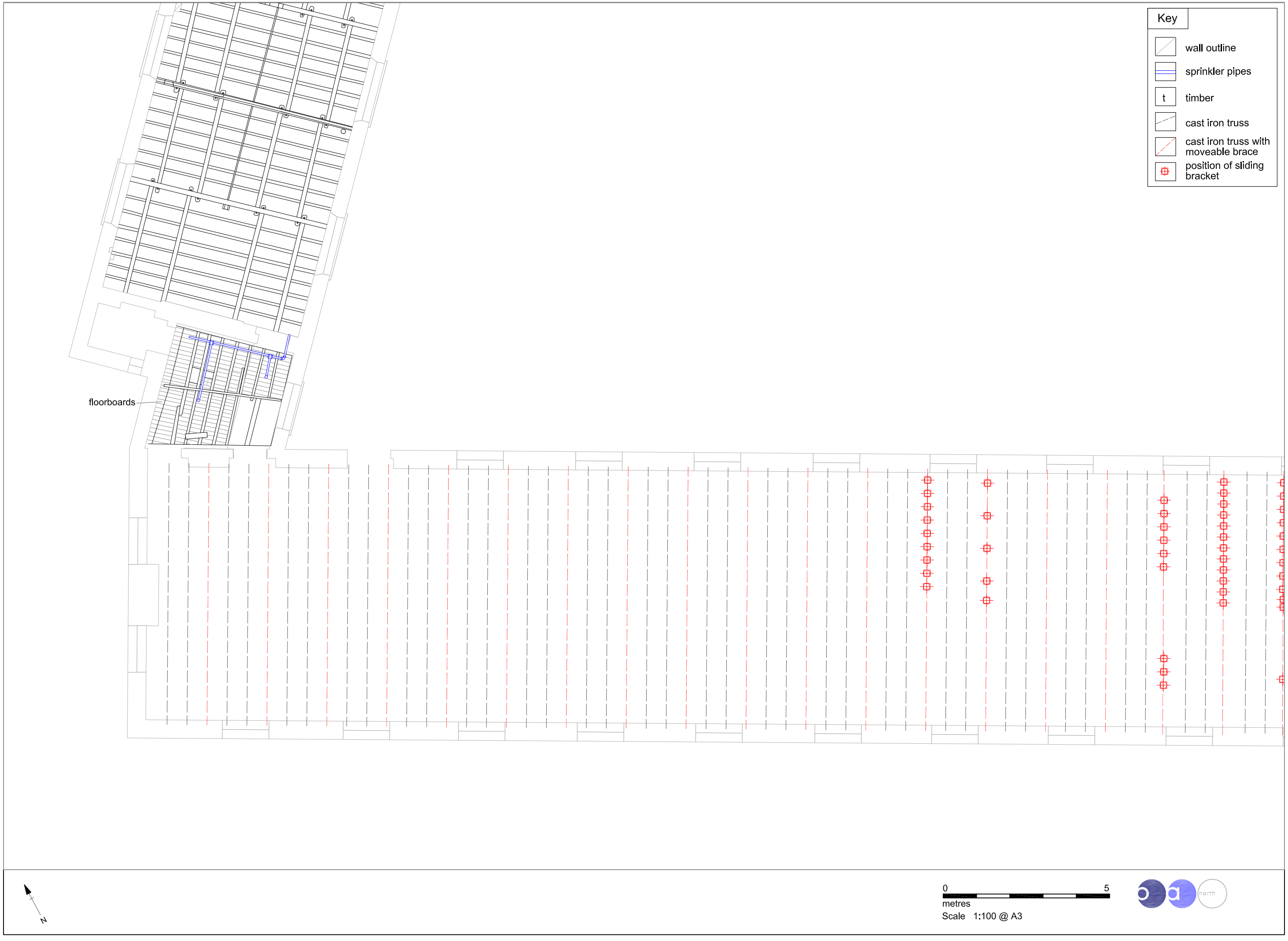


Figure 15: Fourth floor, reflected ceiling plan of Range A (west end)

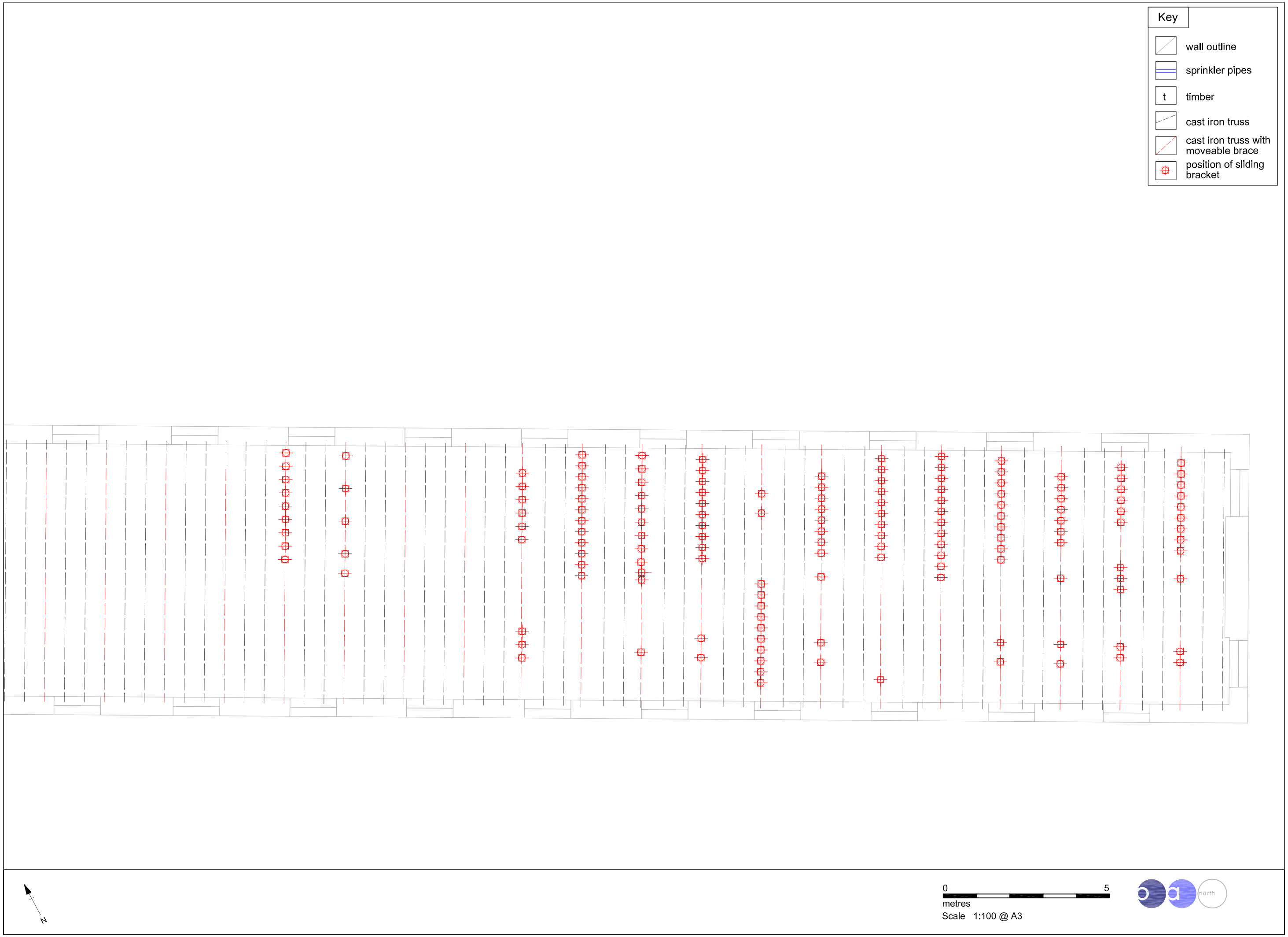


Figure 16: Fourth floor, reflected ceiling plan of Range A (east end)

