

Bentfield Bury Farm, Stansted Mountfitchet, Essex.
Description and analysis of a timber-framed granary. Surveyed 19 03 2011.



The Granary is at the centre of the farm complex at Bentfield Bury Farm.

Location.

Bentfield Bury Farm is located at TL499260 in Bentfield Bower near to Stansted Mountfitchet. (See Appendix 1). The farm consists of a large number of agricultural buildings separated into two complexes. The historic complex has the Farmhouse, an aisled barn dated to 1452 from dendrochronology undertaken by Martin Bridge in conjunction with Adrian Gibson and a range of low, purpose built buildings for livery and piggeries. The building under study is a two storey timber-framed and brick built building designed as a first floor granary with lucam and ground floor implement and cart lodge. It is oriented NNW-SSE which for this report will be considered as N-S.



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The Granary is Listed:

IoE Number: 413082. Location: GRANARY TO NORTH EAST OF BENTFIELDBURY,
STANSTED MOUNTFITCHET, UTTLESFORD, ESSEX

Photographer: Mr A. Gude. Date Photographed: 21 September 2004.

Date listed: 21 February 1967. Date of last amendment: 22 February 1980. Grade II.

STANSTED MOUNTFITCHET BENTFIELD BURY 1. 5222 Granary to north-east of Bentfieldbury (formerly listed under Bentfield) TL 42 NE 21/716 - 21.2.67 II GV 2. Probably C18, a timber-framed and weather-boarded granary with a lower storey of brick and rubble on 3 sides and open on the east side. The upper storey is approached by a flight of steps with a sloping tiled roof. Roof to granary, tiled, hipped.



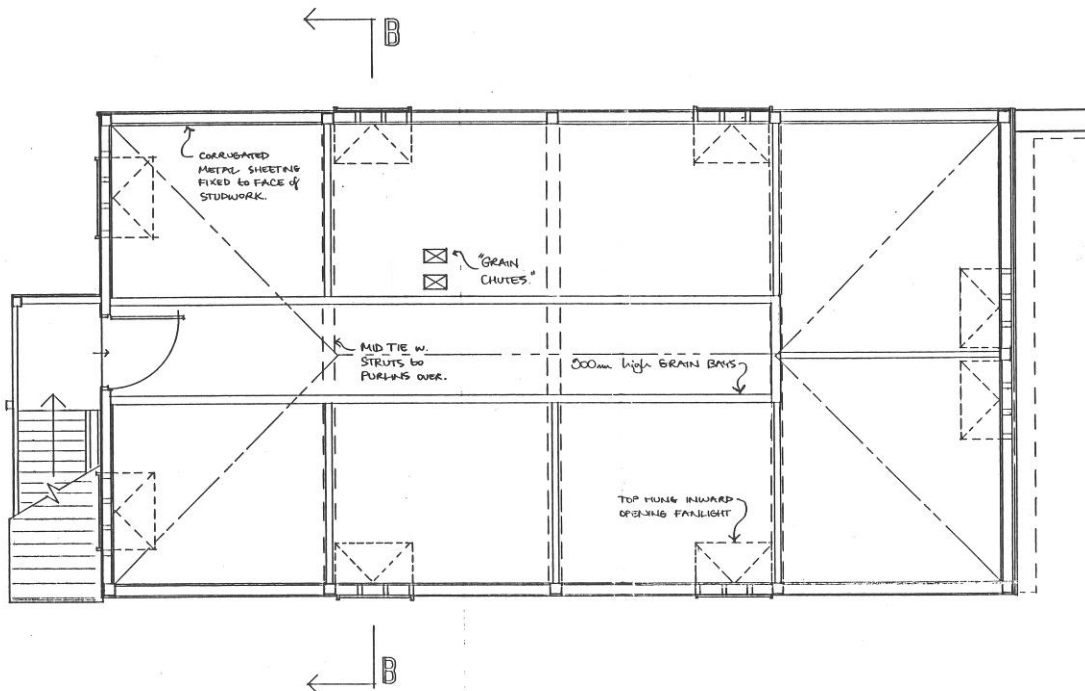
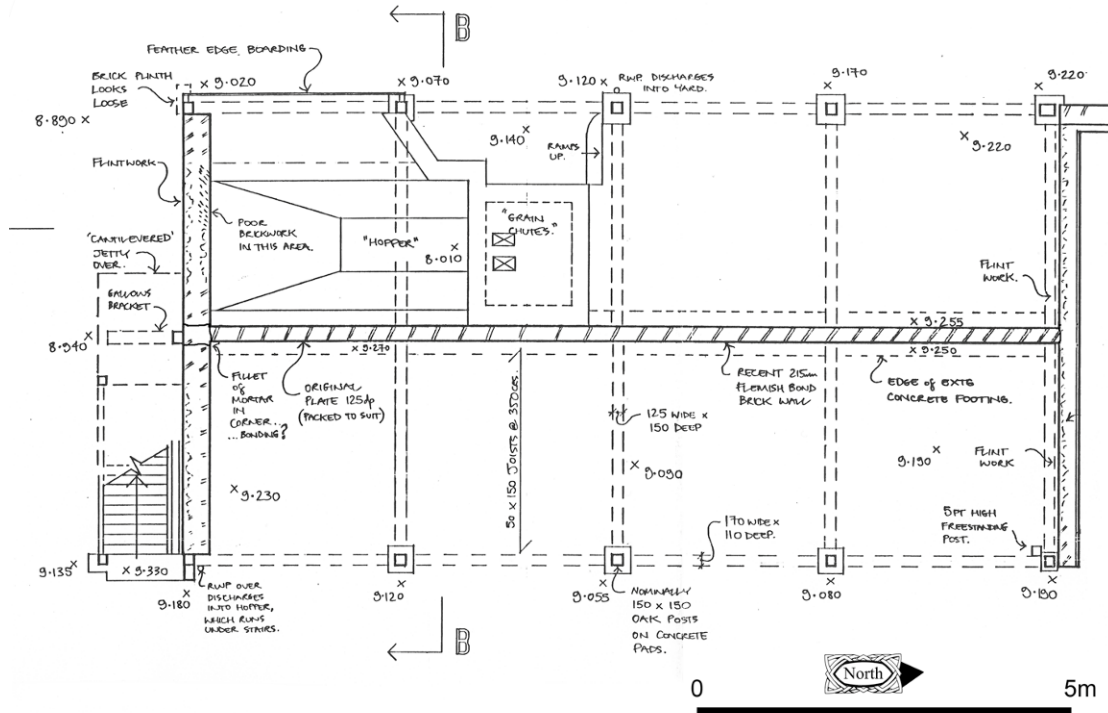
Description -General

