

Medieval remains at 30-31 Occupation Road, Cambridge



Archaeological Evaluation Report



July 2013

Client: Dudley Construction Ltd

OA East Report No: 1496

OASIS No: oxfordar3-154680

NGR: TL 4623 5879

Medieval Remains at 30-31 Occupation Road, Cambridge

Archaeological Evaluation

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Report Date: July 2013

Report Number: 1496
Site Name: 30-31 Occupation Road, Cambridge
HER Event No: ECB3986
Date of Works: July 2013
Client Name: Dudley Construction Ltd
Client Ref: N/A
Planning Ref: 12/0628/FUL
Grid Ref: TL 4623 5879
Site Code: CAMOCR13
Finance Code: CAMOCR13
Receiving Body: CCC Stores, Landbeach
Accession No: CAMOCR13
Prepared by: Jonathan House
Position: Supervisor
Date: July 2013
Checked by: James Drummond-Murray
Position: Senior Project Manager
Date:
Signed: 

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Summary

Summary text.

An evaluation was carried out by OA East on the 1st and 2nd July 2013, at 30-31 Occupation Road, Cambridge, Grid ref. TL 4623 5879. A single 10m long trench was positioned at the south side of the site to avoid above ground obstructions.

The site is located within an area of historical and archaeological significance; the proximity of Barnwell Priory and the lay settlement of Barnwell (recently subject to excavation at the corner of Newmarket Road and Coldhams Lane to the east of the subject site) are of particular significance. Extensive early 19th century gravel quarrying is known to have been undertaken in the vicinity, and by the early 19th century the site had been developed for domestic housing. From the mid 20th century onwards the residential housing in this area was gradually replaced by commercial properties. The site is located within an area of known post-medieval quarrying as noted on adjacent sites. It is also thought to be sited within the medieval lay settlement associated with Barnwell Priory.

Features of possible medieval date were found during this investigation, they have been interpreted as medieval or later quarrying activity, since associated pottery dating to the mid 12th century to mid 14th century was recovered from their fills and there were no later finds, it should be noted, however, that the pottery was heavily abraded suggesting it had been lying in the soil for a considerable time before finally being deposited in these pits. Evidence for 19th century building expansion was also found during the evaluation.

1 INTRODUCTION

1.1 Location and scope of work

- 1.1.1 An archaeological evaluation was conducted at 30-31 Occupation Road, Cambridge NGR TL 4623 5879.
- 1.1.2 This archaeological evaluation was undertaken in accordance with a Brief issued by Cambridgeshire County Council Historic Environment Team (Thomas 2013), supplemented by a Specification prepared by OA East (Connor 2013).
- 1.1.3 The work was designed to assist in defining the character and extent of any archaeological remains within the proposed redevelopment area, in accordance with the guidelines set out in *National Planning Policy Framework* (Department for Communities and Local Government March 2012). The results will enable decisions to be made by CCC, on behalf of the Local Planning Authority, with regard to the treatment of any archaeological remains found.
- 1.1.4 The site archive is currently held by OA East and will be deposited with the appropriate county stores in due course.

1.2 Geology and topography

- 1.2.1 The site is located on the eastern side of Occupation Road, less than 100m to the south of Newmarket Road. The River Cam flows approximately 350m to the north of the development area at a height of c.5mOD. From the river to the site, there is a rise in ground height to c.14.5mOD, despite this rise in the ground from the river, the local area is generally quite flat.
- 1.2.2 The superficial geological deposits comprise River Terrace Deposits 3, sand and gravel. The local bedrock deposits were not exposed with this investigation, however the underlying geology is recognised as either, Gault Formation, Mudstone, or West Melbury Marly Chalk Formation. (British Geological Survey, 2013, online)

1.3 Archaeological and historical background

- 1.3.1 The following information is taken from the Specification (Connor 2013):
- 1.3.2 The proposed development is located to the south of the site of Barnwell Priory which was founded in the 12th century (CHER 04653).
- 1.3.3 A number of prehistoric finds are recorded in the vicinity of the proposed development area, although none from the site itself. They include a palaeolithic hand axe (CHER 05139), a Neolithic polished axe (CHER 05142) and a cremation of undetermined prehistoric date (CHER 05020A). Two food vessels and a small bowl of the early Bronze Age were found in gravel diggings on Midsummer Common about 1860 (CHER 04801). Recent excavations at the former regional college site, Brunswick a short distance to the west found worked flint dated as late Mesolithic to Early Bronze Age. The gravel terraces of the CAM are thought to have been particularly favoured for prehistoric settlement (Archaeology of Cambridgeshire, Cyril Fox 1923) although in heavily built up areas the evidence for this period is often obscured or destroyed.
- 1.3.4 Roman finds are recorded throughout the city but are generally thought to be derived from manuring of fields. Pottery found in the vicinity of the proposed development area includes a few sherds found during construction of a sewer across Midsummer

Common in 1895 (CHER 05020B). Excavations at the former regional college site (Rob Atkins 2012, PCAS) found evidence for Roman arable farming.