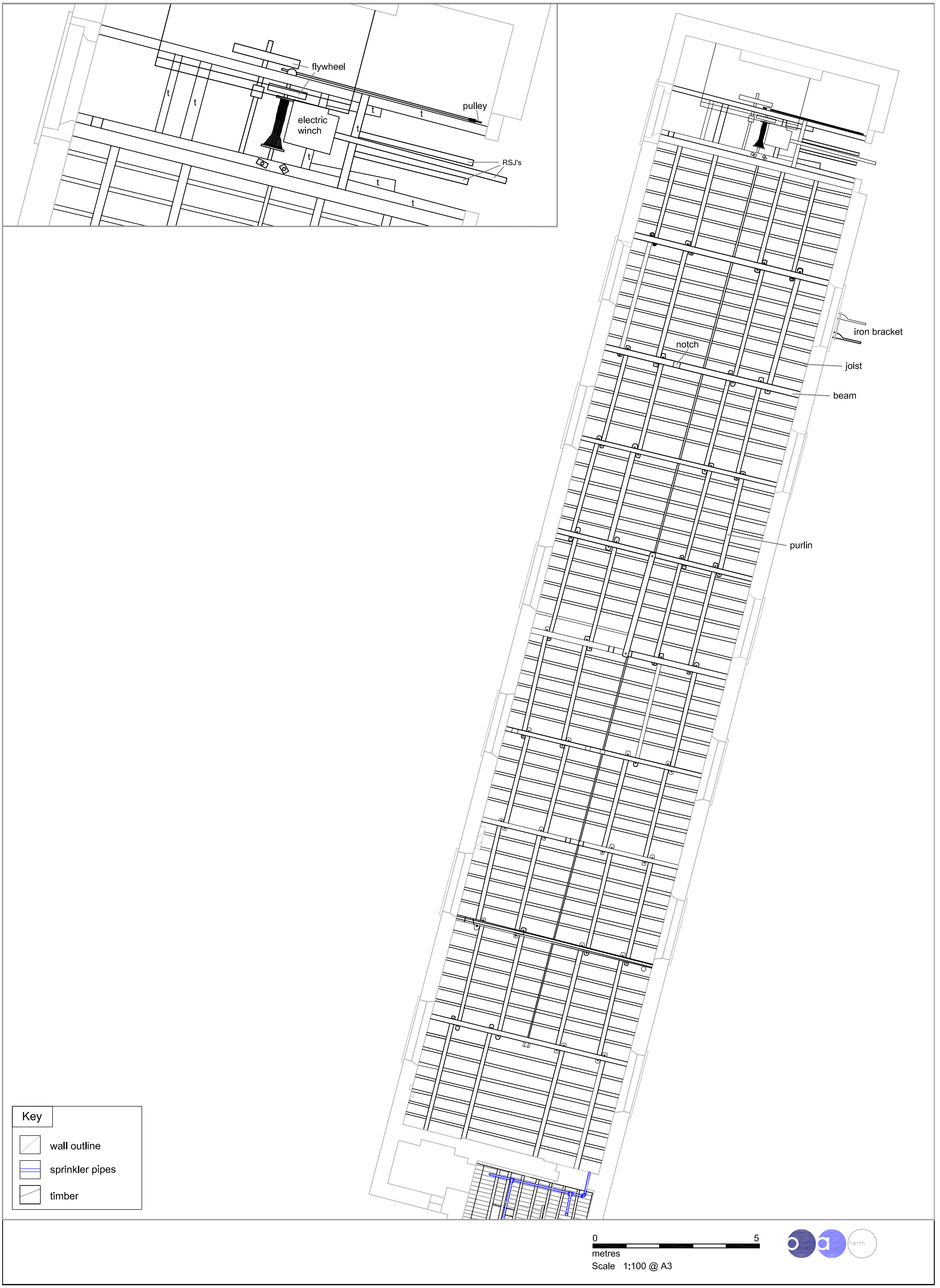


Figure 17: Fourth floor, reflected ceiling plan of Range B

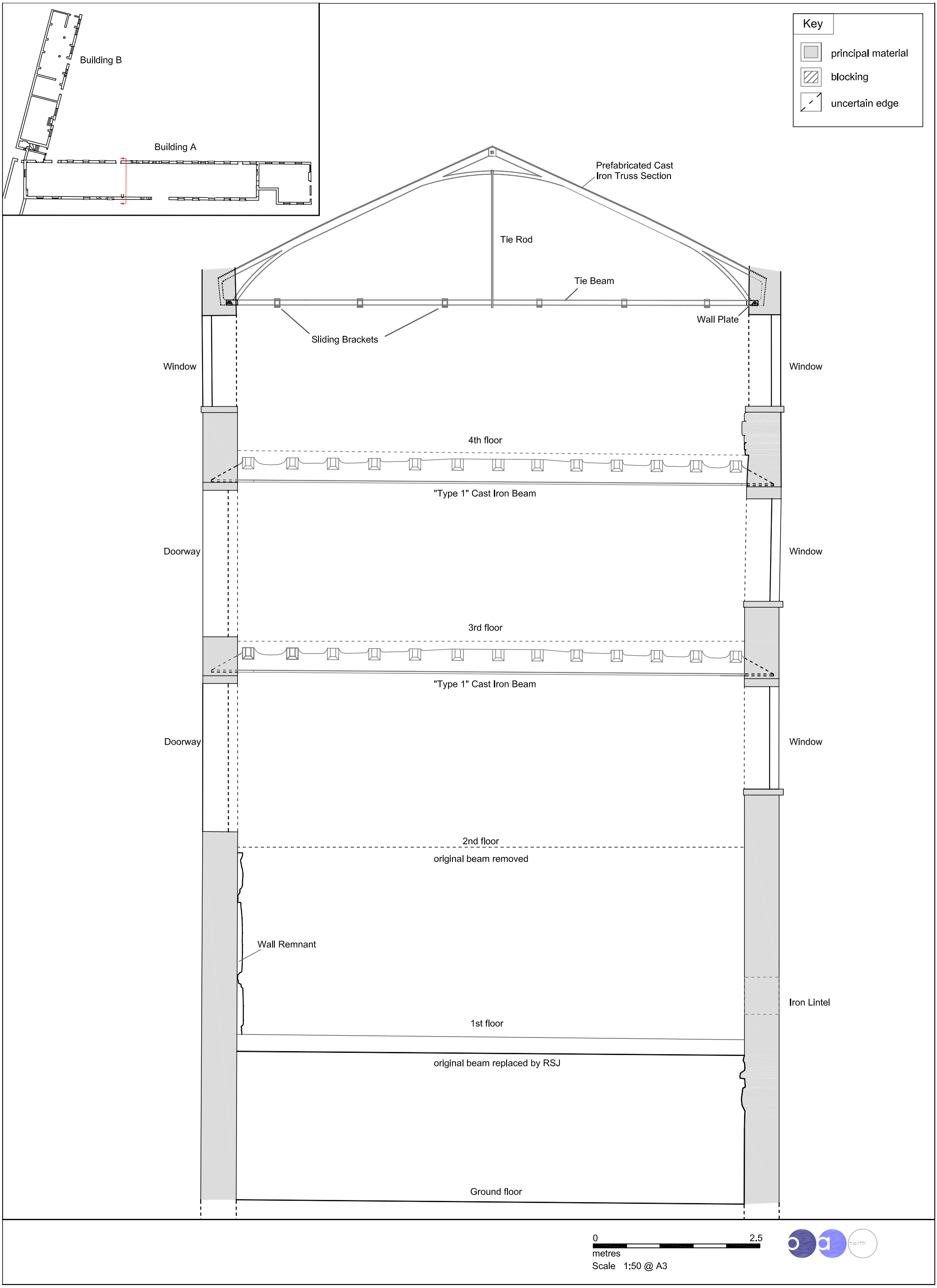


Figure 18: West-facing cross-section Range A

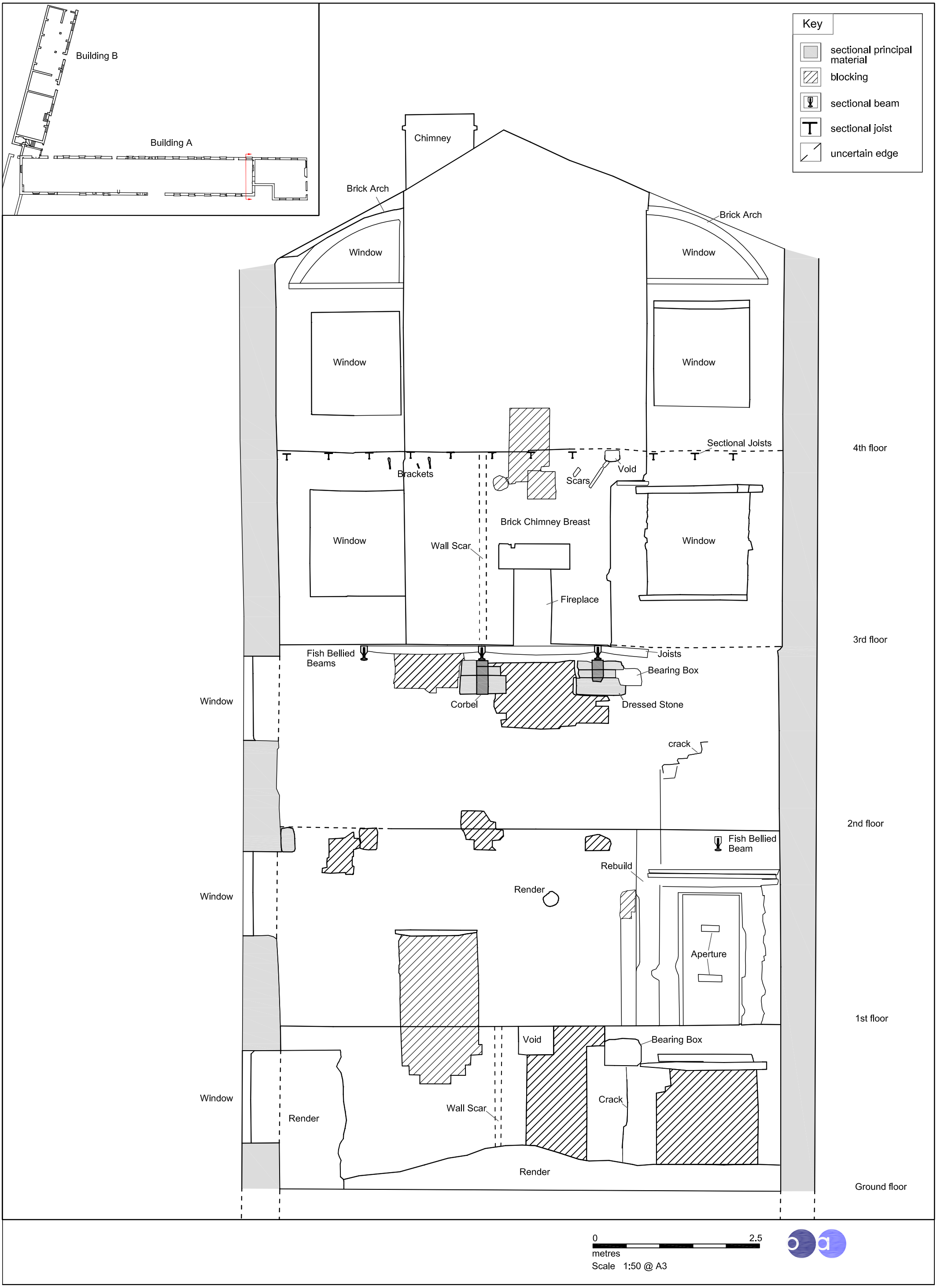
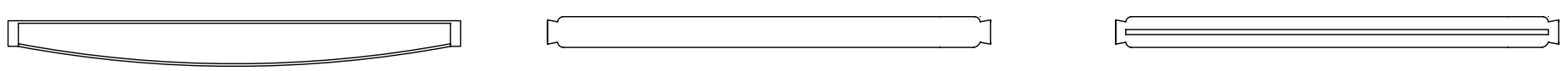
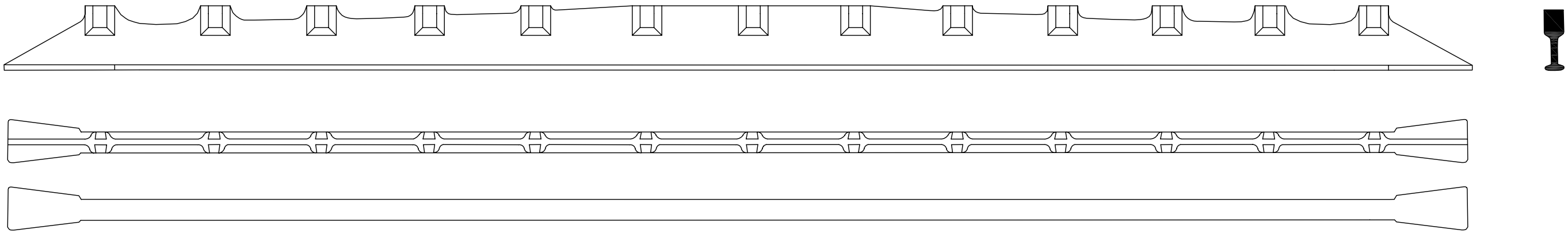


Figure 19: West-facing internal elevation of Range A