The building is of two storeys and divided into four bays. The upper storey is divided into large timber grain bins with a central corridor to allow access along the floor. There is a 1950's electrically driven grain elevator that lifts grain from a hopper buried into the ground to adjustable chutes to fill each bin. The upper floor is reached by a staircase ladder to a lucam on the southern end. The ladder is on hooks to allow it to be removed.

The upper storey is supported on timber posts and a central brick spine wall. Flint panelled walls have been added to either end. The spine wall was replaced in the 1970's after the original collapsed. The ground floor is divided into four stalls either side to store implements or to act as cow byres. A concrete hopper was installed in the SW stall in 1953 to serve the elevator. The loading of the upper floor is known to have been limited to 30 tons. (Farm Manager - pers comm).



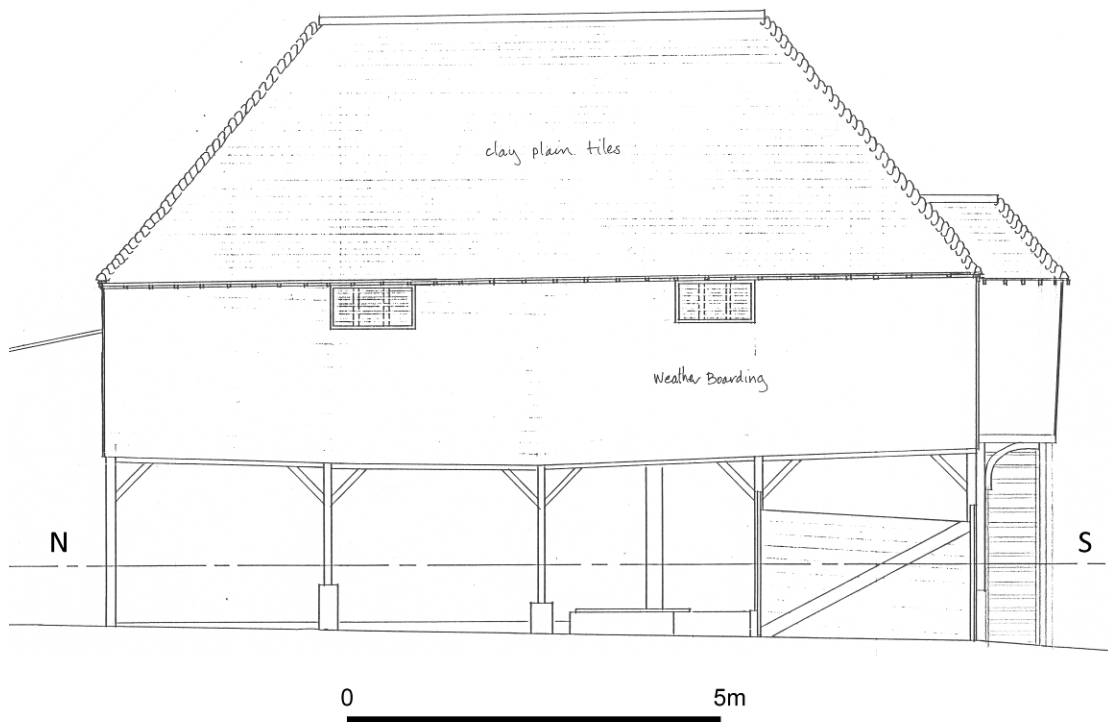
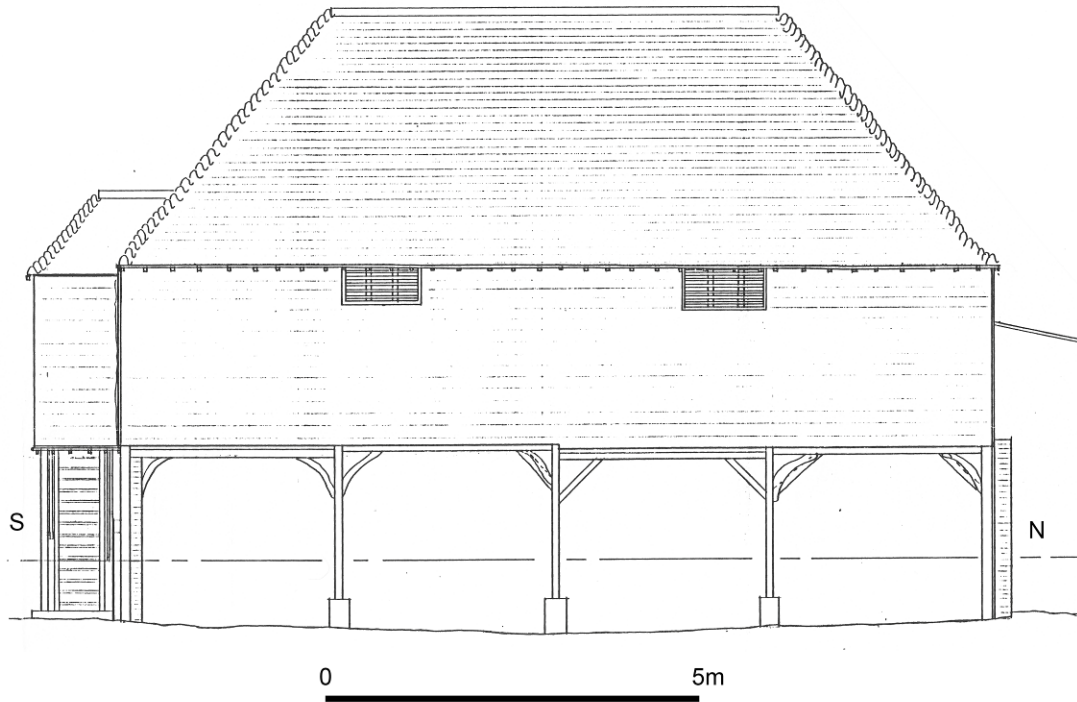
Barry Hillman-Crouch
Design & Recording Services