- 1.3.5 Anglo-Saxon evidence is limited in Cambridge and other than a few sherds of pottery found during excavation of a sewer across Midsummer Common in 1895 (CHER05020B) there are no recorded finds of this period in the vicinity of the proposed development area.
- 1.3.6 Medieval remains are more common and the proposed development area lies to the south of the precinct of the medieval priory at Barnwell (CHER 04653). Barnwell Priory, was founded by Augustinian Canons, in 1092 at a site near Cambridge Castle and moved to its present site in 1112. Dissolution in 1538 saw much of its stone removed for use in a new chapel at Corpus Christi College. With further demolition and robbing taking place in the early 19th century. The only surviving feature of the priory is a single vaulted chamber of mid 13th century date. A watching brief along the eastern edge of the precinct revealed only modern service features and redeposited alluvial material introduced during the revetment of the frontage in the 19th and 20th centuries. A medieval fishpond (CHER 04653b) belonging to the priory was also located in the vicinity. Excavations on the former regional college site to the north-west (Atkins 2012) found evidence for land reclamation along the edge of the river that had begun in the medieval period and continued for several hundred years. A rich assemblage of artefacts was recovered including metalwork, pottery and building materials. More recently excavations by the Cambridge Archaeological Unit (CAU) approximately 200m to the east have revealed evidence for dense medieval settlement which continued eastwards to the east side of Coldham's Lane where OAE have recently excavated. This settlement was probably associated with the lay settlement of Barnwell Priory and may continue westwards into Occupation Road.
- 1.3.7 The local area is now a fully urban setting, and forms part of the modern city of Cambridge.
- 1.3.8 No intrusive investigation work has taken place to date on the proposed development area although several small evaluations, excavations and watching briefs have been undertaken within Cambridge.
- 1.3.9 Of most relevance to this development is an evaluation that took place immediately to the east of the site (Archaeological Solutions Ltd, ECB 3812). This evaluation found post-medieval and modern made ground deposits (0.51 to 1.23m thick) above natural sand and gravel and a deep (1.20m+) feature in one trench may be the result of post-medieval quarrying.
- 1.3.10 A borehole survey of the site provides additional evidence as to the nature of the underlying deposits.

1.4 Acknowledgements

- 1.4.1 The author would like to thank Dudley Construction Ltd, for commissioning and funding the archaeological works, the site staff were Jonathan House and Andy Greef, the project was managed by Aileen Connors, and the site was monitored by Andy Thomas.

2 AIMS AND METHODOLOGY

2.1 Aims

- 2.1.1 The objective of this evaluation was to determine as far as reasonably possible the presence/absence, location, nature, extent, date, quality, condition and significance of any surviving archaeological deposits within the development area.

2.2 Methodology

- 2.2.1 The Brief required that all archaeological deposits should be investigated, and recorded.
- 2.2.2 Machine excavation was carried out under constant archaeological supervision with a wheeled JCB excavator using a 1.6m wide toothless ditching bucket.
- 2.2.3 The site survey was by means of triangulation to known OS map data.
- 2.2.4 All archaeological features and deposits were recorded using OA East's *pro-forma* sheets. Trench locations, plans and sections were recorded at appropriate scales and colour and monochrome photographs were taken of all relevant features and deposits.
- 2.2.5 A total of 2 bulk samples were taken, from deposits considered most appropriate for environmental sampling, while also considering feature type and period.
- 2.2.6 The on site conditions did not inhibit the archaeological work, however considerations were made due to the depth of the overlying deposits on site. Restricting the depth of excavation where necessary to maintain safe working within the trench. Archaeological features not fully excavated due to depth were augured and measured to establish the depth of deposits.

3 RESULTS

3.1 Introduction

3.1.1 The evaluation consisted of a single trench, the results of which are described below.

3.2 Evaluation Trench

3.2.1 The trench measured 10m in length and 1.6m in width, with an approximate total of 6.5m of the trench excavated to the top of archaeological deposits. The trench was excavated by machine to 1.15m in depth, the majority of these machine excavated overburden deposits related to 19th century housing and more recent hard-standing, these deposits contained finds consistent with this date. These deposits were numbered as (100), and contained demolition materials (see Fig. 3 Section. 4). These deposits were overlying a mid yellowish red, sandy silt, gravel material (101). A 1.5m portion of the deposit was not removed during the machining of the trench, allowing hand excavation of the deposit, however the deposit contained no finds, or datable material. The deposit thinned out towards the western end of the trench, the layer however measured 0.1m in thickness for the majority of the trench. The final layer encountered within the trench (102), was a mid greyish brown, silty clay, measuring 0.12m in thickness consistent throughout the trench covering the river terrace gravels.

3.2.2 A total of five features were identified cutting the river terrace gravels, the earliest of these features were identified as intercutting pits, **108**, **110**, and **112**. These pits were vertical sided to undercutting, and appeared to be oval or rounded in plan. The full extent of the pits was not visible within the trench, however the pits measured at least 2m in width. Due to the narrowness and depth of the trench the base of the features could not be excavated by hand. A hand auger was therefore used to establish the depth of these pits which ranged from 0.96m to 1.1m below the machined surface (that is upto 2.00m below present ground level. Pit **112**, showed evidence for at least three fills (see Fig. 3 Section. 1), (113), (114), and (115), although all were similar greyish brown sandy silts and may have been rapidly deposited. The other pits were very similar to 112 and all contained a broadly contemporary pottery assemblage dated as mid 12th century to mid 14th century (pers. comm. Fletcher). A single residual sherd of Roman pottery was recovered from the upper most fill of **108**, (109).

3.2.3 A post hole (**104**) at the eastern end of the trench, contained post-medieval tile and cut through possible medieval pit **110**, it was also cut from visibly higher in the trench section than the earlier pits, it is therefore likely to have been 19th century in date and contemporary with the remains of brick walls, and associated drains at the eastern end of the trench that were aligned consistent with 19th century cartographic evidence (old-maps.co.uk, online).

3.2.4 A very shallow feature (**106**) also at the eastern end of the trench, measured 3.2m in length, and 0.18m in depth. The only finds recovered from the light greyish brown, sandy silt fill (107), were remains identified as sheep, and cattle bone fragments. It possibly cut and was therefore later than pit **110**.

3.3 Borehole Summary

3.3.1 Prior to archaeological investigation intrusive investigations (borehole sampling) was undertaken by Prior Associates for the purpose of retrieving information about the ground conditions on the site. Four boreholes (WS1-WS4) were located on the subject site with a further three on an adjacent site.