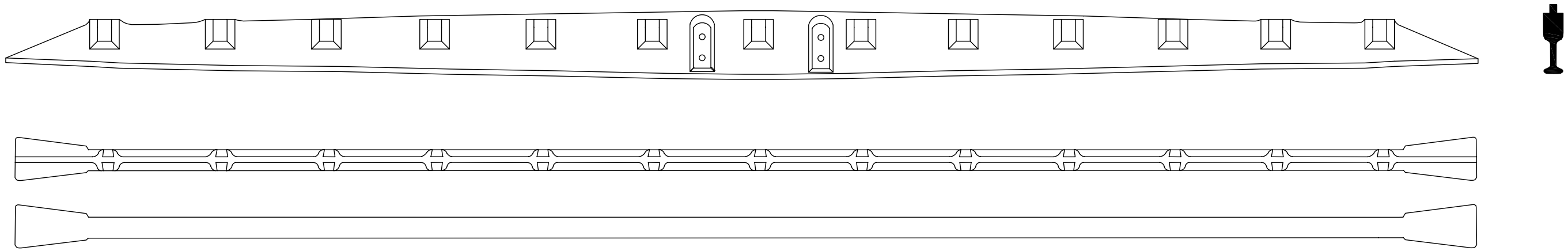


Joist

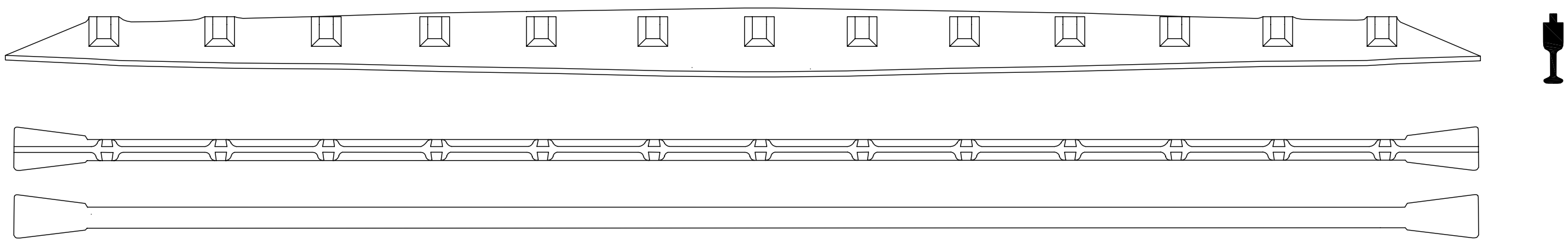
"Type 1" Beam



"Type 3" Beam



"Type 2" Beam



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metres
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Figure 20: Orthographic views of cast joist, and three distinct cast beam styles