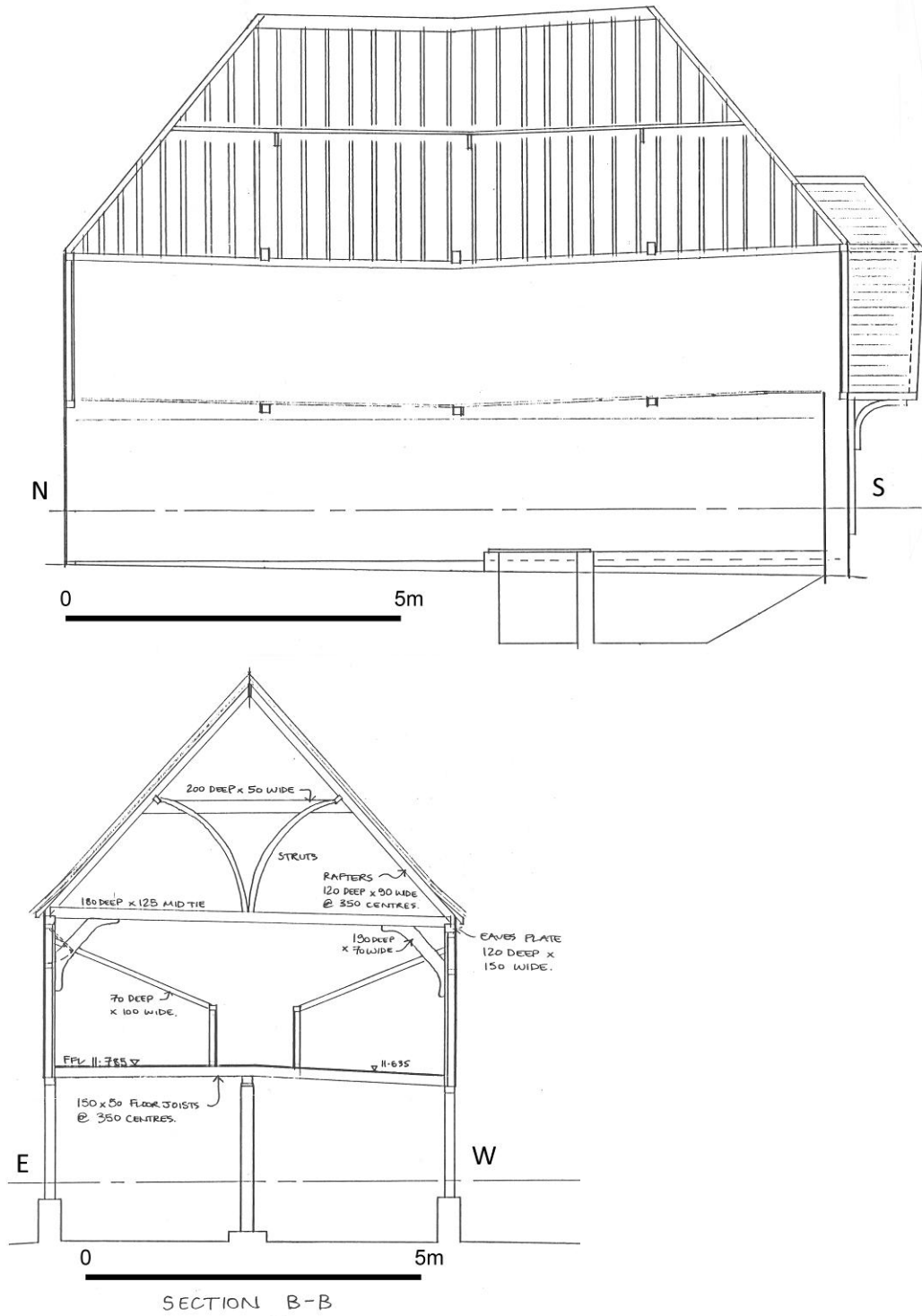
Ground floor and Granary floor plans as existing in 2011. Donald Purkiss Associates.