3.3.2 Two boreholes at the front of the adjacent plot, (WS5 and WS6) showed made ground beneath the surface, in the form of a brown clay layer beneath the sub-base to the tarmac. This was interpreted as being consistent with it having been used to backfill basements beneath the terrace houses shown on the historic maps.

3.3.3 The table below shows a summary of the results of the boreholes on the subject site.

WS1	WS2	WS3	WS4
0-0.7m Made Ground	0-0.6m Made Ground	0.7m Made Ground	0.8m Made Ground
0.7-1.5m Soft to firm light brown clayey Sands and Gravels	0.6-1.5m Soft brown flinty clay	0.7-2.0m Soft to firm brown flinty Clay	0.8-1.9m Soft brown clay and flints
1.5-4m Sands and Gravels	1.5-4m Sands and Gravels	1.5-4m Sands and Gravels	1.5-3.5m Sands and Gravels

3.3.4 The deposits described as soft brown flinty clay between 0.6m and 2m below ground level (WS2-WS4) are likely to be made ground and/or fills of pits similar to those found in the evaluation trench. Deposits at this depth in WS1 located in the North-east corner of the site differed from the others but the description is similarly consistent with fill.

3.4 Finds Summary

3.4.1 A small pottery assemblage (weighing 187 grammes) was recovered from 4 contexts. The pottery recovered from pits **108**, **110**, and **112**, was all medieval in date and comprised unglazed medieval wares, two fragments of glazed Ely ware and one sherd of Roman. The Roman pottery sherd is clearly residual but the remainder of the pottery sherds also showed high levels of abrasion, and small sherd size, indicating the assemblage does not represent primary deposition and are likely to be residual (C. Fletcher pers. Comm.).

3.4.2 A small assemblage (55 grammes) of late post-medieval transfer print pottery was recovered from a layer (100)

3.4.3 Two contexts (105 and 109) contained a small quantity of post-medieval tiles.

Context	Material	Description	Count	Weight (kg)	Average fragment weight
100	Ceramic	Post-medieval pottery	3	0.055	0.018
100	Bone	animal	1	0.088	0.088
105	Ceramic	?medieval tile	3	0.126	0.042
107	Bone	animal	2	0.015	0.007
109	Ceramic	Medieval + RB pottery	6 + 1	0.063	0.009
109	Ceramic	Brick	2	0.015	0.007
111	Ceramic	Medieval pottery	9	0.052	0.006
111	Flint	Waste flake	1	0.003	0.003
115	Ceramic	Medieval pottery	3	0.017	0.006
115	Shell	Oyster	1	0.011	0.011

3.5 Environmental Summary

- 3.5.1 Two bulk samples from the possible medieval quarry pits have been submitted for processing/assessment. The results are not available at time of writing.

4 DISCUSSION AND CONCLUSIONS

4.1 Discussion

- 4.1.1 Pits **108**, **110**, and **112**, appear most likely to represent quarry activity, although the pits are intercutting, they are distinct enough from each other to suggest an attempt to break new ground, for each pitting event. The homogeneous fills within the pits with their similar finds assemblages would suggest that they were backfilled fairly quickly. The level of abrasion of the pottery sherds within the fills, may indicate a time of deposition towards the end of the broad dating range of mid 12th century to mid 14th century or even later. The condition of the pottery suggests it had been lying around, perhaps in middens, for a considerable length of time before finding its way into these pits. The pottery may therefore have derived from the medieval lay settlement of Barnwell but is not necessarily an indicator that these pits were associated with the settlement.
- 4.1.2 A subsoil deposit (102) that sealed the ?medieval pits, may represent a period of dis-use or deliberate levelling (along with a more solid gravel layer 101) of the uneven ground left by quarrying. No dating evidence was recovered from these layers, but they formed an interface between the quarrying activity and 19th century settlement.
- 4.1.3 The adjacent site (ECB 3812) found no evidence for activity pre-dating the 19th century so the discovery of medieval pottery and tile here is of interest.
- 4.1.4 The borehole survey has provided additional evidence that the site is likely to have been subjected to extensive pitting, possibly quarrying. It is not possible to assign a date to the pitting episodes from the borehole survey, although by comparison with the information provided by the evaluation trench, a date at the end of the medieval period or later is likely.

4.2 Conclusion

- 4.2.1 The earliest evidence identified by the evaluation dates to the Roman period, however, this is clearly residual and a single sherd may be derived from manuring of fields. There is more substantial evidence for medieval activity in the form of abraded pottery found in backfilled quarry pits. No later finds were recovered from these pits but the condition of the pottery suggests that the pottery may be residual here and the pits may therefore be later than the pottery found in them. The earliest activity on the site is that associated with quarrying. The wider area is known for its quarrying industry in the later post-medieval period and it is possible that this industry had its origins in the medieval or early post-medieval periods. A period of dis-use or abandonment has been identified after the quarries went out of use followed by housing in the 19th century. No direct medieval settlement evidence has been identified at this location by this evaluation although the pottery is likely to have originally derived from settlement related activity.

4.3 Recommendations

- 4.3.1 Recommendations for any future work based upon this report will be made by Cambridgeshire County Council Historic Environment Team.

BIBLIOGRAPHY

British Geological Survey. 2013. <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> Accessed 7/7/13.

old-maps.co.uk. 2010 <http://www.old-maps.co.uk/index.html> Accessed 7/7/13.

APPENDIX A. OASIS REPORT FORM

All fields are required unless they are not applicable.