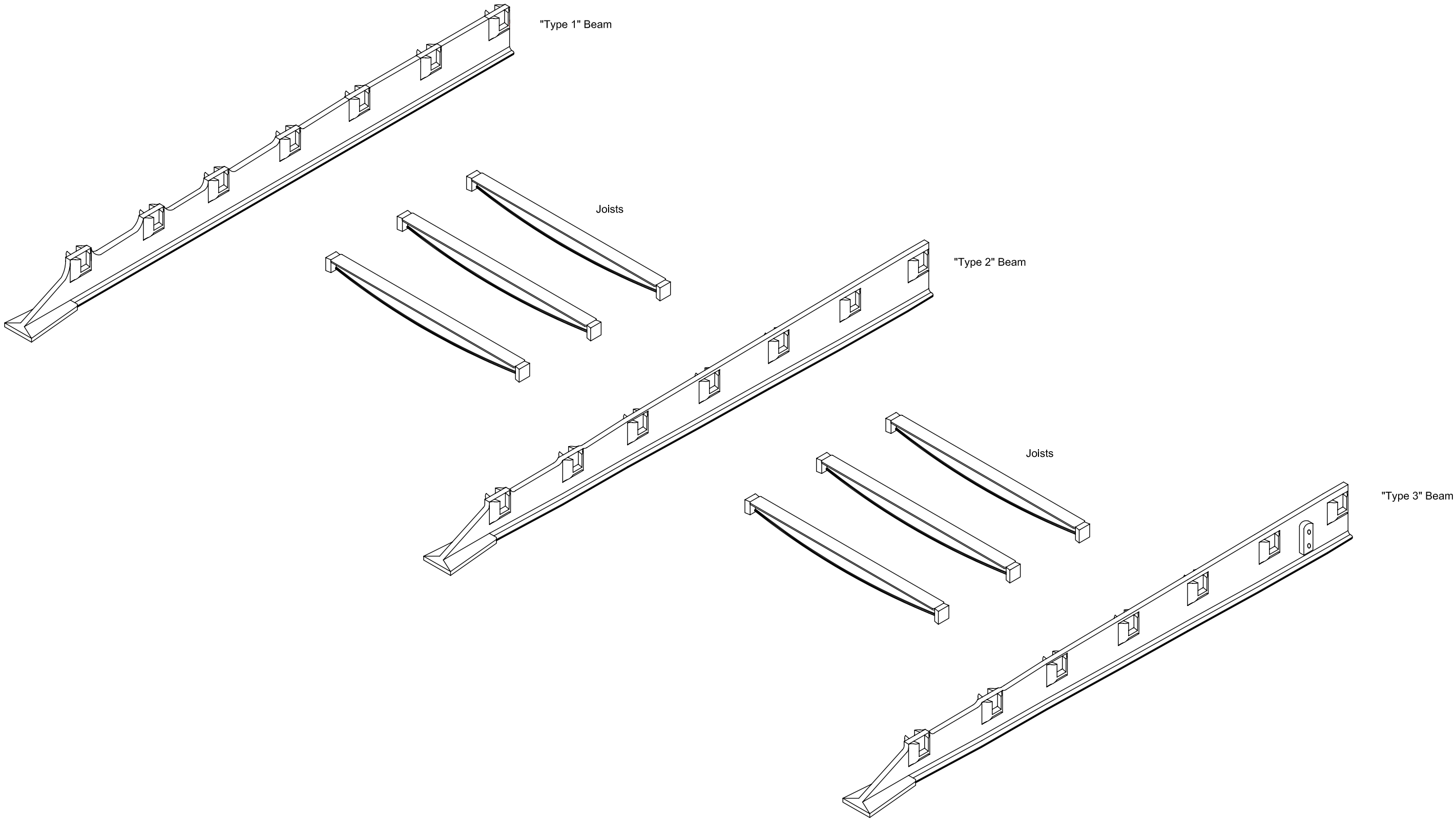

Figure 21: Isometric exploded view of floor construction in Range A

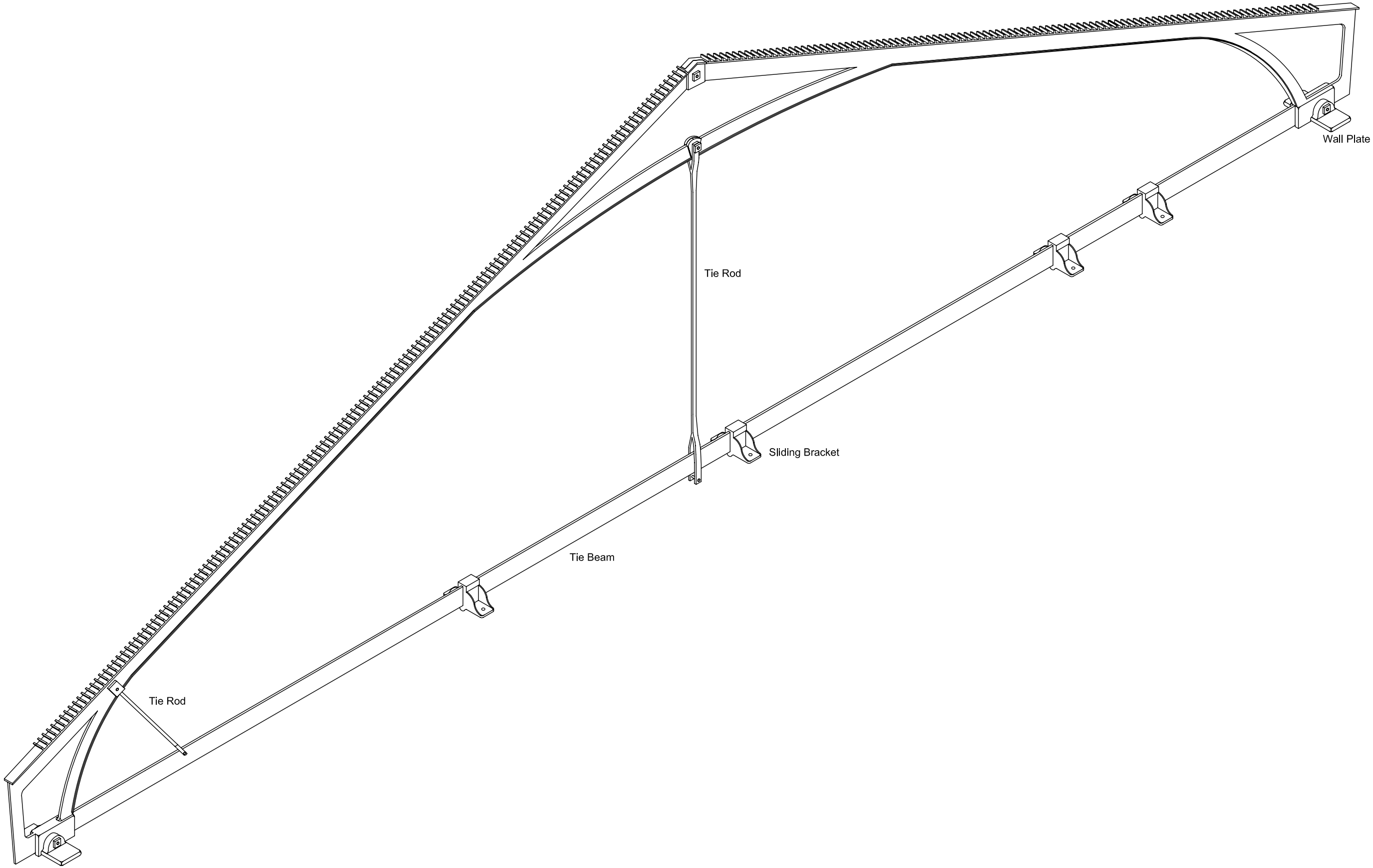

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Figure 22: Isometric view of Prefabricated Cast Irom Truss Assembly

APPENDIX I: WYASAS PROJECT SPECIFICATION

Specification For Building Recording/Structural Watching Brief
Carr Mills, Meanwood Road, Leeds
(SE 3001 3562)

Prepared on behalf of LCC for SJD Architects

1 Summary

1.1 A building record (drawn and photographic survey) is required to identify and document items of archaeological and architectural interest prior to the conversion of this early 19th century woollen mill to housing. This specification for the necessary work has been prepared by the West Yorkshire Archaeology Service's Advisory Service section, the curators of the West Yorkshire Sites and Monuments Record.

2 Site Location and Description

2.1 Location

(Grid ref. 3001 3562) The Carr Mills site lies at the junction of Meanwood Road and Buslingthorpe Lane. The buildings which form the subject of this specification form an L-shaped group, the long arm of which lies roughly parallel to Meanwood Road.