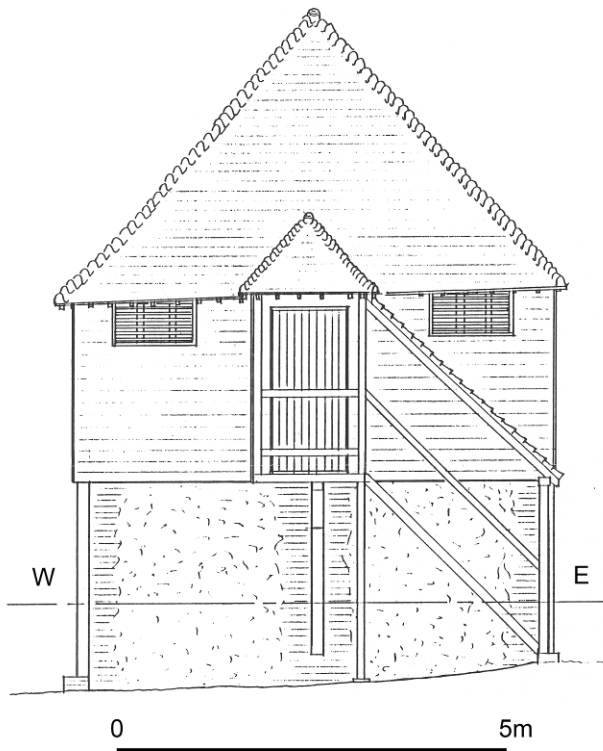
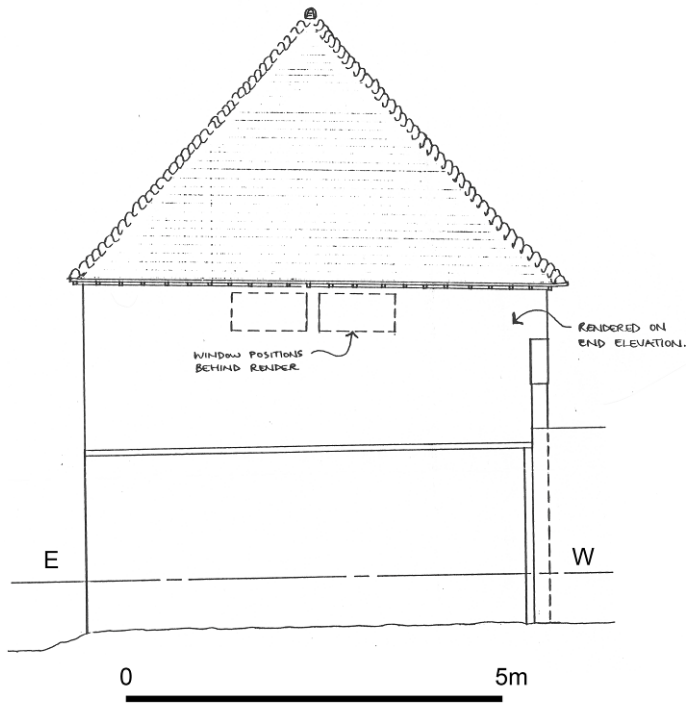
Barry Hillman-Crouch
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East (above) and west elevations as existing in 2011. Donald Purkiss Associates.



Longitudinal and transverse sections across the Granary as existing in 2011. Donald Purkiss Associates.



North and south elevations as existing in 2011. Donald Purkiss Associates.

Description - External



The eastern elevation.

Eastern Elevation

The upper floor is a timber-frame clad with tarred 7in weather-boards fixed with wrought iron nails. There are a few inserted C20th replacement boards but most are original. There are two louvres positioned under the eaves to ventilate the granary floor.



Support post showing original curved brace and later repairs.

The upper floor is supported on five square posts which have been much eroded by cattle and the three central ones have their bases encased in concrete plinths. Each post was originally braced with machined curved braces to the bresummer and tie-beams. Some have been replaced with straight MC20th machined timbers nailed in place.

Each brace is numbered in sequence but this is more easily seen on the other side of the building where most of the braces are original. The braces are not pegged but secured with long slender wrought iron bolts with small flat square nuts. The junction at the post is particularly elegant with only one bolt securing all three braces.

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It is known that the repairs to the posts were done on a running basis in the 1950's and 60's to counteract the damage done by cattle that were byred here. (Farm Manager - pers comm).



Modern spine wall replaces the original.

The spine wall is a modern replacement of the original which collapsed in the 1970's and was rebuilt using 60x95x210mm, textured reds with large rectangular frogs, bedded in white cement mortar. The terminals of the original wall are still visible in the end elevations. It is evident that the end walls which are executed in red, 65x110x235mm bricks with flint panels were not part of the original design but have been built a little later. That to the north actually sits outside of the plan of the building.

The underside of the granary floor is visible and is constructed of 2x6in softwood joists, most of which are bandsawn but some are rough hewn and others appear pit or hand sawn. The principal joists corresponding with the posts are 4x6in rough hewn poles. The joists sit on a central softwood plate which appears to be a half-tree scarfed with a simple lap-joint. Many of the joists are packed to the correct height. There are small square frames for the grain chutes from the bins above.



The cantilever supports for the lucam. East (left) and west sides of the building.

Also visible in the floor structure on both sides of the building is the cantilevered support for the lucam situated on the south end of the building. These are tenoned through the second joist along and retained with large wedges. The intermediate joist is tenoned and nailed in position in the flank of the cantilever. The lucam is described in the south elevation.



The south elevation shrouded in scaffolding.

South Elevation

At the time of the survey the south elevation was obscured by scaffolding. The elevation is dominated by the lucam, its ladder and a tiled roof which has been added later. The upper wall details are the same as for the eastern elevation with 7in tarred weather-boards and louvres beneath the eaves. There is a central timber door from the lucam.



The lucam from the south. Looking up the ladder. Note iron bracket at top right.

The lucam is currently in a parlous state and is supported by scaffold poles. Originally it was self-supporting on the cantilevered beams and a curved bracket to the underside and reached by the staircase ladder which is held on wrought iron hooks and can be removed. This would have made the granary secure from theft and rats but also allow a much wider passing space between the building and the farmhouse wall when the ladder was not required.

The ladder itself is made of machined softwood with 16 steps of a very shallow 4in tread. This was so men could carry hundredweight bags up on their backs without straining their legs on high steps. The ladder is constructed like a staircase and is reinforced with long wrought iron bolts secured with square and hexagonal nuts.

There is a long sloping tiled roof above the ladder which has been added later. The evidence for this is in the way the timbers have been chopped back at the top to receive the three nailed on rafters. The roof structure is supported on a frame that is secured with iron straps to the frame and vertical posts from the ground. Over time the weight has caused the lucam to sag and another C20th post has been added to hold it up.



The internal surfaces of the end lower walls. Both have been rebuilt in the C19th.

The lower part of the walls are infilled with flint panels walls with red brick pillars. The bricks are 65x110x235mm orange/reds with some overfired to purples. They have smooth faces, rounded arrises and horizontal pressure lines. The brickwork is properly closed and set in a hard gritty lime mortar. The two panels are butted against the remains of the original spine wall and show they were added later. Both sides have been repaired with bricks - that on the east side with a very similar mortar indicating an early failure and the other side with a more cementitious mortar of the C20th.