Project Details

OASIS Number	oxfordar3-154680		
Project Name	Medieval Remains at 30-31 Occupation Road, Cambridge		
Project Dates (fieldwork) Start	01-07-2013	Finish	02-07-2013
Previous Work (by OA East)	No	Future Work	Unknown

Project Reference Codes

Site Code	CAMOCR13	Planning App. No.	12/0628/FUL
HER No.	ECB3986	Related HER/OASIS No.	

Type of Project/Techniques Used

Prompt	Direction from Local Planning Authority - PPS 5
Development Type	Rural Residential

Please select all techniques used:

<input type="checkbox"/> Aerial Photography - interpretation	<input type="checkbox"/> Grab-Sampling	<input type="checkbox"/> Remote Operated Vehicle Survey
<input type="checkbox"/> Aerial Photography - new	<input type="checkbox"/> Gravity-Core	<input checked="" type="checkbox"/> Sample Trenches
<input type="checkbox"/> Annotated Sketch	<input type="checkbox"/> Laser Scanning	<input type="checkbox"/> Survey/Recording Of Fabric/Structure
<input type="checkbox"/> Augering	<input type="checkbox"/> Measured Survey	<input type="checkbox"/> Targeted Trenches
<input type="checkbox"/> Dendrochronological Survey	<input type="checkbox"/> Metal Detectors	<input type="checkbox"/> Test Pits
<input type="checkbox"/> Documentary Search	<input type="checkbox"/> Phosphate Survey	<input type="checkbox"/> Topographic Survey
<input type="checkbox"/> Environmental Sampling	<input type="checkbox"/> Photogrammetric Survey	<input type="checkbox"/> Vibro-core
<input type="checkbox"/> Fieldwalking	<input type="checkbox"/> Photographic Survey	<input type="checkbox"/> Visual Inspection (Initial Site Visit)
<input type="checkbox"/> Geophysical Survey	<input type="checkbox"/> Rectified Photography	

Monument Types/Significant Finds & Their Periods

List feature types using the [NMR Monument Type Thesaurus](#) and significant finds using the [MDA Object type Thesaurus](#) together with their respective periods. If no features/finds were found, please state "none".

Monument	Period	Object	Period
Quarry	Medieval 1066 to 1540	Pottery	Medieval 1066 to 1540
	None		None
	Select period...		Select period...

Project Location

County	Cambridgeshire	Site Address (including postcode if possible)	
District	Cambridge City	30-31 Occupation Road, Cambridge CB1 2TX	
Parish	Cambridge City		
HER	Cambridgeshire		
Study Area	200m2	National Grid Reference	TL 4623 5879

Project Originators

Organisation	OA EAST
Project Brief Originator	Andy Thomas
Project Design Originator	CgMs
Project Manager	Aileen Conor
Supervisor	Jonathan House

Project Archives

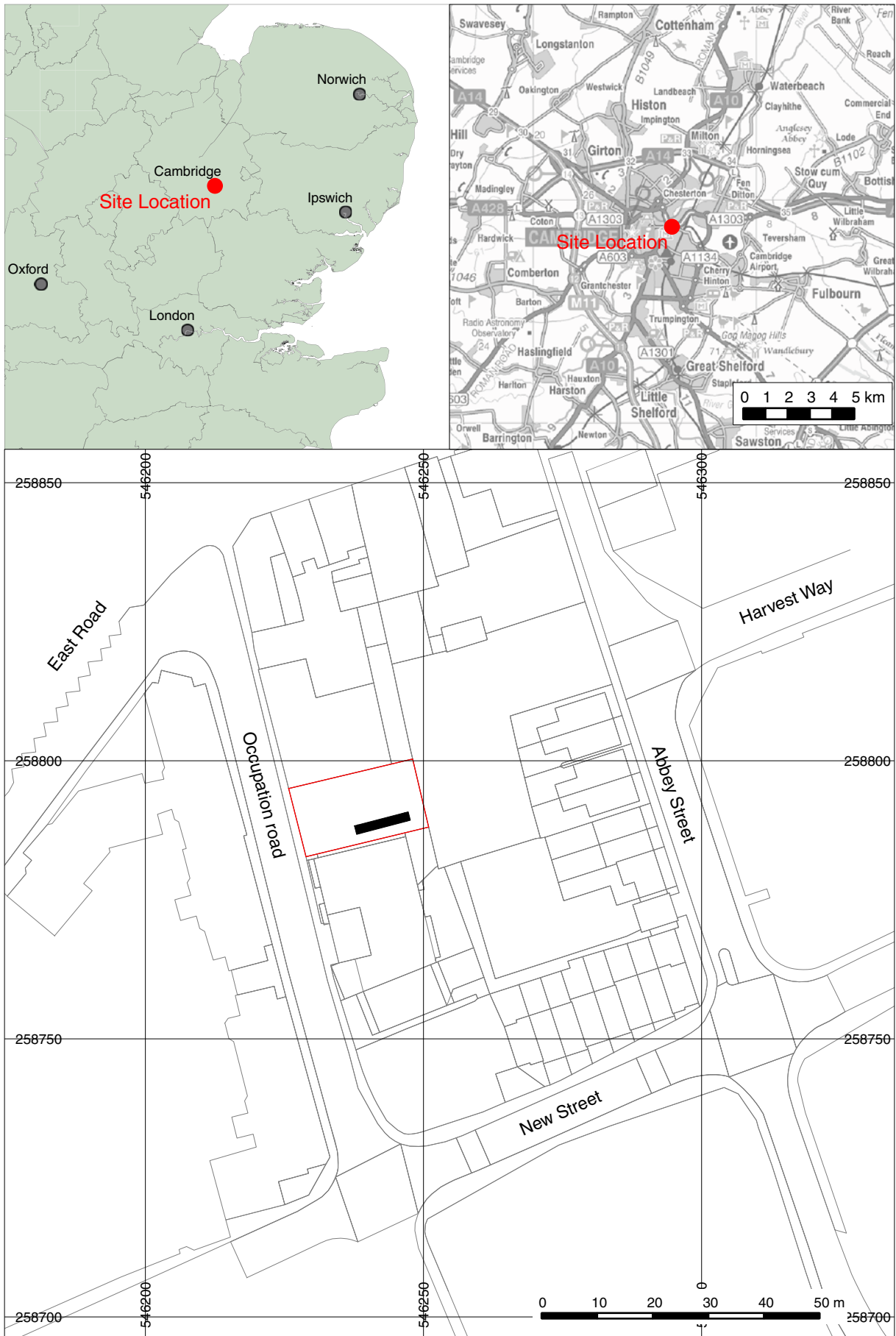
Physical Archive	Digital Archive	Paper Archive
Cambs Musuem Service	OA East (Bar Hill)	Cambs Musuem Service
CAMOCR13	CAMOCR13	CAMOCR13