2.2 Description

Building A lies parallel to Meanwood Road and comprises fourteen bays of five storeys. The building is of stone with an internal cast-iron framework, and cast-iron roof trusses. Building B lies at an angle to Building A and comprises seven bays of five storeys. The building is of stone with internal structural members of timber. Buildings A and B are linked at the angle by a stair/WC tower which appears to be of separate construction. The combined floor area of the buildings is approximately 700 sq. metres. Conversion work has begun on site. In Building A, all windows and external doors have been removed, as have the floor surfaces on the fourth floor, and parts of the second and third floors. The first floor has been removed entirely. In Building B, all windows have been removed, as has the first floor. Confirmation of structural condition should be sought from SJD Architects. The buildings are Listed Grade II.

3 Planning Background

The site owners have obtained planning consent (Planning Application No. 26/152/03/FU and 26/153/03/LI) for partial demolition and conversion of these buildings through housing. Although the local authority has omitted to include a condition requiring archaeological recording in the planning consent, the developer has undertaken to commission an appropriate archaeological record of the structures, in recognition of their importance to an understanding of the development of both textile mills and fireproof construction. This recording is being arranged through their agents SJD Architects (Hampdon House, Falcon Court, Westland Way, Preston Farm Business Park, Stockton on Tees, TS18 3TS, contact Stephen Dodds ☎ 01642 607822). The WYAS Advisory Service (as Leeds City Council's archaeological advisor) has prepared this specification in order to allow the owners to contract the necessary recording.

5 Aims of the Project

5.1 The first aim of the proposed work is to identify and objectively record by means of photographs and annotated and measured drawings any significant evidence for the original and subsequent historical form and functions of the buildings.

5.2 The second aim of the proposed work is to analyse and interpret the buildings as an integrated system intended to perform a specialised function. The archaeologist on site should give particular attention to reconstructing as far as possible the functional arrangements and division of the buildings. The roles of historical plan form, technical layout and process flow should all be considered in this process of interpretation.

6 Recording Methodology

6.1 General Instructions

6.1.1 Health and Safety The archaeologist on site will naturally operate with due regard for Health and Safety regulations. Regard should also be taken of any reasonable additional constraints that the principal building contractors, who are currently on site, may impose. The archaeological contractors' attention is again drawn to the fact that the site has been partially prepared for conversion, and that a number of floor surfaces are now missing. Prior to the commencement of any work on site (and preferably prior to submission of the tender) the archaeological contractor is required to carry out a Risk Assessment on these structures in accordance with the Health and Safety at Work Regulations. Necessary access to all areas of the buildings will be arranged by SJD Architects, but these arrangements (particularly those with regard to access to the fourth floor of Building A) should be confirmed with Stephen Dodds prior to the commencement of work on site. The contractor should also consider the possibility of applying remote measuring techniques where appropriate (but see Para. 6.4.1 below). The contractor is expected to make a reasonable effort to execute the recording work. If a portion of the complex is legitimately judged to be inaccessible without breach of the Health and Safety at Work Regulations, then confirmation of this judgement by a competent and appropriately qualified individual or organisation must be submitted in writing to the WYAS Advisory Service. The WYAS Advisory Service cannot be held responsible for any accidents which may occur to outside contractors engaged to undertake this survey while attempting to conform to this specification.

6.1.2 Confirmation of adherence to specification

Prior to the commencement of any work, the archaeological contractor must confirm in writing adherence to this specification, or state in writing (with reasons) any specific proposals to vary the specification. Should the contractor wish to vary the specification, then written confirmation of the agreement of the WYAS Advisory Service to any variations is required prior to work commencing. Unauthorised variations are made at the sole risk of the contractor (see para. 8.3, below). Modifications presented in the form of a re-written project brief will not be considered by the WYAS Advisory Service.

6.1.3 Confirmation of timetable and contractor's qualifications

Prior to the commencement of work on site, the archaeological contractor should provide the WYAS Advisory Service in writing with a projected timetable for the site work, and with details regarding staff structure and numbers. *Curriculum vitae* of key project members (project manager, site supervisor, photographer, any proposed specialists etc.) should also be supplied to the WYAS Advisory Service if the contractor has not previously done so. All project staff provided by the archaeological contractor must be suitably qualified and experienced for their on-site roles, in accordance with PPG 16 para. 21. In particular, staff involved in building recording should have proven expertise in the recording and analysis of industrial buildings.

6.1.4 Documentary research

A desk-based assessment of the site was carried out by Northern Archaeological Associates in 2003, and the report resulting from this exercise has been lodged with the West Yorkshire County Sites and Monuments Record. Prior to the commencement of work on site, the contractor should gain access to and carefully examine all aspects of this assessment in order to inform the archaeological recording by providing background information with regard to function and phasing. The archaeological contractor is also expected to have consulted R.S. Fitzgerald, 1988 "The Development of the Cast Iron Frame in Textile Mills to 1850", *Industrial Archaeology Review* Vol. 10, no. 2 pp. 127-145, and the relevant sections of C. Giles and I.H. Goodall, 1992 *Yorkshire Textile Mills* (London:HMSO) prior to the commencement of work on site (both sources are available in the County Sites and Monuments Record). Please note that the SMR makes a charge for commercial consultations.

6.1.6 Use of existing plans

SJD Architects have obtained plans as existing of buildings, available in CAD format. If appropriate, these plans may be used as the basis for the drawn record and for any annotation relative both to the historic and photographic record. Additional information relevant to the historic record should be indicated on the plans, which shall be re-drawn as necessary. It is the responsibility of the archaeological contractor to check the accuracy of these drawings and to make any necessary adjustments or corrections. Contractors are therefore advised to determine prior to the submission of tender whether major re-survey/re-drawing will be necessary. For this purpose, the WYAS Advisory Service would suggest that the tendering contractor check a small number of randomly selected measurements across the site, e.g. a few long face measurements, the position and size of a selection of doors and windows, and a random series of internal diagonals (it is accepted that the contracting archaeologist will not be able to identify isolated and unpredictable errors by using this method).

6.2 Sequence of recording

6.2.1 Initial record

Recording work should take place in two stages. The structures should initially be recorded as existing, in order that basic structural information and the position of and relationships between the structural elements being recorded may be secured.

6.2.2 Watching Brief

Subsequent to the commencement of structural work on site, a watching brief should be maintained by the contracting archaeologist to record any pertinent historic structural or functional detail presently inaccessible. This record should be obtained by means of notes, drawings and photographs as appropriate, to the standards outlined elsewhere in this specification. This detail should then be incorporated into the completed record. Please note that it is expected that much of the fine detail of the cast-iron framework (e.g. beam sections) will be secured or confirmed by this method, in the interests of accuracy.

6.3 Written Record

The archaeologist on site should carefully examine all parts of each building prior to the commencement of the drawn and photographic recording, in order to identify all features relevant to its original use. As part of this exercise, the archaeologist on site should produce written observations (e.g. on phasing; on building function) sufficient to permit the preparation of a report on the structure.

6.4 Drawn Record

6.4.1 Drawings required

For the purposes of this specification, the long axis of Building A is considered to lie due east-west, and that of Building B to lie due north-south. The drawn record should comprise:

- Plan of the second floor of Building B (to include stair/WC tower), with reflected ceiling plan
- Plan of the fourth floor of Building B (to include stair/WC tower), with reflected truss plan
- Plan of the ground floor of Building A, with reflected ceiling plan and some aspects of the ground plan (e.g. cross-walls) to be reconstructed (as far as possible) from the evidence visible in the north and south walls of the structure. Reconstructed or extrapolated elements should be clearly indicated on the final drawing. Particular care should be to taken to locate and record the surviving evidence for the engine houses and for power transmission on this floor.
- Plan of the second floor of Building A
- Separate reflected ceiling plan of the second floor of Building A – intended to record the form of the cast-iron framework. This plan should identify the type of each beam individually, and should note (by means of a short dashed line through the beam) the position of any holes drilled in the Type 1 beams at the western end of the building.
- Reflected truss plan of Building A at fourth-floor level. Trusses with sliding brackets on the tie rod should be identified, and the number of brackets recorded.
- North-south elevation of the interior of the east wall of Building A
- North-south section through Bay 8 of Building A, placed to include the elevation of the western wall of the engine house, and continuing upward to include beam and truss elevations. The elevation of the beam at first floor level should be projected forward from the adjacent bay into the plane of the section.