The western elevation.

The Western Elevation

The western elevation is a reflection of the eastern. Most of the original posts and braces are in-situ except for that at the NW corner which is a reused cill plate from a similar building.



Central post has replaced braces. The others are numbered through.

The original braces are numbered through with carpenter's marks made by a wide chisel point and would have made a sequence of Roman numerals from I to VIII. The northernmost brace is missing and two have been replaced on the central post.

To the north there are two walls. The first is a narrow wall to the height of the first floor built in the style and fabric of those in the south wall. The lower part has been underpinned with shuttered concrete. The second is an added two storey wall in brick and flint of the same materials but a different lime mortar. In the C20th this was the rear wall of a loose box for pigs. (Farm Manager - pers comm).

This side of the building was used as a cow byre in the C20th and the concrete apron is formed into gullies to drain the yard down to the south. The posts were repaired ad-hoc and reinforced with other posts bolted on and set into concrete plinths.

The two southernmost bays were converted into a concrete hopper and grain elevator housing to allow grain to be lifted mechanically into the granary loft.



The grain elevator and hopper. The bucket belt has rotted away and fallen out.

It is known that the grain elevator was installed in 1953. The hole for the concrete hopper was dug out by hand by Cecil and Bill Trott, farmworkers. The machine itself has a faded notice on its upper chute noting 'H. Wiseman & Son, Pinkney, Wimbish, Saffron Walden' who most likely supplied it. The grain was poured into the hopper and elevated in buckets attached to a canvas belt driven by an electric motor at the top of the assembly. The entrance to the hopper was protected by a series of boards which drop into slotted posts either side of the bay.



Chutes to empty the grain bins.

Each bay has a timber-fabricated chute with a galvanised tin sheet draw shutter. Originally each had a canvas tube made from old grain sacks nailed in place but only one is left in tatters.

It seems most likely the south wall was repaired when the hopper was installed.



Northern elevation has been lath and plastered.

Northern Elevation

The northern elevation has been lath and plastered up to the eaves. The lower wall is a brick and flint panel wall which sits outside of the plan of the building. The upper timber-framed section can be seen from inside to be cement render on EML (Expanded Metal Lath) and the original boards have been removed in the C20th. The brick wall formed part of the pigs loose box.

The tank and blockwork cubicle shown in the photograph were built in the 1980's to house the chemicals for the sprayers and the doors were later added for the security of the poisonous materials.

Roof Description (external)

The roof is fully hipped at both ends and clad with plain clay tiles. There are half-round ridge tiles and the hips have bonnet tiles all flanchued with cement. The rainwater goods are plastic.

Description - Internal



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The granary looking north from the door.

The granary floor has been divided into 6 large grain bins each constructed of timber-frames clad with plain boards fastened with wrought iron rose headed nails. The grain bins to the west have been reclad with C20th tongue and grooved boards with galvanised French nails. There are also rails for drop boards so that the corridor can also be filled with grain. Each section has its own release chute cut into the floor which is made of 6.5in softwood tongue and grooved boards.



The head of the elevator with its two grain slides. The electric motor drives the belt elevator.

Rising near the centre is the timber carcase of the grain elevator which has two open slides which can be moved around to direct the flow of grain into the bins. There are a number of improvised timber struts and supports to hold the slides into position. At the top is a frame supporting the electric drive motor which nowadays would be considered a fire hazard.



The NE corner of the granary showing the scantling frame and plasterwork.

The timber frame is composed of nailed interrupted studwork. The principal posts, plates and some but not all of the diagonal braces are of straight machined softwood. The remaining studs are a combination of sawn softwood and quarter poles. Although they are all tenoned in place only the principal posts appear pegged in.

The walls are clad in weather-board on the exterior and then lath and plastered in hard white lime plaster between the studs to provide insulation and air tightness. The north wall has been reclad with render on EML. There are some C20th horizontal battens attached to fix up sheets of galvanised tin which have been used to rat proof the walls and some are still in the process of being removed.



The NW corner and western central bay are clad with corrugated iron sheets.

The louvred windows each have top hung two light C20th casements that open inwards. It is understood the work of cladding the walls, creating new bins and hanging the windows was all done at the same time as installing the elevator in 1953.



Tie-beams are supported on sculpted spandrels. Looking SE.

The walls are held in position by softwood tie-beams, sawn and adze finished to shape and supported on sculpted braces similar to those on the external posts and lucam. These are secured with large clout nails and slender wrought iron bolts with square heads. The tie-beams are held in place with wrought iron L-ties. There are a number of added C20th struts to prevent the frame from bulging under the weight of the grain.



Door into the granary and its Woodstock lock decorated with mild steel plate.

There is a vertically boarded, edge moulded, tongue and grooved and ledgered softwood door hung on wrought iron pintle straps with spooned terminals. It has a large woodstock lock box decorated with mild steel plates and the mechanism is also mild steel. This dates it to after 1856 when mild steel was developed. The low level cat hole must have been a real boon for the rats.



Clapsed side purlin roof with queen struts and later additions. Central strut to the hip and a pair of ties to the south wall.

Roof Structure.

The roof structure is a simple clapsed side purlin roof with raking queen struts from the tie-beams to the purlins. The queen struts are actually poles stripped of bark and are numbered at their bases. On the southern tie-beam an additional strut has been added to support the hipped end and then a pair of machined tie-beams have been fixed to prevent the south wall pulling out under the weight of the tiled roof over the ladder.

The roof is fully hipped and the rafters are paired onto a ridge-piece and there is an occasional gusset. The rafters are half or quarter poles set at 12-14in centres. The plain clay tiles are hung on thin 1in battens. There are no principal rafters. The collars are sawn and rough hewn and nailed in place.

Carpentry and Timber Marks

The braces to the granary floor support posts are numbered in sequence I to VII with a narrow chisel point. The raking queen struts in the roof are numbered I to III in pairs from the N-S with a bolster. There were no other visible marks but it is likely the frame is numbered throughout on the outside.