Archive Contents/Media

	Physical Contents	Digital Contents	Paper Contents
Animal Bones	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceramics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Glass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Human Bones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stratigraphic		<input type="checkbox"/>	<input type="checkbox"/>
Survey		<input type="checkbox"/>	<input type="checkbox"/>
Textiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Worked Bone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worked Stone/Lithic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Digital Media	Paper Media
<input type="checkbox"/> Database	<input type="checkbox"/> Aerial Photos
<input type="checkbox"/> GIS	<input checked="" type="checkbox"/> Context Sheet
<input type="checkbox"/> Geophysics	<input type="checkbox"/> Correspondence
<input checked="" type="checkbox"/> Images	<input type="checkbox"/> Diary
<input checked="" type="checkbox"/> Illustrations	<input checked="" type="checkbox"/> Drawing
<input type="checkbox"/> Moving Image	<input type="checkbox"/> Manuscript
<input type="checkbox"/> Spreadsheets	<input type="checkbox"/> Map
<input type="checkbox"/> Survey	<input type="checkbox"/> Matrices
<input checked="" type="checkbox"/> Text	<input type="checkbox"/> Microfilm
<input type="checkbox"/> Virtual Reality	<input type="checkbox"/> Misc.
	<input type="checkbox"/> Research/Notes
	<input type="checkbox"/> Photos
	<input checked="" type="checkbox"/> Plans
	<input checked="" type="checkbox"/> Report
	<input checked="" type="checkbox"/> Sections
	<input type="checkbox"/> Survey

Notes:



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Figure 1: Site location showing archaeological trench (black) and development area (red).