- Elevation and section drawings of a representative Type 1, Type 2 and Type 3 beam and a floor joist at 1:20. These drawings must not be executed using remote measuring techniques.
- Three complete cells of floor construction in Building A (two joists, two beams), representing all three beam types, to be rendered as exploded isometric projections (as per enclosed example) at 1:20. These drawings must not be executed using remote measuring techniques.
- A representative example of a truss tie bar in Building A, with sliding brackets to be rendered as an isometric projection at 1:20. This drawing must not be executed using remote measuring techniques.

Unless otherwise specified, drawings should be made at an appropriate scale (not smaller than 1:100 for plans; not smaller than 1:50 for sections and elevations). The structures should be recorded as existing, but a clear distinction should be made on the final drawings between surviving as-built features and all material introduced in the structure during the late 20th/ early 21st century.

6.4.2 Scope of record

All features of archaeological and architectural interest identified during the process of appraisal should be incorporated into, and clearly identified in, the final drawn record. Typically, items of interest would include:

- all original structural elements (including posts, columns, etc)
- truss positions and form
- timber marks (shipping and assembly)
- foundry marks (origin and assembly)
- original staircases
- original flooring material
- original doors and windows, including internal doors, and/or any fittings related to same
- any evidence for the generation or transmission of power
- original and subsequent historic internal partitions, and any other evidence for original room size, shape and internal arrangement
- evidence for original placement of equipment and for process-flow through the buildings
- any traps, hoists or lifting mechanisms
- any evidence for internal heating and/or drying arrangements
- any other extant 19th-century features (e.g. gas fittings)
- any evidence for original sanitary arrangements/welfare provision
- any evidence for archaeologically/historically significant structural alterations

but this list should not be treated as exhaustive. The archaeologist on site should also identify and note:

- any significant changes in construction material – this is intended to include significant changes in stone/brick type and size
- any blocked, altered or introduced openings
- evidence for phasing, and for historical additions or alterations to the building.

6.4.3 Dimensional accuracy

Dimensional accuracy should accord with the normal requirements of the English Heritage Architecture and Survey Branch (at 1:20, measurements should be accurate to at least 10mm; at 1:50, to at least 20mm; at 1:100, to at least 50mm). Major features such as changes in structural material may be indicated in outline. The recording of individual stones or stone courses is not required unless greater detail is needed in order to adequately represent a particular feature of interest.

6.4.4 Drawing method

The survey may be executed either by hand or by means of reflectorless EDM as appropriate (but see Para. 6.4.1). If finished drawings are generated by means of CAD or a similar proven graphics package, recorders should ensure that the software employed is sufficiently advanced to provide different line-weight (point-size); this feature should then be used to articulate the depth of the drawings. What is required as an end product of the survey is a well-modelled and clear drawing; ambiguous flat-line drawings should be avoided. Drawing conventions should conform to English Heritage guidelines as laid out in RCHME 1996, *Recording Historic Buildings - A Descriptive Specification (3rd Edition)*.

6.5 Photographic Record

6.5.1 External photographs

An external photographic record should be made of all elevations of each building, from vantage points as nearly parallel to the elevation being photographed as is possible within the constraints of the site. In view of the fact that the buildings have been partially scaffolded, it is likely that the contractor will need to make a final visit after the removal of the scaffolding to record some aspects of the building exteriors. The contractor should ensure that all visible elements of each elevation are recorded photographically; this may require photographs from a number of vantage points. A general external photographic record should also be made which includes a number of oblique general views of the buildings from all sides, showing them and the complex as a whole in their setting. In addition, a 35mm general colour-slide survey of the buildings should also be provided (using a variety of wide-angle, medium and long-distance lenses). While it is not necessary to duplicate every black-and-white shot, the colour record should be sufficiently comprehensive to provide a good picture of the form and general appearance of the complex and of the individual structures.

6.5.2 Internal photographs

A general internal photographic record should be made of all floors of each building. General views should be taken of *each room* or discrete internal space from a sufficient number of vantage points to adequately record the form, general appearance and manner of construction of each area photographed.

6.5.3 Detail photographs

In addition, detailed record shots should be made of all individual elements noted in section 6.4.2 above. Elements for which multiple examples exist (e.g. each type of roof truss, column or window frame) may be recorded by means of a single representative illustration. **N.B.** Detail photographs must be taken at medium-to-close range and be framed in such a way as to ensure that the element being

photographed clearly constitutes the principal feature of the photograph. It is likely that detail photography of some elements of the structure of Building A will only be possible as part of the watching brief.

6.5.4 Equipment

General photographs should be taken with a Large Format camera (5" x 4" or 10" x 8") using a monorail tripod, or with a Medium Format camera which has perspective control, using a tripod. The contractor must have proven expertise in this type of work. Any detail photographs of structural elements should if possible be taken with a camera with perspective control. Other detail photographs may be taken with either a Medium Format or a 35mm camera. All detail photographs must contain a graduated photographic scale of appropriate dimensions (measuring tapes and surveying staffs are not considered to be acceptable scales in this context). A 2-metre ranging-rod, discretely positioned, should be included in a selection of general shots, sufficient to independently establish the scale of all elements of the building and its structure.

6.5.5 Film stock

All record photographs to be black and white, using conventional silver-based film only, such as Ilford FP4 or HP5, or Delta 400 Pro (a recent replacement for HP5 in certain film sizes such as 220). Dye-based (chromogenic) films such as Ilford XP2 and Kodak T40CN are unacceptable due to poor archiving qualities. Digital photography is unacceptable due to unproven archiving qualities.

6.5.6 Printing

Record photographs should be printed at a minimum of 5" x 4" . In addition, a selection of photographs intended to illustrate structural detail should be printed at 10" x 8" (it is expected that there is likely to be a need for approximately 20 such prints in Building A, and a smaller number in Building B). Bracketed shots of identical viewpoints need not be reproduced, but all viewpoints must be represented within the report. Prints may be executed digitally from scanned versions of the film negatives, and may be manipulated to improve print quality (but not in a manner which alters detail or perspective). All digital prints must be made on paper and with inks which are certified against fading or other deterioration for a period of 75 years or more when used in combination. If digital printing is employed, the contractor must supply details of the paper/inks used, with supporting documentation indicating their achival stability/durability.

6.5.7 Documentation

A photographic register detailing (as a minimum) location, direction and subject of shot must accompany the photographic record; a separate photographic register should be supplied for any colour slides. Position and direction of each photograph should be noted on a copy of the building plan, which should also be marked with a north pointer; separate plans should be annotated for each floor of each building

7. Post-Recording Work and Report Preparation

7.1 After completion of fieldwork

Prior to the commencement of any other work on site, the archaeological contractor should arrange a meeting at the offices of the WYAS Advisory Service to present a draft of the 1st- stage drawn record, a photo-location plan, and photographic contact

prints adequately referenced to this plan, in order that the Service may confirm that the fieldwork has been completed to a satisfactory standard (material supplied will be returned to the contractor). **N.B.** digital versions of film prints will not be acceptable for this purpose. The WYAS Advisory Service will then confirm to SJD Architects, Leeds Planning Services and English Heritage that fieldwork has been satisfactorily completed and that other work on site may commence (although recording will not be considered to be completed until the watching brief has been undertaken and a completed copy of the full report and photographic record has been received by the WYAS Advisory Service).

7.2 Report Preparation

7.2.1 Report format and content

A written report should be produced. This should include:

- an introduction outlining the reasons for the survey
- a brief architectural description of the buildings presented in a logical manner (as a walk around and through the buildings, starting with setting, then progressing to all sides of the structure in sequence, and finally to the interior from the ground floor up)
- a discussion placing the complex in its local and historical contexts, describing and analysing the development of individual structures and of the complex as a whole. This analysis should consider the site type as an integrated system intended to perform a specialised function, with particular attention being given to historical plan form, technical layout and process flow.

Both architectural description and historical/analytical discussion should be fully cross-referenced to the drawn and photographic record, sufficient to illustrate the major features of the site and the major points raised. It is not envisaged that the report is likely to be published, but it should be produced with sufficient care and attention to detail to be of academic use to future researchers. A copy of this specification and a quantified index to the field archive should also be bound into the back of the report.