Apotropaic Marks and Graffiti

There were no apotropaic marks. The only graffiti found was on the inside of the SE wall which appeared to be dates and possibly yields and looked early C20th. The Farm Manager had no knowledge of them so they most likely pre 1950.

Fixtures



PTO driven saw and hand driven mangel grinder.

In addition to the grain elevator there were two machines in the ground floor of the building. One was a modern table saw driven by the PTO (Power Take-off) shaft from a tractor and the other a much older mangel grinder.

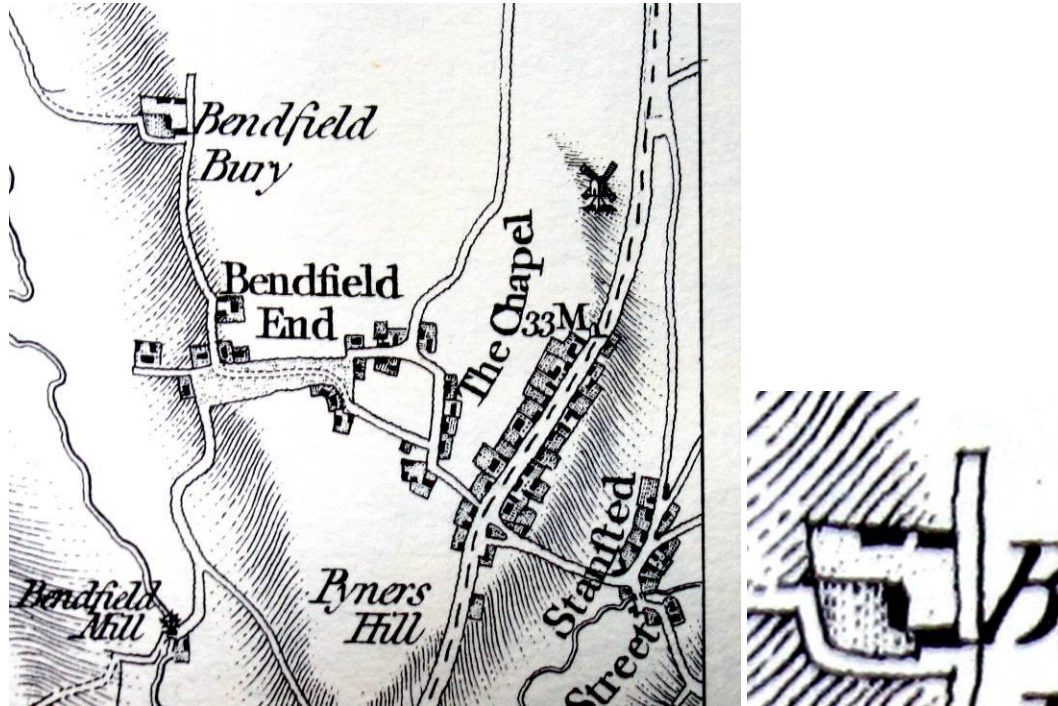
The mangel grinder was marked 'Bentall - Unchokable' and was modified to hand use by the addition of a badly welded handle. Originally it would have been engine driven by a belt drive. It was used by the Farm Manager to chop potatoes as pig and lamb feed. These machines date to the turn of the C20th.

Additional Information

During the survey it was possible to talk to Mr Alan Brett and his wife Ann about the building. Mr Brett first started work at the farm in 1950 and became the Farm Manager in 1965 until he retired in the year 2000. Mr Brett had very clear recollections of the development of the building, its repair and the installation of the equipment.

Topographical Survey from Maps

Some of following documents are in the possession of Mr Toby Lyons and were photographed at his home in Hole Farm. As such they are subject to lens distortion.



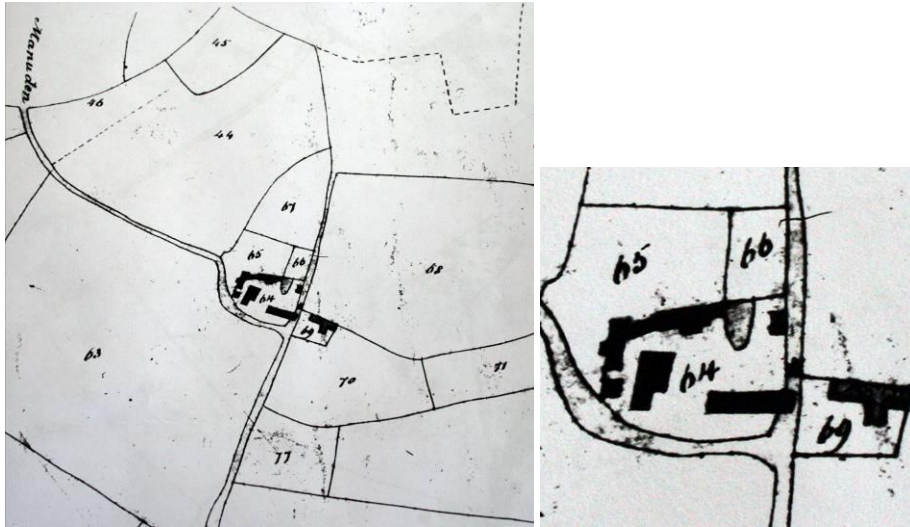
1777 Chapman and Andre's Map of Essex

In 1777 Bendfield Bury is shown as an enclosed site with four large buildings. One corresponds to the Aisled Barn and another may be the Farmhouse but it is shown very close to the barn.



1815 Estate Map. Inset reoriented to North.

The estate was mapped in 1815 where it is shown considerably enlarged. The Aisled Barn is clearly shown in its original position and there is a range of buildings to the east over the lane. A building corresponding to the Farmhouse is in position and there is a range of buildings built around it. There are two large buildings either side of a large round pond. There is no building corresponding to the Granary. Plot 21 is listed as 'Homestead'.