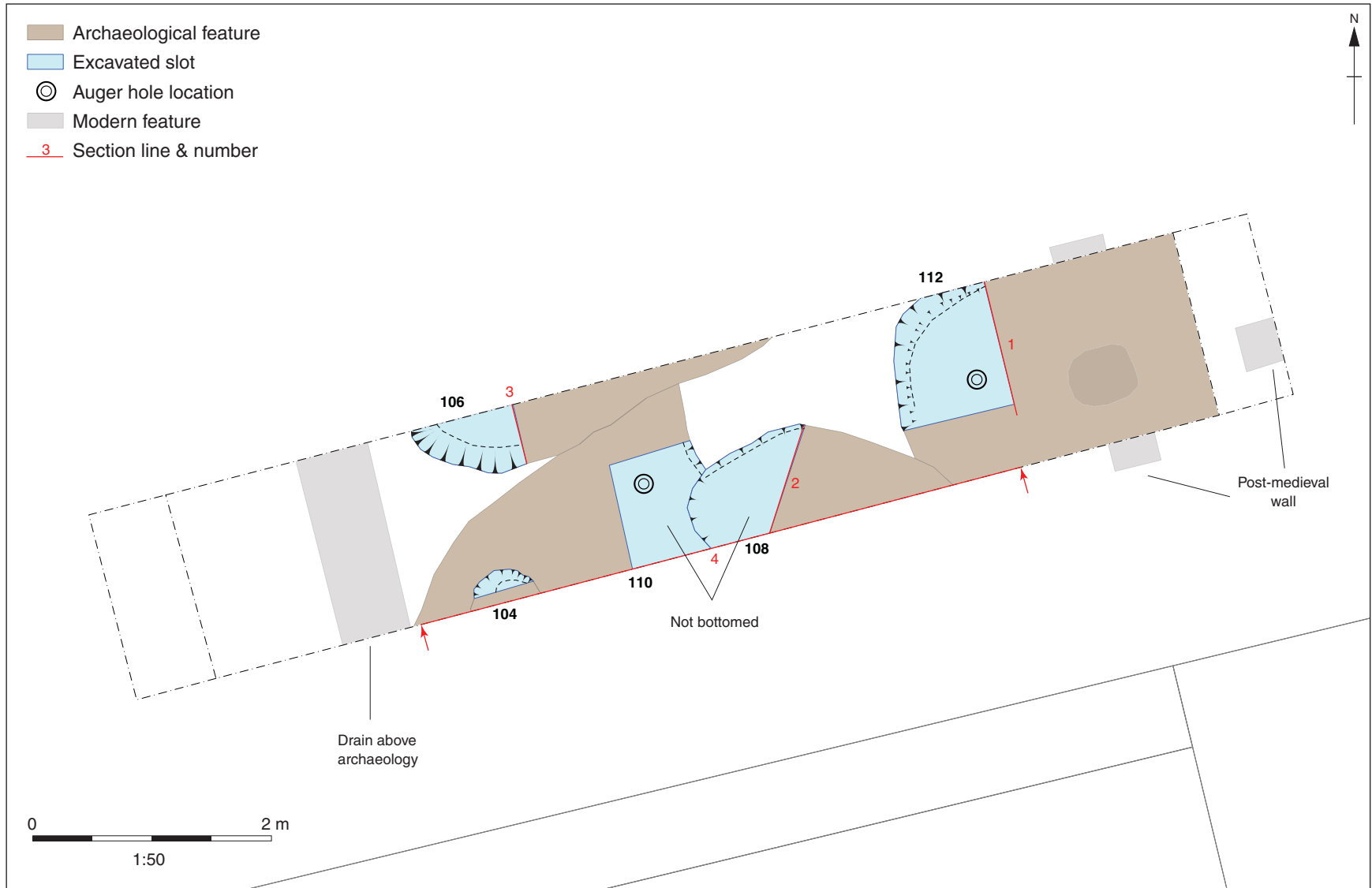


Figure 2: Plan of trench



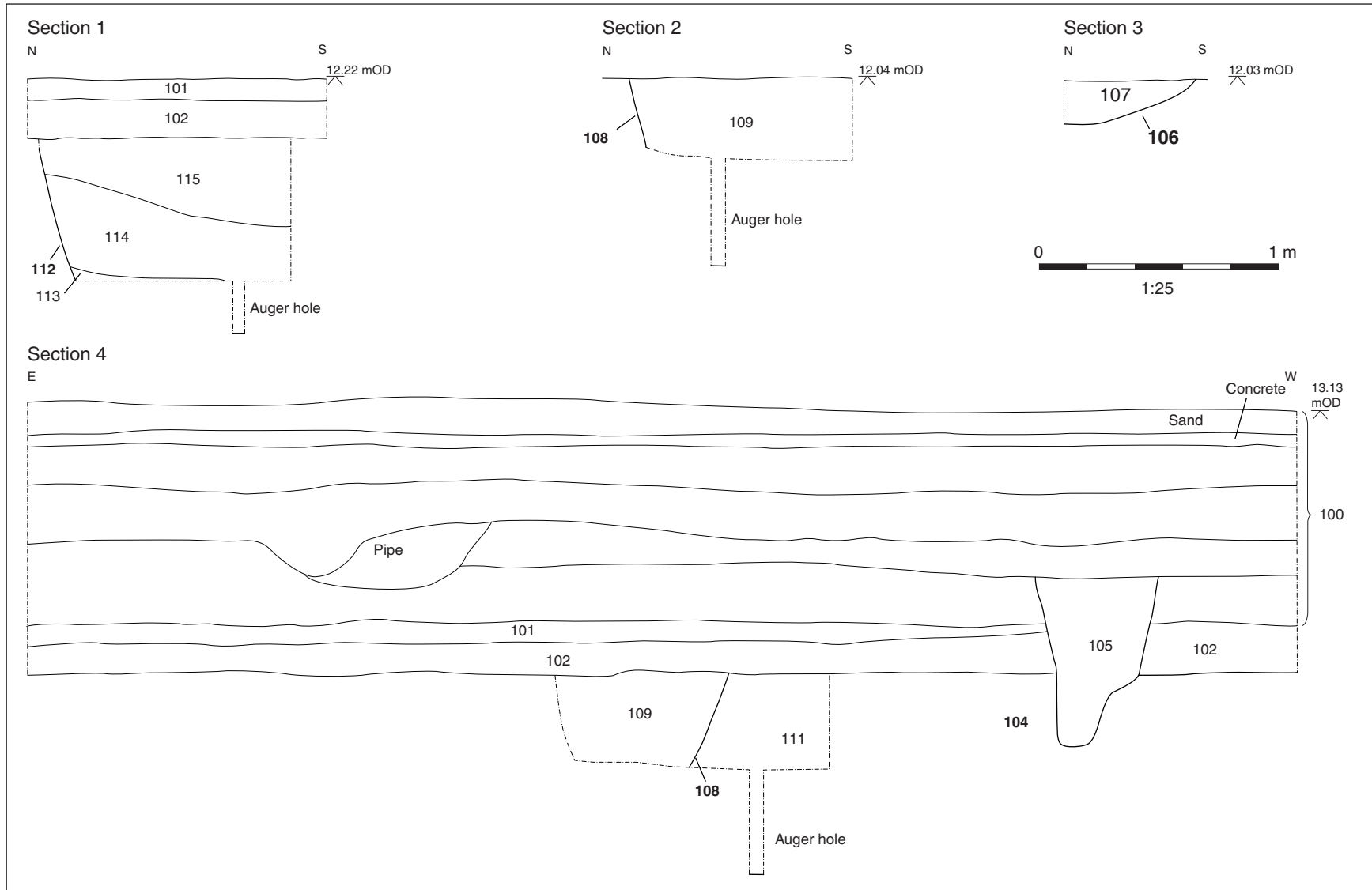


Figure 3: Section drawings

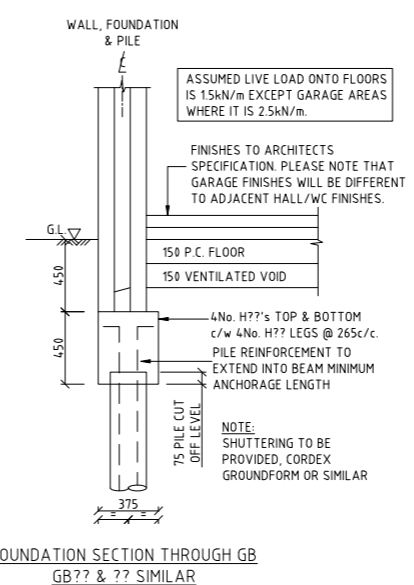
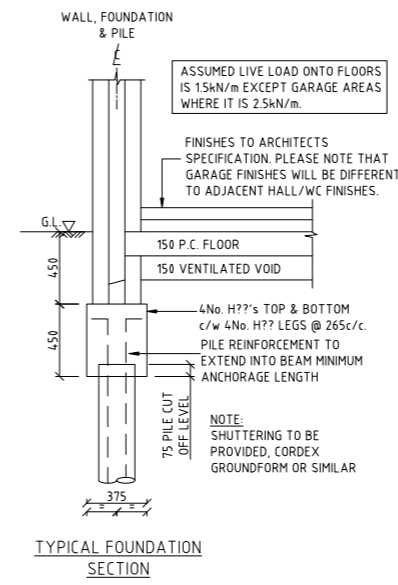
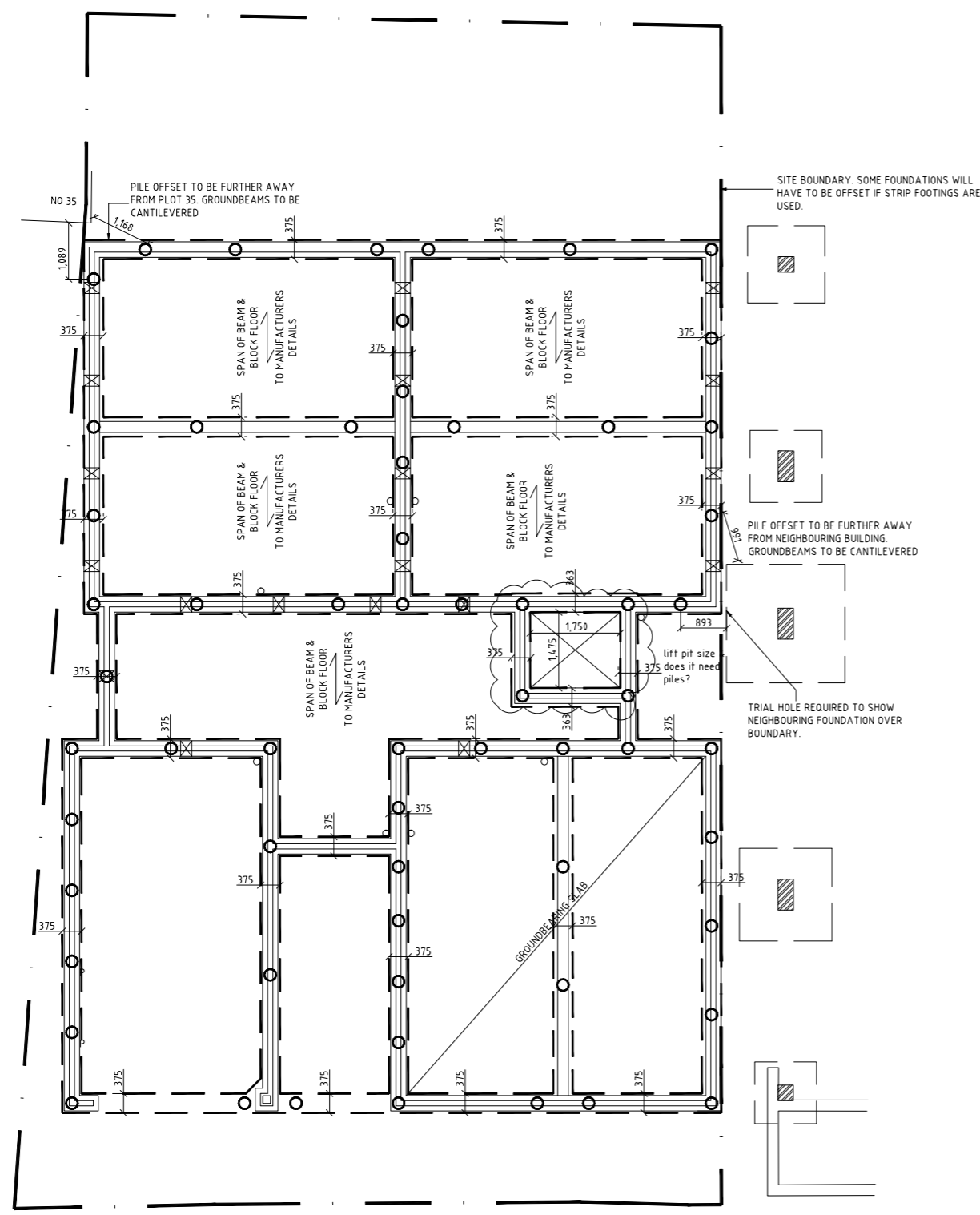




Plate 1: Pit 112 and layer (101), taken from west



Plate 2: Trench shot, showing excavated features, taken from west



SEE PA DRAWING 10600/02 & 10600/03 FOR PILE LAYOUT & REINFORCEMENT DETAILS

- NOTES**
- DO NOT SCALE.
 - ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED. THE CONTRACTOR IS TO CHECK THAT ALL DIMENSIONS ARE IN ACCORDANCE WITH CURRENT ARCHITECT'S DRAWING BEFORE COMMENCING WORK OR ORDERING ANY MATERIALS.
 - THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
 - ANY DISCREPANCIES FOUND ON THIS DRAWING OR ANY OTHER RELEVANT INFORMATION ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER AS SOON AS THEY ARE DISCOVERED.
 - ALL CONSTRUCTION TO BE TO RELEVANT BRITISH STANDARDS, NHBC STANDARDS AND IN ACCORDANCE WITH CURRENT BUILDING REGULATIONS.