7.2.2 Report Illustrations

Illustrations should include:

- a location map at a scale sufficient to allow clear identification of the mill in relation to other buildings on in the immediate area
- an overall keyed plan of the site (available from the SJD Architects) showing the surviving buildings in relation to each other and to the buildings on site which have been demolished
- any relevant historic map editions, with the position and extent of the site clearly indicated
- a complete set of site drawings completed to publication standard, at the scale stipulated in Para. 6.4.1 above (unless otherwise agreed in writing by the WYAS Advisory Service)
- a complete set of building plans, on which position and direction of each photograph has been noted
- any additional illustrations pertinent to the site
- a complete set of good-quality laser copies of all photographs.

The latter should be bound into the report in the same logical sequence employed in the architectural description (Para. 7.2.1 above) and should be appropriately labelled (numbered, and captioned in full). When captioning, contractors should identify the individual photographs by means of a running sequence of numbers (e.g. Plate no. 1; Plate no. 2), and it is this numbering system which should be used in cross-referencing throughout the report and on the photographic plans. However, the relevant original film and frame number should be included in brackets at the end of each caption.

7.3 Report deposition

7.3.1 General considerations

The approved final draft of the report should be supplied to the client and identical copies supplied to the County SMR and to the WY Archive Service. The copy supplied to the County SMR should include a complete set of photographic prints (see Para. 7.3.2 below). The finished report should be supplied within eight weeks of completion of all fieldwork, unless otherwise agreed with the WYAS Advisory Service. The information content of the report will become publicly accessible once deposited with the Advisory Service, unless confidentiality is requested, in which case it will become publicly accessible six months after deposit.

7.3.2 Deposition with WYAS Advisory Service (County Sites and Monuments Record)

The report copy supplied to the WYAS Advisory Service should also be accompanied by both the photographic negatives and a complete set of labelled photographic prints (mounted in KENRO display pockets or similar, and arranged in such a way that labelling is readily visible) bound in a form which will fit readily into a standard filing cabinet suspension file (not using hard-backed ring-binders). Labelling should be in indelible ink on the *back* of the print or on applied printed labels and should include:

- film and frame number
- date recorded and photographer's name
- name and address of building
- national grid reference
- specific subject of photograph.

Colour slides should be mounted, and the mounts suitably marked with – 'Leeds' (the Township name) with 'Carr Mills' under, at the top of the slide; grid reference at the bottom; date of photograph at the right hand side of the mount; subject of photograph at the left hand side of the mount. The slides should be supplied to the WYAS Advisory Service in an appropriate, archivally stable slide hanger (for storage in a filing cabinet).

7.4 Summary for publication

The attached summary sheet should be completed and submitted to the WYAS Advisory Service for inclusion in the summary of archaeological work in West Yorkshire published biannually by that office within *Archaeology And Archives In West Yorkshire*.

7.5 Preparation and deposition of the archive
After the completion of all recording and post-recording work, a fully indexed field archive should be compiled consisting of all primary written documents and drawings, and a set of suitably labelled photographic contact sheets (only). The field archive should be deposited with the Leeds Office of the West Yorkshire Archive Service (Chapeltown Road, Sheepscar, Leeds LS7 3AP tel. 0113-214 5814 leeds@wyjs.org.uk), and should be accompanied by a copy of the full report as detailed above.

8 General considerations
8.1 Technical queries
Any technical queries arising from this specification should be addressed to the WYAS Advisory Service without delay.

8.2 Authorised alterations to specification by contractor
It should be noted that this specification is based upon records available in the County Sites and Monuments Record and on a brief examination of the site by the WYAS Advisory Service. Archaeological contractors submitting tenders should carry out an inspection of the site prior to submission. If, on first visiting the site or at any time during the course of the recording exercise, it appears in the archaeologist's professional judgement that

i) a part or the whole of the site is not amenable to recording as detailed above, and/or
ii) an alternative approach may be more appropriate or likely to produce more informative results, and/or
iii) any features which should be recorded, as having a bearing on the interpretation of the structure, have been omitted from the specification,

then it is expected that the archaeologist will contact the WYAS Advisory Service as a matter of urgency. If contractors have not yet been appointed, any variations which the WYAS Advisory Service considers to be justifiable on archaeological grounds will be incorporated into a revised specification, which will then be re-issued to the developer for redistribution to the tendering contractors. If an appointment has already been made and site work is ongoing, the WYAS Advisory Service will resolve the matter in liaison with the developer and the Local Planning Authority.

8.3 Unauthorised alterations to specification by contractor
It is the archaeological contractor's responsibility to ensure that they have obtained the WYAS Advisory Service's consent in writing to any variation of the specification prior to the commencement of on-site work or (where applicable) prior to the finalisation of the tender. Unauthorised variations may result in the WYAS Advisory Service being unable to recommend discharge of the archaeological recording condition to the Local Planning Authority and are made solely at the risk of the contractor.

8.4 Monitoring
This exercise will be monitored as necessary and practicable by the WYAS Advisory Service in its role as 'curator' of the county's archaeology. The Advisory Service

should receive at least one week's notice in writing of the intention to start fieldwork. A copy of the contractor's Risk Assessment should accompany this notification.

8.5 Valid period of specification
This specification is valid for a period of one year from date of issue. After that time it may need to be revised to take into account new discoveries, changes in policy or the introduction of new working practices or techniques.

Any queries relating to this specification should be addressed to the WYAS Advisory Service without delay.

West Yorkshire Archaeology Service – Advisory Service
Helen M. Gomersall **May 2005**

West Yorkshire Archaeology Service
Registry of Deeds
Newstead Road
Wakefield
WF1 2DE

Telephone: (01924) 306798.
Fax: (01924) 306810
E-mail: hgomersall@wyjs.org.uk

APPENDIX II: PROJECT DESIGN

CARR MILLS, MEANWOOD LANE,
LEEDS

Archaeological Building Survey and Watching Brief
Project Design

Oxford Archaeology North

June 2005

SJD Architects

Planning Application Nos.
26/152/03/FU 26/153/03/LI

1 INTRODUCTION

1.1 This project design has been compiled for Mr S Dodds of SJD Architects Ltd (hereafter the client) for an archaeological building investigation of two buildings (Buildings A and B) at Carr Mills, Meanwood Lane, Leeds (NGR SE 3001 3562). This has been prepared in accordance and should be read in conjunction with, a written brief dated 20/05/2005 (Ref; P/L/CML/HG), issued by Helen Gomersall of West Yorkshire Archaeology Service Advisory Service (WYASAS) in response to the planning permission which has already been granted (Planning Application Nos. 26/152/03/FU and 26/153/03/LI).

1.2 The programme of archaeological recording is required due to the historical importance of this early nineteenth century Grade II-Listed woollen mill, which is proposed for partial demolition and conversion for residential purposes.

1.3 Section 2 of this document states the objectives of the project, Section 3 deals with OA North's methodology. Section 4 addresses other pertinent issues including details of staff to be involved, and project costs are presented in Section 5.

1.4 OA North has considerable experience of the assessment and investigation of historic buildings of all periods and a range of types, having undertaken a great number of small and large-scale projects during the past 20 years. Building investigations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

1.5 OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an Institute of Field Archaeologists (IFA) registered organisation, **registration number 17**, and all its members of staff operate subject to the IFA Code of Conduct.

2 OBJECTIVES

2.1 The objectives of the building investigation are to identify and document features of archaeological and architectural significance within Carr Mills prior to its conversion to housing, which involves the complete gutting of both buildings resulting in the loss of all detail pertaining to their internal function and structural arrangement. The following specific aims have been designed to facilitate the evaluation of the archaeological and historic resource.

(i) A desk-based assessment carried out in 2003 by Northern Archaeological Associates will be consulted prior to the programme of fieldwork in order to place into context any findings that are made;

(ii) To provide a drawn, textual and photographic record of the buildings (survey areas as outlined in the brief) to RCHME Level III-type survey criteria.

(iii) To produce a report and archive in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991).

3 METHOD STATEMENT

3.1 BUILDING INVESTIGATION

3.1.1 ***Introduction:*** a desk-based assessment has been carried out by Northern Archaeological Associates and will be consulted together with the additional sources recommended in the brief only (WYASAS 2005, *Section 6.1.4)*. The desk-based assessment must be made available to OA North if commissioned in order that it may be consulted prior to the commencement of the site work.