1843 Tithe Award Map for Stansted Mountfitchet.

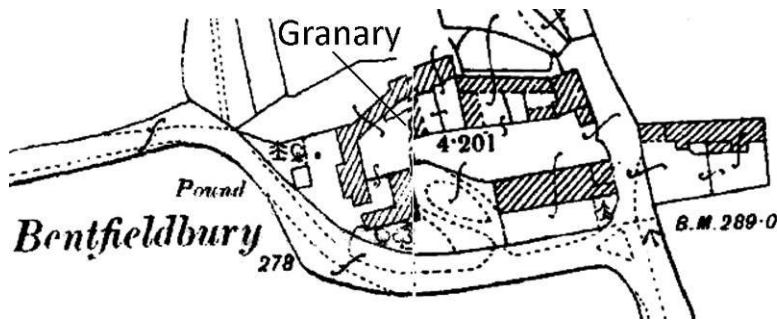
By 1843 there have been some changes to the layout of the site and buildings. In particular the Farmhouse has been extended and a number of buildings have disappeared. There is still no building corresponding to the Granary. In 1843 the site was owned by Robert Gosling Esq and the Homestead, Plot 64 was occupied by Charles Spencer. Plot 69 across the lane is described as Barn and Yard, Plot 65 as Orchard and Plot 66 as Stack Yard.



1876 Ordnance Survey. Sheets XXII.4 and XXII.3

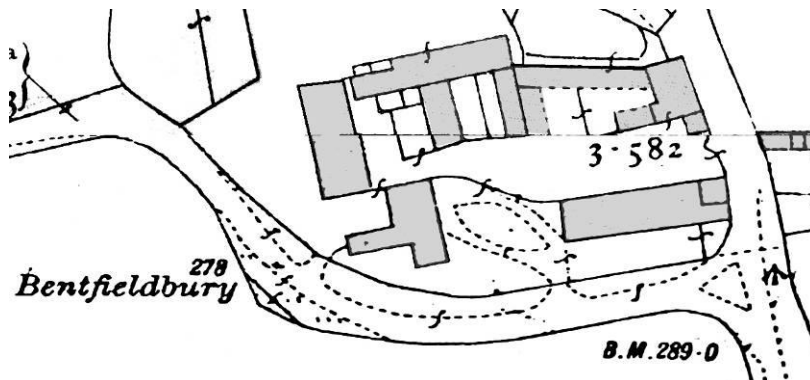
Unfortunately Bentfield Bury Farm is one of those properties that is bisected by the map sheets of the Ordnance Survey. However the Granary is clearly depicted in its current position. Using the convention of a dotted line to show open sides the building is shown open-sided on the east side only. This is probably a cartographic error. The spine wall is shown with a break in it.

The pond in the middle of the site has been remodelled and a range of buildings that are now stables erected in brick. The OS used colour coding to depict the buildings- grey for timber clad and red for brick or stone. Even today these buildings still flood on occasion.



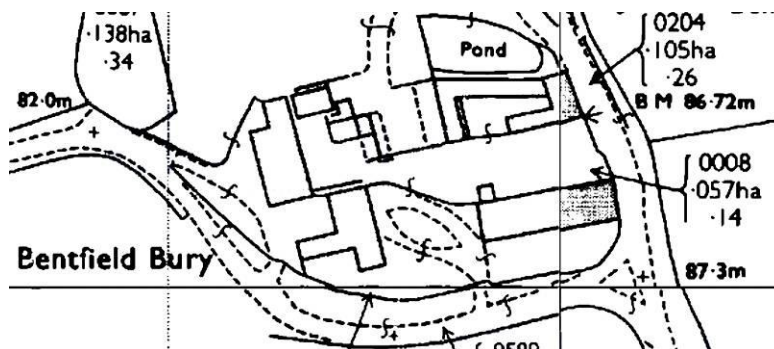
1897 Second Edition Ordnance Survey

By 1897 even more stock buildings have been erected with open sides. Again unfortunately the Granary falls on the edge of two map sheets but it can be seen that the building has been extended to the north to reach the other buildings. The yards are all enclosed to corral animals.



1921 Third Edition (New Series) Ordnance Survey. Coloured by BJHC.

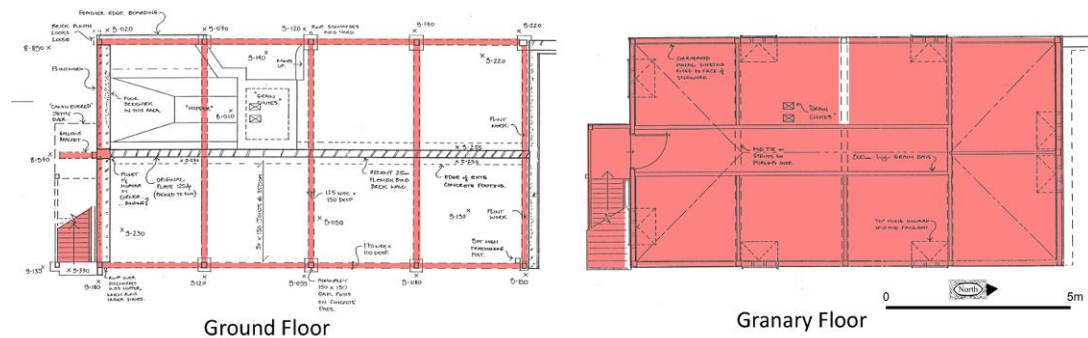
In Essex, the 3rd Edition OS has a new co-ordinate system and Bentfield Bury is now bisected E-W right through the Granary. It is clear that several buildings have been taken down to the north of the Granary and a new configuration developed with the buildings at right angles to each other. There is also a new building parallel to the Granary adjoined to the stables to the east.



1970 Ordnance Survey

None of the previous maps show the Granary as having a staircase at its southern end although great detail has been given to all the small outshuts and fence lines. The only map found that definitely showed the staircase was the 1970 OS map which shows the decline of the farmyard.