- ADDITIONAL NOTES**
- ALL STEEL GRADE S275. ALL BOLTS TO GRADE 8.8. ALL WELDS TO BE ELECTRODE CLASSIFICATION 35. INTERNAL AND EXTERNAL STEELWORK THAT HAS NOT BEEN GALVANISED SHOULD BE PROTECTED WITH AT LEAST TWO COATS OF ZINC PHOSPHATE PRIMER, AND A SUITABLE DECORATIVE FINISH WHERE REQUIRED.
 - FIRE PROTECTION TO STEEL IN ACCORDANCE WITH BUILDING REGULATIONS. ALL NEW STEELWORK TO HAVE MIN. 1 HOUR FIRE PROTECTION ALL ROUND, SUGGEST 2 LAYERS 12.5mm PLASTERBOARD WITH JOINTS STAGGERED AND EXPOSED JOINTS TAPED AND FILLED.
 - USE FOSROC CEBEX 100 OR SIMILAR IN MORTAR TO PACKING OVER BEAMS.
 - USE HARDWOOD WEDGES FOLDING TOGETHER BETWEEN BEAMS AND BRICKWORK AT 300 c/c. PACK UP TIGHT TO BOTH BEARINGS AND BRICKWORK.
 - BOLT BEAMS TOGETHER AS SHOWN USING 10Ø BOLTS WITH GAS TUBE SPACERS TO SUIT CAVITY WIDTH.
 - ⊕ - PADSTONES TO STEELS TO BE 450 x 100 x 225 CLASS B ENGINEERING BRICK TO SINGLE STEELS. 675 x 100 x 225 CLASS B ENGINEERING BRICK UNDER DOUBLE STEEL BEARINGS. MIN. 100mm LONG BEARINGS TO STEELS. WHERE BEARING IS OVER INTEL ENGINEERING BRICK PADSTONE TO EXTEND DOWN TO TOP OF INTEL. IF DEPTH LESS THAN NOTED FOR PADSTONES ABOVE.
 - — — — — PROPRIETARY LITELS TO MANUFACTURER'S DESIGN AND SPECIFICATION. POINT LOADS FROM BEAMS AS NOTED ON PLAN.
 - REINFORCED CONCRETE - LAPS TO MESH MIN. 400mm. LAPS TO BARS MIN. 40 x BAR DIAMETER. COVER TO REINFORCEMENT TO BE: 40mm TOP AND SHUTTERED FACES 75mm ELSEWHERE
 - BENDING SCHEDULE TO BE CHECKED BY CONTRACTOR BEFORE ORDERING REINFORCEMENT.
 - PILES TO BE DESIGNED BY CONTRACTOR TO TAKE LOADS SPECIFIED AS WORKING LOAD WITH A FACTOR OF SAFETY OF 3.0. MAXIMUM PILE DIAMETER TO BE 450mm. IF PILING CONTRACTOR CONSIDERS FURTHER SITE INVESTIGATION OR REVISED PILE SPECIFICATION IS NECESSARY HE SHALL STATE SO IN HIS TENDER AND ARRANGE FOR THE INFORMATION BEFORE SUBMITTING HIS QUOTE
 - CONCRETE TO PILES TO BE SPECIFIED BY PILING CONTRACTOR.

CONCRETE SPECIFICATION

CONCRETE USES MIX	DESIGNED MIX					BRITISH STANDARDS DESIGNATED MIXES TO BS 5328
	GRADE	AGG SIZE	MIN CEMENT	MAX FREE WATER/CEMENT RATIO	SLUMP	
FOUNDATION CONCRETE. CAVITY FILL TO WALLS.	C20	20	220	—	100	OPC GEN 1 75mm SLUMP
MESH REINFORCED FOUNDATIONS.	C20	20	220	0.7	100	OPC GEN 3 75mm SLUMP
GROUND BEARING SLABS - GARAGES.	C20	20	220	0.7	100	OPC GEN 3 75mm SLUMP
GROUND BEARING SLABS - HOUSES.	C20	20	220	0.7	100	OPC GEN 2 75mm SLUMP
FULLY REINFORCED FOUNDATIONS. MINIMALLY AND FULLY REINFORCED SLABS.	C35	20	300	0.6	50	OPC RC 35 75mm SLUMP
BACKING TO PATH EDGES.	C15	20	220	—	SEMI-DRY	OPC GEN 1 V. LOW SLUMP

- NOTES**
- ALL CONCRETE, AGGREGATES, CEMENT, WATER, ADMIXTURES ETC. TO COMPLY WITH BRITISH STANDARDS AND NHBC STANDARDS - CHAPTER 21
 - CRESET REPLACEMENT IS PERMITTED BUT MUST BE CLEARLY SHOWN IN THE QUOTATION AND SHOULD, UNLESS OTHERWISE AGREED, BE WITHIN THE FOLLOWING CRITERIA:
 - a) OPC WITH MINIMUM 25% AND MAXIMUM 30% SLAG, BY WEIGHT
 - OR b) OPC WITH MINIMUM 25% AND MAXIMUM 45% PFA, BY WEIGHT
 - OR c) PORTLAND BLENDED WITH CEMENT FILLER OF OPC
 - APPROVED ADMIXTURES ARE ALLOWED PROVIDED NOTE 1 IS COMPLIED WITH
 - NO WATER MAY BE ADDED ON SITE
 - SPECIAL MIXES MAY BE REQUIRED ON HAZARDOUS SITES. THESE WILL BE DEFINED AS NECESSARY

A	APRIL 2013	CP	CHANGED TO A PILED FOUNDATION
Client	DUDLEY DEVELOPMENTS		
Project	30-31 OCCUPATION ROAD, CAMBRIDGE		
Section	FOUNDATIONS		
Designer	GSC	Drawn	Checked
Date	20/03/13	Scale	Rev A
Drawing No		10600/01	

NOT FOR ISSUE

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