3.1.2 The building investigation will comprise two stages of site investigation. The first phase will be to record the existing buildings prior to any conversion or stripping of original fabric. It is assumed by OA North that no conversion works of any kind will be carried out by the developer during the first phase of recording.

3.1.3 The second phase of work will involve a watching brief which will take place subsequent to the commencement of structural work on site. This will carried out (with due regard to Health and Safety regulations) in order to record any structural and historical detail which is currently inaccessible or obscured. It will be recorded in exactly the same manner as the first phase of work.

3.1.4 ***Photographic Archive:*** a photographic archive will be produced as per *Sections 6.5.1 – 6.5.7* and *7.3.2* of the WYASAS brief (*ibid*).

3.1.5 ***Instrument survey:*** where appropriate and necessary (see *Section 6.4.; ibid*), the plans and required elevations and cross-sections of the buildings will be surveyed by means of a reflectorless electronic distance measurer (REDM). The REDM is capable of measuring distances to a point of detail by reflection from the wall surface, and does not need a prism to be placed. The instrument to be used will be a Leica T1010 theodolite coupled to a Disto electronic distance meter (EDM). The disto emits a viable laser beam, which can be visually guided around points of detail. The digital survey data will be captured within a portable computer running TheoLT software, which allows the survey to be directly inserted into AutoCAD software for the production of final drawings.

3.1.6 Detail captured by the instrument survey will include such features as window and door openings, an indication of ground and roof level, and changes in building material.

3.1.7 Interior elevation detail will be captured by rectified photography or instrument survey (as described in Para 3.1.4). The rectified photography will be undertaken by in-house survey specialists and will be produced in black and white using a medium format camera. The photography will be output at an appropriate scale; it will be scanned into a computer and presented as a raster backdrop within AutoCAD. Where there is any distortion within the photographic base, the digital image will be subject to digital correction using Archis software to convert the images to fully rectified images. The elevation drawings will be drawn up as a vector drawings from the rectified base.

3.1.8 ***Site Drawings:*** the drawings outlined in *Sections 6.4.1* of the WYASAS brief (*ibid*) will be produced for the buildings and they will adhere to the standards

outlined in *Sections 6.4.3* and *6.4.4* (*ibid*). The drawings will also follow RCHME (1996) Level III-type survey criteria.

3.1.9 The drawings will be used to illustrate those features outlined in the brief *Section 6.4.2.* (WYASAS 2005).

3.1.10 The client will provide a full set of existing building plans in 'dwg' format prior to the commencement of the first phase of works. Should these require substantial and obvious redrawing or correcting this will be costed as a variation. OA North shall not be held responsible for correcting isolated and/or unpredictable errors in the drawings.

3.1.11 ***Interpretation and Analysis:*** a visual inspection of the building will be undertaken utilising the OA North buildings proforma sheets. An outline description will be maintained to RCHME Level III-type survey. This level of survey is fully analytical and will provide a systematic account of the building's origins, development and use. It will include an account of the evidence on which the analysis has been based.

3.1.12 The written record will include (see also *Section 7.2.1; ibid*):

(i) An analysis of the building's plan, form, fabric, function, age and development sequence and of the evidence supporting this analysis;

(ii) An account of the building's past and present use and of the uses of their parts, with the evidence for these interpretations;

(iii) An account of the fixtures, fittings associated with the buildings, and their purpose:

(iv) Any evidence for the former existence of demolished structures or processes associated with the building;

(v) Identify areas that are currently obscured or inaccessible which might hold key information to inform our understanding of the building's origin and development and where an archaeological watching brief should be undertaken during stripping out and demolition;

(vi) From historical research and physical evidence, identify areas that have a potential below ground archaeological interest:

(vii) A discussion of the structure in its local and wider context, comparing it with comparative buildings.

3.1.13 ***Access and Attendances****:* the client will be required to arrange access to the building. It is assumed that OA North will have free access to all the areas highlighted for survey (with due regard to Health and Safety regulations).

3.3 HEALTH AND SAFETY

3.3.1 OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). OA North will liase with the client to ensure all health and safety regulations are met. A risk assessment will be completed in advance of any on-site works.

3.3.2 The archaeologists on site will address health and safety considerations in all work areas. If any area is deemed unsafe and therefore unable to be inspected, then they will in the first instance, inform the OA North Project Manager who will then liase with the client and WYASAS in order to agree further courses of action.

3.3.3 It is assumed by OA North that adequate staff welfare facilities exist on the site. As a minimum these should be in the form of hand-washing and toilet facilities. If such facilities do not exist then OA North will provide these as a cost variation.

3.4 REPORT

3.4.1 Following completion of the first phase of work, a draft of the first stage drawn record, a photo-location plan, and photographic contact prints will be inspected (see *Section 7.1;* WYASAS 2005). This will be at a meeting to be held at the WYASAS offices. The finished report will be available eight weeks after completion of all the fieldwork (to include the watching brief).

3.4.2 The format of the report will adhere to the specification outlined in *Section 7.2* of the project brief (*ibid*) and will include a copy of this project design, and indications of any agreed departure from the brief. It will present, summarise, and interpret the results of the programme detailed above and will include a full index of archaeological/architectural features identified in the course of the project, with an assessment of the overall plan, form and function, together with appropriate illustrations, including detailed plans and sections indicating the locations of archaeological/architectural features. The report will also include a complete bibliography of sources from which data has been derived. Recommendations will be made for a watching brief during stripping out/demolition/refurbishment works as appropriate.

3.4.3 The report will identify areas of defined archaeology. An assessment and statement of the actual and potential archaeological significance of the identified archaeology within the broader context of regional and national archaeological priorities will be made. Illustrative material will include a location map, section/elevation drawings, and plans. This report will be in the same basic format as this project design; a copy of the report can be provided on CD-ROM, if required.

3.4.4 ***Confidentiality:*** all internal reports to the client are designed as documents for the specific use of the client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.

3.5 ARCHIVE

3.5.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991) and a synthesis will be submitted to the County SMR and the WY Archive Service (the index to the archive and a copy of the report) in the first instance. A copy

of the final draft of the report will also be supplied to the client (see *Section 7.3*, WYASAS 2005).

3.5.2 Following completion of all recording and post recording work OA North will deposit the original record archive of projects (paper, magnetic and plastic media) and a full copy of the record archive (microform or microfiche) with the Leeds office of the West Yorkshire Archive Service. The archive will be provided in the English Heritage Centre for Archaeology format. Appropriate arrangements will be made with the designated depository at the outset of the project for the proper labelling, packaging, and accessioning of all material recovered.

4 PROJECT MONITORING

4.1 Monitoring of this project will be undertaken through the auspices of the WYASAS Archaeological Officer, who will be informed (in writing with one weeks notice) of the start and end dates of the work.

5 WORK TIMETABLE

5.1 The building investigation will take approximately **20** days in the field.

5.2 The watching brief will be undertaken on a day rate basis on a timescale to be agreed with the client.

5.2 The client report will be completed within eight weeks following receipt of comments on the draft report.

6 STAFFING

6.1 The project will be under the direct management of **Alison Plummer BSc (Hons)** (OA North Senior Project Manager) to whom all correspondence should be addressed.

6.2 The building investigation will be undertaken by **Karl Taylor BSc (Hons) AIFA** (OA North Supervisor) who has a wealth of experience in the recording and analysis of historic industrial buildings. Karl will be accompanied on site by an OA North project Assistant who is also experienced in recording historic buildings.

7 INSURANCE

OA North has a professional indemnity cover to a value of £2,000,000; proof of which can be supplied as required.

REFERENCES

Department of the Environment (DoE), 1990 *Planning Policy Guidance Note 16,* London

English Heritage, 1991 *Management of Archaeological Projects,* 2nd edn, London

Northern Archaeological Associates, 2003 *Deskbased Assessment of Carr Mills, Leeds*, unpubl

SCAUM (Standing Conference of Archaeological Unit Managers), 1991 *Health and Safety Manual*, Poole

United Kingdom Institute for Conservation (UKIC), 1990 Guidelines for the preparation of archives for long-term storage London

WYASAS, 2005 Specification for Building Recording/Structural Watching Brief Carr Mills, Meanwood Road, Leeds.