Phasing and Discussion.



Phase 1. MC19th between 1843 and 1881.

Notwithstanding the fabric, design and construction of the Granary it can be seen that the map evidence shows that the building did not exist before 1843 when the Tithe Award Map was made of the site. It is however shown on the First Edition Ordnance Survey of 1876.

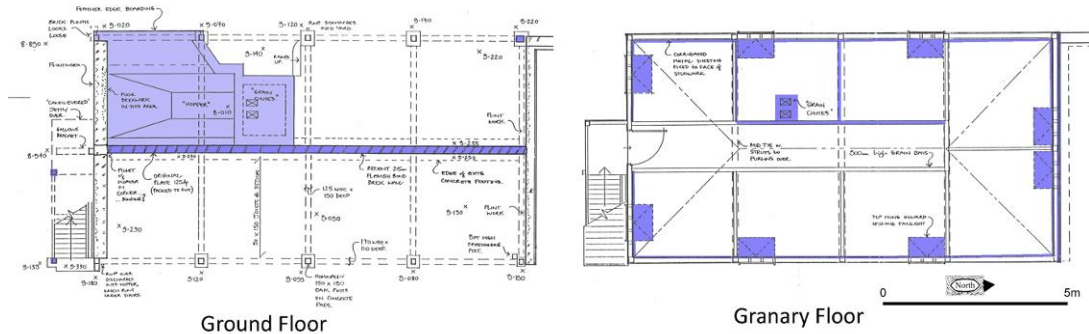
The timber framed construction of nailed interrupted studwork where only the principal posts are pegged into the frame, the ironwork reinforcements and fixings and the machine sawn components all concur with the later part of this era. The elegantly bolted braces on the support posts show a skill in design and understanding of the materials strengths where three braces could be fastened with one slender bolt that did not exist even 60 years earlier when the bolts and clout nails would have been much heavier.

The sculpted braces on the posts and the tie-beam were all cut on a bandsaw using templates to ensure conformity of section and profile. Although some timbers appear hand sawn or poorly finished most are straight, square and true and this may have been a transitional period moving away from traditional woodworking techniques to mass production of standardised timbers. All the timbers are softwood.

The building was designed to store grain, to protect it from rotting and from vermin. To achieve this, the interior panels were all lath and plastered to prevent ingress of moisture and insects. The entrance was via a lucam reached by a ladder which could be removed when not in use. The lucam was supported on cantilevered beams and a single sculpted arched bracket. This also meant the grain could be discharged directly into a wagon waiting below.

Originally the building was supported on the posts and a central spine wall very similar in design to its modern replacement. However it may have been found that the weight of the lucam combined with the grain caused the floor to flex alarmingly. The south wall was then underpinned with a brick and flint panel wall which ironically is very poor in compression and failed early on requiring patching in brickwork.

The north wall was not underpinned so it has to be assumed that the flint panelled wall had another purpose which was most likely to contain cattle within the bays. There is no building to the north shown on the 1876 OS plan so the two storey brick and flint wall must have been added between then and 1897. If we assume the door into the Granary to be as original as it looks then its mild steel fittings date the building to between 1857 and 1876.



Phase 2. The C20th.

According to the mapping the farm grew exponentially during the Victorian era and was still developing when it was mapped in 1921. The Granary remained fairly static in the early part of the century although the building must have been reroofed - being repointed with cement mortar and given new straight, narrow treated battens. The structure of the staircase roof is the same and so it must also have been built during those early years.

The Farm Manager who began work in 1950 was quite definite that the roof had never been repaired in his tenure and that the staircase was always there. The machined timbers and mild steel straps secured with carriage screws are definitely C20th.

In 1953 the grain elevator was installed requiring the excavation of a pit for the concrete hopper and the erection of the frame for the drop bars. Upstairs the grain bins were repaired and slides and chutes installed with various rails to keep them in place. Top-hung windows were installed and the walls lined with corrugated iron sheets to keep the vermin out - who could get in now there was a permanent ladder. (The door has a cat hole cut in it at just the right height to let the rats in).

The open bays were used to byre cattle and then to store implements. The buildings to the north were all devoted to pig raising and a pig loose box was directly adjacent to the Granary using the two storey flint and brick wall to support a single pent roof. The northern wall was repaired with EML and cement render.

On the wooden chutes of the elevator there is a mark that shows how far the floor descended when fully loaded and it was this deflection that led to the failure of the spine wall in the 1970's. The building went out of use as a Granary in the late 1970's. The safe loaded capacity was only 30 tons - about one lorry load and the effort to get it in and out was back-breaking.

Significance

The Granary is a good example of MC19th agricultural architecture, being a purpose built multi-functional building. Like most farm buildings it has suffered due to the harsh conditions of its use not least from the abuse of large animals. It has been repaired ad-hoc using materials to hand. It is no longer suitable for modern agricultural practices and would benefit from conversion not least because it will be used, maintained and heated.

Acknowledgements.

I am indebted to Mrs Frances Lyons, the owner of the site for engaging me to record the building. I also thank Mr Toby Lyons for his help and supplying the estate records. Mr and Mrs Alan Brett gave invaluable details from their memories of the farm.

I acknowledge Richard Havis and Adam Garwood of Essex County Council Heritage Environment Team for their help and advice. The survey drawings were kindly provided by Donald Purkiss Associates, Saffron Walden.

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Appendix I.

Mr Toby Lyons makes the following observations on the road names.

This site has always been known just as Bentfield Bury. The road name "Bentfield Bower" was adopted only about 15 years ago, when some in the cottages to the south, in what was Bentfield End, complained that the road had no name. It seems that someone in Uttlesford District Council looked at the O.S. Map and saw the name Bentfield Bower, which was the name of the large red brick house in Bentfield End (until 1960, when the occupier changed it to Bentfield House) and presumed that this was the name for the road, so that was adopted. But, the name extends only from Bentfield Green to the cottage area in Bentfield End, the farmhouse is still just Bentfield Bury.